



*Handbook for*  
**POST-DISASTER RECOVERY AND  
RECONSTRUCTION PLANNING**  
*in Lao PDR*







## ***List of common abbreviations***

|                |  |
|----------------|--|
| <b>DHUP</b>    | Department of Housing and Urban Planning                               |
| <b>DRR</b>     | Disaster Risk Reduction  |
| <b>GDP</b>     | Gross Domestic Product   |
| <b>LTA</b>     | Lao National Tourism Administration                                    |
| <b>MAF</b>     | Ministry of Agriculture and Forestry                                   |
| <b>MES</b>     | Ministry of Education and Sports                                       |
| <b>MEM</b>     | Ministry of Energy and Mining  |
| <b>MH</b>      | Ministry of Health   |
| <b>MIC</b>     | Ministry of Industry and Commerce                                      |
| <b>MICT</b>    | Ministry of Information and Culture and Tourism                        |
| <b>MLSW</b>    | Ministry of Labour and Social Welfare                                  |
| <b>MoNRE</b>   | Ministry of Natural Resources and Environment                          |
| <b>MPI</b>     | Ministry of Planning and Investment                                    |
| <b>MPWT</b>    | Ministry of Public Works and Transport                                 |
| <b>NDMC</b>    | National Disaster Management Committee                                 |
| <b>NDMO</b>    | National Disaster Management Office                                    |
| <b>PTA</b>     | Post and Telecommunication Authority                                   |
| <b>SOP</b>     | Standard Operating Procedure   |
| <b>ToR</b>     | Terms of Reference   |
| <b>UNECLAC</b> | United Nations Economic Commission for Latin America and the Caribbean |
| <b>WB</b>      | The World Bank   |





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# Section I: Introduction to the Handbook





## A. Disasters in Lao PDR

Lao PDR is a largely mountainous landlocked country with a total area of 236,800 square kilometers. The Mekong River forms a large part of the western boundary with 85 % of the country being part of the Mekong basin catchment area. The country has a population of 6.2 million and it is divided into 17 provinces, 147 districts and 11,387 villages. With about 74% of the population living on less than 2 US\$ per day (UNDP, 2005), Lao PDR is considered as one of the least developed countries in the world. Agriculture is the main livelihood for the majority of the population, with 67% of all households relying on agriculture for their food consumption (Messerli et al., 2008).

Due to its geographical location, Lao PDR is presented with a number of primary natural hazards including flooding, drought, earthquake and tropical storms, each with a significant potential to cause large-scale destruction of property or loss of social and economic assets. The country is also at risk from landslides, pest infections and fire due to slash and burn practices in agriculture. The map below shows the national hazard profile for Lao PDR. During the period of 1970 to 2010, 33 natural hazard events (mostly floods and droughts) have been registered in Lao PDR, affecting almost 9 million people and causing economic damages of over US \$400 million (The World Bank). Droughts and floods are widely considered to be the most prevalent of the hazards. The table below outlines four of the primary hazards found in Lao and provides an overview of the impacts that they have on the country.

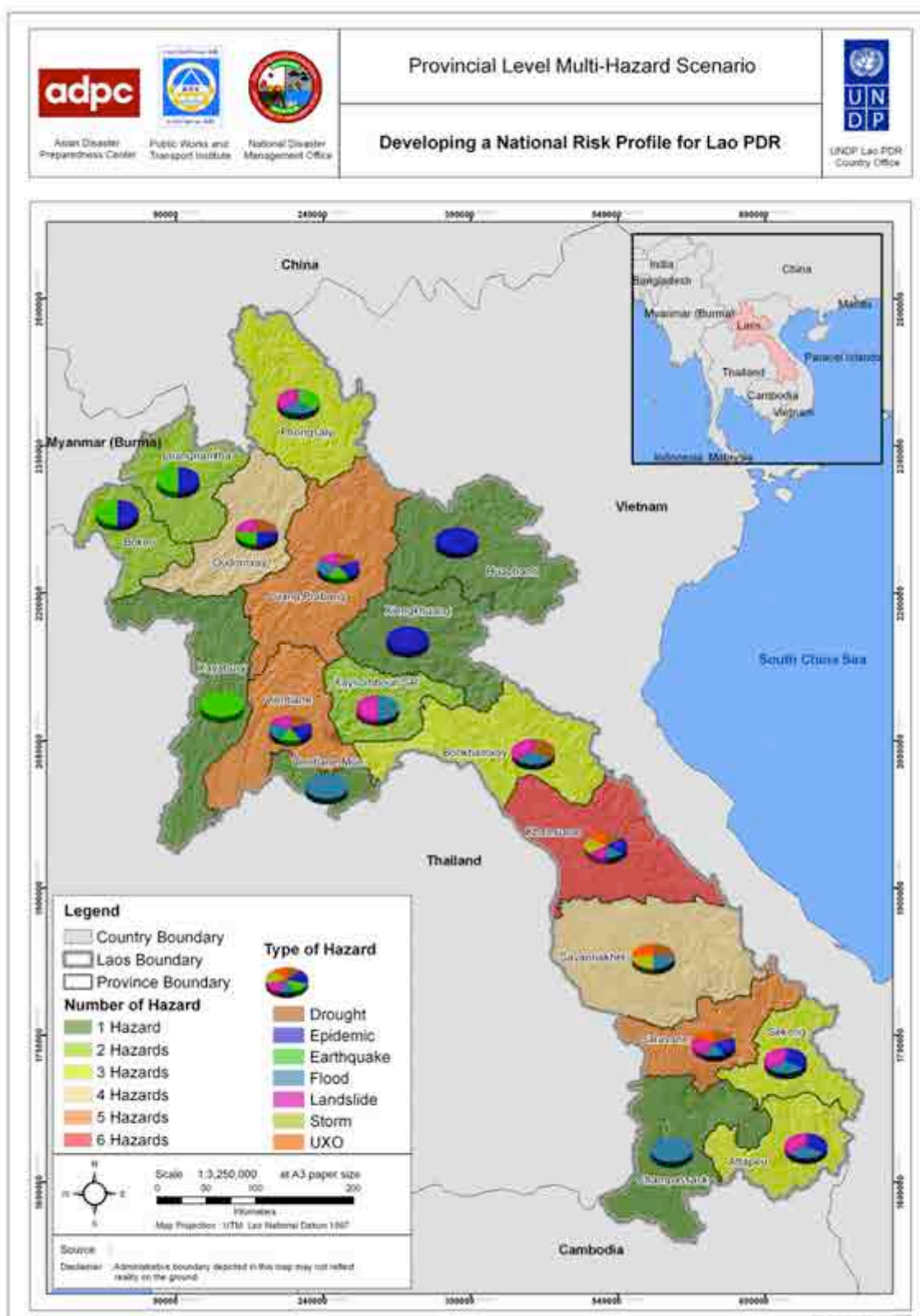
**Table: Primary hazards present in Lao and their impacts**

| Primary Hazard | Impact   |
|----------------|--|
| Droughts       | Five droughts have affected the country over the past 40 years. One of the most severe was in 1977 affecting almost three and half million people. A later drought in 1998 affected 750,000 people.  |
| Floods         | Fifteen floods have occurred in Lao PDR from 1970 to 2010. In 1992 a heavy flood caused economic damages for over US \$21 million. In addition, in 2005 and 2006, the damages on the irrigation system by floods caused more than US \$5 million worth of damage.      |
| Epidemics      | Eight epidemic events have been taken place in the past four decades. Disease outbreaks such as smallpox, malaria, diarrhoea, dysentery, dengue fever and cholera have been registered. In 1994, a major cholera outbreak killed 500 people and affected 8,000 people. |
| Storms         | Five storms or tropical cyclones have reached and affected the country over the last two decades. These storms as well as the impacts from southwest Monsoons have affected over 1 and half million of people and caused damages for over US \$400 thousand            |

*Source: World Bank 2011: climate knowledge portal*

The affect that these hazards have on the population and the socio-economic structures of the country cannot be understated. When looking closely at the impacts of these hazards it becomes evident that the effects are felt through all levels of society, from household livelihoods through regional and provincial development to national development.

Map: National Hazard Profile of Lao PDR



## B. Current procedure for post-disaster recovery and reconstruction planning in Lao PDR

- Currently in the aftermath of a disaster event, the National Disaster Management Office (NDMO) under the Ministry of Labor and Social Welfare (MLSW), in its capacity as the Secretariat of the National Disaster Management Committee (NMDC), carries out rapid damage assessment in close partnership with humanitarian agencies. The scope of this assessment is to determine primarily the need for emergency response<sup>1</sup>. It is also observed from past events, such as the August 2008 floods, that different key line ministries too, after a disaster event, undertake assessment of their respective sectors. However, the assessment methodologies differ among the ministries and primarily include impacts on physical assets and not detailed impact on economic flow because of the disaster event. Thus in most cases the assessments are not comprehensive and largely underestimates the impacts. Moreover, no comprehensive methodology in the country exists to assess overall impacts of disasters and based on which the medium and long-term needs could be identified for recovery<sup>2</sup> and reconstruction. In the absence of such comprehensive methodology, the recovery and reconstruction planning undertaken is also largely ad-hoc. However, with natural hazards being a recurrent feature in Lao PDR, the need of having a comprehensive standardized methodology across all line ministries is recognized as a necessity to assist the government in better coordinating for the damage, loss and needs as well as guiding the post-disaster recovery and reconstruction process. The methodology should enable undertaking assessment of direct and indirect effects of an event on a particular sector, impacts on the economic performance of the area affected by the disaster and determine the needs for medium and long-term recovery and reconstruction, including building back better.

## C. Background on development of this Handbook

- The Ministry of Planning and Investment (MPI) in close partnership with line ministries have led the development of this Handbook in order to provide guidance for post-disaster recovery and reconstruction planning.
- Following line ministries acted as members of the Project Steering Committee of this initiative and guided in developing and testing the methodology described in this Handbook:
  - a. Ministry of Planning and Investment (MPI)
  - b. Ministry of Labour and Social Welfare (MLSW)
  - c. Ministry of Agriculture and Forestry (MAF)
  - d. Ministry of Public Work and Transport (MPWT)
  - e. Ministry of Industry and Commerce (MoIC)
  - f. Ministry of Energy and Mine (MEM)
  - g. Ministry of Education and Sports (MES)
  - h. Ministry of Public Health (MPH)
  - i. Ministry of Information and Culture (MIC)
  - j. Ministry of Natural Resources and Environment (MoNRE)
  - k. Post and Telecommunication Authority
  - l. Lao National Tourism Administration (LNTA)

The process of development of the Handbook has been technically supported by the Asian Disaster Preparedness Center (ADPC) and the World Bank with the financial assistance from the Global Facility for Disaster Reduction and Recovery (GFDRR).

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<sup>1</sup> Response: The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected. (Source: UNISDR, 2009)

<sup>2</sup> Recovery: The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factor (Source: UNISDR, 2009)

## ***D. About the Handbook***

This Handbook has been adopted from the DaLA methodology developed by the United Nations Economic Commission for Latin America and the Caribbean (UNECLAC) and developed to provide the necessary guidance for undertaking damage, loss and needs assessment as well as for developing post-disaster recovery and reconstruction plan, based on the context and experiences of Lao PDR. The Handbook is structured as follows:

### **Section I: Introduction**

### **Section II: Damage Loss and Needs Assessment**

- Section II A: Describes the methodology for damage, loss and needs assessment; objectives of the assessment, scope, key concepts, usage of assessment results to prioritize recovery and reconstruction needs and timeline for assessment.
- Section II B: Provides the Standard Operating Procedures (SOP) for undertaking damage, loss and needs assessment in Lao PDR, describing the purpose, objectives, operational guidelines, procedures and Terms of Reference (ToR) of the assessment.
- Section II C: Includes set of 15 sector specific guidance notes on undertaking damage, loss and needs assessment. Each guidance note describes the methodology to assess the effects of disasters in Lao PDR, breaking them down into damages and losses and into overall macroeconomic effects.

The fifteen Guidelines Notes are classified under four broad sectors namely, Social (Private Housing, Health, Education and Cultural Sites), Productive (Agriculture and Forestry, Manufacturing, service and trade, Mining, Power Supply and Tourism), Infrastructure (Public building, Transport, Urban water supply, Rural water supply and Post and telecommunications) and Effects of disasters on the macro-economy.

### **Section III: Recovery and Reconstruction Planning**

Provides guidance on developing recovery and reconstruction plan

- Since the methodology for damage, loss and needs assessment is very new in the context of Lao PDR, the usage of it, is expected to increase over time with the involvement of the line ministries, capacity among the government officials at various levels and availability of baseline data. In this regard, this version of the Handbook is to be treated as work in progress and which is to be improved by the users over the period of time based on their experiences and challenges in undertaking future assessments and developing recovery and reconstruction plan.





## Section II: Damage Loss and Needs Assessment



## Section II A: Methodology for damage loss and needs assessment

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### *A. Introduction to damage loss and needs assessment methodology*

- The methodology for undertaking damage, loss and needs assessment has been developed by the Government of Lao PDR and is originally derived from the Methodology for Estimating the socio-economic and environmental effects of disasters, developed by the United Nations Economic Commission for Latin America and the Caribbean (better known as the ECLAC Methodology) and further enhanced by the World Bank.
- The ECLAC methodology bases an assessment of disaster impact on the overall economy of the affected country as well as on the household level. This provides a basis for defining the needs for recovery and reconstruction following any disaster. It has proven to be a suitable framework to identify and quantify the socio-economic impact of disasters.
- The methodology utilizes the national accounts of the affected country as a means for valuation of the losses caused by the disaster. The methodology provides an estimate of the destruction of both private and government assets, the changes in economic flows that are caused by the temporary absence of those destroyed assets, and the modifications in the performance of the affected economy. It also provides the basis for assessing the negative impact on personal or household income and overall wellbeing.

### *B. Objectives of damage loss and needs assessment*

- Damage Loss and Needs Assessments are intended to estimate, first, the short-term government interventions that are required to initiate recovery and, second, the financial requirements to achieve overall post-disaster recovery, reconstruction and risk reduction. The usual output after such assessment is a comprehensive program of recovery, reconstruction and risk reduction that will guide all actions after a disaster has occurred.
- Post-disaster recovery, reconstruction and risk reduction program should define, quantify and prioritize all activities required to achieve full recovery of social and economic conditions, reconstruction of destroyed assets and the undertaking of measures to reduce risk in the future for the entire affected area or country.
- Assessment of damage, loss and needs after a disaster is essential for estimating resources needed for recovery and reconstruction. Priorities can then be set in terms of the most affected sectors of the economy, geographical areas of the country and population groups to address during the recovery and reconstruction process. The specific objectives of undertaking a damage, loss and needs assessment are to:
  - ♦ Estimate the overall impact of the disaster that would include the consequences of the disaster on the functioning of the overall economy of the country or affected area, and also at the level of persons or households that are affected. For e.g. macro-economic impacts may occur on the performance of Gross Domestic Product (GDP), the balance of payments and the fiscal sector and the disaster impacts at the micro level may include personal income decline and increase in costs of living.
  - ♦ Define the resources needed for recovery and reconstruction in the affected areas based on the needs in all major sectors of the economy; and
  - ♦ Include disaster risk reduction (DRR) activities associated with the proposed recovery and reconstruction efforts.
  - ♦ Establish an overall and coherent picture of damages and losses in all sectors (as opposed to have a plethora of reports from different organizations using different incomparable methods in different sectors)

- To come up with one common assessment report that can be presented by the Government to the international development partners for likely assistance in implementing the short, medium, long term and disaster risk reduction needs estimated by the assessment.

### **C. Scope of damage loss and needs assessment**

- The methodology proposed in this handbook measures destruction of physical assets and changes or losses in production of goods and services, to estimate financial needs for recovery and reconstruction. The methodology is based on the tried and proven methodology since the early 1970s and adopted by World Bank for use throughout the world. However, at this stage, the methodology in this document does not look into determining disaster impact on human development, the methodology for which is currently under further development by the United Nations. When approved and agreed by the government of Lao PDR, the handbook will revisit the methodology and review and revise the relevant sections where applicable.

### **D. Methodology for damage loss and needs assessment**

- Enables a sector-by-sector analysis of damage and losses. The sectors as in the national accounts of the Lao PDR – agriculture; mining; manufacturing; electricity, gas and water; construction; trade, wholesale and retail; transport and communications; finance; public administration; and others including house ownership - will be followed in presenting the final assessment. However, it should be noted that some of the Guidance Notes (discussed in section II C) are consolidated to cover sub-sectors that belong to the other major sectors mentioned above. This has been done based on the recommendation of the representatives of various ministries of the Lao PDR who wish to conduct the assessment based on the concerns and responsibilities of the various ministries. For instance, the major sectors of manufacturing and trade are under one Guidance Notes since these sectors are with the Ministry of Industry and Commerce (MIC). On the other hand, while electricity and water supply are under one major sector, they are covered by separate Guidance Notes because electricity is under the Ministry of Energy and Mining (MEM) while urban water supply is under the Ministry of Public Works and Transportation (MPWT). The segregation of the sub-sectors according the ministerial responsibilities is intended to facilitate the assessment and not to alter the major sectoral headings. In the overall damage, loss and needs assessment, the assessment team will consolidate the various sectoral reports and place them into their appropriate major sectors.
- Where feasible, a distinction is made between public and private sector damage and loss, and their national and external components (e.g. reduced exports, increased imports, external transfers and national payments as generated by increased debt)
- Is an instrument for the decision making process and for policy formulation as it identifies more severely affected sectors, geographical areas and vulnerable groups

### **E. Concept of damage and loss**

- **Damage:**
  - Total or partial destruction of physical assets, including buildings and their contents
  - Damage occurs during or immediately after the disaster event
  - Damage is measured in physical terms, and a monetary replacement value is assigned to it
- **Loss:**
  - Change in economic flow caused by the disaster, for example:
    - Output losses and higher costs of production in the productive sectors of agriculture, industry, commerce, mining and tourism
    - Losses in revenue or sales and higher costs of operation in infrastructure or basic service sectors



- The changes in the economic flows (losses) that arise after disaster will continue to occur from the time of the natural event that caused the disaster until full economic recovery and reconstruction has been achieved.
- Measured in monetary terms at current prices
- **Macroeconomic effects:** Describes the effects of the disaster on the functioning of the overall economy. The main macroeconomic effects include:
  - Impact on the level and growth of the GDP of the country (province or district)
  - Modification of the normal pattern and structure of the balance of trade due to increased imports and lower exports of goods and services
  - Corresponding impact on the fiscal sector that may occur due to lower revenues and higher expenditures of the Government
  - Impact on gross investment to take into consideration the investment to be made during the recovery period
  - Possible inflation and possible aggravation of poverty
  - Negative impacts on employment and income at the personal and household level

## F. From damage and losses to needs

- After disasters of any kind, activities are designed to achieve recovery of the affected economy as well as activities designed to reconstruct all destroyed physical assets. These are the typical post-disaster activities of recovery and reconstruction. In certain cases, after a disaster, decisions can be taken to enter into a phase of disaster risk reduction, to ensure that when the next disastrous event occurs, its effects will be lower, and therefore introduce special measures for risk reduction.
- The financial needs to achieve recovery and reconstruction are estimated on the quantitative basis of the values of damage and losses arrived at during the assessment for each sector of economic activity.
- Typical objectives of the economic recovery include the restoration of personal and family income, essential services, and production activities in the affected areas. The main objective of the reconstruction program is the replacement or repair of physical assets that were totally or partially destroyed by the disaster, under the “building back better” concept.

## G. From losses to economic recovery needs

- Medium and long-term recovery needs are estimated on the basis of estimated values of losses in each sector. As an example, an agriculture economist may estimate the amounts and value of seeds, fertilizer and pesticides as well as of financing required to re-activate normal crop production; an industrial economist may do similar estimates to calculate the financing required to get industrial enterprises back to pre-disaster levels of production; and a labor economist is able to estimate the financial requirements to assist workers from different sectors to recover from temporary income decline due to the disaster.
- A post-disaster economic recovery program should include changes or modifications to public policies in order to mitigate or shorten the macroeconomic and individual impacts. A program of this type would normally include *inter alia* the following types of components:
  - Income generation schemes for most affected population groups
  - Special grants program for replacement of household assets and goods and for restart of micro-enterprise production, in non-creditworthy population groups
  - Provision of soft-term financing to restart productive activities in micro, small and medium-sized enterprises, through special lines of credit
  - Facilitation measures to expedite construction and reconstruction program start up and execution.
- The estimated value of production losses, and their time, spatial and by-sector distribution, provides the basis to estimate disaster impact on overall macroeconomic and by-sector performance, individual and family employment and income, and on enterprise (with special reference to micro, small and medium size units) performance.

- From the estimated value of production losses by sector, the number of lost employment-days can be obtained to ascertain the loss of income by individuals, and their impact on income levels including those at poverty and indigence. These figures may be used as the basis to define an income generation program that may be initiated as soon as possible after the disaster.
- Data on the estimated value of damage to household goods and machinery for home-based, micro-sized enterprises may be used to define a special grants program focusing on non-credit worthy individuals, such as women.
- The estimates of production losses by sector can be used to ascertain the needs of start-up capital for micro, small- and medium-sized enterprises that may be included in a special program of financing to entrepreneurs, to ensure that they are able to re-initiate their activities at the earliest.
- The financial needs for the economic recovery program must be estimated on the basis of the spatial, by sector, and by affected population group distribution of losses as provided for in the assessment. In that regard, an analysis must be made during the assessment to ascertain the most affected sectors, geographical or political divisional units, and population groups.

## H. From damage to reconstruction program needs

- The estimated value of damage in each sector will provide the basis for the estimation of the amounts of financing required for the reconstruction of assets that were— totally or partially — destroyed by the disaster. The estimated figures are to be complemented with the defined standards to which reconstruction is to be made. Normally, a disaster provides an opportunity to build back better some of the destroyed assets, especially in relation to housing, through introduction of quality standards and also of measures to increase resilience against future disasters. Furthermore, in many instances, it may be required to relocate buildings.
- The reconstruction program after a disaster may be defined after a reconstruction strategy has been decided upon, including definitions on how to “build back better”, and the estimated value of damage provides the basis on which to ascertain reconstruction needs. To obtain the value of reconstruction financial needs, the following data should be added to the value of estimated damage to physical assets arising from the assessment:
  - Additional cost for quality improvement in housing standards, especially for the case of poor families
  - Costs of mitigation works to reduce the impact of future disaster events, including retrofitting of buildings and construction according to higher standards of disaster resistance
  - Cost of relocation to safer areas when required
  - Costs of technological improvements, when desired and needed
  - Estimated cost of post-disaster, multi-year inflation (arising from disaster related scarcity or other reasons).
- The above require the definition of a strategy for reconstruction by the affected government and community. This strategy should include definitions on *inter alia* the manner in which reconstruction is to be faced (i.e. utilizing salvaged materials *vis a vis* full replacement of construction materials, massive reconstruction efforts *versus* individual family reconstruction, the possible adoption of new construction codes for disaster proofing and retrofitting, etc.).
- The allocation of financial needs must be defined, focused and prioritized on the basis of the damage assessment figures, duly supplemented with the information described above. An analysis of *per capita* damage figures, by-sector distribution of damage, and geographical distribution of damage is required for the setting of priorities in this regard.
- In brief, the estimation of needs must be made through the use of the following formula:
- Needs = Value of damage + quality/technological improvement + mitigation measures + multi-annual inflation

- While it is recognized that a final reconstruction strategy may not be available at the time of the assessment, needs may be estimated on the basis of very preliminary decisions on how reconstruction is to be undertaken, and refinements of the needs may be done as soon as the strategy is agreed upon among different stakeholders.

## *I. Timing of undertaking damage loss and needs assessment*

- The assessment will be led by the Government with support from development partners where necessary.
- It is important to note, that the assessment should be undertaken after the humanitarian assessment and assistance is completed or well underway, so as not to interfere with search and rescue activities and to ensure the availability of sufficient information on damage, loss and macro-economic effect in the affected areas.
- But the assessment should not be unnecessarily delayed, as there will be an urgent need to elicit support from the international community, whose attention may quickly be diverted in other parts of the world.
- Typically the damage, loss and needs assessment takes from 4 to 5 weeks but may take longer depending on the availability of data, the assessment teams and the scale of the impact.
- In the first week the overall planning of the assessment would take place and would include the following issues:
  - Baseline data collection
  - Agree on the Terms of Reference for conducting the assessment which includes the proposed team composition from line ministries and development partners where relevant, methodology on the data collection and sectors to be assessed by the team
  - Team Composition Methodology
  - Training on DALA to the central and provincial government officials in the affected provinces prior to visiting the sites
- Second and third week is the assessment stage and would include the following
  - Visiting the disaster affected areas to collect the baseline data and preliminary figures on the damages and loss (if emergency assessments have been undertaken)
  - Visiting the actual sites where accessible to verify the damage and loss data
  - Interviewing some of the local villagers affected by the disasters using a set of questionnaires prepared by the team to comprehend and estimate impacts on their livelihoods and social disruptions as a result of disasters
  - Sector by sector assessment to calculate Damage and losses using staff's own experience against a set of information available. Staff shall fill in questionnaires and use this handbook as a guide where necessary
- Fourth week of the assessment is the data analysis and report writing stage and would include the following
  - Macro economic impacts as a result of disasters based on the analysis done by all key sectors as well as the historical data on the economic growth in the past few years
  - Report drafting by staff from individual sector and the lead author who will consolidate the reports produced by all relevant sectors and
  - Estimating reconstruction and recovery needs based on the damage and loss data and the concept of build back better (BBB) where feasible
- Fifth week of the assessment is the stage of internal team consultation to discuss findings as well as agreeing on the figures for damage, loss and needs. The lead author will make necessary edits on the draft report based on the comments provided by the team prior to dissemination to the wider stakeholders. The launching of the final report will be conducted in the following week with the high level government representatives and development partners. Methodologies and findings will be discussed prior to publishing the report.

## Section II B: Standard Operating Procedures for undertaking damage loss and needs assessment

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### *A. Introduction to Standard Operating Procedures*

- In the period following a disaster and after the emergency response phase is over, it is essential to estimate the overall impact of the disaster, which would mean the consequences of the disaster on the functioning of the overall economy of the country or of affected area in Lao PDR, and also the impact at the level of persons or households that are affected. The damage loss and needs assessment provides estimates on resources required for recovery and reconstruction, identify priorities for intervention, be it in most affected sectors of the economy, geographical areas or population groups and guide the development of a comprehensive program for recovery, reconstruction and risk management.
- The Government of Lao PDR has developed the national methodology for undertaking the damage loss and needs assessment, and which includes sector specific guidance notes detailing the steps of the assessment, templates for baseline data collection, templates for assessing damage and loss, summarizing impacts and developing priority needs for recovery and reconstruction (See Section II C of this Handbook).

### *B. Objectives of Standard Operating Procedures*

- The overall objective of this Standard Operating Procedure (SOP) is to put in place a standard mechanism for undertaking a systematic and harmonized approach for conducting of a damage loss and needs assessment after a disaster event, by the Government of Lao PDR.

### *C. General Guidelines*

This SOP is designed to undertake damage loss and needs assessment after a disaster event caused by a natural hazard in Lao PDR. It shall not be used to conduct a rapid assessment for emergency relief and response after the disasters.

Also, it is important to note that there is currently no threshold level that triggers the responsibilities between the government officials at the central and provincial level in carrying out the damage, loss and needs assessment. Thus, at this stage, most of the assessments are conducted by the central government in coordination with provincial governments using sector specific Guidance Notes (Section II C) . The timing and duration of the assessment shall depend on the scope for assessment, accessibility to the affected areas and effect of the disaster events, which in the Lao context can take between 5-10 weeks.



## D. Operational Guidelines and Procedures

1. **Triggers:** The declaration of a national state of calamity by the National Disaster Management Committee (NDMC).
2. **Planning for damage, loss and needs assessment** (Week 1 after the disaster event)

Upon confirmation of the trigger, the NDMC, which is chaired by the DPM and a Minister of the Ministry of Defense, calls for an emergency meeting with all concerned NDMC member agencies to discuss the government measures to address the emergency event including reliefs as well as assigning the NDMO under the MLSW and Ministry of Planning and Investment (MPI) as the members of the NDMC to report to the government on the estimated damage and loss from the disaster. Some of the NDMC members may already have by then, undertaken visits to the affected areas as part of the relief and response operations: Based on the information provided by NDMC, MPI and line ministries, NDMC will discuss the following issues:

- **Decision on undertaking damage loss and needs assessment:** Situation analysis shall be undertaken based on information available from the rapid impact needs assessment for emergency and relief report and from the database of disaster information system (DesInventar) maintained by National Disaster Management Office (NDMO), various reports from the field prepared by the line ministries (especially MPWT and MAF), from conversation with humanitarian responders and available satellite imagery. Some of the NDMC members may already have by then, undertaken visits to the affected area as part of the relief and response operations. This will help in establishing a first-hand appreciation of the severity of the disaster and its effect on the various sectors. This situation analysis will form the basis for final decisions to undertake the damage, loss and needs assessment or not. If the situation analysis determines that the extent of the damage is insufficient, a full-fledged damage, loss and needs assessment may not be cost effective or sufficiently beneficial. If the situation analysis decides on undertaking the assessment, the NDMC shall MPI, in consultation with NDMO to take the lead in conducting damage loss and needs assessment (DaLA) and providing the guidance on key sectors and sub-sectors to be assessed.
- **MPI, NDMO and the line ministries will later meet to discuss the scope of the assessment and other logistics arrangement including the following: Agreement on objectives and scope:** Assessment objectives, which shall indicate the main focus of the assessment and its scope including anticipated benefits, the duration of the assessment, main activities, affected provinces and sectors areas to be covered, preparation of the Terms of Reference (ToR) of the assessment, team composition and the expected cost.
- **Agreement on the management structure of the assessment:** The management structure shall comprise of the following:
  1. **High-level management team,** Depending on the decision made by the NDMC, the assessment team normally led by the Director General or Deputy Director General of the Department of Planning under MPI and participated by a Director or Deputy Director General from Ministry of Agriculture and Forestry, a Director or Deputy Director General from Ministry of Public Works and Transport and the Director of NDMO. The management team shall meet regularly to oversee the process of assessment, provide strategic guidance, take decisions and shall ensure that the necessary resources are available for undertaking the assessment.
  2. **Coordination team,** the team leaders will agree on assigning a few staff to provide coordination with provincial government and logistics. The Coordination Team can consist of one representative each from MPI and NDMO and one representative from a development partner agency (if any), to advise the government staff. The team shall be responsible for managing day-to-day planning, coordinating with the sector team members as well as provincial government and donors in conducting the assessment, analyzing the data, preparing the reports, and the development of the recovery and reconstruction framework under the guidance on the High-level management team. The Coordination team shall have the principal responsibility in organizing the conduct of the assessment and in ensuring that all logistical arrangements are in place.
  3. **Sector teams:** The sector teams shall be composed of designated technical representatives from line ministries at national level and their respective provincial departments and district

offices, as well as with representatives from development partner agencies. The team members from the national level will join the teams from provincial and district levels during the field visit to the affected provinces. They shall be responsible for collecting sector specific baseline data, damage and loss data, undertaking field visit to validate the data collected, analyzing the data and writing the sectoral assessment report on damage and loss and proposed sector priorities for recovery and reconstruction. Detailed composition and ToR of each sector team shall be based on the suggestion provided in the sector Guidance Notes for undertaking damage, loss and needs assessment (See section IIC). The line Ministries shall designate focal points in the conduct of the damage, loss and needs assessment whose names shall be submitted to the NDMC. These designated focal points shall be trained in the data collection and concept of damage, loss and needs assessment.

4. **Report Preparation Secretariat:** The coordination team with technical support from development partners (if required) shall be responsible for coordinating with the sectoral team members for the sector report based on data analysis for their sector. The coordination team will then compile and summarise the individual sectoral report into consolidated report.
  5. **Identification of a location for the assessment management structure:** Coordination Team will coordinate with the Provincial Administration Office on the meeting venues for kick off and wrap up meetings as well as the provision of the office space for hosting the assessment team.
- The Director General or Deputy Director General of MPI, assigned by the NDMC as the leader of the high-level management team, briefs the NDMC Chairman in the next meeting on the results of the technical meeting on the conduct of the DaLA and recommends appropriate actions to be taken including timeframe for completing the assessment and delivering the report. The NDMC will also decide if assistance from development partners (DPs) in the conduct of the DaLA is needed. If required, NDMC will assign the Ministry of Foreign (MoFA) to issue a formal letter requesting for assistance from development partners in the conduct of DaLA.
  - **Stakeholder consultation:** Once the formal letter is issued by the MoFA to development partners (normally the United Nations Office of the Resident Coordinator (UNORC) on behalf of all the UN agencies, ADB and World Bank in Lao PDR), the representatives from the UNORC will call for an internal meeting between the UN agencies and development partners prior to the meeting with the government. The representatives of High-level management team will have a joint consultation meeting with development partners to brief on the decision taken by the NDMC on undertaking damage, loss and needs assessment, representation of development partners in the coordination team and respective sector team and seek support on sharing of resources; human (technical supports), logistics and financial. Being a government-led process, the major cost of the assessment shall be borne by the sector ministries with necessary support from development partners as per need. The government will also consult and discuss with the UN agencies and the development partners on the scope of the assessment (such as proposed sectors and sub-sectors to be assessed, team composition from the government, timeframe, provinces to be visited) and other logistics in preparation for the assessment.
  - **Orientation training:** Prior to starting the assessment, it is important to refresh the existing team members or brief the new team members on the broad concept of the damage, loss and needs as well as methodology for undertaking the assessments for each sector/sub-sector and issues to be aware when the team is in the field for individual sector members. One common briefing from the Coordination team to be provided to the sector teams on assessment objectives, deliverables, duration, communication channels, and reporting.
  - **Baseline data collection:** Sector teams at national level in coordination with provincial and district counterparts, initiate collection of baseline data as per the templates prescribed in the sector specific Guidance Notes on undertaking damage, loss and needs assessment. Where available the sector teams are encouraged to use the existing data available for the sector, affected provinces and districts as a baseline prior to disaster happens and use any information available from the rapid assessments conducted by individual sector prior to the commencement of the DaLA.

### 3. **Initiate formulation of recovery and reconstruction strategy** (Week 1 after the disaster event)

In parallel to the planning process, the formulation of recovery and reconstruction strategy shall be initiated based on (for more details see Section III):

- Overarching guidance provided on recovery and reconstruction by the National Strategy on Disaster Management
- Sector consultations: Individual sectors shall undertake consultations in partnership with development partners to initiate formulation of sector strategies for recovery and reconstruction of the particular disaster event
- Joint consultation: One joint consultation led by the High-level management team, where, based on the presentation of recovery and reconstruction strategy by each sector, the national strategy for recovery and reconstruction from the concerned disaster event shall be drafted by the coordination team.

### 4. **Undertake damage and loss assessment** (Week 2 and 3 after the disaster event) The following steps broadly described the key processes involved in undertaking the damage, loss and needs assessment:

- **Damage and loss data collection:** Sector team representatives from provincial departments and district offices shall collect the data on damage and losses as per the prescribed templates in the sector specific Guidance Notes prior to the visit made by the central ministries so that the data can be analysed or verified together with the team from the central government during the field visit.
- **Field Visit:** Up on arrival to the affected province by the team from the central government, the provincial government will host a kick-off meeting at the provincial government's office between members from the central and provincial governments. The meeting will be chaired by the Governor or Vice-Governor of the Province who will welcome and report to the team on the sector damage caused by disaster based on the rapid assessment. The representative of the high level Management team then introduce the team, methodology for the assessments as well as requesting for their supports in taking the team to see the most affected areas and coordinating with the district staff in getting some necessary data. Sector team representatives from the central level shall undertake visit to the affected areas to validate the data collected on damage and losses by the provincial departments and district offices. Depending on sectors affected, the field visit will also include focused group discussions with representatives of population affected such as farmers, owners of business enterprises, socially vulnerable population such as women, elderly etc., to understand the scale of impacts, their immediate responses and the priority needs at the local level.
- **Sector analysis:** Based on baseline data and information collected from the field, visit to the affected areas, the sector team shall calculate the damage and losses suffered by the sector and initiate writing of the report on sectoral impacts of the disaster event.

#### **5. Estimate sector needs (Week 4 after disaster)**

- The recovery and reconstruction strategy of all the sectors shall be based on the national strategy for recovery and reconstruction agreed upon during the previous joint consultation (see point 3)
- Estimation of recovery and reconstruction needs of the sector shall be undertaken based on the results of the damage and loss assessment and the finalized sector strategy, and will include identification of priority interventions.
- Report on sector impacts and needs for recovery and reconstruction shall be completed by the Sector Teams and submitted to the Coordination team.

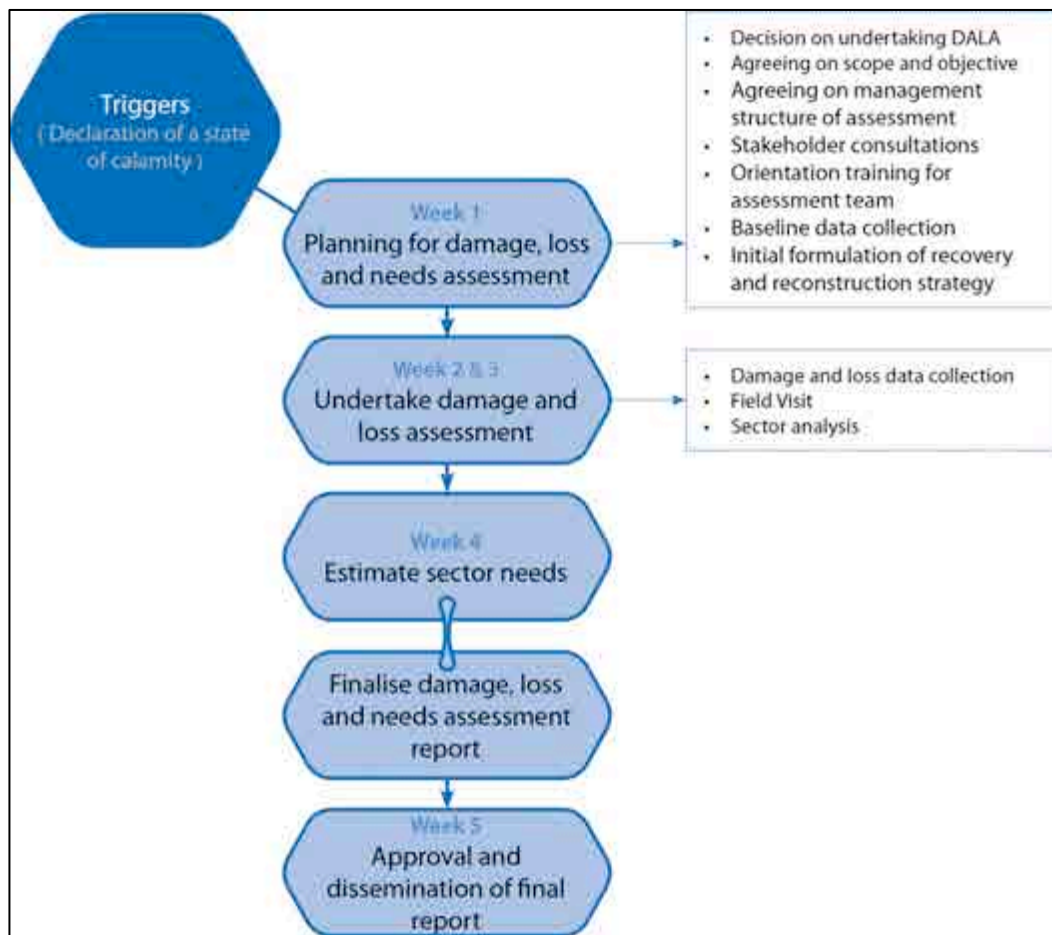
#### **6. Finalize damage, loss and needs assessment report (Week 4 after disaster)**

- Based on submission of individual sector reports, the coordinating team shall compile and make an estimate of the aggregate damage and loss for each sector as well as the overall macro-economic impacts of the disaster with inputs from the National Economic Research Institute (NERI) under the MPI.
- The estimated needs figure to rehabilitate the damaged infrastructure and restore livelihood in the affected areas and improved resilient to disaster in the longer term or “build back better (BBB)” will also be included in the report.

#### **7. Approval and dissemination of final report (Week 5 after disaster)**

- The consolidated report will be consulted with the sector team members and the representatives of High-level management team to agree on the content and format
- The high-level management team will present the results of the assessment to the NDMC for approval.
- Once approved the senior government staff from MPI, NDMO and MoFA will hold a national consultation to disseminate the assessment result with the donors/development partners for further assistance in the rehabilitation of the damage and loss caused by disaster in the short, medium and longer terms. The report will be translated into English and upload onto websites.

The procedures are shown in the diagram below:



## *E. Roles and Responsibilities*

- The Chair of NDMC will approve the implementation of this SOP
- Members of the NDMC (line ministries and provincial/district governments) will ensure the effective and efficient implementation of this SOP and make recommendations to adjust/change the procedures where suitable and applicable to local circumstances and actual practices. shall exercise leadership within their sectors to ensure a comprehensive process is followed for undertaking the assessment in the respective sector and necessary capacity is available within the sector at the national, provincial and district level.
- The High-level management team shall be responsible in operationalizing the provisions of this SOP, ensuring the smooth conduct of the damage, loss and needs assessment and briefing the NDMC on the progress and findings.

## *F. Effectiveness*

- This SOP shall take effect immediately for information, guidance and widest dissemination.

## Section II C: Guidance Notes on damage loss and needs assessment

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This section consist of fifteen Guidance Note clubbed under three headings; Social, Productive and Infrastructure.

### Social Sectors

- Guidance Note 1: Private Housing
- Guidance Note 2: Health
- Guidance Note 3: Education
- Guidance Note 4: Cultural sites

### Productive Sectors

- Guidance Note 5: Agriculture and Forestry
- Guidance Note 6: Manufacturing, service and trade
- Guidance Note 7: Mining
- Guidance Note 8: Power Supply
- Guidance Note 9: Tourism

### Infrastructure Sectors

- Guidance Note 10: Public Buildings
- Guidance Note 11: Transport
- Guidance Note 12: Urban water supply
- Guidance Note 13: Rural water supply
- Guidance Note 14: Post and Telecommunications

### Effects of disaster on macro-economy

- Guidance Note 15: Estimating effects of disaster on macro-economy

## ***Guidance Note 1***

### ***Damage, loss and needs assessment of private housing in Lao PDR***

#### ***Table of contents***

- Introduction to this Guidance Note
- Section-1: Methodology for damage, loss and needs assessment of private housing in Lao PDR
- Section 2: Steps in undertaking damage, loss and needs assessment
  - Step 1: Analysis of pre-disaster situation of private housing
  - Step 2: Estimating post-disaster damage and loss
  - Step 3: Estimating recovery and reconstruction needs
  - Step 4: Developing short, medium and long-term projects and designing implementation plan
  - Step 5: Inputs for Macro-economic impact analysis
  - Step 6: Writing the assessment report
- Section 3: Terms of reference of assessment team

#### ***Introduction to this Guidance Note***

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- This Guidance Note is a part of the Handbook on Post-disaster recovery and reconstruction planning Lao PDR, which consists of fifteen Guidance Notes, for various sectors, on undertaking damage loss and needs assessment.
- This Guidance Note is to be used for undertaking post-disaster damage loss and needs assessment in the **private housing sector** in Lao PDR.
- Private Housing would consist of dwellings or houses of the individual families in the area affected by the disaster. The houses would include the physical structures as well as the belongings inside the structure.
- The Guidance Note is to be used by the team responsible for undertaking assessment of Private Housing sector and led by the **Housing Division of Department of Housing and Urban Planning (DHUP) of Ministry of Public Work and Transport (MPWT)**, Government of Lao PDR, working in close coordination with its provincial and district offices as well as agencies such as National Statistical Center, Ministry of Planning and Investment, National Disaster Management Office of Lao PDR and development partners involved in housing and settlement planning.



## Section 1

### *Methodology for damage, loss and needs assessment of private housing in Lao PDR*

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- This methodology for undertaking damage and loss assessment is derived from the methodology for estimating the socio-economic and environmental effects of disasters, developed by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) as further enhanced by the World Bank.
- The methodology for estimating recovery and reconstruction needs (described in step 3 of section 2 of this Guidance Note) is derived from the Guidance Note of the World Bank and The Global Facility of Disaster Reduction and Recovery entitled: Estimation of Post-Disaster Needs for Recovery and Reconstruction
- The ECLAC methodology uses two terminologies; namely Damage and Losses as explained below:
- **Damages in private housing:** In the case of private housing, damages are the cost or value of total or partial destruction of physical structures of housing units and in-house components such as electricity and water supply, sanitation systems, furniture, etc. Damages are the cost of:
  - repair for the partially damaged assets and;
  - replacement of totally destroyed ones.
  - These destructions would occur at the time of, or shortly after the disaster. It is to be measured in physical terms for which monetary replacement value is subsequently estimated. The unit prices for replacement would be those that prevailed just before the disaster occurred that would allow rebuilding of the houses to the same characteristics prior to the disaster.
- **Losses in private housing:** Losses are the changes in economic flows during the period of recovery and reconstruction following the disaster. In the case of private housing, losses can result from:
  - Cost of relocation of housing units
  - Cost of providing temporary housing after the disaster
  - Loss in revenue from house rents
  - Other unexpected expenditure such as demolition and removal of debris

Losses can continue during the entire period of recovery and reconstruction and even beyond the year that the disaster occurred. It is expressed in monetary values at current prices.

## Section 2

### *Steps in undertaking damage, loss and needs assessment*

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#### Step 1: Analysis of pre-disaster situation of private housing

##### Step 1.1: Understand what is meant by baseline data

- The first step of undertaking the assessment is collecting information on the pre-disaster housing conditions in Lao PDR in order to ascertain the baseline for damage, loss and needs assessment. The following table shows the type of baseline information to be collected and their typical sources:

**Table 1. Type and sources for baseline information for housing sector**

| Type of Information/Data  | Name of source document | Available at                  |                                |                              |                  |
|---|-------------------------|-------------------------------|--------------------------------|------------------------------|------------------|
|   |                         | Ministry/<br>Bureau/ Division | Provincial Office/<br>Division | District Office/<br>Division | Other<br>Sources |
| Total number houses in a district                                 |                         |                               |                                |                              |                  |
| Types of houses in districts                                      |                         |                               |                                |                              |                  |
| Ownership of houses in districts                                  |                         |                               |                                |                              |                  |
| Average construction cost of houses per category                  |                         |                               |                                |                              |                  |
| Average replacement cost of household items per category of house |                         |                               |                                |                              |                  |
| Average value of monthly rental per category of house             |                         |                               |                                |                              |                  |

- As per the Census 2005, private housing in Lao PDR has been classified into two basic categories with further sub-categories:
  - Permanent Houses
    - Concrete/Brick houses
    - Houses
    - Concrete/Wooden houses
  - Temporary Houses
    - Bamboo/Plywood/Grass
- Since in urban areas there are high rise building made of concrete and brick, it is suggested for assessment purposes to break down the category of concrete/brick houses in two further sub-categories:
  - Concrete/Brick Houses single storey house
  - Concrete/Brick Houses multi- storey house
- Since baseline data is available as per this classification, this same classification should be followed for undertaking the damage and loss assessment.

#### Step 1.2: Collect the baseline data for each of the disaster-affected district

- Before the field assessment begins, the baseline situation is to be summarized for each of the disaster-affected district by using the following tables (Table 2 and Table 3).
- This data is to be compiled by the assessment team at the central level (see section 3.2 of this Guidance Note) with necessary inputs from the provincial departments and district offices of the concerned Ministry.

**Table-2. Baseline information of housing situation in district**

Name of district:

| Housing typology                    | Total number of houses | Total number of houses for rent | Number of families according to household head |      | Total number of occupants |      |
|-------------------------------------|------------------------|---------------------------------|--|------|---------------------------|------|
|                                     |                        |                                 | Female   | Male | Female                    | Male |
| Mainly Concrete/Brick single storey |                        |                                 |  |      |                           |      |
| Mainly Concrete/Brick multi-storey  |                        |                                 |  |      |                           |      |
| Mainly Wooden                       |                        |                                 |  |      |                           |      |
| Mainly Concrete/Wooden              |                        |                                 |  |      |                           |      |
| Bamboo/plywood/grass                |                        |                                 |  |      |                           |      |
| Total                               |                        |                                 |  |      |                           |      |

Notes in filling out Table 2:

- The 'Number of families according to household head' and the 'Total number of occupants' refer to the number of families and people, respectively, who live in each type of housing unit.

**Table 3. Baseline information for the related costs of various types of housing units**

| Housing typology                    | Average Construction (Replacement) Cost (Kips/Square Meter) | Average Repair Cost (Kips/Square meter) |      |       |        | Average Value of Contents (Kips) | Average Monthly Rent (Kips) |
|-------------------------------------|---|---|------|-------|--------|----------------------------------|-----------------------------|
|                                     |   | Roof                                    | Wall | Floor | Others |                                  |                             |
| Mainly Concrete/Brick single storey |   |   |      |       |        |                                  |                             |
| Mainly concrete/brick multi-storey  |   |   |      |       |        |                                  |                             |
| Mainly Wooden                       |   |   |      |       |        |                                  |                             |
| Mainly Concrete/Wooden              |   |   |      |       |        |                                  |                             |
| Bamboo / plywood / grass            |   |   |      |       |        |                                  |                             |

Notes in filling out Table 3:

- The average construction cost in Kips per square meter (Kips/SqM) refers to the value of the housing unit computed at the total cost of construction divided by the total floor area in square meters. The cost should be based on the pre-disaster existing values.

- The 'average repair cost' refers the value in Kips normally spent to repair the various parts of the housing units. 'Others' may include the average repair cost of latrines (if separate from the house), plumbing or electrical installations, etc. The cost should be based on the pre-disaster existing values.
- The 'Average Value of Contents' is a rough estimation of the value of the assets inside each of the housing unit. The cost should be based on the pre-disaster existing values.
- The Average monthly rent is applicable only if the disaster takes place in an urban area where there are certain percentage of population who do not live in their own houses and pay rent to owners (In rural areas almost 100% of household live in their own houses). As per the Census 2005, the type of occupancy in Lao PDR is classified as owner, tenants, lodgers, tied accommodation and others. For the purpose of paying rent in this case, classification of tenants, lodgers and tied accommodation is to be considered in this case.

## Step 2: Estimating damage and losses in housing sector

- While the assessment team at the central level is collecting the baseline information, field assessment should be undertaken by the district assessment team to assess the damages and losses suffered by private housing sector from the particular disaster event.
- Since in case of large-scale disasters, the number of private houses impacted being too large, it is often not possible to undertake a household level survey to estimate the damage. In such case, a reconnaissance survey of the affected area can be undertaken to estimate the number of totally destroyed and partially destroyed structures.

### Step 2.1. Estimation of damage: The following are the items that can be damaged in the sector:

- **Housing structures:** The damage assessment should include the effects on the structures of each type of housing units. Direct interviews with private contractors or government officials involved in the construction and repair can be conducted during the field trip in order to validate unit costs of repair and reconstruction (which is already collected by the central assessment team as part of Table 3).
- **Household content** such as equipment, furniture etc: The assessment should also include the contents of each type of housing like furniture, utensils, electronic equipment, rice, canned goods, etc.
- The assessment specialist can classify the damage housing structure as completely destroyed and partially damaged. The following can be taken as guidance for classification of completely destroyed and partially damaged housing, however, it is best to get feedback from national experts in housing construction before the assessment begins:
  - Completely destroyed: All houses which are visibly completely destroyed and those that have suffered irreparable structural damage (damage to load bearing walls, columns, foundation, floor system, shear walls, staircase etc).
  - Partially Damaged: Houses that can be repaired at less than 40 percent of the reconstruction cost.
- The assessment specialist must be aware that different types of disasters can adversely affect structures and contents separately. Typhoons with strong winds and rains can cause the collapse of a house and the total destruction of its contents resulting in damages to structure, furniture, equipment and others. On the other hand, a concrete house may withstand a flood but the flood can totally or partially damage its contents and there may be cases where house contents are more valuable than the structure.
- After assessing the private housing in the disaster affected district, the damages can be summarized district wise using the following table 4 and table 5.

**Table 4. Value of damages from totally destroyed buildings and their contents in a district**

Name of District:

| Type of Housing Units                  | Totally destroyed housing units             |  |                                    | Total damages to structures (Kips) | Average Time to Replace (Months) |
|--|---|--|------------------------------------|------------------------------------|----------------------------------|
|  | Number of totally destroyed                 | Average Construction (Replacement) Cost (Kips) | Value of Reusable Materials (Kips) |                                    |                                  |
|  | A   | B  | C                                  |                                    |                                  |
| 1. Mainly Concrete/Brick single storey |   |  |                                    |                                    |                                  |
| 2. Mainly Concrete/Brick Multi-storey  |   |  |                                    |                                    |                                  |
| 3. Mainly Wooden                       |   |  |                                    |                                    |                                  |
| 4. Mainly Concrete/Wooden              |   |  |                                    |                                    |                                  |
| 5. Bamboo/Plywood/Grass                |   |  |                                    |                                    |                                  |
| Total                                  |   | N.A.   |                                    |                                    | N.A.                             |
| Contents by Type of Housing Unit       | Totally destroyed contents of housing units |  |                                    | Total damages to contents (Kips)   | Average Time to Replace (Months) |
|  | Number of totally destroyed                 | Average Replacement Cost (Kips)                | Value of Reusable Materials (Kips) |                                    |                                  |
| Mainly Concrete/Brick single storey    |   |  |                                    |                                    |                                  |
| a. Equipment                           |   |  |                                    |                                    |                                  |
| b. Others                              |   |  |                                    |                                    |                                  |
| Mainly Concrete/Wooden                 |   |  |                                    |                                    |                                  |
| a. Equipment                           |   |  |                                    |                                    |                                  |
| b. Others                              |   |  |                                    |                                    |                                  |
| Mainly Wooden                          |   |  |                                    |                                    |                                  |
| a. Equipment                           |   |  |                                    |                                    |                                  |
| b. Others                              |   |  |                                    |                                    |                                  |
| Bamboo/Plywood/Grass                   |   |  |                                    |                                    |                                  |
| a. Equipment                           |   |  |                                    |                                    |                                  |
| b. Others                              |   |  |                                    |                                    |                                  |
| Mainly Concrete/Brick multi-storey     |   |  |                                    |                                    |                                  |
| a. Equipment                           |   |  |                                    |                                    |                                  |
| b. Others                              |   |  |                                    |                                    |                                  |
| Total                                  |   |  |                                    |                                    |                                  |
| Grand Total                            |   | N.A.   |                                    |                                    | N.A.                             |

Notes for filling table 4:

- 'Average Replacement Cost' will be the average pre-disaster value of the housing units and their contents that were totally destroyed.
- 'Equipment' in the contents of each type of housing unit will include elevators, electric generators, computers and other equipment and machineries while 'Others' can be books, clothing, food supply and other related materials.
- Although the structure or contents of the structure are totally destroyed, there will still be some re-usable materials that have salvage values. For instance, some wood or iron can be re-used for reconstruction while damaged equipment can be sold as scrap. The salvage values must be subtracted from the replacement cost.
- According to the experience of past disasters, typically around 10-40 percent of materials can be re-used after a disaster. (Source World Bank)
- In formula, the total damages will be (Column D) = [(Column A) x (Column B)] – Column C.
- Filling out column E is very important and should be done with the help of experienced engineers who have wide experience in housing sector and construction in Lao PDR and the estimates should take into consideration factors such as the capacity of the construction sector, the availability of construction materials and labour, as well as the availability of adequate financing. This data in this column will be used into while calculating loss assessment for private housing (step 2.2)

**Table 5. Value of damages from partially destroyed buildings and their contents in a district**

Name of District

| Particulars                           | Partially damaged structures |                        |            |                          |                                  |                        |        | Value of Reusable Materials (Kips) | Total Cost of Repair (Kips)     | Average Time to Repair (Months) |
|---------------------------------------|------------------------------|------------------------|------------|--------------------------|----------------------------------|------------------------|--------|------------------------------------|---------------------------------|---------------------------------|
|                                       | Roof                         |                        | Walls      |                          | Floor                            |                        | Others |                                    |                                 |                                 |
|                                       | Area (SqM)                   | Repair Cost (Kips/SqM) | Area (SqM) | Repair Cost (Kips/SqM)   | Area (SqM)                       | Repair Cost (Kips/SqM) |        |                                    |                                 |                                 |
|                                       | A                            | B                      | C          | D                        | E                                | F                      |        |                                    |                                 |                                 |
| Housing Units                         |                              |                        |            |                          |                                  |                        |        |                                    |                                 |                                 |
| Mainly Concrete / Brick single storey |                              |                        |            |                          |                                  |                        |        |                                    |                                 |                                 |
| Mainly Concrete / Brick Multi-storey  |                              |                        |            |                          |                                  |                        |        |                                    |                                 |                                 |
| Mainly Wooden                         |                              |                        |            |                          |                                  |                        |        |                                    |                                 |                                 |
| Mainly Concrete / Wooden              |                              |                        |            |                          |                                  |                        |        |                                    |                                 |                                 |
| Bamboo / Plywood / Grass              |                              |                        |            |                          |                                  |                        |        |                                    |                                 |                                 |
| Total                                 |                              | N.A.                   |            | N.A.                     |                                  | N.A.                   |        |                                    |                                 | N.A.                            |
| Contents by Type of Housing           |                              |                        |            | Quantity Damaged (Units) | Average Repair Cost (Kips/ Unit) |                        |        | Total Cost of Repair (Kips)        | Average Time to Repair (Months) |                                 |
|                                       |                              |                        |            | A                        | B                                |                        |        | C                                  | D                               |                                 |
| Mainly Concrete/Brick Single Storey   |                              |                        |            |                          |                                  |                        |        |                                    |                                 |                                 |
| a. Equipment                          |                              |                        |            |                          |                                  |                        |        |                                    |                                 |                                 |

|                                    |  |      |  |  |      |
|------------------------------------|--|------|--|--|------|
| b. Others                          |  |      |  |  |      |
| Mainly Concrete/Wooden             |  |      |  |  |      |
| a. Equipment                       |  |      |  |  |      |
| b. Others                          |  |      |  |  |      |
| Mainly Wooden                      |  |      |  |  |      |
| a. Equipment                       |  |      |  |  |      |
| b. Others                          |  |      |  |  |      |
| Bamboo/Plywood/Grass               |  |      |  |  |      |
| a. Equipment                       |  |      |  |  |      |
| b. Others                          |  |      |  |  |      |
| Mainly Concrete/Brick Multi-storey |  |      |  |  |      |
| a. Equipment                       |  |      |  |  |      |
| b. Others                          |  |      |  |  |      |
| <b>Total</b>                       |  | N.A. |  |  | N.A. |
| <b>Grand Total</b>                 |  |      |  |  | N.A. |

Notes in filling out Table 5:

- The total value of damage due to partially destroyed assets will be the total cost of repair computed as:  

$$\text{Column I} = (\text{Column A} \times \text{Column B}) + (\text{Column C} \times \text{Column D}) + (\text{Column E} \times \text{Column F}) + \text{Column G} - \text{Column H}$$
- The value for the average cost of repair per unit is found in the baseline information.
- “Others” may include the cost of repair of latrines (if separate from the house), electrical and plumbing systems, among others.
- For the contents of the buildings, the value of damages will be the repair cost of the damaged quantity multiplied by average repair cost of each, computed as:  

$$\text{Column C} = \text{Column A} \times \text{Column B}$$
- The average value of contents of each type of housing unit is in the baseline information. The assessment specialist must be able to roughly estimate the damages based on the extent of damage to the housing unit/s.
- The cost of repair should also exclude the value of the materials that can be re-used. Typically after a disaster around 10-40 percent of materials can be re-used.
- Filling out column J is very important and should be done with the help of experienced engineers who have wide experience in housing sector in Lao PDR and the estimates should take into consideration factors such as the capacity of the construction sector, the availability of construction materials and labour, as well as the availability of adequate financing. This data in this column will be fed into while calculating loss assessment for private housing (step 2.2)
- Once the totally destroyed and partially destroyed housing are assessed, the total damages in the district can be summarized using the following table:

**Table 6. Summary of damages in a district to private buildings and their contents**

| Name of district                    |                      |                     |                     |                     |               |
|-------------------------------------|----------------------|---------------------|---------------------|---------------------|---------------|
| Type of building units              | Damages to buildings |                     | Damages to contents |                     | Total damages |
|                                     | Totally destroyed    | Partially destroyed | Totally destroyed   | Partially destroyed |               |
|                                     | A                    | B                   | C                   | D                   |               |
| Mainly Concrete/Brick single storey |                      |                     |                     |                     |               |
| Mainly Concrete/Brick multi-storey  |                      |                     |                     |                     |               |
| Mainly Wooden                       |                      |                     |                     |                     |               |
| Mainly Concrete/Wooden              |                      |                     |                     |                     |               |
| Bamboo/Plywood/Grass                |                      |                     |                     |                     |               |
| <b>Total</b>                        |                      |                     |                     |                     |               |

**Step 2.2. Estimation of losses in housing sector:** Losses in the housing sector can come from the following:

- Cost of relocation: The cost of permanent new housing to the affected population should include land, housing, and other requirements like water and power supply.
- Cost of temporary housing: The cost of providing temporary shelter to the affected population should be estimated based on the cost of operations for the total expected duration of the temporary shelter scheme.
- Losses due to lower revenues: Losses may arise from unearned rent from damaged houses and may last for the duration of reconstruction. In case of Lao PDR this is only valid for urban areas as since per the census almost 100 percent of rural population live in their own houses.
- Cost of other unexpected expenses: Included here are the cost of the demolition and removal of debris, retrieval of important documents, etc.
- Losses can extend beyond the year that the disaster occurred and these should be reflected in the loss assessment. The results of damage assessment which provides the estimate for number of months required to reconstruct or repair affected housing and the capacity of the sector will determine the duration losses will be suffered.
- The district assessment team can use the following table for summarizing losses suffered by the private housing in the district.

**Table 7. Summary of losses in housing sector in a district**

Name of District:

| Type of loss           | Amount in Disaster Year (Kip) |         | Amount in Year 1 (Kip) |         | Amount in Year 2 (Kip) |         | Amount in Year 3 (Kip) |         | Total Losses (Kips) |
|------------------------|-------------------------------|---------|------------------------|---------|------------------------|---------|------------------------|---------|---------------------|
|                        | Public                        | Private | Public                 | Private | Public                 | Private | Public                 | Private |                     |
| Temporary shelter      |                               |         |                        |         |                        |         |                        |         |                     |
| Loss from rent         |                               |         |                        |         |                        |         |                        |         |                     |
| Demolition costs       |                               |         |                        |         |                        |         |                        |         |                     |
| Removal of debris      |                               |         |                        |         |                        |         |                        |         |                     |
| Other losses (specify) |                               |         |                        |         |                        |         |                        |         |                     |



Total

Note for filling table 7.

- The cost of temporary shelter should include the following costs: a) land acquisition, b) building temporary quarters, c) water supply, d) sanitation e) electricity at the site; and f) transport to/from work.
- Losses are to broken down by calendar year, starting with the current year of the disaster, and subsequent years if they are foreseen. For example after the disaster, the cost incurred for setting up temporary shelter will be a loss, but some portions of this cost (operating cost) may continue for months till the temporary shelter stops functioning. Such costs should be estimated accordingly in the disaster year and if relevant in future years to come.
- The assessment team at the district level should estimate this time period of reconstruction and recovery and accordingly assess the losses. The assessment team at central and provincial level with wider knowledge on the sector performance and capacity, during the field mission should validate this estimation.

### Step 2.3. Summarize Damages and Losses in Private Housing in a district

- Based on the information gathered in the previous tables (Table 4 to Table 7), the table below can be used by the district assessment team for summarizing the total damages and losses in the housing sector in the said district.

**Table 8. Summary of damage and losses in a district**

Name of District:

| Buildings and their Contents           | Within the Disaster Year |        | Losses Beyond Disaster Year |        |        | Total (Kips) |
|--|--------------------------|--------|-----------------------------|--------|--------|--------------|
|  | Damages                  | Losses | Year 1                      | Year 2 | Year 3 |              |
| 1. Mainly Concrete/Brick single storey |                          |        |                             |        |        |              |
| 2. Mainly Concrete/Brick multi-storey  |                          |        |                             |        |        |              |
| 3. Mainly Wooden                       |                          |        |                             |        |        |              |
| 4. Mainly Concrete/Wooden              |                          |        |                             |        |        |              |
| 5. Bamboo/Plywood/Grass                |                          |        |                             |        |        |              |
| TOTAL                                  |                          |        |                             |        |        |              |

### Step 2.4. Summarize Damages and Losses in Private Housing in a province

- Once the summary table (Table 8) for each affected district has been filled out, the below table should be used for summarizing information at the province level. Each affected province should fill up a similar table.
- The provincial offices should make this data available to the assessment team visiting from the central level during field assessment. Depending on requirement the central level team along with representatives from provincial offices may undertake some validation of the data by visiting some specific districts.

**Table 9. Summary of damage and losses in a province**

Name of Province:

| Name of Districts (Type the name of the district below) | Within the Disaster Year |        | Losses Beyond Disaster Year |        |        | Total (Kips) |
|---|--------------------------|--------|-----------------------------|--------|--------|--------------|
|   | Damages                  | Losses | Year 1                      | Year 2 | Year 3 |              |
| District 1  |                          |        |                             |        |        |              |
| District 2  |                          |        |                             |        |        |              |
| District 3  |                          |        |                             |        |        |              |
| District 4  |                          |        |                             |        |        |              |
| District 5  |                          |        |                             |        |        |              |
| TOTAL   |                          |        |                             |        |        |              |

**Step 2.5. Summarize Damages and Losses in Private Housing at the national level**

- Once the summary table (Table 9) for each affected province has been filled out, the below table should be used by the central level assessment team for summarizing information at the national level. This is to be filled out after the field assessment is over.

**Table 10. Summary of damage and losses at the national level**

| Name of Province (Type the name of the province below) | Within the Disaster Year |        | Losses Beyond Disaster Year |        |        | Total (Kips) |
|--|--------------------------|--------|-----------------------------|--------|--------|--------------|
|  | Damages                  | Losses | Year 1                      | Year 2 | Year 3 |              |
| Province 1   |                          |        |                             |        |        |              |
| Province 2   |                          |        |                             |        |        |              |
| Province 3   |                          |        |                             |        |        |              |
| Province 4   |                          |        |                             |        |        |              |
| Province 5   |                          |        |                             |        |        |              |
| TOTAL  |                          |        |                             |        |        |              |

**Step 3. Estimating recovery and reconstruction needs for housing sector****Step 3.1 Setting the recovery and reconstruction strategy for housing sector:**

- While the damage and loss assessment is being undertaken, the DHUP in consultation with their counterparts in affected provinces, National Disaster Management Office and in partnership with development partners involved in housing and settlement, should develop the strategy to be followed for recovery and reconstruction of private housing. Some of the broad content of the strategy could include the following:
  - Identifying sector specific factors which will contribute to 'build back better' of private housing
  - Possibilities of relocation of specific settlements because of high risk, if required
  - Possible incentives to private house owners for reconstructing their houses with higher standards of resilience
  - Enhancing and strengthening medium to long term disaster risk reduction related issues in housing sector such as integrating hazard resilient standards in building codes, undertaking risk

sensitive land-use planning, training of masons and engineers on hazard resilient construction etc.

### Step 3.2 Estimating recovery and reconstruction needs

- The quantification of damage and losses will enable the estimation of financial requirements to achieve full recovery of private housing sector and to reconstruct the assets in the housing sector that were destroyed or damaged.
- The value of losses is used to estimate the amounts required to achieve recovery of the housing sector; and the value of damage are used to estimate the financial requirements for reconstruction.
- This estimation of financial needs for recovery and reconstruction is to be broken down by districts and provinces.

#### Step 3.2.1 Estimating recovery needs

Possible recovery related activities in the case of private housing could include:

- Provision of temporary shelter to those rendered homeless. This figure in terms of cost and time required for temporary shelter scheme is already available from the loss assessment (Table 8). Make sure the cost of providing water supply and sanitation, electricity, transport and other essential services for the temporary shelter is added to the estimation of need
- Technical assistance in the repair of disaster-resilient housing units
- Grant provision of construction materials for home repairs and household replacement for the poor who may wish to repair their own homes on their own. This scheme may be supplemented with technical assistance to such families on how to reconstruct and repair homes with special reference to disaster-resilient standards.

DHUP can use the below table to put forward their summary of recommendation for recovery needs to MPI:

**Table 11. Summary of Recovery Needs in Housing Sector**

| Possible assistance for households affected from disaster                       | Type and amount of assistance needed (KIPS) |        |        | Total amount needed (KIPS) | Foreign Cost Component (US\$) |
|---|---|--------|--------|----------------------------|-------------------------------|
|   | Grant assistance or subsidy                 | Credit | Others |                            |                               |
| Provision of temporary shelter  |   |        |        |                            |                               |
| Technical assistance in repair and reconstruction of disaster-resilient housing |   |        |        |                            |                               |
| Cost of construction materials for the repair of housing units of the poor      |   |        |        |                            |                               |
| Others  |   |        |        |                            |                               |
| Total   |   |        |        |                            |                               |

#### Step 3.2.2. Estimating reconstruction needs

To estimate the value of reconstruction needs for the housing sector, the following formula is to be used:

$$\text{Housing Reconstruction Needs} = D * \text{Housing Damage value,}$$

Wherein

- D is a disaster-resilience coefficient whose value may usually range from 1.10 to 1.35. The actual value to be adopted would depend on the improved degree of construction standards or norms required. Civil engineers or architects familiar with disaster-resilient construction standards would be able to define those coefficients.
- Formula must be applied separately to each type of housing unit that may have been destroyed, and the value of 'D' will vary from housing type to housing type

Possible reconstruction related activities in the case of private housing could include the following. It is to be noted that activities should include both poor families who had suffered housing damage and at the same time other home owners who may need support in form of credit to repair and reconstruct housing:

- Special scheme of providing soft-term credit for housing reconstruction. Such scheme should include norms for disaster-resilient construction, and in some cases may be accompanied by technical assistance and/or training of construction personnel in the use of such improved standards. Such a program will be developed by the central government and mostly implemented by private banks or development bank. These programs should use lowest interest rates and longer repayment periods possible, with appropriate grace periods, as required by the post-disaster situation prevailing in Lao PDR.
- Specific program for reconstruction of improved housing for the poor may be implemented. The unit cost for such improved quality housing units must be estimated on the basis of the improvement characteristics that should also provide for disaster resilience. Financing needs for this type of reconstruction program can be met through outright grants and/or heavily subsidized credits, depending on the possibilities available.
- For housing that needs repair, a sub-program on soft-term credit may be implemented aimed at financing repairs of housing units that were partially damaged, with some retrofitting to ensure disaster resilience. These programs should use lowest interest rates and longer repayment periods possible, with appropriate grace periods, as required by the post-disaster situation prevailing in Lao PDR.
- Relocation of housing units: In case of affected area being unsuitable for reconstruction, suitable relocation of housing units in safer area can be undertaken. In this case the need should include the cost of reconstruction plus the cost of land acquisition and provision of basic services of water and sanitation, electricity and other basis services.
- In case the government decides to assist the affected population with “compensation” which is in fact subsidies to reconstruct housing units, and which normally represent a fraction of total cost of rebuilding a house. Lower income families should be the main target of such schemes.

DHUP can use the below table to put forward their summary of recommendation for reconstruction needs to MPI:

**Table 12. Reconstruction Needs of the Housing Sector**

| Reconstruction Needs  | Reconstruction Needs (Kips) |        | Foreign Cost Component (US\$) | Main Ministry Responsible |
|---|-----------------------------|--------|-------------------------------|---------------------------|
|   | Grant                       | Credit |                               |                           |
| Credit scheme for reconstruction of houses completely destroyed |                             |        |                               |                           |
| Credit scheme for repair of houses partially destroyed          |                             |        |                               |                           |
| Relocation of housing   |                             |        |                               |                           |
| Compensation  |                             |        |                               |                           |
| Replacement of household goods completely destroyed             |                             |        |                               |                           |
| Repair of household goods partially destroyed                   |                             |        |                               |                           |
| Total   |                             |        |                               |                           |

Notes in filling out Table 11:

- Replacement of damaged household goods may only be based on selected important items like cooking utensils, food items, etc.
- The foreign cost component will be the amount of foreign currency needed as part of the total cost.

## Step 4. Developing short, medium and long-term projects and designing implementation plan

Recovery and Reconstruction needs identified above would need to be broken down in short, medium and long term needs. Following are some examples of projects in housing sector, which can be undertaken as short, medium and long term.

1. **Short-term projects.** Short-term projects are crucial immediately after disaster with a view to resume economic activities in the areas affected. To achieve this, the following short-term initiatives/projects can be introduced:
  - Immediate rehabilitation of displaced community with the provision of temporary shelters with basic services such as drinking water, sanitary services.
  - Introduce labor incentive housing reconstruction program such as “food for work” or “cash for work”.
  - Provision of construction materials for the repair of affected houses of the poor.
  - Provision of basic shelter needs like cooking utensils.
  - Credit assistance and tax schemes to affected families.

**Medium-term projects/programs.** Medium-term programs and projects can include:

- Undertake risk reduction measures in housing reconstruction to reduce future risk from disasters like retrofitting of undamaged houses.
- Relocation of houses to safer locations.
- Replacement of houses for the poor
- Development of hazard resilient design specifications for construction of housing.

**Longer-term projects/programs**

- Mitigation works like flood protection dikes, etc.
- Development of risk-sensitive land use plans

Based on the identified priority projects, the MPWT can plot the implementation periods of each project to determine the budgetary needs over the years. The following steps can be followed.

- a. Identify the specific projects according to their relative urgency or priority in relation to the recovery of the sector.
- b. Plot the timeline of activities of all the projects, with the urgent ones on top, in a Gantt chart with the corresponding funding requirement. This will assist the MPI in programming the necessary funds over a certain time period, like on a quarterly or annual basis.
- c. Identify the projects that need further feasibility studies which may be funded by foreign grants.
- d. To the extent possible, a logical framework (logframe) should be created for each of the project proposed for inclusion in the recovery plan.

## Step 5. Inputs for Macro-economic impact analysis

The damages and losses to the housing sector can affect the macro economy. To the extent possible the DHUP, MPWT should collect the following information that will be used by MPI for undertaking the macro-economic impact analysis.

- **Gross Domestic Product (GDP).** The loss of income from the housing rentals can reduce the GDP. If the disaster has hit the urban areas in Lao PDR, where some population may be living in rented housing, the necessary data should be collected
- **Fiscal Balance:** The impact on the fiscal balance for the private housing sector may be twofold: on the current and the capital accounts of the budget. In the first case, the unexpected expenditures to finance the temporary shelter program combined with possible lower tax revenues from rental income will lower revenues. In the second case, the balance may be affected by the need to acquire fresh loans to partially finance reconstruction of housing that will increase expenditure.
- **Balance of Payments:** Items needed for housing reconstruction that are not produced locally in Lao PDR and have to be imported should be estimated and expressed in percentage of total

reconstruction needs. This figure would be used for the analysis of the impact on the balance of payments.

- **Prices or Inflation:** Prices of construction materials could go high if the destruction of the housing sector is massive.
- **Employment:** There can be a big reduction in employment particularly in urban and semi-urban area if the destruction is huge in housing sector that will contribute for the increased poverty as a result of decreased employment.

## Step 6. Write the assessment report

The following format may be considered for writing the assessment chapter of private housing:

Brief background on Housing Sector in Lao PDR

Overview of impacts of the disaster on private housing

Damage and Loss quantification

Damage and Loss by province (or district)

Proposed strategies for recovery and reconstruction of private housing

Needs estimation for recovery and reconstruction of private housing

The report of the private housing should be written by DHUP in close partnership with development partners involved in housing and settlement and once completed should be submitted to MPI for inclusion in the final report.

## Section 3

### *Terms of reference of assessment team for private housing*

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#### 3.1 Formation of pre-identified assessment teams MPWT

- Pre-identified team should be formed with officials from Housing Division of DHUP, MPWT and Department of Planning of MPWT. These officials would need to have good understanding on the performance of the housing sector in Lao PDR and should have also undergone prior training on the damage, loss and needs assessment

#### 3.2 Composition of the assessment team

- At the central level the assessment team should comprise of the following
  - Officials from Housing Division, Department of Housing and Urban Planning, MPWT
  - Department of Planning, MPWT
  - Development Partners involved in housing and settlement planning
- At the field level the assessment team should comprise of the following
  - Provincial and District Housing Officers
- Specific expertise required within the team would include the following:
  - Civil Engineers/ Structural Engineers
  - Architects
  - Economists who is aware of the housing sector performance in the country

#### 3.3 Task of assessment team

- Gathering of the pre-identified team from Housing Division of DHUP, MPWT after the disaster event based on the order received from MPI
- Consultation with development partners involved in housing and settlement planning and who will join the assessment team
- Undertaking quick orientation on the assessment methodology for the assessment team
- Working closely with relevant departments of MPWT at national (such as Department of Planning) and provincial/district and responsible for compiling baseline information.
- Undertaking field visits in disaster affected areas and working closely with District and Provincial Housing Officers and collecting information on damage and losses
- Based on information collected, undertaking damage and loss assessment for the sector Simultaneously in close consultation with relevant agencies such as National Disaster

Management Office and development partners, formulate the recovery and reconstruction strategy for private housing

- Estimating the recovery and reconstruction needs based on the strategy and damage and loss assessment results
- Writing the assessment report for private housing
- Presentation of the findings of the assessment report to the decision makers within the MPWT and other development partners for broader consultation.
- Finalization of the report based on the inputs received from broader consultation and submission to MPI

### 3.4 Assessment timeline

- Typically the post-disaster damage, loss and needs assessment takes from 4 to 5 weeks
- The assessment is usually started once the rapid impact and needs assessment for emergency and relief support is completed and the relief and response phase of the disasters is over or well underway
- In the first week the overall planning of the assessment would take place and would include the following issues:
  - Baseline data collection
  - Agree on ToR
  - Team Composition Methodology
  - Orientation Training on DALA
  - Discussion on formulating recovery and reconstruction strategy for private housing
- Second and third week week is the assessment stage and would include the following
  - Field survey
  - Calculation of Damage and losses for private housing
- Fourth week of the assessment is the analysis stage and would include the following
  - Finalizing recovery and reconstruction strategy for private housing
  - Estimating recovery and reconstruction needs for private housing
  - Report drafting
  - Consultation within the sector to seek inputs on the report
  - Submission of sector report to MPI
  - Finalisation of report by MPI
- Fifth week of the assessment is launch and dissemination of the report

## ***Guidance Note 2***

### ***Damage loss and needs assessment of Health Sector in Lao PDR***

#### ***Table of Contents***

- Introduction to this Guidance Note
- Section-1: Methodology for damage, loss and needs assessment for Health Sector in Lao PDR
- Section-2: Steps in undertaking damage, loss and needs assessment
  - Step 1: Analysis of pre-disaster situation of health sector
  - Step 2: Estimating post-disaster damage and loss
  - Step 3: Estimating recovery and reconstruction needs
  - Step 4: Developing short, medium and long-term projects and designing implementation plan
  - Step 5: Inputs for macro-economic and household impact analysis
  - Step 6: Writing the assessment report
- Section 3: Terms of reference of assessment team

#### ***Introduction to this Guidance Note***

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- This Guidance Note is a part of the Handbook on Post-disaster recovery and reconstruction planning of Lao PDR, which consists of fifteen Guidance Notes, for various sectors, on damage loss and needs assessment.
- This Guidance Note is to be used for undertaking damage, loss and needs assessment of the **health sector** in Lao PDR.
- The Health Sector in this case consists of the health sub-sector and its infrastructure, equipment and general functioning. The infrastructure considered here includes all premises used for health-care centers, hospitals and clinics.
- This Guidance Note is to be used by the team responsible for undertaking assessment of health sector and led by **Ministry of Health (MoH)**, Government of Lao PDR and working in close coordination with its provincial department and district offices as well as agencies such as the National Statistical Center, Ministry of Planning and Investment, National Disaster Management Office of Lao PDR and development partners involved in health sector in Lao PDR.



## **Section 1**

### **Methodology for damage, loss and needs assessment of Health Sector in Lao PDR**

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- This methodology for undertaking damage, loss and needs assessment of Health sector is derived from the methodology for estimating the socio-economic and environmental effects of disasters, developed by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) as further enhanced by the World Bank.
- The methodology for estimating recovery and reconstruction needs (described in step 3 under section 2 of this Guidance Note) is derived from the Guidance Note of the World Bank and The Global Facility for Disaster Reduction and Recovery entitled: Estimation of Post-Disaster Needs for Recovery and Reconstruction.
- The ECLAC methodology uses two terminologies; namely Damage and Losses as explained below:
- Damages in Health sector include:
  - Total or partial destruction of buildings of health facilities
  - Furniture inside the health facilities
  - Medical equipment,
  - Medical supplies that are directly destroyed during the disaster

These destructions would occur at the time of the disaster or shortly after the disaster. Damage is to be measured in physical terms (e.g. square meters of construction) for which monetary replacement value can be subsequently estimated. The unit prices for replacement would be those that prevailed just before the disaster occurred that would allow rebuilding to the same characteristics of the assets prior to the disaster.

- Losses in Health sector include:
  - Increased costs of treatment in alternative health care facilities due to damage or destruction of existing facilities, including the transport of patients when appropriate;
  - Loss of revenues during the period of reconstruction of damaged health care facilities;
  - The costs of monitoring and controlling the spread of infectious and contagious diseases;
  - Increased costs for care of vulnerable population groups such as elderly, infants and pregnant women etc.

These losses would continue during the entire period of reconstruction and recovery and are expressed in monetary values at current prices. Losses are measured as the change in operational costs for the provision of medical care over and above the normal budgetary appropriations for the health sector.

## **Section 2**

### **Steps in undertaking damage, loss and needs assessment**

---

#### **Step1: Analysis of pre-disaster situation of health sector**

##### **Step1.1: Understand what is meant by baseline data**

- The first step of undertaking the assessment is collecting information on pre-disaster health sector situation in order to ascertain the baseline for the assessment. The following table shows the type of baseline information to be collected and their typical sources:

**Table 1. Type and Sources of baseline information for health sector**

| Type of Information/Data   | Available at | Name of source document |
|--|--------------|-------------------------|
| Total number health facilities and capacity in a district (broken down by types)   |              |                         |
| Ownership of health facilities in districts  |              |                         |
| Inventory and value of assets in all types of health facilities (structures, equipment, medicines, vehicles/ ambulance and others) |              |                         |
| Average replacement and repair costs of each type of health facility   |              |                         |
| Average replacement and repair costs of important medical equipment  |              |                         |
| Average number of patients (in-patients and out-patients) per day in all types of health facilities                                |              |                         |
| General types of diseases treated in each type of health facility  |              |                         |
| Average number of births taking place per day (including out of facility births by health staff)                                   |              |                         |
| Average costs of treatment per type of health facility including births, ANC, PNC Family Planning consultations, etc               |              |                         |
| Average revenue per day or per month of each type of health facility   |              |                         |
| Baseline surveillance data of 19 notifiable diseases e.g. number of reported diseases and outbreaks                                |              |                         |
| Average cost of prevention and control of:   |              |                         |
| a. Diarrhea  |              |                         |
| b. Malaria   |              |                         |
| c. Others  |              |                         |

As per Statistical Yearbook Lao PDR 2010, Health facilities are classified as the following:

- Central Hospitals
- Curative Centers at central level
- Regional Hospitals
- Provincial Hospitals
- District Hospitals
- Dispensaries
- Private Clinic

Since baseline data is available as per this classification, this same classification should be followed for undertaking the damage and loss assessment.

#### Step1.2: Collect baseline data for each of the disaster-affected district

- Before field assessment begins, the baseline data should be collected and summarized for each of the disaster-affected district by using the following tables (Table 2, Table 3 and Table 4)
- This data is to be compiled by the assessment team at the central level (see section 3.2 of this Guidance Note) with necessary inputs from the provincial departments and district offices of the concerned Ministry.

**Table 2. Baseline information on health status in a district**

Name District

| Population              | By Sex   |        | By Age Group   |         |
|-------------------------|--|--------|--|---------|
|                         | Male   | Female | Children   | Elderly |
| Other Indicators        | Average Number of Patients for the Past Three Years By Sex |        | Average Number of Patients for the Past Three Years By Age Group |         |
|                         | Male   | Female | Children   | Elderly |
| Common diseases         |  |        |  |         |
| Diarrhea                |  |        |  |         |
| Malaria                 |  |        |  |         |
| Others                  |  |        |  |         |
| HIV-AIDS incidence      |  |        |  |         |
| Crude birth rate        |  |        | N.A.   | N.A.    |
| Maternal mortality rate | N.A.   |        | N.A.   | N.A.    |
| Mortality rate          |  |        | N.A.   | N.A.    |
| Under-5 mortality rate  |  |        | N.A.   | N.A.    |
| Other indicators        |  |        |  |         |

Notes in filling out Table 2:

- The common disease should be based on the surveillance data of 19 noticeable diseases.

**Table 3. Baseline information of health facilities in districts**

Name of District:

| Type of health facilities         | Number of health care facilities |         | Total number | Average number of patients/day |        |         |        | Total number of medical personnel |        |
|-----------------------------------|----------------------------------|---------|--------------|--------------------------------|--------|---------|--------|-----------------------------------|--------|
|                                   | Public                           | Private |              | Public                         |        | Private |        | Male                              | Female |
|                                   |                                  |         |              | Male                           | Female | Male    | Female |                                   |        |
| Central Hospitals                 |                                  |         |              |                                |        |         |        |                                   |        |
| Curative Centers at central level |                                  |         |              |                                |        |         |        |                                   |        |
| Regional Hospitals                |                                  |         |              |                                |        |         |        |                                   |        |
| Provincial Hospitals              |                                  |         |              |                                |        |         |        |                                   |        |
| District Hospitals                |                                  |         |              |                                |        |         |        |                                   |        |
| Dispensaries                      |                                  |         |              |                                |        |         |        |                                   |        |
| Private Clinic                    |                                  |         |              |                                |        |         |        |                                   |        |
| Others                            |                                  |         |              |                                |        |         |        |                                   |        |

**Table 4. Baseline information on costs related to health facilities**

| Particulars   | Central Hospitals | Curative Centers at central level | Regional Hospitals | Provincial Hospitals | District Hospitals | Dispensaries | Private Clinics |
|---|-------------------|-----------------------------------|--------------------|----------------------|--------------------|--------------|-----------------|
| Average construction cost of health facilities (Kips per square meter)                    |                   |                                   |                    |                      |                    |              |                 |
| Average repair cost of roofs (Kips per square meter)                                      |                   |                                   |                    |                      |                    |              |                 |
| Average repair cost of walls (Kips per square meter)                                      |                   |                                   |                    |                      |                    |              |                 |
| Average repair cost of floors (Kips per square meter)                                     |                   |                                   |                    |                      |                    |              |                 |
| Average value of equipment, machineries and furnishings (Kips per unit)                   |                   |                                   |                    |                      |                    |              |                 |
| Average revenue (Kips per day or month)   |                   |                                   |                    |                      |                    |              |                 |
| Common diseases treated (Number per month)  |                   |                                   |                    |                      |                    |              |                 |
| Average cost of treatment of common diseases (Kips per type of disease)                   |                   |                                   |                    |                      |                    |              |                 |
| Average cost of consultation/visit (Kips per visit)                                       |                   |                                   |                    |                      |                    |              |                 |
| Average number of births (deliveries per month)   |                   |                                   |                    |                      |                    |              |                 |
| Average cost of MNCH package (package per month)  |                   |                                   |                    |                      |                    |              |                 |
| Average costs of treatment (Kips per birth; ANC; PNC; Family Planning consultations, etc) |                   |                                   |                    |                      |                    |              |                 |
| Average cost of disease control in urban areas (per month) for:                           |                   |                                   |                    |                      | Kips               |              |                 |
| a. Diarrhea   |                   |                                   |                    |                      |                    |              |                 |
| b. Malaria  |                   |                                   |                    |                      |                    |              |                 |
| c. Others   |                   |                                   |                    |                      |                    |              |                 |
| Average cost of disease control in rural areas (per month) for:                           |                   |                                   |                    |                      |                    |              |                 |
| a. Diarrhea   |                   |                                   |                    |                      |                    |              |                 |
| b. Malaria  |                   |                                   |                    |                      |                    |              |                 |
| c. Others   |                   |                                   |                    |                      |                    |              |                 |

Notes in filling out Tables 3 and 4

- There may be various buildings or structures in each type of health facility. All of them should be included in the baseline information.
- Other types of health facilities existing in the district or area not included in the above table should be included.
- Equipment, machinery and supplies can be grouped according to use such as diagnostic, medical operation, etc.

## Step 2: Estimating damage and losses in the health sector

- While the assessment team at the central level is collecting the baseline information, field assessment should be undertaken by the district assessment team to assess the damages and losses suffered by the health sector from the particular disaster event.
- Since there may not be many health facilities in a district damaged by a disaster, during this stage, as much as possible individual health facilities impacted by the disaster should be assessed by the district assessment team and the results should be compiled district wise in a summary table to reflect the damage and losses for the entire sector in the district.

### Step 2.1. Estimation of damage: The following are the items that can be damaged in the health sector.

- **Health infrastructure.** The damage assessment should include the effects on the structures of each of the impacted health facilities. Direct interviews with private contractors or government officials involved in the construction and repair of health facilities should be conducted during the field trip in order to validate unit costs of repair and reconstruction (which is already collected by central assessment team as part of Table 4).
- **Equipment, furniture and other machinery.** The assessment should also include medical equipment, medical supplies, furniture, etc. in each of the health care facility. Equipment can be segregated as those for diagnostic; medical operation; and others. The list must include especially those that are important and expensive such as CATSCAN machines, X-ray machines, MRI equipment, operating room equipment, ambulances, computers, including waste disposal machinery, among others.
- Medicines, drug kits and other medical supply in the health facilities.
- The assessment specialist can classify the damage as completely destroyed and partially damaged. The following can be taken as guidance for classification of completely destroyed and partially damaged, however, it is best to get feedback from national experts before the assessment begins:
  - Completely destroyed: All health facilities which are visibly completely destroyed and those that have suffered irreparable structural damage
  - Partially damaged: Health facilities that can be repaired at less than 40 percent of the reconstruction cost
- The district assessment team can use the following table for undertaking quick assessment of individual health facilities affected by the disasters

**Table-5: Post-disaster damage assessment of individual health facility**

| Questions to be asked to the representative from health facility |  | Write the answer in this column |
|--|--|---------------------------------|
| Name of Health Facility  |  |                                 |
| Location of the Facility (Village/Town)                          |  |                                 |
| Type of Facility   | Central Hospitals<br>Curative Centers at central level<br>Regional Hospitals<br>Provincial Hospitals<br>District Hospitals<br>Dispensaries<br>Private Clinic |                                 |
| Ownership  | Public<br>Private  |                                 |
| Average Number of patients/day pre-disaster                      | Male   |                                 |
|  | Female   |                                 |
| Average Number of patients/day post-disaster                     | Male   |                                 |
|  | Female   |                                 |
| Average revenue per patient (Kips/patient)                       |  |                                 |
| Number of workers in the health                                  | Male   |                                 |

|   |                      |                |
|---|----------------------|----------------|
| care facility pre-disaster  | Female               |                |
| Number of workers required in the health care facility to meet the post-disaster need   | Male                 |                |
|   | Female               |                |
| Additional cost being incurred to treat patients affected by disasters (Kips/day)   |                      |                |
| Additional cost being incurred to prevent outbreak of disease in post-disaster condition (Kips/day)   |                      |                |
| Additional cost being incurred for vector control (Kips/day)  |                      |                |
| Additional cost being incurred for outreach to affected women (Kips/day) (Will include the cost for making more regular visits or having more/additional temporary teams to visit affected areas where women in particular will be too busy to come for routine ANC, PNC and family planning services including childbirth. |                      |                |
| Is the facility on a rental premise? If Yes how much is rent paid per month?  |                      |                |
| Number of days the facility is not functional after the disaster  |                      |                |
| Was the facility shifted somewhere else temporarily because of disaster or additional outreach/mobile teams required esp for MNCH If yes, how much was spent to set up the temporary facility?  |                      |                |
| Is the structure of the building  | Completely destroyed |                |
|   | Partially destroyed  |                |
| How long will it take to repair the structure (Days)  |                      |                |
| List the furniture and equipment damaged by the disaster  | Type                 | Number damaged |
| 1   |                      |                |
| 2   |                      |                |
| 3   |                      |                |
| 4   |                      |                |
| 5   |                      |                |
| 6   |                      |                |
| 7   |                      |                |
| 8   |                      |                |

- After assessing the individual health facilities, the damages in a particular district can be summarized in the following tables (Table 6, Table 7 and Table 8)

**Table 6. Value of damages from totally destroyed health facilities in a district**

Name of District:

| Type of Structures and Contents   | Totally destroyed structures and contents |         |       |  |   | Total damages<br><br>(Kips) | Average<br>Time to<br>Replace<br><br>(Months) |
|-----------------------------------|---|---------|-------|--|---|-----------------------------|---|
|                                   | Number of totally destroyed               |         |       | Average<br>Replacement<br>Cost<br>(Kips) | Value of<br>Reusable<br>Materials<br>(Kips) |                             |   |
|                                   | Public                                    | Private | Total |  |   |                             |   |
|                                   |   |         |       |  |   |                             |   |
| Central Hospitals                 |   |         |       |  |   |                             |   |
| Curative Centers at central level |   |         |       |  |   |                             |   |

|                      |  |  |  |  |  |  |
|----------------------|--|--|--|--|--|--|
| Regional Hospitals   |  |  |  |  |  |  |
| Provincial Hospitals |  |  |  |  |  |  |
| District Hospitals   |  |  |  |  |  |  |
| Dispensaries         |  |  |  |  |  |  |
| Private Clinic       |  |  |  |  |  |  |
| Others               |  |  |  |  |  |  |

| Contents             | Number of totally destroyed contents |         | Totally | Average Replacement Cost (Kips) | Value of Reusable Materials (Kips) | Total damages (Kips) | Average Time to Replace (Months) |
|----------------------|--------------------------------------|---------|---------|---------------------------------|------------------------------------|----------------------|----------------------------------|
|                      | Public                               | Private | Total   |                                 |                                    |                      |                                  |
|                      |                                      |         | A       | B                               | C                                  | D                    | E                                |
| Medical equipment    |                                      |         |         |                                 |                                    |                      |                                  |
| Machinery            |                                      |         |         |                                 |                                    |                      |                                  |
| Furniture            |                                      |         |         |                                 |                                    |                      |                                  |
| Medicines            |                                      |         |         |                                 |                                    |                      |                                  |
| Medical supplies     |                                      |         |         |                                 |                                    |                      |                                  |
| Vehicles             |                                      |         |         |                                 |                                    |                      |                                  |
| Other medical assets |                                      |         |         |                                 |                                    |                      |                                  |
| <b>Total</b>         |                                      |         |         | N.A.                            |                                    |                      | N.A.                             |

Notes for filling table 6.

- 'Average Replacement Cost' will be the average pre-disaster value of the buildings and their contents that were totally destroyed.
- Although the structure or contents of the structure are totally destroyed, there will still be some re-usable materials that have salvage values. For instance, some wood or iron can be re-used for reconstruction while damaged equipment can be sold as scrap. The salvage values must be subtracted from the replacement cost.
- According to experience in past disasters typically around 10-40 percent of materials can be re-used after a disaster.
- In formula, the total damages will be (Column D) = [(Column A) x (Column B)] – Column C.
- The grand total refers to the sum of the damages to structures and contents.
- Medical equipment especially the critical ones should be enumerated.
- Normally, medicines and medical supplies are replaced once damaged.
- Filling out column E is very important and should be done with the help of experienced engineers who have wide experiences in the health sector construction in Lao PDR and the estimates should take into consideration factors such as capacity of construction sector, the availability of construction material and labour, as well as the availability of adequate financing. This data will be required for calculating losses in the health sector (step 2.2)

**Table 7. Value of damages from partially destroyed health facilities and their contents in a district**

District

| Particulars                          | Partially damaged structures |                                  |               |                                  |               |                                  | Others<br>Kips/<br>Unit | Value of<br>Reusabl<br>e<br>Materia<br>ls<br>(Kips) | Total<br>Cost of<br>Repair<br>(Kips)     | Average<br>Time to<br>Repair<br>(Months) |
|--------------------------------------|------------------------------|----------------------------------|---------------|----------------------------------|---------------|----------------------------------|-------------------------|---|--|--|
|                                      | Roof                         |                                  | Walls         |                                  | Floor         |                                  |                         |   |  |  |
|                                      | Area<br>(SqM)                | Repair<br>Cost<br>(Kips/<br>SqM) | Area<br>(SqM) | Repair<br>Cost<br>(Kips/<br>SqM) | Area<br>(SqM) | Repair<br>Cost<br>(Kips/<br>SqM) |                         |   |  |  |
|                                      | A                            | B                                | C             | D                                | E             | F                                |                         |   |  |  |
| 1. Central Hospitals                 |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| a. Public                            |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| b. Private                           |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| 2. Curative Centers at central level |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| a. Public                            |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| b. Private                           |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| 3. Regional hospitals                |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| a. Public                            |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| b. Private                           |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| 4. Provincial hospitals              |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| a. Public                            |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| b. Private                           |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| 5. District hospitals                |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| a. Public                            |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| b. Private                           |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| 6. Dispensaries                      |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| a. Public                            |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| b. Private                           |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| 7. Private Climic                    |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| a. Public                            |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| b. Private                           |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| 8. Others                            |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| Total                                |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| Contents                             | Quantity Damaged<br>(Units)  |                                  |               | Average Repair<br>Cost           |               |                                  |                         | Total Cost of<br>Repair<br>(Kips)                   | Average<br>Time to<br>Repair<br>(Months) |  |
|                                      | Public                       |                                  | Private       | (Kips/ Unit)                     |               |                                  |                         |   |  |  |
|                                      | A                            | B                                | C             |                                  |               |                                  |                         |   |  |  |
| 1. Medical equipment                 |                              |                                  |               |                                  |               |                                  |                         |   |  |  |
| 2. Machinery                         |                              |                                  |               |                                  |               |                                  |                         |   |  |  |



|                         |  |  |  |  |  |
|-------------------------|--|--|--|--|--|
| 3. Furniture            |  |  |  |  |  |
| 4. Medicines            |  |  |  |  |  |
| 5. Medical supplies     |  |  |  |  |  |
| 6. Vehicles             |  |  |  |  |  |
| 7. Other medical assets |  |  |  |  |  |
| <b>Total</b>            |  |  |  |  |  |
| <b>Grand Total</b>      |  |  |  |  |  |

Notes in filling out Table 7.

- The total value of damage due to partially destroyed assets will be the total cost of repair computed as:  

$$\text{Column I} = (\text{Column A} \times \text{Column B}) + (\text{Column C} \times \text{Column D}) + (\text{Column E} \times \text{Column F}) + \text{Column G} - \text{Column H}$$
- The value for the average cost of repair per unit is found in the baseline information.
- For the contents of the buildings, the value of damages will be the repair cost of the number of damaged quantity multiplied by average repair cost of each, computed as:  

$$\text{Column D} = (\text{Column A} + \text{Column B}) \times \text{Column C}$$
- In calculating damages, the unit cost of reconstruction should be based on pre-disaster value that would allow rebuilding to the same characteristics of the assets prior to the disaster.
- Medical equipment especially the critical ones should be enumerated.
- The cost of repair should also exclude the value of the materials that can be re-used.
- Filling out column J is very important and should be done with the help of experienced engineers who have wide experiences in the health sector construction in Lao PDR and the estimates should take into consideration factors such as capacity of construction sector, the availability of construction material and labour, as well as the availability of adequate financing. This data will be required for calculating losses in the health sector (step 2.2)

**Table 8. Summary of damages to health facilities and their contents in a district**

Name of district:

| Types of health facilities        | Damages to buildings (Kips) |         |                     |         | Total damages (Kips) |
|-----------------------------------|-----------------------------|---------|---------------------|---------|----------------------|
|                                   | Totally destroyed           |         | Partially destroyed |         |                      |
|                                   | Public                      | Private | Public              | Private |                      |
| Structures                        |                             |         |                     |         |                      |
| Central Hospitals                 |                             |         |                     |         |                      |
| Curative Centers at central level |                             |         |                     |         |                      |
| Regional Hospitals                |                             |         |                     |         |                      |
| Provincial Hospitals              |                             |         |                     |         |                      |
| District Hospitals                |                             |         |                     |         |                      |
| Dispensaries                      |                             |         |                     |         |                      |
| Private Clinic                    |                             |         |                     |         |                      |
| Others                            |                             |         |                     |         |                      |
| Total                             |                             |         |                     |         |                      |

| Contents             | Damages to contents (Kips) |         |                     |         | Total damages (Kips) |
|----------------------|----------------------------|---------|---------------------|---------|----------------------|
|                      | Totally destroyed          |         | Partially destroyed |         |                      |
|                      | Public                     | Private | Public              | Private |                      |
| Medical equipment    |                            |         |                     |         |                      |
| Machinery            |                            |         |                     |         |                      |
| Furniture            |                            |         |                     |         |                      |
| Medicines            |                            |         |                     |         |                      |
| Medical supplies     |                            |         |                     |         |                      |
| Vehicles             |                            |         |                     |         |                      |
| Other medical assets |                            |         |                     |         |                      |
| Total                |                            |         |                     |         |                      |
| Grand Total          |                            |         |                     |         |                      |

**Step 2.2. Estimation of losses in Health Sector: Losses in health sector will include the following:**

- **Higher costs of health care:** Government health facilities may incur additional expenses to assist the disaster-affected population (over and above the regular budget of the sector). This higher cost can be for any of the following reasons:
  - Treatment of physically and psychologically injured persons over a period of time which will require additional expenses for medicine and supplies
  - Transportation costs of injured persons to alternative, unaffected health facilities
  - Additional home visits to women and children needing more attention since they are more vulnerable and at risk
  - Rent of additional equipment, transportation to make more out of facility service provision
  - Overtime payment of health sector personnel, or cost of employing temporary additional staff if needed.
- **Cost of setting up and operating temporary health care facilities, if necessary.** If permanent structures of health facilities are destroyed or significantly damaged, temporary medical facilities may be need to be established. When temporary health care facilities are built, it will be necessary to estimate the cost of construction and related services, such as the provision of water, latrines and electric power and duration for which these temporary facilities will function. When using rented buildings as temporary health care facilities, the total value of rent will be part of the loss.
- Cost of replenishing stock of medical supplies and medicines
- Cost of providing medium and long-term treatment to injured persons as well as psychological attention to the affected population
- **Direct costs of monitoring and control of outbreak of diseases:** After a disaster, there is a possibility of breakout of epidemics which may require direct interventions like health surveillance and other disease control like fumigation, control of water-borne diseases, vaccination, public information and education, etc.
- **Losses due to lower revenues:** Closure of private and public health care facilities due to physical damages would result in the loss of revenues. On the other hand, even if the facilities are not affected, there may be a reduction in demand/patients if the facility has become inaccessible or if the people lost their source of income to pay for health services. Revenue losses will be: Pre-disaster revenues minus the estimated post-disaster revenues.
- **Other losses such as demolition and clean-up costs:** The costs of demolition, removal of debris in the affected health facilities, land improvement, disposal of bio-hazardous materials, among others are considered losses in health sector. Demolition costs vary widely in relation to the type of building materials involved. The health sector specialist should consult with an engineer or architect at this point. Typically the cost of removal of debris up to the roadside is incurred by the health facilities while the disposal of debris from the road to the disposal site may be incurred by other mandated agencies.
- Losses can extend beyond the year that the disaster occurred and these should be reflected in the loss assessment. The result of damage assessment will provide the estimate of time required to

repair and reconstruct the affected health care facilities as well as the capacity of the sector will determine the duration for which losses will continue. The duration will also include the time required for controlling and monitoring the possible outbreak of disease that may change the morbidity levels arising from the disaster.

- The district assessment team can use the following table for summarizing losses suffered by the Health Sector in the district

Note for filling table 9:

- The cost of estimating temporary health care facilities should include cost of land acquisition, cost of building temporary quarters, cost of water supply, sanitation and electricity at the site. If the temporary facility is on rented property, the value of rent will be a loss.
- Losses are to broken down by calendar year, starting with the current year of the disaster, and subsequent years if they are foreseen. Some of the losses may continue way beyond the year of the disaster till the entire recovery and reconstruction period is over. For example after the disaster, the cost incurred for setting up temporary health care facilities will be a loss, but some portions of this cost (operating cost) may continue for months till the temporary facilities stops functioning. Such costs should be estimated accordingly in the disaster year and if relevant in future years to come.
- The assessment team at the district level should estimate this time period of recovery and reconstruction and accordingly assess the losses. The assessment team at central and provincial level with wider knowledge on the sector performance and capacity, during the field mission should validate this estimation.

### Step 2.3. Summarize Damages and Losses in health sector in a district

- Based on the information gathered in the previous tables, a summary table would need to be developed by the district assessment team for total damages and losses in the health sector in the said district.

**Table 10. Summary of damage and losses in the health sector**

Name of district:

| Type of Facility                  | Within the Disaster Year |         |        |         | Losses Beyond Disaster Year |         |        |         |        |         |
|-----------------------------------|--------------------------|---------|--------|---------|-----------------------------|---------|--------|---------|--------|---------|
|                                   | Damages                  |         | Losses |         | Year 1                      |         | Year 2 |         | Year 3 |         |
|                                   | Public                   | Private | Public | Private | Public                      | Private | Public | Private | Public | Private |
| Central Hospitals                 |                          |         |        |         |                             |         |        |         |        |         |
| Curative Centers at central level |                          |         |        |         |                             |         |        |         |        |         |
| Regional Hospitals                |                          |         |        |         |                             |         |        |         |        |         |
| Provincial Hospitals              |                          |         |        |         |                             |         |        |         |        |         |
| District Hospitals                |                          |         |        |         |                             |         |        |         |        |         |
| Dispensaries                      |                          |         |        |         |                             |         |        |         |        |         |
| Private Clinic                    |                          |         |        |         |                             |         |        |         |        |         |
| Others                            |                          |         |        |         |                             |         |        |         |        |         |
| <b>Total</b>                      |                          |         |        |         |                             |         |        |         |        |         |

### Step 2.4. Summarize Damages and Losses in health sector in a province

- Once the summary table (Table 10) for each affected district has been filled out, the below table should be used for summarizing information at the province level. Each affected province should fill up a similar table.
- The provincial offices should make this data available to the assessment team visiting from the central level during field assessment. Depending on requirement the central level team along with representatives from provincial offices may undertake some validation of the data by visiting some specific districts.

**Table 11. Summary of damage and losses in province**

Name of province:

| Name of districts<br>(Type the name of the district below) | Within the Disaster Year |         |        |         | Losses Beyond Disaster Year |         |        |         | Total (Kips) |         |
|--|--------------------------|---------|--------|---------|-----------------------------|---------|--------|---------|--------------|---------|
|  | Damages                  |         | Losses |         | Year 1                      |         | Year 2 |         |              |         |
|  | Public                   | Private | Public | Private | Public                      | Private | Public | Private | Public       | Private |
| District 1   |                          |         |        |         |                             |         |        |         |              |         |
| District 2   |                          |         |        |         |                             |         |        |         |              |         |
| District 3   |                          |         |        |         |                             |         |        |         |              |         |
| District 4   |                          |         |        |         |                             |         |        |         |              |         |
| District 5   |                          |         |        |         |                             |         |        |         |              |         |
| <b>TOTAL</b>   |                          |         |        |         |                             |         |        |         |              |         |

#### Step 2.5. Summarize Damages and Losses in health sector at the national level

- Once the summary table (Table 11) for each affected district has been filled out, the below table should be used by the central level assessment team for summarizing information at the national level. This is to be filled out after the field assessment is over.

**Table 12. Summary of damage and losses in the health sector at the national level**

| Name of Province (Type the name of the province below) | Within the Disaster Year |        | Losses Beyond Disaster Year |        |        | Total (Kips) |
|--|--------------------------|--------|-----------------------------|--------|--------|--------------|
|  | Damages                  | Losses | Year 1                      | Year 2 | Year 3 |              |
| Province 1   |                          |        |                             |        |        |              |
| Province 2   |                          |        |                             |        |        |              |
| Province 3   |                          |        |                             |        |        |              |
| Province 4   |                          |        |                             |        |        |              |
| Province 5   |                          |        |                             |        |        |              |
| <b>TOTAL</b>   |                          |        |                             |        |        |              |

### Step 3: Estimating recovery and reconstruction needs for health sector

#### Step 3.1 Setting the recovery and reconstruction strategy for health sector:

- While the damage and loss assessment is being undertaken, the MoH in consultation with their counterparts in affected provinces, Ministry of Planning and Investment, National Disaster Management Office, and in partnership with development partners involved in health sector in Lao PDR, should develop the strategy to be followed for recovery and reconstruction of health sector. Some of the broad content of the strategy could include the following:

- Identifying sector specific factors which will contribute to 'build back better' of health sector
- Possibilities of relocation of health care facilities situated in high risk areas to safer location
- Possible incentives to private clinics owners for reconstruction of damaged clinics with higher standards of resilience
- Enhancing and strengthening medium to long-term disaster risk reduction related issues in health sector such as integrating hazard resilience standards in design and construction of all new health facilities, retrofitting of health facilities situated in high risk areas, training of health workforce for post-disaster response etc.

### Step 3.2 Estimating recovery and reconstruction needs

- The quantification of damage and losses will enable the estimation of financial requirements to achieve full recovery of health sector and to reconstruct the facilities in the health sector that were destroyed or damaged.
- The value of losses is used to estimate the amount required to achieve recovery of the health sector, and the value of damage is used to estimate the financial requirements for reconstruction of health facilities.
- This estimation of financial needs for recovery and reconstruction should be broken down by districts and provinces

In the health sector, quick recovery efforts must be first priority for disaster of any kind and magnitude.

#### Step 3.2.1 Estimating recovery needs

Possible recovery related activities in case of health sector could include:

- Setting up of temporary hospitals in either alternative suitable building facilities or in tents, until the destroyed facilities are rebuilt.
- Additional operation budget over and above the regular government appropriations for the sector required to finance additional personnel or to pay overtime to existing personnel
- Replenishing stocks of medical supplies and medicines that may have been destroyed during the disaster,
- Provide medium- to long-term medical treatment to injured persons as well as psychological attention to the affected population
- Preventing and controlling the possible occurrence of disease outbreaks or epidemics, whose cost is not normally included in the regular budget of the country. Under this heading, the cost of public information campaigns, vaccinations, vector control schemes and monitoring of morbidity levels are to be included
- If food insecurity has arisen due to the disaster, a temporary nutrition scheme for mothers and children may be designed and implemented

The cost of these recovery needs would have been estimated as a loss in the assessment. MoH can use the below table to put forward the recommendation to MPI for activities related to recovery needs:

**Table 13. Summary of Recovery Needs in Health Sector**

| Recovery needs  | Type and amount of assistance needed (Kips) |         |        |         |        |         | Total Recovery Needs (Kips) | Foreign Cost Component (US\$) |
|---|---|---------|--------|---------|--------|---------|-----------------------------|-------------------------------|
|   | Grant assistance/ subsidy                   |         | Credit |         | Others |         |                             |                               |
|   | Public                                      | Private | Public | Private | Public | Private |                             |                               |
| Setting up of temporary hospitals                             |   |         |        |         |        |         |                             |                               |
| Additional personnel or to pay overtime to existing personnel |   |         |        |         |        |         |                             |                               |
| Replenishing stocks of medical supplies and medicines         |   |         |        |         |        |         |                             |                               |
| Medical treatment to injured persons as                       |   |         |        |         |        |         |                             |                               |

|  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|
| well as psychological attention  |  |  |  |  |  |  |  |
| Preventing and controlling the possible occurrence of disease outbreaks or epidemics |  |  |  |  |  |  |  |
| Temporary nutrition scheme for mothers and children                                  |  |  |  |  |  |  |  |
| Others   |  |  |  |  |  |  |  |
| <b>Total</b>   |  |  |  |  |  |  |  |

### Step 3.2.2 Estimating reconstruction needs

The estimation of reconstruction needs for the health sector, the following formula is to be used:

$$\text{Education Reconstruction Needs} = H * \text{Hospital Damage value},$$

Wherein

- H is a disaster-resilience coefficient, whose value may range from 1.10 to 1.50. The actual value to be adopted would depend on the improved degree of construction standards or norms required. Civil engineers or architects familiar with disaster-resilient construction standards would be able to define those coefficients.
- Formula must be applied separately to each hospital or facility that may have been destroyed, and the corresponding disaster-resilience coefficient may vary from facility to facility.

Possible reconstruction related activities in case of health care facilities could include the following.

- Scheme for reconstruction of public and private health care facilities under a building-back-better strategy to ensure disaster resilience through the adoption and enforcement of improved construction standards. The calendar for this scheme should be defined to reduce the duration of temporary health facilities that may have been established immediately after the disaster, and thereby reduce the suffering of the affected people and areas.
- Scheme of structural retrofitting of hospitals and health facilities may also be required, to ensure that undamaged or lightly damaged units are able to withstand the impact of future disasters and continue its function of health care provision uninterruptedly. The financial needs are to be estimated by specialized architects or civil engineers after defining the standards for retrofitting and the degree of disaster resilience to be achieved.
- Relocation of specific health care facilities to safer location may be required. The financial requirements for this scheme should include not just the cost of the new structures, but the cost of land acquisition and of basic service provision.

MoH can use the below table to put forward their recommendation to MPI for activities related to reconstruction needs:

**Table 14. Reconstruction Needs of the Health Sector**

| Assistance to educational facilities                                   | Reconstruction Needs (Kips) |         |        |         | Total Reconstruction Needs | Foreign Cost Component (US\$) |
|--|-----------------------------|---------|--------|---------|----------------------------|-------------------------------|
|  | Grant                       |         | Credit |         |                            |                               |
|  | Public                      | Private | Public | Private |                            |                               |
| Reconstruction and repair of public and private health care facilities |                             |         |        |         |                            |                               |
| Structural retrofitting of health care facilities                      |                             |         |        |         |                            |                               |
| Relocation of schools to safer area                                    |                             |         |        |         |                            |                               |

|              |  |  |  |  |  |  |
|--------------|--|--|--|--|--|--|
| Others       |  |  |  |  |  |  |
| <b>Total</b> |  |  |  |  |  |  |

Notes in filling out Tables 13 and 14:

- The reconstruction needs under the 'credit' column normally refer to the assistance that will be extended to damaged educational facilities owned by the private sector and is expected to be repaid over time. If the government will extend assistance to the private sector without repayment required, the amount of assistance should be under the 'grant' column. Government-owned facilities are assumed to be financed by the government without repayment from the said facilities. As such the amount should be under the 'grant' column, otherwise in the credit column.
- The foreign cost component will be the amount of foreign currency needed as part of the total cost.

## Step 4. Developing short, medium and long-term projects and designing implementation plan

Recovery and Reconstruction needs identified above would need to be broken down in short, medium and long-term needs. Following are some examples of projects in health sector, which can be undertaken as short, medium and long-term:

### 1. Short-term projects

- Support for immediate provisions of medicines, drinking water, sanitary services, control of diseases, and other vital equipment for urgent medical needs, restoration of power and water in the health facilities, among others
- Immediately repair of structures vital to operations and activities if health facilities especially those that are related to the treatment of disaster victims
- Providing support for nutritional program to the children, pregnant and lactating mothers, physically disabled and elder people from poor families who have lost their livelihoods due to the disaster

### 2. Medium-term projects/programs

- Relocation of health centers and hospitals to the safer places
- Support to replace other non-urgent health equipment damaged by the disaster
- Development of hazard resilient design specifications for construction of health care facilities

### 3. Longer-term projects/programs

- Retrofitting of existing health care facilities

The identified needs should have a rough schedule of implementation outlining at the very least the activities, timing and budget required for all the programs and projects. The following techniques can be considered:

1. Identify the specific projects according to their relative urgency or priority in relation to recovery.
2. Plot the timeline of activities of all the projects, with the urgent ones on top, in a Gantt chart with the corresponding funding requirement. This will assist the MPI in programming the necessary funds over a certain time period, like on a quarterly or annual basis.
3. Identify and include in the list of projects that need further feasibility studies which may be funded by foreign grants.
4. To the extent possible, a logical framework (log frame) should be created for each of the project proposed for inclusion in the recovery plan.

## Step 5. Inputs for macro-economic and household impact analysis

The damages and losses to the health sector can affect the macro economy. To the extent possible that the MoH can, should collect the following information, which will be used by MPI for undertaking the macro-economic impact analysis

- **Gross Domestic Product (GDP):** The loss of the contribution to the national economy of income generated directly or indirectly by health sector.

- **Fiscal Balance:** The impact on the fiscal balance for the health sector may be twofold: on the current and the capital accounts of the budget. In the first case, the unexpected expenditures to finance the temporary health care facilities combined with possible lower tax revenues from private clinics. In the second case, the government may resort to more borrowings/fresh loans for reconstruction of health sector after a disaster, which can result into higher budget deficit.
- **Balance of Payment:** Items and amount needed for the recovery and reconstruction of the health sector that are not produced locally in Lao PDR and have to be imported from other countries. These should be estimated and expressed in percentage of total recovery and reconstruction needs to be used for the analysis of impact on the balance of payment.
- **Prices or Inflation:** Prices of construction materials could go high if the destruction of the health sector is massive.
- To the extent possible, the assessment team must also provide an analysis of impacts on personal or household situation. These effects can be on community health, nutrition, sanitation and any increased costs of obtaining medical or health care. The MPI can use such analysis in the assessment of the overall disaster impacts.

## Step 6. Write the assessment report

The following format may be considered for writing the assessment chapter of health sector:

- Brief background on Health Sector in Lao PDR
- Overview of impacts of the disaster on Health Sector
- Damage and Loss quantification
- Damage and Loss by province (or district)
- Proposed strategies for recovery and reconstruction of Health Sector
- Needs estimation for recovery and reconstruction of Health Sector

The report of the Health Sector should be written by MoH in close partnership with development partners involved in housing and settlement and once completed should be submitted to MPI for inclusion in the final report.

## Section 3

### *Terms of reference of assessment team*

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#### 3.1 Formation of pre-identified assessment teams within MoH

- Pre-identified team should be formed with officials from MoH. These officials would need to have a good understanding on the performance of health sector, construction of health facility and should have also undergone prior training on the damage, loss and needs assessment.

#### 3.2 Composition of the assessment team

- At the central level the assessment team should comprise of the following:
  - Officials from Department of Planning of MoH
  - Officials from Division of Construction, MoH
  - Development Partners involved in health sector
- At the field level the assessment team should comprise of the following:
  - Provincial Department of Health
  - District Office of Health
- Specific expertise required within the team would include the following:
  - Public health specialist
  - Nutrition specialist
  - Epidemiologists
  - Civil Engineer/Structural Engineers



### 3.3 Task of assessment team

- Gathering of the pre-identified team from MoH after the disaster event based on the order received from MPI
- Consultation with development partners involved in Health Sector and who will join the assessment team
- Undertaking quick orientation on the assessment methodology for the assessment team
- Working closely with relevant departments of MoH at national (such as Division of Construction, Department of Planning) and provincial/district and responsible for compiling baseline information.
- Undertaking field visits in disaster affected areas and working closely with District and Provincial Health Offices and collecting information on damage and losses
- Based on information collected, undertaking damage and loss assessment for the sector Simultaneously in close consultation with relevant agencies such as National Disaster Management Office and development partners, formulate the recovery and reconstruction strategy for Health Sector
- Estimating the recovery and reconstruction needs based on the strategy and damage and loss assessment results
- Writing the assessment report for Health Sector
- Presentation of the findings of the assessment report to the decision makers within the MoH and other development partners for broader consultation.
- Finalization of the report based on the inputs received from broader consultation and submission to MPI

### 3.4 Assessment timeline

- Ideally, the post-disaster damage, loss and needs assessment takes from 2 to 5 weeks.
- The assessment is usually started once the rapid impact and needs assessment for emergency and relief support is completed and the relief and response phase of the disasters is over or well underway.
- In the first week the overall planning of the assessment would take place and would include the following issues:
  - Baseline data collection
  - Agree on ToR
  - Team composition selection
  - Orientation Training on damage, loss and needs assessment
  - Discussion on formulating recovery and reconstruction strategy for health sector
- Second week is the assessment stage and would include the following
  - Field survey
  - Calculation of Damage and losses for Health Sector
- Third week of the assessment is the analysis stage and would include the following
  - Finalizing recovery and reconstruction strategy for Health Sector
  - Estimating recovery and reconstruction needs for Health Sector
  - Report drafting
  - Consultation within sector to seek inputs on the report
  - Submission of sector report to MPI
  - Finalisation of report by MPI
- Fifth week of the assessment is launch and dissemination of the report

## ***Guidance Note 3***

### ***Damage, loss and needs assessment of Education Sector in Lao PDR***

## ***Table of Contents***

- Introduction to this Guidance Note
- Section-1: Methodology for damage, loss and needs assessment of Education Sector in Lao PDR
- Section-2: Steps in undertaking damage, loss and needs assessment
  - Step 1: Analysis of pre-disaster situation of education sector
  - Step 2: Estimating post-disaster damage and loss
  - Step 3: Estimating recovery and reconstruction needs
  - Step 4: Developing short, medium and long-term projects and designing implementation plan
  - Step 5: Inputs for Macro-economic and household level impact analysis
  - Step 6: Writing the assessment report
- Section 3: Terms of reference of assessment team

## ***Introduction to this Guidance Note***

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- This Guidance Note is a part of the Handbook on Post-disaster recovery and reconstruction planning of Lao PDR, which consists of fifteen Guidance Notes, for various sectors, on damage, loss and needs assessment.
- This Guidance Note is to be used for undertaking damage, loss and needs assessment of the **Education Sector** in Lao PDR after a disaster
- The Education Sector in this case consists of all the buildings used for educational purposes and its premises, equipment, machinery, furniture including libraries, laboratories, gymnasiums and other sports facilities.
- The Guidance Note is to be used by the team responsible for undertaking the assessment of the education sector to be led by the personnel of the **Ministry of Education and Sports (MES)**, Government of Lao PDR working in close coordination with its provincial and district offices as well as with other agencies such as National Statistical Center of Lao PDR, Ministry of Planning and Investment, National Disaster Management Office, and development partners involved in education sector.

## Section 1

### *Methodology damage, loss and needs assessment of Education Sector in Lao PDR*

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- This methodology for undertaking damage and loss assessment of Education sector is derived from the Methodology for estimating the socio-economic and environmental effects of disasters, developed by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) as further enhanced by the World Bank.
- The methodology for estimating recovery and reconstruction needs (described in step 3 of section 2 of this Guidance Note) is derived from the Guidance Note of the World Bank and The Global Facility of Disaster Reduction and Recovery entitled: Estimation of Post-Disaster Needs for Recovery and Reconstruction
- The ECLAC methodology uses two terminologies; namely Damage and Losses as explained below:
  - **Damages in Education sector:** The following are the items that can be damaged in the education sector:
    - Total or partial destruction of physical structure related to education and sports facilities such as school buildings, university, library, gymnasiums, sports center, etc.
    - Destruction to the content inside the education facility such as:
      - furniture
      - educational and sports equipment
      - educational materials
  - Damage would occur at the time of the disaster or shortly after the disaster and estimated in terms of physical units of assets that may be totally or partially destroyed. Damages are valued as the cost of repair of partially destroyed assets and the cost of replacement of assets or goods that were totally damaged. The unit prices for replacement would be those that prevailed just before the disaster occurred that would allow rebuilding the education facilities to the same characteristics prior to the disaster.
  - **Losses in the Education sector.** Losses are the change in economic flow during the period of recovery and reconstruction following the disaster. In the case of education sector the losses can result from:
    - Cost of unforeseen expenditures like temporary rental of premises, equipment, etc. to be used as substitute while the schools' assets are under repair or reconstruction
    - Foregone income from education and sports facilities like tuition fees, rents, and other fees.
    - Payment of overtime salaries to teachers or other workers in the sector
    - Incremental cost of extending the school year, training of replacement of dead teachers, etc.
    - Costs involved for the demolition or removal of debris.
  - Losses will take place during the entire period of recovery and reconstruction of the sector and may stretch even beyond the year that the disaster occurred. It is expressed in monetary value at current prices.

## Section 2

### *Steps in undertaking damage, loss and needs assessment*

---

#### Step1: Analysis of pre-disaster situation of education sector

##### Step 1.1: Understand what is meant by baseline data

- The first step of undertaking the assessment is the collection of information on the pre-disaster situation of education sector in order to ascertain the baseline for the damage, loss and needs assessment. The following table shows the type of baseline information to be collected and their typical sources:

**Table 1. Type and Sources for the baseline information for education sector**

| Type of Information/Data   | Data Available at   | Name of source document   |
|--|---|---|
| Total number education institutions and sports facilities in a province broken down by types. Data for number of education facilities in a district is also available at central level but not printed in the Annual Report. | Center for Education statistics and Information Technology, MES | Annual Report, Ministry of Education and reports from the former sports authority |
| Inventory of assets in the various types of educational institutions and sports facilities   | Center for Education statistics and Information Technology, MES | Central Database  |
| Ownership of educational institutions and sports facilities in districts   | Department of Private Education, MES                            |   |
| Total Number of students per type of school in each district (disaggregated by male and female)  | Center for Education statistics and Information Technology, MES |   |
| Total Number of teacher per type of school in each district (disaggregated by male and female)   | Center for Education statistics and Information Technology, MES |   |
| Unit replacement or construction cost of various types of school buildings and sports facilities   | Division of Construction, Department of finance, MES            |   |
| Unit repair cost of various types of school buildings and sports facilities  | Division of Construction, Department of finance, MES            |   |
| Unit replacement cost of assets of various types of schools and sports facilities  | Division of Construction, Department of finance, MES            |   |
| Average monthly rent of school buildings and sports facilities   | Department of finance, Budgeting division, MES                  |   |
| Average school fee in various types of schools (public and private schools)  | Department of Private Education, MES                            |   |

- As per the Statistical Yearbook of Lao PDR, 2010, Educational facilities are classified as follows:
  - Kindergarten and crèche
  - General Education
  - Primary
  - Lower Secondary
  - Upper Secondary
  - Vocational Education
  - University
  - Institutes
  - Technical secondary schools
  - Technical first-schools
- Since baseline data is available as per this classification, this same classification should be followed for undertaking the damage and loss assessment.

#### Step 1.2: Collect the baseline data for each of the disaster-affected district

- Before the field assessment begins, the baseline data should be collected and summarized for each of the disaster-affected district by using the following tables (Table 2, Table 3 and Table 4)
- This data is to be compiled by the assessment team at the central level (see section 3.2 of this Guidance Note) with necessary inputs from the provincial departments and district offices of the concerned Ministry.

**Table 2. Baseline information of educational facilities in districts**

Name of District:

| Type of facilities          | Total number |         | Total number | Average number of students |        | Total number of staff |        |
|-----------------------------|--------------|---------|--------------|----------------------------|--------|-----------------------|--------|
|                             | Public       | Private |              | Male                       | Female | Male                  | Female |
| Educational facilities      |              |         |              |                            |        |                       |        |
| Kindergarten and crèche     |              |         |              |                            |        |                       |        |
| Primary School              |              |         |              |                            |        |                       |        |
| Lower Secondary School      |              |         |              |                            |        |                       |        |
| Upper Secondary School      |              |         |              |                            |        |                       |        |
| University                  |              |         |              |                            |        |                       |        |
| Institutes                  |              |         |              |                            |        |                       |        |
| Technical secondary schools |              |         |              |                            |        |                       |        |
| Technical first-schools     |              |         |              |                            |        |                       |        |
| Total                       |              |         |              |                            |        |                       |        |
| Sports facilities           |              |         |              |                            |        |                       |        |
| Gymnasium                   |              |         |              |                            |        |                       |        |
| Sports Stadium              |              |         |              |                            |        |                       |        |
| Others                      |              |         |              |                            |        |                       |        |
| <b>Total</b>                |              |         |              |                            |        |                       |        |

**Table 3. Baseline information of unit cost of educational facilities in a district**

| Particulars   | Values (in Kips)        |                |                        |                        |            |            |                             |                         |
|---|-------------------------|----------------|------------------------|------------------------|------------|------------|-----------------------------|-------------------------|
|   | Kindergarten and creche | Primary School | Lower Secondary School | Upper Secondary School | University | Institutes | Technical Secondary Schools | Technical First-Schools |
| <b>Average cost of:</b>   |                         |                |                        |                        |            |            |                             |                         |
| Construction per unit or type of structure                        |                         |                |                        |                        |            |            |                             |                         |
| Roofing per square meter  |                         |                |                        |                        |            |            |                             |                         |
| Wall per square meter   |                         |                |                        |                        |            |            |                             |                         |
| Flooring per square meter   |                         |                |                        |                        |            |            |                             |                         |
| <b>Average value per unit of:</b>                                 |                         |                |                        |                        |            |            |                             |                         |
| Desk  |                         |                |                        |                        |            |            |                             |                         |
| Computer  |                         |                |                        |                        |            |            |                             |                         |
| Book  |                         |                |                        |                        |            |            |                             |                         |
| Chalk board   |                         |                |                        |                        |            |            |                             |                         |
| Electric fan  |                         |                |                        |                        |            |            |                             |                         |
| Other educational materials, equipment, machinery and furnishings |                         |                |                        |                        |            |            |                             |                         |
| Average fee/s per   |                         |                |                        |                        |            |            |                             |                         |

|                                  |  |  |  |  |  |  |  |  |
|----------------------------------|--|--|--|--|--|--|--|--|
| student per month                |  |  |  |  |  |  |  |  |
| Average revenue per day or month |  |  |  |  |  |  |  |  |

**Table 4. Baseline information of unit cost of sports facilities in a district**

| Particulars                                | Values (in Kips) |                |        |
|--|------------------|----------------|--------|
|  | Gymnasiums       | Sports Stadium | Others |
| <b>Average cost of:</b>                    |                  |                |        |
| Construction per unit or type of structure |                  |                |        |
| Roofing per square meter                   |                  |                |        |
| Wall per square meter                      |                  |                |        |
| Flooring per square meter                  |                  |                |        |
| Average value per unit of:                 |                  |                |        |
| Sports materials and equipment (specify)   |                  |                |        |
| Computer                                   |                  |                |        |
| Desks and tables                           |                  |                |        |
| Machineries (specify)                      |                  |                |        |
| Other furnishings                          |                  |                |        |
| Average fee/s per student per month        |                  |                |        |
| Average revenue per day or month           |                  |                |        |

Notes in filling out Tables 2, 3 and 4

- There may be many buildings or structures in a certain educational and sports facility. Each of them should be included in the baseline information.
- The construction cost of structure/s, values of books, equipment and furnishing/s should be per unit or per type in each educational and sports facility.
- Other types of educational facilities like public libraries existing in the district should be included.

## Step 2: Estimating damage and losses in education sector

- While the assessment team at the central level is collecting the baseline information, field assessment should be undertaken by the district assessment team to assess the damages and losses suffered by the education sector from the particular disaster event.
- Since there may not be many educational and sports facilities in a district damaged by a disaster, during this stage, as much as possible individual educational and sports facilities impacted by the disaster should be assessed by the district assessment team and the results should be compiled district wise in a summary table to reflect the damage and losses for the entire sector in the district.

**Step 2.1. Estimation of damages: Damages must be assessed for both public and private educational facilities. The following are the items that can be damaged in the sector:**

- **Educational and sports infrastructure.** The damage assessment should include the effects on the structures of each of the impacted facilities. Direct interviews with private contractors or government officials involved in the construction and repair of educational and sports facilities can be conducted during the field trip in order to validate unit costs of repair and reconstruction (which is already collected by central assessment team as part of Table 3 and 4).
- **Equipment, furniture and other machinery.** There are various instruments used for educational and sports purposes like laboratory and workshop equipment, computers, sports gear/equipment, etc. On the hand, there are equipment like installations that are part of the building itself, such as elevators, security equipment, air conditioning, internal communication systems, vehicles, and others. Depending on the level of the facilities and number of students or trainees enrolled, the

types of equipment and other assets may also vary from facility to facility, which may have direct implication in estimating the cost of damage in the sector. Therefore, the types of equipment, machinery, furniture and other important assets possessed and damaged in each facility should be considered.

- **Educational and sports materials supplies.** Buildings used for education normally have stocks such as paper, books, chemicals, etc. Their value can be sufficiently high to warrant individual assessment. Inventories of research, art works and other collections deposited in a given institution must also be included under this heading.
- The assessment specialist can classify the damage as completely destroyed and partially damaged. The following can be taken as guidance for classification of completely destroyed and partially damaged, however, it is best to get feedback from national experts before the assessment begins:
  - Completely destroyed: All education facilities which are visibly completely destroyed and those that have suffered irreparable structural damage
  - Partially damaged: Educational facilities that can be repaired at less than 40 percent of the reconstruction cost
- The district assessment team can use the following table for undertaking quick assessment of individual educational and sports facility.

**Table-5: Post-disaster damage assessment of individual educational facility**

| Questions to be asked to the school authority  |  | Write the answer in this column |
|--|--|---------------------------------|
| Name of Educational /Sports Facility   |  |                                 |
| Location of the Facility (Village/Town)  |  |                                 |
| Type of Facility   | Kindergarten and Creche<br>Primary School<br>Lower Secondary School<br>Upper Secondary School<br>University<br>Institutes<br>Technical Secondary Schools<br>Technical First-Schools<br>Gymnasium<br>Sports Stadium |                                 |
| Ownership  | Public<br>Private  |                                 |
| If Private how much tuition fee is charged per student per month (Kip/per student/per month)                                     |  |                                 |
| Number of students   | Male   |                                 |
|  | Female   |                                 |
| Number of workers  | Male   |                                 |
|  | Female   |                                 |
| Is the facility on a rental premise? If Yes how much is rent paid per month?   |  |                                 |
| Number of days the facility is not functional after the disaster   |  |                                 |
| Was the school shifted somewhere else temporarily because of disaster? If yes, how much was spent to set up the temporary school |  |                                 |
| Is the structure of the building   | Completely destroyed   |                                 |
|  | Partially destroyed  | Roof                            |
|  |  | Walls                           |
|  |  | Floor                           |
| How long will it take to repair the structure (Days)   |  |                                 |
| List the furniture and equipment damaged   | Type   | Number damaged                  |

| by the disaster and |  |  |
|---------------------|--|--|
| 1                   |  |  |
| 2                   |  |  |
| 3                   |  |  |
| 4                   |  |  |
| 5                   |  |  |
| 6                   |  |  |
| 7                   |  |  |
| 8                   |  |  |
| 9                   |  |  |
| 10                  |  |  |

- After assessing the individual education and sports facilities, the damages in a particular district can be summarized in the following tables (Table 6, Table 7 and Table 8):

**Table 6. Value of damages from totally destroyed educational and sports facilities in a district**

Name of District:

| Type of education and sports facility | Totally destroyed           |         |       | Average Replacement Cost (Kips) | Value of Reusable Materials (Kips) | Total damages to structures (Kips) | Average Time to Replace (Months) |
|---------------------------------------|-----------------------------|---------|-------|---------------------------------|------------------------------------|------------------------------------|----------------------------------|
|                                       | Number of totally destroyed |         |       |                                 |                                    |                                    |                                  |
|                                       | Public                      | Private | Total |                                 |                                    |                                    |                                  |
|                                       |                             |         | A     | B                               | C                                  | D                                  | E                                |
| Kindergarten and crèche               |                             |         |       |                                 |                                    |                                    |                                  |
| Primary School                        |                             |         |       |                                 |                                    |                                    |                                  |
| LowerSecondary School                 |                             |         |       |                                 |                                    |                                    |                                  |
| Upper Secondary School                |                             |         |       |                                 |                                    |                                    |                                  |
| University                            |                             |         |       |                                 |                                    |                                    |                                  |
| Institutes                            |                             |         |       |                                 |                                    |                                    |                                  |
| Technical secondary schools           |                             |         |       |                                 |                                    |                                    |                                  |
| Technical first-schools               |                             |         |       |                                 |                                    |                                    |                                  |
| Gymnasium                             |                             |         |       |                                 |                                    |                                    |                                  |
| Sports Stadium                        |                             |         |       |                                 |                                    |                                    |                                  |
| Others                                |                             |         |       |                                 |                                    |                                    |                                  |
| Total                                 |                             |         |       | N.A.                            |                                    |                                    | N.A.                             |
| Contents                              | Number of totally destroyed |         |       | Average Replacement Cost (Kips) | Value of Reusable Materials (Kips) | Total damages to contents (Kips)   | Average Time to Replace (Months) |
|                                       | Public                      | Private | Total |                                 |                                    |                                    |                                  |



|                    |  |  | A | B    | C | D | E    |
|--------------------|--|--|---|------|---|---|------|
| Desks and tables   |  |  |   |      |   |   |      |
| Computer           |  |  |   |      |   |   |      |
| Book               |  |  |   |      |   |   |      |
| Chalk board        |  |  |   |      |   |   |      |
| Equipment          |  |  |   |      |   |   |      |
| Sports gear        |  |  |   |      |   |   |      |
| Machinery          |  |  |   |      |   |   |      |
| Furniture          |  |  |   |      |   |   |      |
| Other materials    |  |  |   |      |   |   |      |
| <b>Total</b>       |  |  |   |      |   |   |      |
| <b>Grand Total</b> |  |  |   | N.A. |   |   | N.A. |

Notes for filling table 6:

- 'Average Replacement Cost' will be the average pre-disaster value of the buildings and their contents that were totally destroyed.
- Although the structure or contents of the structure are totally destroyed, there will still be some re-usable materials that have salvage values. For instance, some wood or iron can be re-used for reconstruction while damaged equipment can be sold as scrap. The salvage values must be subtracted from the replacement cost.
- According to experience in past disasters, typically around 10-40 percent of materials can be re-used after a disaster.
- In formula, the total damages will be (Column D) = [(Column A) x (Column B)] – Column C.
- Filling out column E is very important and should be done with the help of experienced engineers who have wide experience in the education sector in Lao PDR and the estimates should take into consideration factors such as capacity of the school construction sector, the availability of construction material and labour, as well as the availability of adequate financing. This data will be required for calculating losses in the education sector (step 2.2)

**Table 7. Value of damages from partially destroyed educational and sports facilities in a district**

Name of District:

| Type of education and sports facility | Partially damaged structures |                         |            |                         |            |                         | Others     | Value of Reusable material (Kips) | Total Cost of Repair (Kips) | Average Time to Repair (Months) |
|---------------------------------------|------------------------------|-------------------------|------------|-------------------------|------------|-------------------------|------------|-----------------------------------|-----------------------------|---------------------------------|
|                                       | Roof                         |                         | Walls      |                         | Floor      |                         | Kips/ Unit |                                   |                             |                                 |
|                                       | Area (SqM)                   | Repair Cost (Kips/ SqM) | Area (SqM) | Repair Cost (Kips/ SqM) | Area (SqM) | Repair Cost (Kips/ SqM) |            |                                   |                             |                                 |
|                                       | A                            | B                       | C          | D                       | E          | F                       |            |                                   |                             |                                 |
| Kindergarten and crèche               |                              |                         |            |                         |            |                         |            |                                   |                             |                                 |
| Public                                |                              |                         |            |                         |            |                         |            |                                   |                             |                                 |
| Private                               |                              |                         |            |                         |            |                         |            |                                   |                             |                                 |
| Primary School                        |                              |                         |            |                         |            |                         |            |                                   |                             |                                 |
| Public                                |                              |                         |            |                         |            |                         |            |                                   |                             |                                 |
| Private                               |                              |                         |            |                         |            |                         |            |                                   |                             |                                 |
| Lower Secondary School                |                              |                         |            |                         |            |                         |            |                                   |                             |                                 |

|                             |                             |         |                     |  |                         |                              |  |
|-----------------------------|-----------------------------|---------|---------------------|--|-------------------------|------------------------------|--|
| Public                      |                             |         |                     |  |                         |                              |  |
| Private                     |                             |         |                     |  |                         |                              |  |
| Upper Secondary School      |                             |         |                     |  |                         |                              |  |
| Public                      |                             |         |                     |  |                         |                              |  |
| Private                     |                             |         |                     |  |                         |                              |  |
| University                  |                             |         |                     |  |                         |                              |  |
| Public                      |                             |         |                     |  |                         |                              |  |
| Private                     |                             |         |                     |  |                         |                              |  |
| Institutes                  |                             |         |                     |  |                         |                              |  |
| Public                      |                             |         |                     |  |                         |                              |  |
| Private                     |                             |         |                     |  |                         |                              |  |
| Technical secondary schools |                             |         |                     |  |                         |                              |  |
| Public                      |                             |         |                     |  |                         |                              |  |
| Private                     |                             |         |                     |  |                         |                              |  |
| Technical first-schools     |                             |         |                     |  |                         |                              |  |
| Public                      |                             |         |                     |  |                         |                              |  |
| Private                     |                             |         |                     |  |                         |                              |  |
| Gymnasium                   |                             |         |                     |  |                         |                              |  |
| Public                      |                             |         |                     |  |                         |                              |  |
| Private                     |                             |         |                     |  |                         |                              |  |
| Sports stadium              |                             |         |                     |  |                         |                              |  |
| Others                      |                             |         |                     |  |                         |                              |  |
| Total                       |                             |         |                     |  |                         |                              |  |
| Contents                    | Quantity Damaged<br>(Units) |         | Average Repair Cost |  | Total Cost<br>of Repair | Average<br>Time to<br>Repair |  |
|                             | Public                      | Private | (Kips/ Unit)        |  | (Kips)                  | (Months)                     |  |
|                             | A                           | B       | C                   |  | D                       | E                            |  |
| Desk                        |                             |         |                     |  |                         |                              |  |
| Computer                    |                             |         |                     |  |                         |                              |  |
| Book                        |                             |         |                     |  |                         |                              |  |
| Chalk board                 |                             |         |                     |  |                         |                              |  |
| Equipment                   |                             |         |                     |  |                         |                              |  |
| Sports gear                 |                             |         |                     |  |                         |                              |  |
| Machinery                   |                             |         |                     |  |                         |                              |  |
| Furniture                   |                             |         |                     |  |                         |                              |  |
| Other materials             |                             |         |                     |  |                         |                              |  |
| Total                       |                             |         |                     |  |                         |                              |  |
| Grand Total                 |                             |         |                     |  |                         |                              |  |

Notes in filling out Table 7:

- The total value of damage due to partially destroyed assets will be the total cost of repair computed as:  

$$\text{Column I} = (\text{Column A} \times \text{Column B}) + (\text{Column C} \times \text{Column D}) + (\text{Column E} \times \text{Column F}) + \text{Column G} - \text{Column H}$$
- The value for the average cost of repair per unit is found in the baseline information.
- For the contents of the buildings, the value of damages will be the repair cost of the number of damaged quantity multiplied by average repair cost of each, computed as:  

$$\text{Column D} = (\text{Column A} + \text{Column B}) \times \text{Column C}$$
- The cost of repair should also exclude the value of the materials that can be re-used.
- Filling out column J is very important and should be done with the help of experienced engineers who have wide experience in the education sector in Lao PDR and the estimates should take into consideration factors such as capacity of the school construction sector, the availability of construction material and labour, as well as the availability of adequate financing. This data will be required for calculating losses in the education sector (step 2.2)

**Table 8. Summary of damages to educational and sports facilities and their contents in a district**

Name of district:

| Types of educational and sports facilities | Damages to buildings (Kips) |         |                     |         | Total damages (Kips) |
|--|-----------------------------|---------|---------------------|---------|----------------------|
|  | Totally destroyed           |         | Partially destroyed |         |                      |
|  | Public                      | Private | Public              | Private |                      |
| Structures                                 |                             |         |                     |         |                      |
| Kindergarten and crèche                    |                             |         |                     |         |                      |
| Primary School                             |                             |         |                     |         |                      |
| Lower Secondary School                     |                             |         |                     |         |                      |
| Upper Secondary School                     |                             |         |                     |         |                      |
| University                                 |                             |         |                     |         |                      |
| Institutes                                 |                             |         |                     |         |                      |
| Technical Secondary School                 |                             |         |                     |         |                      |
| Technical First-School                     |                             |         |                     |         |                      |
| Gymnasium                                  |                             |         |                     |         |                      |
| Sports Stadium                             |                             |         |                     |         |                      |
| Others                                     |                             |         |                     |         |                      |
| Total                                      |                             |         |                     |         |                      |
| Contents                                   | Damages to contents (Kips)  |         |                     |         | Total damages (Kips) |
|  | Totally destroyed           |         | Partially destroyed |         |                      |
|  | Public                      | Private | Public              | Private |                      |
| Desk                                       |                             |         |                     |         |                      |
| Computer                                   |                             |         |                     |         |                      |
| Book                                       |                             |         |                     |         |                      |
| Chalk board                                |                             |         |                     |         |                      |
| Equipment                                  |                             |         |                     |         |                      |
| Sports gear                                |                             |         |                     |         |                      |
| Machinery                                  |                             |         |                     |         |                      |
| Furniture                                  |                             |         |                     |         |                      |

|                    |  |  |  |  |  |
|--------------------|--|--|--|--|--|
| Other materials    |  |  |  |  |  |
| <b>Total</b>       |  |  |  |  |  |
| <b>Grand Total</b> |  |  |  |  |  |

**Step.2.2. Estimation of losses in education sector:** Losses in the education sector will include the following:

- **Cost of temporary school building.** The cost of temporary school buildings is a loss that must be estimated. When temporary schools are built, it will be necessary to estimate the cost of construction and related services, such as the provision of water, latrines and electric power and the duration for which these temporary schools would function. When using rented buildings as temporary schools, the total value of rent will be part of the loss.
- **Cost of urgent repairs of schools and gymnasiums to be used as emergency shelter.** Some schools and gymnasiums may need urgent repair, water installations, latrines, etc. if they were used as temporary shelters. This should be included in the loss since this will require unexpected expenses on the part of the government.
- **Higher costs of education.** Government facilities may incur additional expenses (over and above the regular budget of the sector) to assist the population for any of the following reasons:
  - Extension of classes over a period of time to compensate for the delays due to the disaster which will require additional expenses like cost of training if new teachers will be hired, overtime payment, etc.
  - Supplemental feeding and subsidy on transportation costs of students and teachers, if applicable.
- **Losses due to lower revenues.** Revenue losses, especially in cases of private schools, may arise from interruption of classes while school buildings are being repaired or reconstructed. Sports facilities may also lose earnings on rent. The values of losses in revenues will be the pre-disaster revenues minus the estimated post-disaster revenues.
- **Other losses such as demolition and cleanup costs.** Aside from repair or reconstruction, a school building may require partial or total demolition and the resulting debris removed. These indirect costs are often estimated based on the volume to be removed, the unit cost of removal and disposal of debris and the number of affected building units.
- Losses can extend beyond the year that the disaster occurred and these should be reflected in the loss assessment. The results of damage assessment will provide the estimate of time required to repair and reconstruct the affected structures as well as the capacity of the sector will determine the duration the losses will be suffered.
- The district assessment team can use the following table for summarizing losses suffered by the education sector in the district

**Table 9: Summary of losses in education sector in a district**

| Type of loss  | Kindergarten and crèche |    |                  |    | Primary School          |    |                  |    | Lower Secondary School  |    |                  |    | Upper Secondary School  |    |                  |    | University              |    |                  |    | Institutes              |    |                  |    | Technical Secondary Schools |    |                  |    | Technical First-Schools |    |                  |    | Sports facilities |  |  |  | Total Losses |
|---|-------------------------|----|------------------|----|-------------------------|----|------------------|----|-------------------------|----|------------------|----|-------------------------|----|------------------|----|-------------------------|----|------------------|----|-------------------------|----|------------------|----|-----------------------------|----|------------------|----|-------------------------|----|------------------|----|-------------------|--|--|--|--------------|
|   | Amount in Disaster Year |    | Amount in Year 1 |    | Amount in Disaster Year |    | Amount in Year 1 |    | Amount in Disaster Year |    | Amount in Year 1 |    | Amount in Disaster Year |    | Amount in Year 1 |    | Amount in Disaster Year |    | Amount in Year 1 |    | Amount in Disaster Year |    | Amount in Year 1 |    | Amount in Disaster Year     |    | Amount in Year 1 |    | Amount in Disaster Year |    | Amount in Year 1 |    |                   |  |  |  |              |
|   | Pb                      | Pv | Pb               | Pv | Pb                      | Pv | Pb               | Pv | Pb                      | Pv | Pb               | Pv | Pb                      | Pv | Pb               | Pv | Pb                      | Pv | Pb               | Pv | Pb                      | Pv | Pb               | Pv | Pb                          | Pv | Pb               | Pv | Pb                      | Pv | Pb               | Pv |                   |  |  |  |              |
| Cost of setting up and operation of temporary schools                   |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                             |    |                  |    |                         |    |                  |    |                   |  |  |  |              |
| Cost of repair facilities that were used as temporary shelters          |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                             |    |                  |    |                         |    |                  |    |                   |  |  |  |              |
| Payment of overtime salaries to teachers or other workers in the sector |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                             |    |                  |    |                         |    |                  |    |                   |  |  |  |              |
| Incremental cost of training replacement of dead teachers               |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                             |    |                  |    |                         |    |                  |    |                   |  |  |  |              |
| Cost of supplemental feeding of students                                |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                             |    |                  |    |                         |    |                  |    |                   |  |  |  |              |
| Cost of subsidies to students (transport, uniforms) etc.                |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                             |    |                  |    |                         |    |                  |    |                   |  |  |  |              |
| Cost of demolition, debris removal and clean up                         |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                             |    |                  |    |                         |    |                  |    |                   |  |  |  |              |
| Revenue losses  |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                             |    |                  |    |                         |    |                  |    |                   |  |  |  |              |
| Other unexpected expenses   |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                             |    |                  |    |                         |    |                  |    |                   |  |  |  |              |
| Total losses  |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                         |    |                  |    |                             |    |                  |    |                         |    |                  |    |                   |  |  |  |              |

Note for filling table 9:

- The cost of estimating temporary school facilities should include cost of land acquisition, cost of building temporary quarters, cost of water supply, sanitation and electricity at the site. If the temporary schools are rented with all water, sanitation and power connections, the value of rent will be a loss.
- Losses are to broken down by calendar year, starting with the current year of the disaster, and subsequent years if they are foreseen. Some of the losses may continue way beyond the year of the disaster till the entire recovery and reconstruction period is over. For example after the disaster, the cost incurred for setting up temporary schools will be a loss, but some portions of this cost (operating cost) may continue for months till the temporary schools stops functioning. Such costs should be estimated accordingly in the disaster year and if relevant in future years to come.
- The assessment team at the district level should estimate this time period of reconvert and reconstruction and accordingly assess the losses. The assessment team at central and provincial level with wider knowledge on the sector performance and capacity, during the field mission should validate this estimation.

### Step 2.3. Summarize Damages and Losses in education sector in a district

- Based on the information gathered in the previous tables, a summary table as shown below would need to be developed by the district assessment team for total damages and losses in the education sector in the said district.

**Table 10. Summary of damage and losses in district**

Name of district:

| Type of Facility            | Within the Disaster Year |         |        |         | Losses Beyond Disaster Year |         |        |         |        |         |
|-----------------------------|--------------------------|---------|--------|---------|-----------------------------|---------|--------|---------|--------|---------|
|                             | Damages                  |         | Losses |         | Year 1                      |         | Year 2 |         | Year 3 |         |
|                             | Public                   | Private | Public | Private | Public                      | Private | Public | Private | Public | Private |
| Kindergarten and crèche     |                          |         |        |         |                             |         |        |         |        |         |
| Primary School              |                          |         |        |         |                             |         |        |         |        |         |
| Lower Secondary School      |                          |         |        |         |                             |         |        |         |        |         |
| Upper Secondary school      |                          |         |        |         |                             |         |        |         |        |         |
| University                  |                          |         |        |         |                             |         |        |         |        |         |
| Institutes                  |                          |         |        |         |                             |         |        |         |        |         |
| Technical secondary schools |                          |         |        |         |                             |         |        |         |        |         |
| Technical first-school      |                          |         |        |         |                             |         |        |         |        |         |
| Gymnasiums                  |                          |         |        |         |                             |         |        |         |        |         |
| Sports stadiums             |                          |         |        |         |                             |         |        |         |        |         |
| Others                      |                          |         |        |         |                             |         |        |         |        |         |
| <b>TOTAL</b>                |                          |         |        |         |                             |         |        |         |        |         |

### Step 2.4. Summarize Damages and Losses in education sector in a province

- Once the summary table (Table 10) for each affected district has been filled out, the below table should be used for summarizing information at the province level. Each affected province should fill up a similar table.
- The provincial offices should make this data available to the assessment team visiting from the central level during field assessment. Depending on requirement the central level team along with representatives from provincial offices may undertake some validation of the data by visiting some specific districts.

**Table 11. Summary of damage and losses in province**

Name of province:

| Name of districts<br>(Type the name of the district below) | Within the Disaster Year |         |        |         | Losses Beyond Disaster Year |         |        |         | Total (Kips) |         |
|--|--------------------------|---------|--------|---------|-----------------------------|---------|--------|---------|--------------|---------|
|  | Damages                  |         | Losses |         | Year 1                      |         | Year 2 |         |              |         |
|  | Public                   | Private | Public | Private | Public                      | Private | Public | Private | Public       | Private |
| District 1   |                          |         |        |         |                             |         |        |         |              |         |
| District 2   |                          |         |        |         |                             |         |        |         |              |         |
| District 3   |                          |         |        |         |                             |         |        |         |              |         |
| District 4   |                          |         |        |         |                             |         |        |         |              |         |
| District 5   |                          |         |        |         |                             |         |        |         |              |         |
| <b>TOTAL</b>   |                          |         |        |         |                             |         |        |         |              |         |

### Step 2.5. Summarize Damages and Losses in Education Sector at the national level

- Once the summary table (Table 11) for each affected province has been filled out, the below table should be used by the central level assessment team for summarizing information at the national level. This is to be filled out after the field assessment is over.

**Table 12. Summary of damage and losses at the national level**

| Name of Province (Type the name of the province below) | Within the Disaster Year |        | Losses Beyond Disaster Year |        |        | Total (Kips) |
|--|--------------------------|--------|-----------------------------|--------|--------|--------------|
|  | Damages                  | Losses | Year 1                      | Year 2 | Year 3 |              |
| Province 1   |                          |        |                             |        |        |              |
| Province 2   |                          |        |                             |        |        |              |
| Province 3   |                          |        |                             |        |        |              |
| Province 4   |                          |        |                             |        |        |              |
| Province 5   |                          |        |                             |        |        |              |
| <b>TOTAL</b>   |                          |        |                             |        |        |              |

## Step 3: Estimating recovery and reconstruction needs for education sector

### Step 3.1 Setting the recovery and reconstruction strategy for education sector:

- While the damage and loss assessment is being undertaken, the MES in consultation with their counterparts in affected provinces, Ministry of Planning and Investment, National Disaster Management Office, and in partnership with development partners involved in education sector in Lao PDR, should develop the strategy to be followed for recovery and reconstruction of education sector. Some of the broad content of the strategy could include the following:
  - Identifying sector specific factors which will contribute to 'build back better' of education sector
  - Possibilities of relocation of education and sports facilities situated in high risk areas

- Possible incentives to private schools owners for reconstruction of damaged schools with higher standards of resilience
- Enhancing and strengthening medium to long-term disaster risk reduction related issues in education sector such as integrating hazard resilience standards in design and construction of all new school buildings, retrofitting of school buildings situated in high risk areas, integrating disaster risk reduction in national school curricula, training of teachers on disaster preparedness measures etc.

### 3.2 Estimating recovery and reconstruction needs

- The quantification of damage and losses will enable the estimation of financial requirements to achieve full recovery of education sector and to reconstruct the facilities in the education sector that were destroyed or damaged.
- The value of losses is used to estimate the amount required to achieve recovery of the education sector, and the value of damage is used to estimate the financial requirements for reconstruction of education and sports facilities.
- This estimation of financial needs for recovery and reconstruction should be broken down by districts and provinces

In the education sector, quick recovery efforts must be undertaken since a great number of students may encounter delay in continuing their studies. The government must ensure that its education services will be normalized as soon as possible. To assist the private education sector, the MES can identify policy measures that will enable them to recover without necessarily having the government spending for the costs required. There are certain options that can be implemented through policy measures to expedite recovery and reconstruction in the private education sector. Among them are:

- Tax breaks for private educational facilities.
- Subsidizing construction materials and equipment to be imported by private educational facilities from other countries during the recovery and reconstruction phase.
- If needed, direct subsidy may be extended by the government to enable private educational facilities to recover immediately.

The MES, together with the MPI, should be able to analyze the best possible option or their combinations.

#### *Step 3.2.1 Estimating recovery needs*

Possible recovery related activities in case of education sector could include:

- Reactivation of education activities under special conditions such as
  - More intensive utilization of undamaged education facilities, by establishing several daily “shifts” instead of normal ones;
  - Rental of alternative premises which may not have been affected; and
  - Setting up temporary classrooms, by using tents, containers or other similar facilities.
- Repair of schools used as temporary shelter and that may have sustained damage due to the overuse.
- Replacement of education materials and minimum equipment whose provision must not wait until reconstruction begins
- Accelerated training of teachers if a large number of teachers had lost their lives in the disaster.

The cost of each of the above mentioned activities would have been estimated as part of loss assessment. MES can use the below table to put forward their recommendation to MPI for activities related to recovery needs:



**Table 13. Summary of Recovery Needs in Education Sector**

| Recovery needs   | Type and amount of assistance needed (Kips) |         |        |         |        |         | Total Recovery Needs (Kips) | Foreign Cost Component (US\$) |
|--|---|---------|--------|---------|--------|---------|-----------------------------|-------------------------------|
|  | Grant assistance/ subsidy                   |         | Credit |         | Others |         |                             |                               |
|  | Public                                      | Private | Public | Private | Public | Private |                             |                               |
| Reactivation of education activities by increasing number of shifts in schools |   |         |        |         |        |         |                             |                               |
| Rental of alternative premises for using as schools                            |   |         |        |         |        |         |                             |                               |
| Setting up of temporary classrooms   |   |         |        |         |        |         |                             |                               |
| Urgent repair of schools used as temporary shelters                            |   |         |        |         |        |         |                             |                               |
| Replacement of education materials and equipment                               |   |         |        |         |        |         |                             |                               |
| Accelerated training of teachers   |   |         |        |         |        |         |                             |                               |
| Others   |   |         |        |         |        |         |                             |                               |
| Total  |   |         |        |         |        |         |                             |                               |

**Step 3.2.2 Estimating Reconstruction Needs**

To estimate the value of reconstruction needs of the education sector, the following formula is to be used:

$$\text{Education Reconstruction Needs} = E * \text{Education facility Damage value,}$$

Wherein

- E is a disaster-resilience coefficient whose value may usually range from 1.10 to 1.50. The actual value to be adopted would depend on the improved degree of construction standards or norms required. Civil engineers or architects familiar with disaster-resilient construction standards would be able to define those coefficients.
- Formula must be applied separately to each type of school that may have been destroyed, and the corresponding disaster-resilience coefficient may vary from school type to school type.

Possible reconstruction related activities in case of education and sports facilities could include the following. It is to be noted that activities should include both public as well as private educational facilities and may require different types of financing strategy.

- Reconstruction of public schools under a building-back-better strategy to ensure future disaster resilience through the adoption and enforcement of improved construction standards. Such as program will be implemented by MES
- Soft-term credit for reconstruction of private schools. Such schemes can be accompanied by technical assistance for improved disaster resilient standards of construction
- Cost of replacing furniture and equipment that was destroyed may be included within the needs for reconstruction, unless they have been covered under the recovery needs to provide temporary education services for the affected area.
- Structural retro-fitting of undamaged or partially damaged school so that they are not affected by disaster event in the future. The costs for such a scheme must be estimated on an ad hoc basis, for which architects and civil engineers would need to define the new standards up to which retro-fitting should aim, and should estimate the additional funding required for it.
- Relocation of schools to safe areas may be required, and the additional costs involved – which might include land acquisition, and basic services provision (water, sanitation, electricity, etc)

- MES can use the below table to put forward their recommendation to MPI for activities related to reconstruction needs:

**Table 14. Reconstruction Needs of the Education Sector**

| Assistance to educational facilities                           | Reconstruction Needs (Kips) |         |        |         | Total Reconstruction Needs | Foreign Cost Component (US\$) |
|--|-----------------------------|---------|--------|---------|----------------------------|-------------------------------|
|  | Grant                       |         | Credit |         |                            |                               |
|  | Public                      | Private | Public | Private |                            |                               |
| Reconstruction and repair of public schools                    |                             |         |        |         |                            |                               |
| Credit scheme for reconstruction and repair of private schools |                             |         |        |         |                            |                               |
| Replacement of totally damaged furniture and equipment         |                             |         |        |         |                            |                               |
| Structural retrofitting of damaged schools                     |                             |         |        |         |                            |                               |
| Relocation of schools to safer area                            |                             |         |        |         |                            |                               |
| Others   |                             |         |        |         |                            |                               |
| Total  |                             |         |        |         |                            |                               |

Notes in filling out Tables 13 and 14:

- The reconstruction needs under the 'credit' column normally refer to the assistance that will be extended to damaged educational facilities owned by the private sector and is expected to be repaid over time. If the government will extend assistance to the private sector without repayment required, the amount of assistance should be under the 'grant' column. Government-owned facilities are assumed to be financed by the government without repayment from the said facilities. As such the amount should be under the 'grant' column, otherwise in the credit column.
- The foreign cost component will be the amount of foreign currency needed as part of the total cost.

#### Step 4. Developing short, medium and long-term projects and designing implementation plan

Recovery and Reconstruction needs identified above would need to be broken down in short, medium and long-term needs. Following are some examples of projects in education sector, which can be undertaken as short, medium and long-term:

- **Short-term projects**
  - Immediate repair of education related facilities such as classrooms, buildings, science laboratories and sanitary services.
  - Distribution of books, school uniforms, and stationeries to the needy children.
  - Temporary school feeding, if necessary
  - Building of temporary schools in safer places.
- **Medium-term projects/programs**
  - Relocation of damaged schools to safer location
  - Replacement of school teaching materials and equipment
  - Development of hazard resilient design specifications for construction of future new schools
- **Longer-term projects/programs**
  - Retrofitting of existing schools

The identified needs should have a rough schedule of implementation outlining at the very least the activities, timing and budget required for all the programs and projects. The following techniques can be considered:

1. Identify the specific projects according to their relative urgency or priority in relation to recovery. Plot the timeline of activities of all the projects, with the urgent ones on top, in a Gantt chart with the corresponding funding requirement. This will assist the MPI in programming the necessary funds over a certain time period, like on a quarterly or annual basis. Identify and include in the list of projects that need further feasibility studies which may be funded by foreign grants. To the extent possible, a logical framework (log frame) should be created for each of the project proposed for inclusion in the recovery plan.

## Step 5. Inputs for macro-economic and household impact analysis

The damages and losses to the education sector can affect the macro economy. To the extent possible that the MES can, should collect the following information, which will be used by MPI for undertaking the macro-economic impact analysis

- **Gross Domestic Product (GDP):** The loss of the contribution to the national economy of income generated directly or indirectly by education sector.
- **Fiscal Balance:** The impact on the fiscal balance for the education sector may be twofold: on the current and the capital accounts of the budget. In the first case, the unexpected expenditures to finance the temporary schools combined with possible lower tax revenues from private schools. In the second case, the government may resort to more borrowings/fresh loans for reconstruction of education sector after a disaster which can result into higher budget deficit.
- **Balance of Payment:** Items and amount needed for the recovery and reconstruction of the education sector that are not produced locally in Lao PDR and have to be imported from other countries. These should be estimated and expressed in percentage of total recovery and reconstruction needs to be used for the analysis of impact on the balance of payment.
- **Prices or Inflation:** Prices of construction materials could go high if the destruction of the education sector is massive.
- **Employment:** There can be a big reduction in employment particularly in private schools if the destruction is huge in education related infrastructure that will contribute for the increased poverty as a result of decreased employment.
- To the extent possible, the assessment team must also provide an analysis of impacts on personal or household situation. These effects can be on the disruption of education, additional costs to families due to extension of school calendar, possibility of increased number of school drop outs, among others. The MPI can use such analysis in the assessment of the overall disaster impacts.

## Step 6. Write the assessment report

The following format may be considered for writing the assessment chapter of education sector:

1. Brief background on Education Sector in Lao PDR  
Overview of impacts of the disaster on Education Sector  
Damage and Loss quantification  
Damage and Loss by province (or district)  
Proposed strategies for recovery and reconstruction of Education Sector  
Needs estimation for recovery and reconstruction of Education Sector

The report of the Education Sector should be written by MES in close partnership with development partners involved in housing and settlement and once completed should be submitted to MPI for inclusion in the final report.

## Section 3

### *Terms of reference of assessment team*

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#### 3.1 Formation of pre-identified assessment teams within MES

- Pre-identified team should be formed with officials from MES. These officials would need to have a good understanding on the performance of education sector, construction of education facility and should have also undergone prior training on the damage, loss and needs assessment.

#### 3.2 Composition of the assessment team

- At the central level the assessment team should comprise of the following:
  - Officials from Department of Planning of MES
  - Officials from Division of Construction, MES
  - Development Partners involved in education sector
- At the field level the assessment team should comprise of the following:
  - Provincial Department of Education and Sports
  - District Office of Education and Sports
- Specific expertise required within the team would include the following:
  - Civil Engineer/Structural Engineers
  - Education sector specialist

#### 3.3 Task of assessment team

- Gathering of the pre-identified team from MES after the disaster event based on the order received from MPI
- Consultation with development partners involved in Education Sector and who will join the assessment team
- Undertaking quick orientation on the assessment methodology for the assessment team
- Working closely with relevant departments of MES at national (such as Division of Construction, Department of Planning) and provincial/district and responsible for compiling baseline information.
- Undertaking field visits in disaster affected areas and working closely with District and Provincial Education Offices and collecting information on damage and losses
- Based on information collected, undertaking damage and loss assessment for the sector Simultaneously in close consultation with relevant agencies such as National Disaster Management Office and development partners, formulate the recovery and reconstruction strategy for Education Sector
- Estimating the recovery and reconstruction needs based on the strategy and damage and loss assessment results
- Writing the assessment report for Education Sector
- Presentation of the findings of the assessment report to the decision makers within the MES and other development partners for broader consultation.
- Finalization of the report based on the inputs received from broader consultation and submission to MPI

#### 3.4 Assessment timeline

- Ideally, the post-disaster damage, loss and needs assessment takes from 2 to 5 weeks.
- The assessment is usually started once the rapid impact and needs assessment for emergency and relief support is completed and the relief and response phase of the disasters is over or well underway.
- In the first week the overall planning of the assessment would take place and would include the following issues:
  - Baseline data collection
  - Agree on ToR

- Team composition selection
  - Orientation Training on damage, loss and needs assessment
  - Discussion on formulating recovery and reconstruction strategy for education sector
- Second week is the assessment stage and would include the following
  - Field survey
  - Calculation of Damage and losses for Education Sector
- Third week of the assessment is the analysis stage and would include the following
  - Finalizing recovery and reconstruction strategy for Education Sector
  - Estimating recovery and reconstruction needs for Education Sector
  - Report drafting
  - Consultation within sector to seek inputs on the report
  - Submission of sector report to MPI
  - Finalisation of report by MPI
- Fifth week of the assessment is launch and dissemination of the report

## ***Guidance Note 4***

# ***Damage, loss and needs assessment of cultural and historical sites in Lao PDR***

## ***Table of contents***

- Introduction to this Guidance Note
- Section-1: Methodology for damage, loss and needs assessment of cultural and historical sites in Lao PDR
- Section 2: Steps in undertaking damage, loss and needs assessment
  - Step 1: Analysis of pre-disaster situation of the sites
  - Step 2: Estimating post-disaster damages and losses
  - Step 3: Estimating recovery and reconstruction needs
  - Step 4: Developing short, medium and long-term projects and designing implementation plan
  - Step 5: Inputs for macroeconomic impact analysis
  - Step 6: Writing the assessment report
- Section 3: Terms of reference of assessment team

## ***Introduction to this Guidance Note***

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- This Guidance Note is a part of the Handbook on Post-disaster recovery and reconstruction planning of Lao PDR, which consists of fifteen Guidance Notes, for various sectors, on damage loss and needs assessment.
- This Guidance Note is to be used for undertaking post-disaster damage, loss and needs assessment of the cultural and historical sites in Lao PDR.
- The sites in this case consist of all structures considered to form part of cultural, historical and religious heritage of the country like temples, palaces, etc.
- The Guidance Note is to be used by the team assigned from the **Ministry of Information and Culture and Tourism (MICT)** of the Government of Lao PDR to undertake post-disaster damage, loss and needs assessment. To perform such functions, the MICT is expected to engage and cooperate with its provincial and district level offices as well as agencies such as National Statistical Center, Ministry of Planning and Investment, National Disaster Management Office of Lao PDR as well as other development partners involved in cultural heritage in Lao PDR.

## Section 1

### Methodology for damage, loss and needs assessment of cultural and historical sites in Lao PDR

- This methodology for undertaking damage, loss and needs assessment is derived from the methodology for estimating the socio-economic and environmental effects of disasters, developed by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) as further enhanced by the World Bank.
- The ECLAC methodology uses two terminologies; namely Damage and Losses as explained below:
- **Damages.** In the culture sector, damages are the cost or value of total or partial destruction of physical assets and structures of historical, cultural and religious sites as well as other similar assets like archaeological sites, monuments, temples, churches. Damages are the cost of:
  - repair for the partially damaged assets and;
  - replacement (not applicable for historical structure) of totally destroyed ones.

These destructions would occur at the time of, or shortly after the disaster. It is to be measured in physical terms for which monetary replacement value is subsequently estimated. The unit prices for replacement would be those that prevailed just before the disaster occurred that would allow rebuilding of the structures to the same characteristics prior to the disaster.

- **Losses.** Losses are the changes in economic flows during the period of reconstruction following the disaster and are expressed in monetary values at current prices. In the sector, losses can result from:
  - Cost of relocation, as applicable for some structures
  - Lower revenue (revenue losses) from fees collected from visitors to the sites
  - Other unexpected expenditure such as simple refurbishments, demolition and removal of debris

If the cultural and historical sites do not generate income, the only losses that can be valued in monetary terms are the unexpected expenditures. Losses can continue during the entire period of reconstruction and recovery and even beyond the year that the disaster occurred. It is expressed in monetary values at current prices.

## Section 2

### Steps in undertaking damage, loss and needs assessment

#### Step1: Analysis of pre-disaster situation

##### Step 1.1: Understand what is meant by baseline data

- The first step of undertaking the assessment is collecting information on the pre-disaster conditions in order to ascertain the baseline for assessment. The following table shows the type of baseline information to be collected and their typical sources:

**Table 1. Sources for baseline information for cultural and historical sites**

| Type of Information/Data  | Available at | Name of source document |
|---|--------------|-------------------------|
| Total number structures or sites in a district according to types and ownership |              |                         |
| Average maintenance per year per type or category                               |              |                         |
| Average income from fees per year, if applicable                                |              |                         |

##### Step 1.2: Collect baseline data for each of the disaster-affected district

- Before field assessment begins, the baseline data should be collected and summarized for each of the disaster-affected district by using the table 2

- This data is to be compiled by the assessment team at the central level with necessary inputs from the provincial departments and district offices of the concerned Ministry.

**Table 2. Baseline information on cultural sites in districts**

Name of District

| Type of cultural site | Number | Average Replacement Cost (Kips/Square Meter or Kips/ Cubic Meter) | Average Repair Cost (Kips/Square meter) |      |       |        | Average Value of Contents (Kips) | Average Monthly Income (Kips) |
|-----------------------|--------|---|---|------|-------|--------|----------------------------------|-------------------------------|
|                       |        |   | Roof                                    | Wall | Floor | Others |                                  |                               |
| Temples               |        |   |   |      |       |        |                                  |                               |
| Monuments             |        | N.A.  |   |      |       |        |                                  |                               |
| Others                |        |   |   |      |       |        |                                  |                               |
| Total                 |        |   |   |      |       |        |                                  |                               |

Notes in filling out Table 2:

- Temples can be structures that are similar to buildings whose replacement or repair costs can be in Kips per square meter.
- Monuments are generally concrete structures whose repair cost can be estimated by Kips per volume (cubic meter) of concrete. Because of their usual historical value it will not be possible to replace them if completely destroyed by a new structure.
- Structural engineers will be able to determine the appropriate unit of measurement.

## Step 2: Estimating damage and losses of affected cultural sites

- While the assessment team at the central level is collecting the baseline information, field assessment should be undertaken by the district assessment team to assess the damages and losses suffered by the cultural sites from the particular disaster event.
- Since there may not be many cultural sites in a district damaged by a disaster, during this stage, as much as possible individual sites impacted by the disaster should be assessed by the district assessment team and the results should be compiled district wise in a summary table to reflect the damage and losses for the entire sector in the district.

### Step 2.1. Estimation of damage: The following are the items that can be damaged:

- **Structures:** The damage assessment should include the effects on the structures of each type of cultural or historical site. Direct interviews with private contractors or government officials involved in the construction and repair can be conducted during the field trip in order to validate or ascertain the unit costs of repair and reconstruction (if it is a new structure).
- **Furnishings:** The assessment should also include the other assets like furnishings inside the cultural and historical sites.
  - The assessment specialist can classify the damage as completely destroyed and partially destroyed structures.
  - The district assessment team can use the following tables (Table 3, Table 4 and Table 5) for undertaking quick assessment of individual structure affected by the disaster and then summarizing the results of damages.



**Table 3. Value of totally damaged cultural sites in a district**

Name of District:

| Cultural Sites | Totally Destroyed Cultural Site |   |                                    | Total damages to structures (Kips) | Average Time to Replace (Months) |
|----------------|---------------------------------|---|------------------------------------|------------------------------------|----------------------------------|
|                | Number of totally destroyed     | Average Replacement Cost (Kips)                   | Value of Reusable Materials (Kips) |                                    |                                  |
|                | A                               | B   | C                                  |                                    |                                  |
| Temples        |                                 |   |                                    |                                    |                                  |
| Structure      |                                 |   |                                    |                                    |                                  |
| Contents       |                                 |   |                                    |                                    |                                  |
| Monuments      |                                 | May not be applicable because of historical value |                                    |                                    |                                  |
| Structure      |                                 |   |                                    |                                    |                                  |
| Contents       |                                 |   |                                    |                                    |                                  |
| Others         |                                 |   |                                    |                                    |                                  |
| Structure      |                                 |   |                                    |                                    |                                  |
| Contents       |                                 |   |                                    |                                    |                                  |
| Total          |                                 |   |                                    |                                    |                                  |

Notes in filling out Table 3:

- 'Average Replacement Cost' will be the average pre-disaster value of the sites and their contents that were totally destroyed.
- According to experience in past disasters, typically around 10-40 percent of materials from an affected structure can be re-used after a disaster.
- In formula, the total damages will be (Column D) = [(Column A) x (Column B)] – Column C.

**Table 4. Value of damages from partially destroyed cultural sites and their contents in a district**

Name of District:

| Cultural Sites | Partially damaged structures |                                  |               |                                  |               |                                  | Others<br>Kips/<br>Unit | Value of<br>Reusable<br>Materials<br>(Kips) | Total<br>Cost of<br>Repair<br>(Kips) | Average<br>Time to<br>Repair<br>(Months) |
|----------------|------------------------------|----------------------------------|---------------|----------------------------------|---------------|----------------------------------|-------------------------|---|--------------------------------------|--|
|                | Roof                         |                                  | Walls         |                                  | Floor         |                                  |                         |   |                                      |  |
|                | Area<br>(SqM)                | Repair<br>Cost<br>(Kips/<br>SqM) | Area<br>(SqM) | Repair<br>Cost<br>(Kips/<br>SqM) | Area<br>(SqM) | Repair<br>Cost<br>(Kips/<br>SqM) |                         |   |                                      |  |
|                | A                            | B                                | C             | D                                | E             | F                                |                         |   |                                      |  |
| Temples        |                              |                                  |               |                                  |               |                                  |                         |   |                                      |  |
| Monuments      |                              |                                  |               |                                  |               |                                  |                         |   |                                      |  |
| Others         |                              |                                  |               |                                  |               |                                  |                         |   |                                      |  |
| Total          |                              |                                  |               |                                  |               |                                  |                         |   |                                      | N.A.                                     |

| Contents by Type of Cultural Site | Quantity Damaged (Units) | Average Repair Cost (Kips/ Unit) | Value of Reusable Materials (Kips) | Total Cost of Repair (Kips) | Average Time to Repair (Months) |
|-----------------------------------|--------------------------|----------------------------------|------------------------------------|-----------------------------|---------------------------------|
|                                   | A                        | B                                | C                                  | D                           | E                               |
| Temples                           |                          |                                  |                                    |                             |                                 |
| Monuments                         |                          |                                  |                                    |                             |                                 |
| Others                            |                          |                                  |                                    |                             |                                 |
| Total                             |                          |                                  |                                    |                             | N.A.                            |

Notes in filling out Table 4:

- The total value of damage due to partially destroyed assets will be the total cost of repair computed as:  

$$\text{Column I} = (\text{Column A} \times \text{Column B}) + (\text{Column C} \times \text{Column D}) + (\text{Column E} \times \text{Column F}) + \text{Column G} - \text{Column H}$$
- The value for the average cost of repair per unit is found in the baseline information.
- “Others” may include the cost of repair of latrines (if separate from the site), electrical and plumbing systems, among others.
- For the contents of the sites, the value of damages will be the repair cost of the damaged quantity multiplied by average repair cost of each, computed as:  

$$\text{Column D} = \text{Column A} \times \text{Column B} - \text{Column C}$$
- In calculating damages, the unit cost of repair should be based on pre-disaster value that would allow rebuilding to the same characteristics of the assets prior to the disaster.
- The cost of repair should also exclude the value of the materials that can be re-used. Typically after a disaster around 10-40 percent of materials can be re-used.

**Table 5. Summary of damages of cultural sites in a district**

Name of District:

| Type of cultural site | Damages to buildings |                     | Damages to contents |                     | Total damages |
|-----------------------|----------------------|---------------------|---------------------|---------------------|---------------|
|                       | Totally destroyed    | Partially destroyed | Totally destroyed   | Partially destroyed |               |
|                       | A                    | D                   | D                   | E                   | F             |
| Temples               |                      |                     |                     |                     |               |
| Monuments             |                      |                     |                     |                     |               |
| Others                |                      |                     |                     |                     |               |
| Total                 |                      |                     |                     |                     |               |

Notes in filling out Table 5:

- The total damages will be the sum of the cost of repair and replacement of all the cultural sites that were assessed from the affected areas/districts.

**Step 2.2. Estimation of losses: Losses to cultural sites can include from the following:**

- Losses due to lower revenues:** Losses may arise from unearned fees from damaged sites and may last for the duration of reconstruction.
- Cost of other unexpected expenses:** Included here are the cost of the cleaning and removal of debris, etc.
- Losses can extend beyond the year that the disaster occurred and these should be reflected in the loss assessment.
- The district assessment team can use the following table (Table 6) for summarizing losses

**Table 6. Losses of cultural sites in a district**

Name of District:

| Cultural Sites                    | Losses                               |                              |                              |                              |                        |
|-----------------------------------|--------------------------------------|------------------------------|------------------------------|------------------------------|------------------------|
|                                   | Amount in<br>Disaster Year<br>(Kips) | Amount in Year<br>1<br>(Kip) | Amount in<br>Year 2<br>(Kip) | Amount in<br>Year 3<br>(Kip) | Total Losses<br>(Kips) |
|                                   | A                                    | B                            | C                            | D                            | E                      |
| <b>Temples</b>                    |                                      |                              |                              |                              |                        |
| Losses due to lower revenues      |                                      |                              |                              |                              |                        |
| Cost of other unexpected expenses |                                      |                              |                              |                              |                        |
| <b>Monuments</b>                  |                                      |                              |                              |                              |                        |
| Losses due to lower revenues      |                                      |                              |                              |                              |                        |
| Cost of other unexpected expenses |                                      |                              |                              |                              |                        |
| <b>Others</b>                     |                                      |                              |                              |                              |                        |
| Losses due to lower revenues      |                                      |                              |                              |                              |                        |
| Cost of other unexpected expenses |                                      |                              |                              |                              |                        |
| Total                             |                                      |                              |                              |                              |                        |

Note for filling table 6:

- Losses are to be broken down by calendar year, starting with the current year of the disaster, and subsequent years if they are foreseen. Some of the losses may continue way beyond the year of the disaster till the entire recovery and reconstruction period is over.
- The assessment team at the district level should estimate this time period of recovery and reconstruction and accordingly assess the losses. The assessment team at central and provincial level with wider knowledge on the sector performance and capacity, during the field mission should validate this estimation.

**Step 2.3. Summarize Damages and Losses in the District**

- Based on the information gathered in the previous tables, a summary table would need to be developed for total damages and losses.

**Table 7. Summary of damage and losses**

Name of District:

| Type of Cultural Sites | Within the Disaster Year |         |        |         | Losses Beyond Disaster Year |         |        |         |        |         | Total (Kips) |         |
|------------------------|--------------------------|---------|--------|---------|-----------------------------|---------|--------|---------|--------|---------|--------------|---------|
|                        | Damages                  |         | Losses |         | Year 1                      |         | Year 2 |         | Year 3 |         |              |         |
|                        | Public                   | Private | Public | Private | Public                      | Private | Public | Private | Public | Private | Public       | Private |
| Temples                |                          |         |        |         |                             |         |        |         |        |         |              |         |
| Monuments              |                          |         |        |         |                             |         |        |         |        |         |              |         |
| Others                 |                          |         |        |         |                             |         |        |         |        |         |              |         |
| Total                  |                          |         |        |         |                             |         |        |         |        |         |              |         |

**Step 2.4. Summarize Damages and Losses of the cultural sites in a province**

- Once the summary table (Table 7) for each affected district has been filled out, the below table should be used for summarizing information at the province level. Each affected province should fill up a similar table.
- The provincial offices should make this data available to the assessment team visiting from the central level during field assessment. Depending on requirement the central level team along with representatives from provincial offices may undertake some validation of the data by visiting some specific districts.

**Table 8. Summary of damage and losses in a province**

Name of District:

| Type of Cultural Sites | Within the Disaster Year |         |        |         | Losses Beyond Disaster Year |         |        |         |        |         | Total (Kips) |         |
|------------------------|--------------------------|---------|--------|---------|-----------------------------|---------|--------|---------|--------|---------|--------------|---------|
|                        | Damages                  |         | Losses |         | Year 1                      |         | Year 2 |         | Year 3 |         |              |         |
|                        | Public                   | Private | Public | Private | Public                      | Private | Public | Private | Public | Private | Public       | Private |
| District 1             |                          |         |        |         |                             |         |        |         |        |         |              |         |
| District 2             |                          |         |        |         |                             |         |        |         |        |         |              |         |
| District 3             |                          |         |        |         |                             |         |        |         |        |         |              |         |
| Total                  |                          |         |        |         |                             |         |        |         |        |         |              |         |

#### Step 2.5. Summarize Damages and Losses at the national level

- Once the summary table for each affected province has been filled out, the below table should be used by the central level assessment team for summarizing information at the national level. This is to be filled out after the field assessment is over.

**Table 9. Summary of damage and losses at the national level**

Name of District:

| Type of Cultural Sites | Within the Disaster Year |         |        |         | Losses Beyond Disaster Year |         |        |         |        |         | Total (Kips) |         |
|------------------------|--------------------------|---------|--------|---------|-----------------------------|---------|--------|---------|--------|---------|--------------|---------|
|                        | Damages                  |         | Losses |         | Year 1                      |         | Year 2 |         | Year 3 |         |              |         |
|                        | Public                   | Private | Public | Private | Public                      | Private | Public | Private | Public | Private | Public       | Private |
| Province 1             |                          |         |        |         |                             |         |        |         |        |         |              |         |
| Province 2             |                          |         |        |         |                             |         |        |         |        |         |              |         |
| Province 3             |                          |         |        |         |                             |         |        |         |        |         |              |         |
| Total                  |                          |         |        |         |                             |         |        |         |        |         |              |         |

### Step 3: Estimating recovery and reconstruction needs for the cultural sites

#### Step 3.1 Setting the recovery and reconstruction strategy

- While the damage and loss assessment is being undertaken, the MICT in consultation with their counterparts in affected provinces, Ministry of Planning and Investment, National Disaster Management Office, and in partnership with development partners involved in the cultural sites in Lao PDR, should develop the strategy to be followed for recovery and reconstruction. Some of the broad content of the strategy could include the following:
  - Identifying sector specific factors which will contribute to 'build back better' of cultural sites.
  - Enhancing and strengthening medium to long-term disaster risk reduction related to the cultural sites such as integrating hazard resilience standards in the design and repair cultural sites, retrofitting of existing cultural and religious sites situated in high risk areas, etc.

### Step 3.2 Estimating recovery and reconstruction needs

- The quantification of damage and losses will enable the estimation of financial requirements to achieve full recovery of cultural sites and to reconstruct the sites that were destroyed or damaged.
- This estimation of financial needs for recovery and reconstruction should be broken down by districts and provinces

#### Step 3.2.1 Estimating recovery needs

The possible recovery related activities for the cultural sites could include:

- Repair of cultural and religious sites especially those that earn revenues from tourism.
- Repair of cultural sites that were used as temporary shelter and that may have sustained damage due to the overuse.
- Replacement of the contents of the damaged sites.

The MICT can use the below table to put forward their recommendation to MPI for activities related to recovery needs:

**Table 10. Recovery Needs**

| Recovery Projects   | Needs (Kips) | Foreign Cost Component (US\$) | Main Ministry Responsible |
|---|--------------|-------------------------------|---------------------------|
| Repair of partially destroyed sites                                 |              |                               |                           |
| Repair or replacement of totally or partially destroyed furnishings |              |                               |                           |
| Others  |              |                               |                           |
| Total   |              |                               |                           |

Notes in filling out Table 10.

- The foreign cost component will be the amount of foreign currency needed as part of the total cost. Uploaded: <http://www.mediafire.com/?8voboofwf2sb2>

#### Step 3.2.2 Estimating Reconstruction Needs

The possible reconstruction related activities for the cultural sites could include the following:

- Reconstruction of cultural and religious sites under a building-back-better strategy to ensure future disaster resilience through the adoption and enforcement of improved construction standards. Such as program will be implemented by MICT.
- Cost of replacing furniture and equipment that was destroyed may be included within the needs for reconstruction, unless they have been covered under the recovery needs.
- Structural retro-fitting of undamaged or partially damaged cultural sites so that they are not affected by disaster event in the future. The costs for such a scheme must be estimated on an ad hoc basis, for which architects and civil engineers would need to define the new standards up to which retro-fitting should aim, and should estimate the additional funding required for it.

The MICT can use the table below to put forward their recommendation to MPI for activities related to reconstruction needs:

**Table 11. Reconstruction Needs of Cultural Sites**

| Assistance to educational facilities                      | Reconstruction Needs (Kips) |         |        |         | Total Reconstruction Needs | Foreign Cost Component (US\$) |
|---|-----------------------------|---------|--------|---------|----------------------------|-------------------------------|
|   | Grant                       |         | Credit |         |                            |                               |
|   | Public                      | Private | Public | Private |                            |                               |
| Reconstruction and repair of cultural and religious sites |                             |         |        |         |                            |                               |

|  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|
| Replacement of totally damaged furniture and equipment |  |  |  |  |  |  |
| Structural retrofitting of damaged cultural sites      |  |  |  |  |  |  |
| Others   |  |  |  |  |  |  |
| <b>Total</b>   |  |  |  |  |  |  |

## Step 4. Developing short, medium and long-term projects and designing implementation plan

Recovery and Reconstruction needs identified above would need to be broken down in short, medium and long-term needs. Following are some examples of projects which can be undertaken as short, medium and long-term:

- **Short-term projects**
  - Immediate repair of cultural sites especially those that are revenue-generating.
  - Repair of the contents that were damaged.
- **Medium-term projects/programs**
  - Development of hazard resilient design specifications for repairs
- **Longer-term projects/programs**
  - Retrofitting of existing cultural sites

The identified needs should have a rough schedule of implementation outlining at the very least the activities, timing and budget required for all the programs and projects. The following techniques can be considered:

- Identify the specific projects according to their relative urgency or priority in relation to recovery.
- Plot the timeline of activities of all the projects, with the urgent ones on top, in a Gantt chart with the corresponding funding requirement. This will assist the MPI in programming the necessary funds over a certain time period, like on a quarterly or annual basis.
- Identify and include in the list of projects that need further feasibility studies which may be funded by foreign grants.
- To the extent possible, a logical framework (log frame) should be created for each of the project proposed for inclusion in the recovery plan. Log frames are normally enough for foreign donors to consider project proposals.

## Step 5: Inputs for Macro-economic impact analysis

The damages and losses to cultural sites sector can affect the macroeconomy. To the extent possible that the MICT can, should collect the following information, which will be used by MPI for undertaking the macro-economic impact analysis.

- **Gross Domestic Product (GDP).** The loss of the income due to the destruction of the sites may reduce GDP.
- **Fiscal Balance:** The post disaster expenditures for reconstruction can adversely affect the fiscal balance.
- **Prices or Inflation:** Prices of construction materials could go high if the destruction of the sites is massive.

## Step 6. Write the assessment report

The following format may be considered for writing the assessment chapter of the sector:

1. Brief background on cultural sites in the affected area of Lao PDR

Overview of impacts of the disaster on the cultural sites

Damage and Loss quantification

Damage and Loss by province (or district)  
Proposed strategies for recovery and reconstruction of cultural sites  
Needs estimation for recovery and reconstruction of cultural sites

The report of the Sector should be written by MICT in close partnership with development partners involved in cultural heritage and once completed should be submitted to MPI for inclusion in the final report.

## **Section 3**

### ***Terms of reference of assessment team***

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#### **3.1 Formation of pre-identified assessment teams within MICT**

Pre-identified team should be formed with officials from MICT. These officials would need to have a good understanding of the value of cultural sites, repair of temples and monuments and should have also undergone prior training on the damage, loss and needs assessment.

#### **3.2 Composition of the assessment team**

- At the central level the assessment team should comprise of the following:
  - Officials from Department of Planning of MICT
  - Officials from Division of Construction, MICT
  - Development Partners involved in cultural sites restoration or preservation
- At the field level the assessment team should comprise of the following:
  - Provincial Department of MICT
  - District Office of MICT
- Specific expertise required within the team would include the following:
  - Civil Engineer/Structural Engineers
  - Culture and arts sector specialist

#### **3.3 Task of assessment team**

- Gathering of the pre-identified team from MICT after the disaster event based on the order received from MPI
- Consultation with development partners involved in cultural sites preservation and restoration and who will join the assessment team
- Undertaking quick orientation on the assessment methodology for the assessment team
- Working closely with relevant departments of MICT at national (such as Division of Construction, Department of Planning) and provincial/district and responsible for compiling baseline information.
- Undertaking field visits in disaster affected areas and working closely with District and Provincial MICT Offices and collecting information on damage and losses
- Based on information collected, undertaking damage and loss assessment of the cultural sites. Simultaneously in close consultation with relevant agencies such as National Disaster Management Office and development partners, formulate the recovery and reconstruction strategy
- Estimating the recovery and reconstruction needs based on the strategy and damage and loss assessment results
- Writing the assessment report
- Presentation of the findings of the assessment report to the decision makers within the MICT and other development partners for broader consultation.
- Finalization of the report based on the inputs received from broader consultation and submission to MPI

#### **3.4 Assessment timeline**

- Ideally, the post-disaster damage, loss and needs assessment takes from 2 to 5 weeks.
- The assessment is usually started once the rapid impact and needs assessment for emergency and relief support is completed and the relief and response phase of the disasters is over or well underway.

- In the first week the overall planning of the assessment would take place and would include the following issues:
  - Baseline data collection
  - Agree on ToR
  - Team composition selection
  - Orientation Training on damage, loss and needs assessment
  - Discussion on formulating recovery and reconstruction strategy
- Second week is the assessment stage and would include the following
  - Field survey
  - Calculation of Damage and losses
- Third week of the assessment is the analysis stage and would include the following
  - Finalizing recovery and reconstruction strategy
  - Estimating recovery and reconstruction needs
  - Report drafting
  - Consultation within sector to seek inputs on the report
  - Submission of sector report to MPI
  - Finalisation of report by MPI
- Fifth week of the assessment is launch and dissemination of the report



## ***Guidance Note 5***

### ***Damage, loss and needs assessment for the Agriculture and Forestry Sector in Lao PDR***

## ***Table of Contents***

- Introduction to this Guidance Note
- Section 1: Proposed methodology for post-disaster damage, loss and needs assessment in the agriculture and forestry sector in Lao PDR
- Section 2: Steps in undertaking damage, loss and needs assessment
  - Step 1: Analysis of pre-disaster situation of the agriculture and forestry sector
  - Step 2: Estimating post-disaster damages
  - Step 3: Estimating recovery and reconstruction needs
  - Step 4: Developing short, medium and long-term projects and design an implementation plan
  - Step 5: Inputs for Macro-Economic and Household Level Impact Analysis
  - Step 6: Writing the assessment report
- Section 3: Terms of reference of Assessment Team

## ***Introduction to this Guidance Note***

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- This Guidance Note is a part of the Handbook on Post-disaster recovery and reconstruction planning of Lao PDR, which consists of fifteen Guidance Notes, for various sectors, on damage loss and needs assessment.
- This Guidance Note is to be used for assessing impacts of a disaster event on the **Agriculture and Forestry Sector** in Lao PDR
- The Agriculture Sector in this case consists of Crops, Livestock, Fisheries and Forestry including structures, equipment and machineries, etc. that are related to the sector.
- This Guidance Note is to be used by the team assigned from the Ministry of Agriculture and Forestry (MAF), Government of Lao PDR, for undertaking the post-disaster needs assessment and working in close consultation with agencies such as National Statistical Center, Ministry of Planning and Investment and National Disaster Management Office, as well as in partnership with development partners involved in agriculture sector in Lao PDR.

## Section 1

### Methodology for damage, loss and needs assessment in the agriculture and forestry sector in Lao PDR

- This proposed methodology for undertaking post-disaster damage, loss and needs assessment is originally derived from the methodology for estimating the socio-economic and environmental effects of disasters, developed by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) as further enhanced by the World Bank.
- The methodology for estimating recovery and reconstruction needs (described in step 3 under section 2 of this guidance note) is derived from the Guidance Note of the World Bank and the Global Facility for Disaster Reduction and Recovery entitled: Estimation of Post-Disaster Needs for Recovery and Reconstruction.
- The ECLAC methodology uses two terminologies; namely Damage and Losses as explained below:
  - Damages in agriculture and forestry sector include:
    - Total or partial destruction of physical assets such as:
      - Structures like animal sheds, storage, ice plants, etc.
      - Farm equipment and machineries
      - Agricultural land and soils (which may have been eroded, silted or otherwise destroyed)
      - Irrigation and drainage systems
      - Permanent plantations
      - Stocks or assets like animals, fertilizers, pesticides, seeds, veterinary supplies, etc.
    - Damage will occur at the time of, or shortly after the disaster.
    - Damage is to be measured in physical terms (such as square meters of construction, number of equipment destroyed) for which monetary value of repair or replacement is subsequently estimated using pre-disaster prices.
  - Losses in agriculture and forestry sector include:
    - Lost future income from seasonal and permanent crops, fisheries, livestock and forestry due to the destruction caused by floods, landslides, strong winds, prolonged droughts, including the destruction of land and bodies of water which can affect future harvests.
    - Higher cost of production (land preparation, seeds, pesticides, etc.) as reflected when farmers have to replant after the destruction of crops, or higher cost of irrigation after drought.
    - Additional expenses to clean up the debris of destruction, retrieval of buried assets, etc.

## Section 2

### Steps in undertaking damage, loss and needs assessment

#### Step1: Analyze the pre-disaster situation in agriculture and forestry sector

##### Step 1.1: Understand what is meant by baseline data

- The first step of undertaking the assessment is collecting information on the pre-disaster conditions in order to ascertain the baseline for damage, loss and needs assessment. The following table shows the type of baseline information to be collected and their typical sources:
- The baseline information should be gathered at a district level.

**Table 1. Type and Sources of baseline information for agriculture and forestry sector**

| Type of Information/Data                                | Available at                 | Name of source document  |
|---|------------------------------|--|
| Crops   |                              |  |
| Rice  |                              |  |
| Areas planted with lowland; upland; and dry season rice | MAF/<br>Planning<br>Division | Crop Statistics Year Book<br>2009 and for dry season<br>crop- Statistics Year Book |

|   |                                     |   |
|---|-------------------------------------|---|
|   |                                     | 2008-2009   |
| Present and estimated future total production and production per hectare of lowland; upland; and dry season rice  | MAF/<br>Planning<br>Division        | Crop Statistics Year Book 2009 and for dry season crop- Statistics Year Book 2008-2009 except information on farm gate price and total income |
| Planting and harvest season   |                                     |   |
| Past and present farm gate price of lowland; upland; and dry season rice  |                                     |   |
| Number of farmers by sex and families involved  |                                     |   |
| Other seasonal crops  |                                     |   |
| Name of crops; areas planted; planting and harvest season; present and estimated future total production and production per hectare; past and present farm gate prices of each type of crop; number of farmers by sex and families involved       | MAF/<br>Planning<br>Division        | Crop Statistics Year Book 2009  |
| Permanent crops   |                                     |   |
| Name of permanent crops; areas planted; harvest season; total production and production per hectare; past and present farm gate prices of each type of crop; number of farmers by sex and families involved                                       | MAF/<br>Planning<br>Division        | Crop Statistics Year Book 2009 and for dry season crop- Statistics Year Book 2008-2009 except information on farm get price and total income  |
| Forest products   |                                     |   |
| Name of forest products; areas planted; harvest season; present and estimated future total production and production per hectare; Past and present farm gate prices of each type of forest product; number of people by sex and families involved | MAF/<br>Planning<br>Division        | Crop Statistics Year Book 2009 and for dry season crop- Statistics Year Book 2008-2009 except information on farm get price and total income  |
| Fisheries   |                                     |   |
| Number of inland and aquaculture ponds classified as commercial or artisanal  | MAF/<br>Planning<br>Division        |   |
| Present and estimated future total and average production of inland and aquaculture ponds classified as commercial or artisanal   |                                     |   |
| Number of people by sex engaged in the various types of fisheries   |                                     |   |
| Harvest season for the various types of fisheries   |                                     |   |
| Past and present farm gate prices of various fishery products classified as commercial or artisanal   |                                     |   |
| Livestock   |                                     |   |
| Number of livestock according to their purpose, whether for meat, milk, eggs, etc. or grown as work animals   |                                     |   |
| Present and estimated future total production of meat, eggs, milk, etc.   |                                     |   |
| Offspring per year of animals grown for working purposes  |                                     |   |
| Past and present farm gate prices of the various livestock grown; meat; eggs; milk, etc.  |                                     |   |
| Number of farmers, by sex, and families involved in livestock raising.  |                                     |   |
| Irrigation  |                                     |   |
| Number, type, length and areas irrigated of irrigation systems  | MAF/<br>Department<br>of Irrigation |   |
| Cost Per Meter, Replacement Cost, Monthly Income From Fees,   |                                     |   |

Ownership, and Number of beneficiaries

#### Agricultural assets

Types, quantity, ownership, average replacement cost of equipment and machinery

Types, quantity, average replacement cost of raw materials and inputs

Types, quantity, and average cost of land

Types, quantity and average replacement cost of animal sheds, boats, fishing gears, and other agricultural structures and assets

#### Step 1.2: Collect Baseline Information on Calendar of Seasonal Agriculture, Fisheries and Livestock Activities in Affected District

- Before field assessment begins, the baseline calendar for seasons agriculture, fisheries and livestock activities should be collected. This information will help in the following:
  - Knowing the type of crops that may have been impacted in the area affected by the disaster that occurred in a certain month;
  - Quickly estimate the damages and losses after a disaster
- Knowing the number of people depending on these sub-sectors, by sex, will provide a picture as to how many people can be adversely affected should a disaster occur.
- All major agricultural crops, livestock, forestry and fisheries grown in a certain area (district) can be summarized in the following tables:

**Table 2. Seasonal Crops in District**

Name of District:

| Crops                | Number of Farmers |        | Planting to Harvest Season (Months) |   |   |   |   |   |   |   |   |   |   |   |
|----------------------|-------------------|--------|-------------------------------------|---|---|---|---|---|---|---|---|---|---|---|
|                      | Male              | Female | J                                   | F | M | A | M | J | J | A | S | O | N | D |
| Lowland rainfed rice |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |
| Dry season rice      |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |
| Upland rainfed rice  |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |
| Maize                |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |
| Sweet corn           |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |
| Soybean              |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |
| Mungbean             |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |
| Peanut               |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |
| Black bean           |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |
| Starchy roots        |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |
| Cassava              |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |
| Sweet potato         |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |
| Yam bean             |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |
| Taro                 |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |
| Pineapple            |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |
| Papaya               |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |
| Sesame               |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |
| Cardamom             |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |
| Job's Tear           |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |
| Tobacco              |                   |        |                                     |   |   |   |   |   |   |   |   |   |   |   |

|                             |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------|-----------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Cantaloupe and other melons |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Sugarcane                   |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Vegetables                  |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Water melon                 |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Leafy stem vegetables       |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Root, Bulb and Tuberous     |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Others                      |                       |  |  |  |  |  |  |  |  |  |  |  |  |  |
| TOTAL                       | Not Applicable (N.A.) |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Table 3. Permanent Crops in a District**

Name of District:

| Crops                 | Number of Farmers     |        | Harvest Season (Months) |   |   |   |   |   |   |   |   |   |   |   |
|-----------------------|-----------------------|--------|-------------------------|---|---|---|---|---|---|---|---|---|---|---|
|                       | Male                  | Female | J                       | F | M | A | M | J | J | A | S | O | N | D |
| Permanent Crops       |                       |        |                         |   |   |   |   |   |   |   |   |   |   |   |
| Fruit trees (Specify) |                       |        |                         |   |   |   |   |   |   |   |   |   |   |   |
| Coconut               |                       |        |                         |   |   |   |   |   |   |   |   |   |   |   |
| Banana                |                       |        |                         |   |   |   |   |   |   |   |   |   |   |   |
| Coffee                |                       |        |                         |   |   |   |   |   |   |   |   |   |   |   |
| Cotton                |                       |        |                         |   |   |   |   |   |   |   |   |   |   |   |
| Tea                   |                       |        |                         |   |   |   |   |   |   |   |   |   |   |   |
| Mulberry bark         |                       |        |                         |   |   |   |   |   |   |   |   |   |   |   |
| Others (Specify)      |                       |        |                         |   |   |   |   |   |   |   |   |   |   |   |
| TOTAL                 | Not Applicable (N.A.) |        |                         |   |   |   |   |   |   |   |   |   |   |   |

**Table 4. Forestry Products in a District**

Name of District:

| Forestry                        | Number of Farmers     |        | Harvest Season (Months) |   |   |   |   |   |   |   |   |   |   |   |
|---------------------------------|-----------------------|--------|-------------------------|---|---|---|---|---|---|---|---|---|---|---|
|                                 | Male                  | Female | J                       | F | M | A | M | J | J | A | S | O | N | D |
| Timber                          |                       |        |                         |   |   |   |   |   |   |   |   |   |   |   |
| Rattan                          |                       |        |                         |   |   |   |   |   |   |   |   |   |   |   |
| Firewood                        |                       |        |                         |   |   |   |   |   |   |   |   |   |   |   |
| Other Forest Products (Specify) |                       |        |                         |   |   |   |   |   |   |   |   |   |   |   |
| Forestry                        |                       |        |                         |   |   |   |   |   |   |   |   |   |   |   |
| TOTAL                           | Not Applicable (N.A.) |        |                         |   |   |   |   |   |   |   |   |   |   |   |

Notes in filling out Tables 2, 3 and 4:

- Tick the appropriate boxes under the month for the planting to harvest months of specific crops or permanent crops. This will indicate how many months in a year a certain crops or permanent crops are harvested.

**Table 5. Baseline Information on Fisheries in a District**

Name of District:

| Fisheries        | Number of Fishers |        | Growing to Harvest Season (Months) |   |   |   |   |   |   |   |   |   |   |   |
|------------------|-------------------|--------|------------------------------------|---|---|---|---|---|---|---|---|---|---|---|
|                  | Male              | Female | J                                  | F | M | A | M | J | J | A | S | O | N | D |
| Inland Fisheries |                   |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| Commercial       |                   |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| a.               |                   |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| b.               |                   |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| Artisan          |                   |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| a.               |                   |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| b.               |                   |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| Aquaculture      |                   |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| Commercial       |                   |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| a.               |                   |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| b.               |                   |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| Artisan          |                   |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| TOTAL            |                   |        | Not Applicable (N.A.)              |   |   |   |   |   |   |   |   |   |   |   |

Notes in filling out Table 5:

- Inland fisheries are generally those that are caught in fresh waters while aquaculture species are raised in ponds or cages. Commercial ones are those that are big in scale like big fishing fleets manned by a large number of people and while the artisan ones are generally at the small-scale household levels (small fishing boats with a capacity of one or two persons).
- “Others” may include other aquaculture species like shrimps, etc.
- Tick the appropriate boxes under the month for the seeding to harvest season of the specific activities in fisheries. This will indicate how many months in a year the species are harvested.

**Table 6. Baseline Information on Livestock**

Name of District:

| Livestock and poultry | Number of Farmers/<br>Growers |        | Growing to Selling Season (Months) |   |   |   |   |   |   |   |   |   |   |   |
|-----------------------|-------------------------------|--------|------------------------------------|---|---|---|---|---|---|---|---|---|---|---|
|                       | Male                          | Female | J                                  | F | M | A | M | J | J | A | S | O | N | D |
| <b>Grown For Meat</b> |                               |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| Buffalo               |                               |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| Cattle                |                               |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| Pig                   |                               |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| Goat and sheep        |                               |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| Broilers              |                               |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| Layers                |                               |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| Others (Specify)      |                               |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| <b>Other products</b> |                               |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| Eggs                  |                               |        |                                    |   |   |   |   |   |   |   |   |   |   |   |
| Milk                  |                               |        |                                    |   |   |   |   |   |   |   |   |   |   |   |

| Grown As Work Animals |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------|--|--|--|--|--|--|--|--|--|--|--|
| Buffalo               |  |  |  |  |  |  |  |  |  |  |  |
| Cattle                |  |  |  |  |  |  |  |  |  |  |  |
| Others                |  |  |  |  |  |  |  |  |  |  |  |

Notes in filling out Table 6:

- Most animals are grown for meat, eggs and milk but some are raised for working in the fields so their price units will vary – kilograms for the meat and per head for working animals.
- Eggs and milk are considered primary agricultural products here. Those that involve more processes will be considered in food processing under manufacturing.
- Tick the appropriate boxes under the month for the growing to harvest or selling season of the specific livestock and animal products.

### Step 1.3. Collect Baseline Information on Production of Agricultural Crops, Fisheries, Livestock and Forestry

- To have a reliable basis in estimating the overall potential impacts of disasters, the baseline information should also include the production for the past year and the estimated production for the present year and percentage of the outputs for sale. The information in the following tables should be collected.

**Table 7. Past Production and Estimated Production of Agricultural Crops in a District**

Name of District:

| Agricultural Crops   | Average for the Past Three Years |    |                  | Current Year<br>(Pre-Disaster) |    |                      |
|----------------------|----------------------------------|----|------------------|--------------------------------|----|----------------------|
|                      | Area Planted                     |    | Total Production | Area Planted                   |    | Estimated Production |
|                      | Hectares                         | MT | Kips             | Hectares                       | MT | Kips                 |
| Lowland rainfed rice |                                  |    |                  |                                |    |                      |
| Dry season rice      |                                  |    |                  |                                |    |                      |
| Upland rainfed rice  |                                  |    |                  |                                |    |                      |
| Maize                |                                  |    |                  |                                |    |                      |
| Sweet corn           |                                  |    |                  |                                |    |                      |
| Soybean              |                                  |    |                  |                                |    |                      |
| Mungbean             |                                  |    |                  |                                |    |                      |
| Peanut               |                                  |    |                  |                                |    |                      |
| Black bean           |                                  |    |                  |                                |    |                      |
| Starchy roots        |                                  |    |                  |                                |    |                      |
| Cassava              |                                  |    |                  |                                |    |                      |
| Sweet potato         |                                  |    |                  |                                |    |                      |
| Yam bean             |                                  |    |                  |                                |    |                      |
| Taro                 |                                  |    |                  |                                |    |                      |
| Pineapple            |                                  |    |                  |                                |    |                      |
| Papaya               |                                  |    |                  |                                |    |                      |
| Sesame               |                                  |    |                  |                                |    |                      |
| Cardamom             |                                  |    |                  |                                |    |                      |
| Job's Tear           |                                  |    |                  |                                |    |                      |
| Tobacco              |                                  |    |                  |                                |    |                      |

|                             |  |      |  |      |  |
|-----------------------------|--|------|--|------|--|
| Cantaloupe and other melons |  |      |  |      |  |
| Sugarcane                   |  |      |  |      |  |
| Vegetables                  |  |      |  |      |  |
| Water melon                 |  |      |  |      |  |
| Leafy stem vegetables       |  |      |  |      |  |
| Root, Bulb and Tuberous     |  |      |  |      |  |
| Others                      |  |      |  |      |  |
| TOTAL                       |  | N.A. |  | N.A. |  |

**Table 8. Past Production and Estimated Production of Permanent Crops in a District**

Name of District:

| Permanent Crops       | Average for the Past Three Years |                  |      | Current Year (Pre-Disaster) |                      |      |
|-----------------------|----------------------------------|------------------|------|-----------------------------|----------------------|------|
|                       | Area Planted                     | Total Production |      | Area Planted                | Estimated Production |      |
|                       | Hectares                         | MT               | Kips | Hectares                    | MT                   | Kips |
| Fruit trees (Specify) |                                  |                  |      |                             |                      |      |
| Coconut               |                                  |                  |      |                             |                      |      |
| Banana                |                                  |                  |      |                             |                      |      |
| Coffee                |                                  |                  |      |                             |                      |      |
| Cotton                |                                  |                  |      |                             |                      |      |
| Tea                   |                                  |                  |      |                             |                      |      |
| Mulberry bark         |                                  |                  |      |                             |                      |      |
| Others (Specify)      |                                  |                  |      |                             |                      |      |
| TOTAL                 |                                  | N.A.             |      |                             | N.A.                 |      |

**Table 9. Past Production and Estimated Production of Forestry Products in a District**

Name of District:

| Forestry Products               | Average for the Past Three Years |                  |      | Current Year (Pre-Disaster) |                      |      |
|---------------------------------|----------------------------------|------------------|------|-----------------------------|----------------------|------|
|                                 | Area Planted                     | Total Production |      | Area Planted                | Estimated Production |      |
|                                 | Hectares                         | MT               | Kips | Hectares                    | MT                   | Kips |
| Timber                          |                                  |                  |      |                             |                      |      |
| Rattan                          |                                  |                  |      |                             |                      |      |
| Firewood                        |                                  |                  |      |                             |                      |      |
| Other Forest Products (Specify) |                                  |                  |      |                             |                      |      |
| TOTAL                           |                                  | N.A.             |      |                             | N.A.                 |      |



**Table 10. Past Production and Estimated Production of Fisheries in a District**

Name of District:

| Fisheries        | Average for the Past Three Years |                  |      | Current Year (Pre-Disaster) |                      |      |
|------------------|----------------------------------|------------------|------|-----------------------------|----------------------|------|
|                  | Areas Covered                    | Total Production |      | Areas Covered               | Estimated Production |      |
|                  | Hectares                         | MT               | Kips | Hectares                    | MT                   | Kips |
| Inland Fisheries |                                  |                  |      |                             |                      |      |
| Commercial       |                                  |                  |      |                             |                      |      |
| a.               |                                  |                  |      |                             |                      |      |
| b.               |                                  |                  |      |                             |                      |      |
| Artisan          |                                  |                  |      |                             |                      |      |
| a.               |                                  |                  |      |                             |                      |      |
| b.               |                                  |                  |      |                             |                      |      |
| Aquaculture      |                                  |                  |      |                             |                      |      |
| Commercial       |                                  |                  |      |                             |                      |      |
| a.               |                                  |                  |      |                             |                      |      |
| b.               |                                  |                  |      |                             |                      |      |
| Artisan          |                                  |                  |      |                             |                      |      |
| a.               |                                  |                  |      |                             |                      |      |
| b.               |                                  |                  |      |                             |                      |      |
| TOTAL            |                                  | N.A.             |      |                             | N.A.                 |      |

**Table11. Past Production and Estimated Production of Livestock in a District**

Name of District:

| Livestock and Poultry        | Average for the Past Three Years |      | Current Year (Pre-Disaster) |      |
|------------------------------|----------------------------------|------|-----------------------------|------|
|                              | Total Production                 |      | Estimated Production        |      |
| <b>Grown For Meat</b>        | Kilograms                        | Kips | Kilograms                   | Kips |
| Buffalo                      |                                  |      |                             |      |
| Cattle                       |                                  |      |                             |      |
| Pig                          |                                  |      |                             |      |
| Goat and sheep               |                                  |      |                             |      |
| Broilers                     |                                  |      |                             |      |
| Layers                       |                                  |      |                             |      |
| Others (Specify)             |                                  |      |                             |      |
| <b>Eggs</b>                  | Dozens                           | Kips | Dozens                      | Kips |
|                              |                                  |      |                             |      |
| <b>Milk</b>                  | Liters                           | Kips | Liters                      | Kips |
|                              |                                  |      |                             |      |
| <b>Grown As Work Animals</b> | Offsprings                       | Kips | Offsprings                  | Kips |
| Buffalo                      |                                  |      |                             |      |

|        |      |  |      |  |
|--------|------|--|------|--|
| Cattle |      |  |      |  |
| Others |      |  |      |  |
| TOTAL  | N.A. |  | N.A. |  |

Notes in filling out Tables 7, 8, 9, 10 and 11:

- The “Average for the Past Three Years” refers to the average quantity and value of production for the immediate past three (3) years.

#### Step 1.4. Collect Baseline Information on Average Farm Gate and/or Producers’ Prices per Month

**Table 12. Average prices of agricultural outputs on a monthly basis in a District**

Name of District:

| Outputs                     | Average Farm Gate or Producers’ Prices for the Last Three Years (Kips per Month) |   |   |   |   |   |   |   |   |   |   |   |
|-----------------------------|--|---|---|---|---|---|---|---|---|---|---|---|
|                             | J  | F | M | A | M | J | J | A | S | O | N | D |
| <b>Crops</b>                |  |   |   |   |   |   |   |   |   |   |   |   |
| Lowland rainfed rice        |  |   |   |   |   |   |   |   |   |   |   |   |
| Dry season rice             |  |   |   |   |   |   |   |   |   |   |   |   |
| Upland rainfed rice         |  |   |   |   |   |   |   |   |   |   |   |   |
| Maize                       |  |   |   |   |   |   |   |   |   |   |   |   |
| Sweet corn                  |  |   |   |   |   |   |   |   |   |   |   |   |
| Soybean                     |  |   |   |   |   |   |   |   |   |   |   |   |
| Mungbean                    |  |   |   |   |   |   |   |   |   |   |   |   |
| Peanut                      |  |   |   |   |   |   |   |   |   |   |   |   |
| Black bean                  |  |   |   |   |   |   |   |   |   |   |   |   |
| Starchy roots               |  |   |   |   |   |   |   |   |   |   |   |   |
| Cassava                     |  |   |   |   |   |   |   |   |   |   |   |   |
| Sweet potato                |  |   |   |   |   |   |   |   |   |   |   |   |
| Yam bean                    |  |   |   |   |   |   |   |   |   |   |   |   |
| Taro                        |  |   |   |   |   |   |   |   |   |   |   |   |
| Pineapple                   |  |   |   |   |   |   |   |   |   |   |   |   |
| Papaya                      |  |   |   |   |   |   |   |   |   |   |   |   |
| Sesame                      |  |   |   |   |   |   |   |   |   |   |   |   |
| Cardamom                    |  |   |   |   |   |   |   |   |   |   |   |   |
| Job’s Tear                  |  |   |   |   |   |   |   |   |   |   |   |   |
| Tobacco                     |  |   |   |   |   |   |   |   |   |   |   |   |
| Cantaloupe and other melons |  |   |   |   |   |   |   |   |   |   |   |   |
| Sugarcane                   |  |   |   |   |   |   |   |   |   |   |   |   |
| Vegetables                  |  |   |   |   |   |   |   |   |   |   |   |   |
| Water melon                 |  |   |   |   |   |   |   |   |   |   |   |   |
| Leafy stem vegetables       |  |   |   |   |   |   |   |   |   |   |   |   |
| Root, Bulb and Tuberous     |  |   |   |   |   |   |   |   |   |   |   |   |
| Others                      |  |   |   |   |   |   |   |   |   |   |   |   |

|                                    |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|
| <b>Forest products</b>             |  |  |  |  |  |  |  |  |  |  |  |  |
| Timber                             |  |  |  |  |  |  |  |  |  |  |  |  |
| Rattan                             |  |  |  |  |  |  |  |  |  |  |  |  |
| Firewood                           |  |  |  |  |  |  |  |  |  |  |  |  |
| Other Forest Products<br>(Specify) |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Fisheries</b>                   |  |  |  |  |  |  |  |  |  |  |  |  |
| In-land                            |  |  |  |  |  |  |  |  |  |  |  |  |
| Aquaculture                        |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Livestock</b>                   |  |  |  |  |  |  |  |  |  |  |  |  |
| For Meat                           |  |  |  |  |  |  |  |  |  |  |  |  |
| Buffalo                            |  |  |  |  |  |  |  |  |  |  |  |  |
| Cattle                             |  |  |  |  |  |  |  |  |  |  |  |  |
| Pig                                |  |  |  |  |  |  |  |  |  |  |  |  |
| Goat and sheep                     |  |  |  |  |  |  |  |  |  |  |  |  |
| Broilers                           |  |  |  |  |  |  |  |  |  |  |  |  |
| Others (Specify)                   |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Grown As Work Animals</b>       |  |  |  |  |  |  |  |  |  |  |  |  |
| Buffalo                            |  |  |  |  |  |  |  |  |  |  |  |  |
| Cattle                             |  |  |  |  |  |  |  |  |  |  |  |  |
| Layers                             |  |  |  |  |  |  |  |  |  |  |  |  |
| Others                             |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Others</b>                      |  |  |  |  |  |  |  |  |  |  |  |  |
| Milk                               |  |  |  |  |  |  |  |  |  |  |  |  |
| Eggs                               |  |  |  |  |  |  |  |  |  |  |  |  |
| Honey                              |  |  |  |  |  |  |  |  |  |  |  |  |
| Others                             |  |  |  |  |  |  |  |  |  |  |  |  |

Notes in filling out Table 12:

- Farm gate or producers' prices vary according to the months of the year. This information can be calculated from the information on the production and values in the Crop Statistics Yearbook at the Planning Division of the MAF.
- Put the average farm gate or producers' prices under the columns of the months - (J for January up to D for December).
- The assessment team must have this information over at least the last three years to have the reliable data on the average monthly prices of commodities.
- Knowing the average prices of commodities per month over the past years will enable the assessment team to put value on the potential losses of the sector.

### Step 1.5. Collect Baseline Information on Production Inputs

The cost of production for agricultural products can be summarized in the following table.

**Table 13. Production Inputs for agricultural products**

Name of District:

| Sub-sector             | Average Cost of Inputs | Units                             |
|------------------------|------------------------|-----------------------------------|
| <b>Crops</b>           |                        |                                   |
| Rice                   |                        |                                   |
| Lowland rainfed rice   |                        | Kips/Hectares                     |
| Dry season rice        |                        | Kips/Hectares                     |
| Upland rainfed rice    |                        | Kips/Hectares                     |
| <b>Corn</b>            |                        |                                   |
| Maize                  |                        | Kips/Hectares                     |
| Sweet corn             |                        | Kips/Hectares                     |
| <b>Rootcrops</b>       |                        |                                   |
| Sweet potato           |                        | Kips/Hectares                     |
| Cassava                |                        | Kips/Hectares                     |
| Others                 |                        | Kips/Hectares                     |
| <b>Vegetables</b>      |                        |                                   |
| Leafy vegetables       |                        | Kips/Hectares                     |
| Legumes                |                        | Kips/Hectares                     |
| Others                 |                        | Kips/Hectares                     |
| <b>Permanent Crops</b> |                        |                                   |
| Fruit trees            |                        | Kips/Hectare                      |
|                        |                        | Kips/Tree                         |
| Coconut                |                        | Kips/Hectare                      |
|                        |                        | Kips/Tree                         |
| Others                 |                        | Kips/Hectare                      |
|                        |                        | Kips/Tree                         |
| <b>Forest Products</b> |                        |                                   |
| Timber                 |                        | Kips/Hectare                      |
|                        |                        | Kips/Tree                         |
| Others                 |                        | Kips/Hectare                      |
|                        |                        | Kips/Tree                         |
| <b>Fish stock</b>      |                        |                                   |
| Commercial             |                        | Kips/Square Meter of Pond or Cage |
| Artisan                |                        | Kips/Square Meter of Pond or Cage |
| <b>Livestock</b>       |                        |                                   |
| Cattle                 |                        | Kips/Animal                       |
| Pig                    |                        | Kips/Animal                       |
| Goat                   |                        | Kips/Animal                       |
| Layers                 |                        | Kips/Animal                       |
| Broilers               |                        | Kips/Animal                       |

|                            |  |                |
|----------------------------|--|----------------|
| Others                     |  | Kips/Animal    |
| <b>Other farm products</b> |  |                |
| Honey production           |  | Kips/bee house |
| Others                     |  | Kips/Unit      |

Notes in filling out Table 13:

- The values in the above table will be useful in estimating higher production costs as well as the recovery needs of the sector/sub-sectors after a disaster.

#### Step 1.6. Collect Baseline Information on Food Consumption in a District

The types of foods consumed in the district will estimate any potential food shortage after a disaster. The following table will show the food consumption in the district.

**Table 14. Types of food and their consumption in the district**

Name of District:

| Food items | Average Production in the District<br>(Kilograms per Month) | Average Consumption in the District<br>(Kilograms per Month) |
|------------|---|--|
| Rice       |   |  |
| Beef       |   |  |
| Poultry    |   |  |
| Fish       |   |  |
| Corn       |   |  |
| Vegetables |   |  |
| Root crops |   |  |
| Others     |   |  |

Notes in filling out Table14:

- The food items produced in the district can be taken from previous tables on production data.
- The average consumption per month can be sourced from health statistics. If such data does not exist, a rough estimation should be made.

#### Step 1.7. Collect Baseline Information on Irrigation and Drainage Assets

- Irrigation is one of the major components in agriculture that is vital for the sector's performance that must be accounted for before a disaster to facilitate a post-disaster assessment in the future. The quantity, total construction costs as well as cost per unit should be included as in the following table. The location and description of all irrigation systems or facilities must also be included as pre-disaster baseline information to enable the assessment specialists to quantify not only the damages but also the possible impact on future agricultural production.

**Table 15. Irrigation and Drainage Systems Description or Scheme in a District**

Name of District

| Name of Irrigation System 1 |                 |             |
|-----------------------------|-----------------|-------------|
| Ownership                   | Public ( )      | Private ( ) |
| Description                 | Unit of Measure | Value       |
| Areas Irrigated             | Hectares        |             |
| Length of Canals            | Meters          |             |
| Construction Cost           | Kips/Meter      |             |
| Replacement Cost            | Kips            |             |

|                         |            |  |
|-------------------------|------------|--|
| Average Monthly Income  | Kips/Month |  |
| Number of Beneficiaries | Farmers    |  |
|                         | Families   |  |
| Average Repair Cost     | Kips/Meter |  |
| <b>Head work system</b> |            |  |
| Flooding Weir           | Kips/Item  |  |
| Gate                    | Kips/Item  |  |
| Earth dam               | Kips/Item  |  |
| Others                  | Kips/Item  |  |
| <b>Canal</b>            |            |  |
| Earth                   | Kips/Meter |  |
| Brick                   | Kips/Meter |  |
| Stone                   | Kips/Meter |  |
| Concrete                | Kips/Meter |  |
| <b>Other components</b> |            |  |
| Pumps                   | Kips/Item  |  |
| Wells                   | Kips/Item  |  |
| Culverts                | Kips/Meter |  |
| Others                  | Kips/Meter |  |

Notes for filling in Table 15:

- The above table describes an irrigation system in a district.
- All other irrigation systems existing in the district should have the same tables of information.

#### Step 1.8. Collect Baseline Information on Other agricultural assets

Information on equipment and machineries used in agriculture can assist in assessment and the recovery of the sector should a disaster occur.

**Table 16. Agricultural Assets in a District**

Name of District:

| Assets            | Unit of Measure | Quantity by Ownership |        |       | Average Replacement Cost per Unit | Number of Household Owning the Asset |
|-------------------|-----------------|-----------------------|--------|-------|-----------------------------------|--------------------------------------|
|                   |                 | Private               | Public | Total | Kips/Unit                         |                                      |
| Physical Assets   |                 |                       |        |       |                                   |                                      |
| Agriculture land  | Hectares        |                       |        |       |                                   |                                      |
| Drainage system   | System          |                       |        |       |                                   |                                      |
| Storage buildings | Square meters   |                       |        |       |                                   |                                      |
| In-farm roads     | Kilometers      |                       |        |       |                                   |                                      |
| Fencing           | Meters          |                       |        |       |                                   |                                      |
| Animal pen        | Square meter    |                       |        |       |                                   |                                      |
| Animal equipment  | Square meter    |                       |        |       |                                   |                                      |

|                                 |              |  |  |  |  |  |
|---------------------------------|--------------|--|--|--|--|--|
| Others                          |              |  |  |  |  |  |
| <b>Equipment and machinery</b>  |              |  |  |  |  |  |
| Tractor                         | Item         |  |  |  |  |  |
| Hand tractor                    | Item         |  |  |  |  |  |
| Thresher                        | Item         |  |  |  |  |  |
| Weeder                          | Item         |  |  |  |  |  |
| Plow                            | Item         |  |  |  |  |  |
| Water pumps                     | Item         |  |  |  |  |  |
| Delivery trucks                 | Item         |  |  |  |  |  |
| Others                          |              |  |  |  |  |  |
| <b>Raw materials and inputs</b> |              |  |  |  |  |  |
| Seeds                           | Sacks        |  |  |  |  |  |
| Fertilizer                      | Sacks        |  |  |  |  |  |
| Pesticides                      | Sacks        |  |  |  |  |  |
| Stored production               | Sacks        |  |  |  |  |  |
| Others                          |              |  |  |  |  |  |
| <b>Plantations</b>              |              |  |  |  |  |  |
| Trees                           | Item         |  |  |  |  |  |
| Pasture                         | Hectares     |  |  |  |  |  |
| Others                          |              |  |  |  |  |  |
| <b>Livestock</b>                |              |  |  |  |  |  |
| Beef cattle                     | Item         |  |  |  |  |  |
| Dairy cattle                    | Item         |  |  |  |  |  |
| Breeding stock                  | Item         |  |  |  |  |  |
| Horses                          | Item         |  |  |  |  |  |
| Camels                          | Item         |  |  |  |  |  |
| Goat                            | Item         |  |  |  |  |  |
| Broilers                        | Item         |  |  |  |  |  |
| Layers                          | Item         |  |  |  |  |  |
| Honey production units          | Item         |  |  |  |  |  |
| Other animals                   |              |  |  |  |  |  |
| <b>In-land Fisheries</b>        |              |  |  |  |  |  |
| <i>Commercial</i>               |              |  |  |  |  |  |
| Boats                           | Item         |  |  |  |  |  |
| Engines                         | Item         |  |  |  |  |  |
| Nets                            | Square meter |  |  |  |  |  |
| Traps and Cages                 | Item         |  |  |  |  |  |
| Ponds                           | Square meter |  |  |  |  |  |
| Gears                           | Item         |  |  |  |  |  |
| Others                          |              |  |  |  |  |  |

*Artisan*

|                 |              |  |  |  |  |
|-----------------|--------------|--|--|--|--|
| Boats           | Item         |  |  |  |  |
| Engines         | Item         |  |  |  |  |
| Nets            | Square meter |  |  |  |  |
| Traps and Cages | Item         |  |  |  |  |
| Ponds           | Square meter |  |  |  |  |
| Gears           | Item         |  |  |  |  |
| Others          |              |  |  |  |  |

**Aquaculture***Commercial*

|                 |              |  |  |  |  |
|-----------------|--------------|--|--|--|--|
| Boats           | Item         |  |  |  |  |
| Engines         | Item         |  |  |  |  |
| Nets            | Square meter |  |  |  |  |
| Traps and Cages | Item         |  |  |  |  |
| Ponds           | Square meter |  |  |  |  |
| Gears           | Item         |  |  |  |  |
| Others          |              |  |  |  |  |

*Artisan*

|                 |              |  |  |  |  |
|-----------------|--------------|--|--|--|--|
| Boats           | Item         |  |  |  |  |
| Engines         | Item         |  |  |  |  |
| Nets            | Square meter |  |  |  |  |
| Traps and Cages | Item         |  |  |  |  |
| Ponds           | Square meter |  |  |  |  |
| Gears           | Item         |  |  |  |  |
| Others          |              |  |  |  |  |

Note for filling in Table 16:

- The first column of the table includes the type of agricultural assets in the area affected by the disaster event.
- The second column refers to the units of measures of the assets. “Item” means the number of the individual asset like the number of boats, etc.
- The above-mentioned assets in the district could be a rough estimate at any given time of the year.
- The average replacement cost refers to the average current value per unit or quantity of each type of asset. “SqM” means square meter and “m” means meter.
- Stored production are purchased goods kept by farmers.
- The same table should be filled out for each of the districts.

## Step 2. Estimating damages and losses in the agriculture and forestry sector

- Once the assessment team at the national level collects the baseline information and provided to the local governments, field assessment should be undertaken by the district team to assess the damage and losses suffered by the agriculture and forestry sector from the particular disaster event.



## Step 2.1. Estimation of damages

### Step 2.1.1. Estimation of damages to agricultural assets

- There are assets that, when damaged, can affect the performance and recovery of the agriculture sector. The following tables (Table 17 and Table 18) can be used to estimate the damages to totally destroyed and partially destroyed agricultural assets in the affected district.

**Table 17. Value of damages from totally destroyed agricultural assets in a district**

Name of District:

| Agricultural Assets             | Totally destroyed assets    |                                 |                                    | Total damages (Kips) | Average Time to Replace (Months) |
|---------------------------------|-----------------------------|---------------------------------|------------------------------------|----------------------|----------------------------------|
|                                 | Number of totally destroyed | Average Replacement Cost (Kips) | Value of Reusable Materials (Kips) |                      |                                  |
|                                 | A                           | B                               | C                                  | D                    | E                                |
| <b>Farming and Forestry</b>     |                             |                                 |                                    |                      |                                  |
| <i>Physical Assets</i>          |                             |                                 |                                    |                      |                                  |
| Agriculture land                |                             |                                 |                                    |                      |                                  |
| Storage buildings (silos)       |                             |                                 |                                    |                      |                                  |
| In-farm roads                   |                             |                                 |                                    |                      |                                  |
| Fencing                         |                             |                                 |                                    |                      |                                  |
| Animal pen                      |                             |                                 |                                    |                      |                                  |
| Animal equipment                |                             |                                 |                                    |                      |                                  |
| Others                          |                             |                                 |                                    |                      |                                  |
| <i>Equipment and machinery</i>  |                             |                                 |                                    |                      |                                  |
| Tractor                         |                             |                                 |                                    |                      |                                  |
| Hand tractor                    |                             |                                 |                                    |                      |                                  |
| Thresher                        |                             |                                 |                                    |                      |                                  |
| Weeder                          |                             |                                 |                                    |                      |                                  |
| Plow                            |                             |                                 |                                    |                      |                                  |
| Water pumps                     |                             |                                 |                                    |                      |                                  |
| Delivery trucks                 |                             |                                 |                                    |                      |                                  |
| Others                          |                             |                                 |                                    |                      |                                  |
| <i>Raw materials and inputs</i> |                             |                                 |                                    |                      |                                  |
| Seeds                           |                             |                                 |                                    |                      |                                  |
| Fertilizer                      |                             |                                 |                                    |                      |                                  |
| Pesticides                      |                             |                                 |                                    |                      |                                  |
| Stored production               |                             |                                 |                                    |                      |                                  |
| Others                          |                             |                                 |                                    |                      |                                  |
| <b>Fisheries</b>                |                             |                                 |                                    |                      |                                  |
| <i>Commercial</i>               |                             |                                 |                                    |                      |                                  |
| Boats                           |                             |                                 |                                    |                      |                                  |
| Nets                            |                             |                                 |                                    |                      |                                  |
| Traps and Cages                 |                             |                                 |                                    |                      |                                  |

|                 |  |      |  |      |
|-----------------|--|------|--|------|
| Ponds           |  |      |  |      |
| Gears           |  |      |  |      |
| Others          |  |      |  |      |
| <i>Artisan</i>  |  |      |  |      |
| Boats           |  |      |  |      |
| Nets            |  |      |  |      |
| Traps and Cages |  |      |  |      |
| Ponds           |  |      |  |      |
| Gears           |  |      |  |      |
| Others          |  |      |  |      |
| <b>TOTAL</b>    |  | N.A. |  | N.A. |

Notes for filling Table 17.

- The units of measure that will be used for the assets in Table 17 will be the ones enumerated in Table 16.
- 'Average Replacement Cost' will be the average pre-disaster value of the assets that were totally destroyed.
- Although the assets are totally destroyed, there will still be some re-usable materials that have salvage values. For instance, some wood or iron can be re-used for reconstruction of animal sheds while damaged equipment can be sold as scrap. The salvage values must be subtracted from the replacement cost.
- According to experience in past disasters, typically around 10-40 percent of materials can be re-used after a disaster.
- In formula, the total damages will be (Column D) = [(Column A) x (Column B)] – Column C.

The partially destroyed assets can be estimated using the following table.

**Table 18. Value of damages from partially destroyed agricultural assets in a district**

Name of District

| Agricultural Assets            | Partially destroyed assets  |                            |                                    | Total damages (Kips) | Average Time to Replace (Months) |
|--------------------------------|-----------------------------|----------------------------|------------------------------------|----------------------|----------------------------------|
|                                | Number of totally destroyed | Average Repair Cost (Kips) | Value of Reusable Materials (Kips) |                      |                                  |
|                                | A                           | B                          | C                                  | D                    | E                                |
| <b>Farming and Forestry</b>    |                             |                            |                                    |                      |                                  |
| <i>Physical Assets</i>         |                             |                            |                                    |                      |                                  |
| Agriculture land               |                             |                            |                                    |                      |                                  |
| Storage buildings (silos)      |                             |                            |                                    |                      |                                  |
| In-farm roads                  |                             |                            |                                    |                      |                                  |
| Fencing                        |                             |                            |                                    |                      |                                  |
| Animal pen                     |                             |                            |                                    |                      |                                  |
| Animal equipment               |                             |                            |                                    |                      |                                  |
| Others                         |                             |                            |                                    |                      |                                  |
| <i>Equipment and machinery</i> |                             |                            |                                    |                      |                                  |
| Tractor                        |                             |                            |                                    |                      |                                  |

|                                 |  |      |  |      |
|---------------------------------|--|------|--|------|
| Hand tractor                    |  |      |  |      |
| Thresher                        |  |      |  |      |
| Weeder                          |  |      |  |      |
| Plow                            |  |      |  |      |
| Water pumps                     |  |      |  |      |
| Delivery trucks                 |  |      |  |      |
| Others                          |  |      |  |      |
| <i>Raw materials and inputs</i> |  |      |  |      |
| Seeds                           |  |      |  |      |
| Fertilizer                      |  |      |  |      |
| Pesticides                      |  |      |  |      |
| Stored production               |  |      |  |      |
| Others                          |  |      |  |      |
| <b>Fisheries</b>                |  |      |  |      |
| <i>Commercial</i>               |  |      |  |      |
| Boats                           |  |      |  |      |
| Nets                            |  |      |  |      |
| Traps and Cages                 |  |      |  |      |
| Ponds                           |  |      |  |      |
| Gears                           |  |      |  |      |
| Others                          |  |      |  |      |
| <i>Artisan</i>                  |  |      |  |      |
| Boats                           |  |      |  |      |
| Nets                            |  |      |  |      |
| Traps and Cages                 |  |      |  |      |
| Ponds                           |  |      |  |      |
| Gears                           |  |      |  |      |
| Others                          |  |      |  |      |
| TOTAL                           |  | N.A. |  | N.A. |

Notes for filling table 18.

- The units of measure that will be used for the assets in Table 18 will be the ones enumerated in Table 16.
- 'Average Repair Cost' will be the average pre-disaster value of the assets that were partially destroyed.
- The salvage values of re-usable material must be subtracted from the repair cost.
- According to experience in past disasters, typically around 10-40 percent of materials can be re-used after a disaster.
- In formula, the total damages will be (Column D) = [(Column A) x (Column B)] – Column C.

#### **Step 2.1.2. Estimating Damages to Irrigation and Drainage Systems**

- The following table can be used to assess the damages of an irrigation system in a district. The assessment specialist must be familiar with the costs involved in the construction of irrigation systems.

**Table 19. Damages to Irrigation and Drainage Systems**

Name of District:

Name of Irrigation System  
1

Ownership Public ( ) Private ( )

**Extent of Damage**

|                      |   |                                     |
|----------------------|---|-------------------------------------|
| a. Totally destroyed | Value of Damage<br>(Replacement Cost in Kips) | Average Time to Replace<br>(Months) |
|----------------------|---|-------------------------------------|

b. Partially destroyed

| Description of Damage | Quantity or Unit of Measure | Quantity Damaged (Unit) | Repair Cost (Kips/Unit) | Value of Damage (Kips) | Average Time to Repair (Months) |
|-----------------------|-----------------------------|-------------------------|-------------------------|------------------------|---------------------------------|
|-----------------------|-----------------------------|-------------------------|-------------------------|------------------------|---------------------------------|

**Canals**

Earth Meters

Brick Meters

Stone Meters

Concrete Meters

**Head work system**

Flooding Weir Item or quantity

Gate Item or quantity

Earth dam Item or quantity

Others Item or quantity

**Other components**

Culverts Item or quantity

Pumps Item or quantity

Wells Item or quantity

Others Item or quantity

|       |  |      |      |  |      |
|-------|--|------|------|--|------|
| Total |  | N.A. | N.A. |  | N.A. |
|-------|--|------|------|--|------|

Notes in filling out Table 19.

- An irrigation system can only be damaged either totally or partially. If an irrigation system is totally destroyed, then the value of damage is its replacement cost. Otherwise, the repair costs of its components should be assessed as enumerated in Row B of the above table.
- Each of the affected irrigation systems in the district should be assessed in the same manner.

After assessing all the irrigation systems, the damages can be summarized in the following table.

**Table 20. Summary of Damages to Irrigation and Drainage Systems in a District**

Name of District:

| Name of Irrigation and Drainage System | Total Value of Damage (Kips) | Areas That Will Lose Irrigation Services (Hectares) | Number of Affected |          | Average Time to Repair or Replace (Months) |
|--|------------------------------|---|--------------------|----------|--|
|  |                              |   | Farmers            | Families |  |
| Name of Irrigation System 1            |                              |   |                    |          |  |
| Name of Irrigation System 2            |                              |   |                    |          |  |
| Name of Irrigation System 3            |                              |   |                    |          |  |

|                             |  |  |  |  |
|-----------------------------|--|--|--|--|
| Name of Irrigation System 4 |  |  |  |  |
| TOTAL                       |  |  |  |  |

Note for filling in Table 20:

- Table 20 is the summary of damages of the irrigation systems in a district based on the information gathered using Table 19. Column 1 is the name of all the irrigation systems in the district that affected by the disaster.
- The estimate on the number of hectares and farmers and families affected can be found in the baseline information. The information will give an indication on the extent of impact on people.

### Step 2.1.3. Estimating Damages to Livestock

- The assessment team must be able to have a head count of all the livestock that have died from the disaster to account for the damages.

**Table 21. Damages to Livestock**

Name of District:

| Livestock              | Quantity of Dead Animals | Ownership |        | Average Replacement Cost per Unit (Kips) | Total Damages (Kips) | Number of Affected Families |
|------------------------|--------------------------|-----------|--------|--|----------------------|-----------------------------|
|                        |                          | Private   | Public |  |                      |                             |
|                        | A                        | B         | C      | D  | E                    | F                           |
| Beef cattle            |                          |           |        |  |                      |                             |
| Dairy cattle           |                          |           |        |  |                      |                             |
| Breeding stock         |                          |           |        |  |                      |                             |
| Horses                 |                          |           |        |  |                      |                             |
| Camels                 |                          |           |        |  |                      |                             |
| Goats and sheep        |                          |           |        |  |                      |                             |
| Broilers               |                          |           |        |  |                      |                             |
| Layers                 |                          |           |        |  |                      |                             |
| Honey production units |                          |           |        |  |                      |                             |
| Other animals          |                          |           |        |  |                      |                             |
| TOTAL                  |                          |           |        | N.A.                                     |                      |                             |

Notes in filling out Table 21.

- The “total damages” is the replacement value of the animals that died due to the disaster. In formula: Column A x Column D = Column E (quantity of dead animals multiplied by average replacement cost per unit).
- The ‘number of affected families’ refers to the number of households which have animal/s that died due to the disaster.

### Step 2.1.4. Estimating Damages to Permanent Crops and Forest Products

- The assessment team must be able to have a count of all the permanent crops that have been totally destroyed or uprooted by the disaster to account for the damages.

**Table 22. Damages to Permanent Crops and Forest Products**

Name of District

| Permanent Crops       | For Big Plantations                   |   | For Trees Grown By Households   |  | Total Damages (Kips) | Number of Families Affected | Planting to Maturity Period (Years) |
|-----------------------|---------------------------------------|---|---------------------------------|--|----------------------|-----------------------------|-------------------------------------|
|                       | Total Number of Areas Affected (Has.) | Average Replanting Cost Per Hectare (Kips/ Hectare) | Total Number of Trees Destroyed | Average Replanting Cost per Tree (Kips/Tree) |                      |                             |                                     |
| A                     | B                                     | C   | D                               | E  | F                    | G                           | H                                   |
| Fruit trees (Specify) |                                       |   |                                 |  |                      |                             |                                     |
| Coconut               |                                       |   |                                 |  |                      |                             |                                     |
| Banana                |                                       |   |                                 |  |                      |                             |                                     |
| Coffee                |                                       |   |                                 |  |                      |                             |                                     |
| Cotton                |                                       |   |                                 |  |                      |                             |                                     |
| Tea                   |                                       |   |                                 |  |                      |                             |                                     |
| Mulberry bark         |                                       |   |                                 |  |                      |                             |                                     |
| Others (Specify)      |                                       |   |                                 |  |                      |                             |                                     |
| Forestry              |                                       |   |                                 |  |                      |                             |                                     |
| Timber                |                                       |   |                                 |  |                      |                             |                                     |
| Rattan                |                                       |   |                                 |  |                      |                             |                                     |
| Others (Specify)      |                                       |   |                                 |  |                      |                             |                                     |
| TOTAL                 |                                       | N.A.  |                                 | N.A.   |                      |                             | N.A.                                |

Notes in filling out Table 22:

- The “total damages” is the sum of the total replacement or replanting value of the totally destroyed or uprooted permanent crops and trees due to the disaster.
- For big plantations, the amount of damages can be readily calculated by multiplying the number of areas affected by the replanting cost per hectare that may be readily available from the MAF. [Column B x Column C]
- For a few number of permanent trees owned by many individual households, the value of damages can be approximated by the total number of permanent trees/crops destroyed multiplied by the average cost of replanting the same tree. [Column D x Column E]
- Total damages will be: [Column B x Column C] + [Column D x Column E] = Column F
- The ‘number of families affected’ refers to the number of households whose permanent trees that have been destroyed by the disaster.
- ‘Planting to maturity period’ refers to the time when the trees or crops are planted up to the time that they are ready for harvest.

**Step 2.1.5. Summarize the Damages in a District**

- Based on the assessment of the agricultural sub-sectors (Table 17 to Table 22) , the damages can be summarized in the following table:

**Table 23. Summary of Damages by Ownership in a District**

Name of District:

| Agricultural Sub-sector | Totally Destroyed (Kips) |        | Partially Destroyed (Kips) |         | Total Damages (Kips) |
|-------------------------|--------------------------|--------|----------------------------|---------|----------------------|
|                         | Private                  | Public | Public                     | Private |                      |
| Crops                   |                          |        |                            |         |                      |
| Permanent Crops         |                          |        |                            |         |                      |
| Fisheries               |                          |        |                            |         |                      |
| Livestock               |                          |        |                            |         |                      |
| Forestry and Timber     |                          |        |                            |         |                      |
| Agricultural Assets     |                          |        |                            |         |                      |
| Irrigation              |                          |        |                            |         |                      |
| Others                  |                          |        |                            |         |                      |
| TOTAL                   |                          |        |                            |         |                      |

**Step 2.2. Estimating losses in agriculture and forestry sector**

- There are several steps to assess losses in the agriculture sector and they are enumerated below.

**Step 2.2.1. Estimating agricultural production losses within the disaster year**

- The estimated losses in agriculture are the difference between the expected pre-disaster and post-disaster production of various crops, livestock, fisheries and forestry within the year that the disaster occurred. The following tables (Table 24 to Table 28) below can help in estimating these losses.

**Table 24. Losses from Crops**

Name of District:

| Crops                | Projected Annual Crop Production |      |               |      | Production Losses |      | Higher Production Cost | Other Losses | Total Losses |
|----------------------|----------------------------------|------|---------------|------|-------------------|------|------------------------|--------------|--------------|
|                      | Pre-Disaster                     |      | Post-Disaster |      |                   |      |                        |              |              |
|                      | (MT)                             | Kips | (MT)          | Kips | (MT)              | Kips | Kips                   | Kips         | Kips         |
|                      | A                                | B    | C             | D    | E                 | F    | G                      | H            | I            |
| Lowland rainfed rice |                                  |      |               |      |                   |      |                        |              |              |
| Dry season rice      |                                  |      |               |      |                   |      |                        |              |              |
| Upland rainfed rice  |                                  |      |               |      |                   |      |                        |              |              |
| Maize                |                                  |      |               |      |                   |      |                        |              |              |
| Sweet corn           |                                  |      |               |      |                   |      |                        |              |              |
| Soybean              |                                  |      |               |      |                   |      |                        |              |              |
| Mungbean             |                                  |      |               |      |                   |      |                        |              |              |
| Peanut               |                                  |      |               |      |                   |      |                        |              |              |
| Black bean           |                                  |      |               |      |                   |      |                        |              |              |
| Starchy roots        |                                  |      |               |      |                   |      |                        |              |              |
| Cassava              |                                  |      |               |      |                   |      |                        |              |              |
| Sweet potato         |                                  |      |               |      |                   |      |                        |              |              |
| Yam bean             |                                  |      |               |      |                   |      |                        |              |              |

|                             |      |  |      |  |      |  |  |  |
|-----------------------------|------|--|------|--|------|--|--|--|
| Taro                        |      |  |      |  |      |  |  |  |
| Pineapple                   |      |  |      |  |      |  |  |  |
| Papaya                      |      |  |      |  |      |  |  |  |
| Sesame                      |      |  |      |  |      |  |  |  |
| Cardamom                    |      |  |      |  |      |  |  |  |
| Job's Tear                  |      |  |      |  |      |  |  |  |
| Tobacco                     |      |  |      |  |      |  |  |  |
| Cantaloupe and other melons |      |  |      |  |      |  |  |  |
| Sugarcane                   |      |  |      |  |      |  |  |  |
| Vegetables                  |      |  |      |  |      |  |  |  |
| Water melon                 |      |  |      |  |      |  |  |  |
| Leafy stem vegetables       |      |  |      |  |      |  |  |  |
| Root, Bulb and Tuberous     |      |  |      |  |      |  |  |  |
| Others                      |      |  |      |  |      |  |  |  |
| TOTAL                       | N.A. |  | N.A. |  | N.A. |  |  |  |

Notes in filling out Table 24:

- “Production Losses” is the difference between the “Pre-disaster” and “Post-disaster” crop production estimates for the year. ‘MT’ refers to metric tons of production while ‘Kips’ refers to the equivalent in monetary terms of the production. In formula, it is:

Column E = Column A – Column C

Column F = Column B – Column D

- “Higher production cost” will be incurred if the farmers will re-plant in time for harvest within the year. Therefore, the value of “higher production cost” will be the initial investment put into the crops before they were destroyed by the disaster; they will be the “added” cost to the re-planting expenses of the farmers.
- The value of the “higher production cost” will depend on the timing of the occurrence of the disaster. For instance, if floods wiped out a hectare of rice land just after planting, the investment put into the land is lower compared to when floods happened during the middle stages of growth of rice. The assessment team must, therefore, be aware of the timing of the occurrence of the disaster – whether it happened at the early planting, middle or ready-to-harvest stages of cropping. It must be noted too that more production inputs may be needed after a disaster.
- The “total losses” will be the sum of production losses (in Kips), higher production costs and other losses. Other losses are the additional costs of cleaning up debris, retrieving documents, etc. In formula, it is:

Column I = Column F + Column G + Column H

- The above concepts will be followed in the following tables.

**Table 25. Losses From Permanent Crops Production**

Name of District:

| Permanent Crops       | Projected Annual Production |      |               |      | Production Losses |      | Other Losses | Total Losses |
|-----------------------|-----------------------------|------|---------------|------|-------------------|------|--------------|--------------|
|                       | Pre-Disaster                |      | Post-Disaster |      |                   |      |              |              |
|                       | (MT)                        | Kips | (MT)          | Kips | (MT)              | Kips | Kips         | Kips         |
| Fruit trees (Specify) |                             |      |               |      |                   |      |              |              |
| Coconut               |                             |      |               |      |                   |      |              |              |
| Banana                |                             |      |               |      |                   |      |              |              |



|                  |      |  |      |  |      |  |  |  |
|------------------|------|--|------|--|------|--|--|--|
| Coffee           |      |  |      |  |      |  |  |  |
| Cotton           |      |  |      |  |      |  |  |  |
| Tea              |      |  |      |  |      |  |  |  |
| Mulberry bark    |      |  |      |  |      |  |  |  |
| Others (Specify) |      |  |      |  |      |  |  |  |
| TOTAL            | N.A. |  | N.A. |  | N.A. |  |  |  |

Notes in filling out Table 25:

- Permanent crops will take a longer time to regain its productive capacity. As such, losses will extend beyond the disaster year. The assessment team must be able to estimate the various durations before the permanent crops will yield the pre-disaster levels of production.
- Since destroyed permanent crops cannot regain its pre-disaster level of production within the year that the disaster occurred, there will no higher production costs.
- The losses beyond the disaster year will be considered in the next step.

**Table 26. Losses From Fisheries Production**

Name of District:

| Fisheries               | Projected Annual Production |      |               |      | Production Losses |      | Higher Production Cost | Other Losses | Total Losses |
|-------------------------|-----------------------------|------|---------------|------|-------------------|------|------------------------|--------------|--------------|
|                         | Pre-Disaster                |      | Post-Disaster |      | Production Losses |      |                        |              |              |
|                         | (MT)                        | Kips | (MT)          | Kips | (MT)              | Kips | Kips                   | Kips         | Kips         |
| <b>Inland Fisheries</b> |                             |      |               |      |                   |      |                        |              |              |
| <i>Commercial</i>       |                             |      |               |      |                   |      |                        |              |              |
| a.                      |                             |      |               |      |                   |      |                        |              |              |
| b.                      |                             |      |               |      |                   |      |                        |              |              |
| <i>Artisan</i>          |                             |      |               |      |                   |      |                        |              |              |
| a.                      |                             |      |               |      |                   |      |                        |              |              |
| b.                      |                             |      |               |      |                   |      |                        |              |              |
| <b>Aquaculture</b>      |                             |      |               |      |                   |      |                        |              |              |
| <i>Commercial</i>       |                             |      |               |      |                   |      |                        |              |              |
| a.                      |                             |      |               |      |                   |      |                        |              |              |
| b.                      |                             |      |               |      |                   |      |                        |              |              |
| <i>Artisan</i>          |                             |      |               |      |                   |      |                        |              |              |
| a.                      |                             |      |               |      |                   |      |                        |              |              |
| b.                      |                             |      |               |      |                   |      |                        |              |              |
| TOTAL                   | N.A.                        |      | N.A.          |      | N.A.              |      |                        |              |              |

Notes in filling out Table 26:

- Similar to crops, culture fish can be damaged at several stages of production – newly stocked, middle of harvest and ready-to-harvest.
- Higher production costs will be incurred if the fish growers will re-stock in time for harvest within the year. Therefore, the value of “higher production costs” will be the initial investment put into the fingerlings before they were destroyed by the disaster; they will be the “added” cost to the re-stocking expenses of the fish farmers.
- The other notes in the previous table apply in filling out this table.

**Table 27. Losses From Livestock Production**

Name of District:

| Livestock             | Projected Annual Meat Production |      |               |      | Losses    |      | Higher Production Cost | Others Losses | Total Losses |
|-----------------------|----------------------------------|------|---------------|------|-----------|------|------------------------|---------------|--------------|
|                       | Pre-Disaster                     |      | Post-Disaster |      |           |      |                        |               |              |
|                       | Kgs                              | Kips | Kgs           | Kips | Kgs       | Kips | Kips                   | Kips          | Kips         |
| For Meat              |                                  |      |               |      |           |      |                        |               |              |
| Buffalo               |                                  |      |               |      |           |      |                        |               |              |
| Cattle                |                                  |      |               |      |           |      |                        |               |              |
| Pig                   |                                  |      |               |      |           |      |                        |               |              |
| Goat and sheep        |                                  |      |               |      |           |      |                        |               |              |
| Broilers              |                                  |      |               |      |           |      |                        |               |              |
| Layers                |                                  |      |               |      |           |      |                        |               |              |
| Others (Specify)      |                                  |      |               |      |           |      |                        |               |              |
| Eggs                  | Dozens                           |      | Dozens        |      | Dozens    |      |                        |               |              |
|                       |                                  |      |               |      |           |      |                        |               |              |
| Milk                  | Liters                           |      | Liters        |      | Liters    |      |                        |               |              |
|                       |                                  |      |               |      |           |      |                        |               |              |
| Grown As Work Animals | Offspring                        | Kips | Offspring     | Kips | Offspring | Kips | Kips                   | Kips          | Kips         |
| Buffalo               |                                  |      |               |      |           |      |                        |               |              |
| Cattle                |                                  |      |               |      |           |      |                        |               |              |
| Others                |                                  |      |               |      |           |      |                        |               |              |
| TOTAL                 | N.A.                             |      | N.A.          |      | N.A       |      |                        |               |              |

Notes in filling out Table 27:

- The higher cost in production for livestock can be due to additional veterinary and medical expenses for the affected livestock, cost temporary shelters for animals, etc.
- Disaster can also stress animals, adversely affecting their productivity. For instance, after a disaster, the egg production of layers normally decreases.

**Table 28. Losses From Forestry Production**

Name of District:

| Forestry | Projected Production |      |               |      | Losses |      | Other Losses | Total Losses |
|----------|----------------------|------|---------------|------|--------|------|--------------|--------------|
|          | Pre-Disaster         |      | Post-Disaster |      |        |      |              |              |
|          | (Unit)               | Kips | (Unit)        | Kips | (Unit) | Kips | Kips         | Kips         |
| Timber   |                      |      |               |      |        |      |              |              |
| Rattan   |                      |      |               |      |        |      |              |              |
| Firewood |                      |      |               |      |        |      |              |              |
| Others   |                      |      |               |      |        |      |              |              |
| TOTAL    | N.A.                 |      | N.A.          |      | N.A.   |      |              |              |

Notes for filling in Table 28:

- Destroyed forestry assets, like permanent crops, will take a longer time to regain its productive capacity. As such, there will be no higher costs to produce the same output within the year since losses will extend beyond the disaster year. The assessment team must be able to estimate the various durations before the forestry sector will yield the pre-disaster levels of production.
- The losses beyond the disaster year will be considered in the next step.

### Step 2.2.2. Estimating losses from Irrigation and Drainage systems fees within the disaster year

- There will be foregone income from destroyed irrigation facilities since they charge fees from users.

**Table 29. Losses from irrigation**

Name of District:

| Name and Description of the Irrigation and Drainage Facility | Estimated Income From Fees |               | Losses (Kips) | Ownership |         |
|--|----------------------------|---------------|---------------|-----------|---------|
|  | Pre-disaster               | Post-disaster |               | Public    | Private |
| 1.   |                            |               |               |           |         |
| 2.   |                            |               |               |           |         |
| 3.   |                            |               |               |           |         |
| 4.   |                            |               |               |           |         |
| TOTAL  |                            |               |               |           |         |

General notes on the above tables of losses (Table 24 to Table 29).

- The prime considerations in estimating post-disaster production are the damages that will severely reduce production capacity in the given year like damage to irrigation, land, permanent crops, the rate at which destroyed livestock and poultry can be replaced, the timing of the occurrence of the disaster, etc. Post-disaster losses will be the value of foregone production in relation to the projected output for the year under assessment had there been no disaster.
- “Losses” is the difference of pre- and post-disaster estimates for the year that the disaster occurred. The “losses” is the value that should be used to calculate the effect on GDP for the disaster year. The losses beyond the disaster year should affect the pre-disaster GDP estimates for those years.
- Tick the space under the column of ownership, whether private or public.
- Similar sheets would need to be filled in for each of the affected districts/provinces.

### Step 2.3. Summarize the Damages and Losses for the year that the disaster occurred

- Based on the information gathered in the previous tables, a summary should be developed to show the total damages and losses in a district. The details of the entries in the summary table below are from previous tables of damages and losses of the various sub-sectors under agriculture and forestry.

**Table 30. Summary of Damages and Losses in a district**

Name of District:

| Agricultural Sub-sector | Damages (Kips) |        | Total Damages (Kips) | Losses (Kips) |         | Total Losses (Kips) |
|-------------------------|----------------|--------|----------------------|---------------|---------|---------------------|
|                         | Private        | Public |                      | Public        | Private |                     |
| Crops                   |                |        |                      |               |         |                     |
| Permanent Crops         |                |        |                      |               |         |                     |
| Fisheries               |                |        |                      |               |         |                     |
| Livestock               |                |        |                      |               |         |                     |
| Forestry and Timber     |                |        |                      |               |         |                     |
| Agricultural Assets     |                |        |                      |               |         |                     |

|            |  |  |  |  |  |  |
|------------|--|--|--|--|--|--|
| Irrigation |  |  |  |  |  |  |
| Others     |  |  |  |  |  |  |
| TOTAL      |  |  |  |  |  |  |

Notes for filling out Table 30:

- The Damages in Column 2 is the sum of the values in the tables for damages to agricultural assets, irrigation and drainage systems, livestock and the damages on permanent crops.
- The Losses in Column 4 is the sum of the values in the tables for the estimated production losses and higher production costs for crops, permanent crops, fisheries, livestock, forestry and irrigation.

#### Step 2.4. Estimate Future Losses

- The MAF must be able to estimate the long-term effects on production levels due to the damages to land and permanent crops or trees, irrigation etc. to enable the MPI and the MOF to consider their economic impacts. The following tables should be created by the MAF and shared with the MPI and MOF.

**Table 31. Estimated Post-disaster Crop Production Losses Beyond the Disaster Year**

Name of District:

| Agricultural Crops          | Year 1 Estimates |               |        | Year 2 Estimates |               |        | Year 3 Estimates |               |        |
|-----------------------------|------------------|---------------|--------|------------------|---------------|--------|------------------|---------------|--------|
|                             | Pre-Disaster     | Post-Disaster | Losses | Pre-Disaster     | Post-Disaster | Losses | Pre-Disaster     | Post-Disaster | Losses |
|                             | Kips             | Kips          | Kips   | Kips             | Kips          | Kips   | Kips             | Kips          | Kips   |
| Lowland rainfed rice        |                  |               |        |                  |               |        |                  |               |        |
| Dry season rice             |                  |               |        |                  |               |        |                  |               |        |
| Upland rainfed rice         |                  |               |        |                  |               |        |                  |               |        |
| Maize                       |                  |               |        |                  |               |        |                  |               |        |
| Sweet corn                  |                  |               |        |                  |               |        |                  |               |        |
| Soybean                     |                  |               |        |                  |               |        |                  |               |        |
| Mungbean                    |                  |               |        |                  |               |        |                  |               |        |
| Peanut                      |                  |               |        |                  |               |        |                  |               |        |
| Black bean                  |                  |               |        |                  |               |        |                  |               |        |
| Starchy roots               |                  |               |        |                  |               |        |                  |               |        |
| Cassava                     |                  |               |        |                  |               |        |                  |               |        |
| Sweet potato                |                  |               |        |                  |               |        |                  |               |        |
| Yam bean                    |                  |               |        |                  |               |        |                  |               |        |
| Taro                        |                  |               |        |                  |               |        |                  |               |        |
| Pineapple                   |                  |               |        |                  |               |        |                  |               |        |
| Papaya                      |                  |               |        |                  |               |        |                  |               |        |
| Sesame                      |                  |               |        |                  |               |        |                  |               |        |
| Cardamom                    |                  |               |        |                  |               |        |                  |               |        |
| Job's Tear                  |                  |               |        |                  |               |        |                  |               |        |
| Tobacco                     |                  |               |        |                  |               |        |                  |               |        |
| Cantaloupe and other melons |                  |               |        |                  |               |        |                  |               |        |

|                         |  |  |  |  |  |  |  |  |  |
|-------------------------|--|--|--|--|--|--|--|--|--|
| Sugarcane               |  |  |  |  |  |  |  |  |  |
| Vegetables              |  |  |  |  |  |  |  |  |  |
| Water melon             |  |  |  |  |  |  |  |  |  |
| Leafy stem vegetables   |  |  |  |  |  |  |  |  |  |
| Root, Bulb and Tuberous |  |  |  |  |  |  |  |  |  |
| Others                  |  |  |  |  |  |  |  |  |  |
| TOTAL                   |  |  |  |  |  |  |  |  |  |

**Table 32. Estimated Post-disaster Production Losses of Permanent Crops Beyond the Disaster Year**

Name of District:

| Permanent Crops       | Year 1 Estimates |               |        | Year 2 Estimates |               |        | Year 3 Estimates |               |        |
|-----------------------|------------------|---------------|--------|------------------|---------------|--------|------------------|---------------|--------|
|                       | Pre-Disaster     | Post-Disaster | Losses | Pre-Disaster     | Post-Disaster | Losses | Pre-Disaster     | Post-Disaster | Losses |
|                       | Kips             | Kips          | Kips   | Kips             | Kips          | Kips   | Kips             | Kips          | Kips   |
| Fruit trees (Specify) |                  |               |        |                  |               |        |                  |               |        |
| Coconut               |                  |               |        |                  |               |        |                  |               |        |
| Banana                |                  |               |        |                  |               |        |                  |               |        |
| Coffee                |                  |               |        |                  |               |        |                  |               |        |
| Cotton                |                  |               |        |                  |               |        |                  |               |        |
| Tea                   |                  |               |        |                  |               |        |                  |               |        |
| Mulberry bark         |                  |               |        |                  |               |        |                  |               |        |
| Others (Specify)      |                  |               |        |                  |               |        |                  |               |        |
| TOTAL                 |                  |               |        |                  |               |        |                  |               |        |

**Table 33. Estimated Post-disaster Production Losses of Forestry Products Beyond the Disaster Year**

Name of District:

| Forestry Products               | Year 1 Estimates |               |        | Year 2 Estimates |               |        | Year 3 Estimates |               |        |
|---------------------------------|------------------|---------------|--------|------------------|---------------|--------|------------------|---------------|--------|
|                                 | Pre-Disaster     | Post-Disaster | Losses | Pre-Disaster     | Post-Disaster | Losses | Pre-Disaster     | Post-Disaster | Losses |
|                                 | Kips             | Kips          | Kips   | Kips             | Kips          | Kips   | Kips             | Kips          | Kips   |
| Timber                          |                  |               |        |                  |               |        |                  |               |        |
| Rattan                          |                  |               |        |                  |               |        |                  |               |        |
| Firewood                        |                  |               |        |                  |               |        |                  |               |        |
| Other Forest Products (Specify) |                  |               |        |                  |               |        |                  |               |        |
| TOTAL                           |                  |               |        |                  |               |        |                  |               |        |

**Table 34. Estimated Post-disaster Production Losses of Fisheries Beyond the Disaster Year**

Name of District:

| Fisheries               | Year 1 Estimates |               |        | Year 2 Estimates |               |        | Year 3 Estimates |               |        |
|-------------------------|------------------|---------------|--------|------------------|---------------|--------|------------------|---------------|--------|
|                         | Pre-Disaster     | Post-Disaster | Losses | Pre-Disaster     | Post-Disaster | Losses | Pre-Disaster     | Post-Disaster | Losses |
|                         | Kips             | Kips          | Kips   | Kips             | Kips          | Kips   | Kips             | Kips          | Kips   |
| <b>Inland Fisheries</b> |                  |               |        |                  |               |        |                  |               |        |
| <i>Commercial</i>       |                  |               |        |                  |               |        |                  |               |        |
| a.                      |                  |               |        |                  |               |        |                  |               |        |
| b.                      |                  |               |        |                  |               |        |                  |               |        |
| <i>Artisan</i>          |                  |               |        |                  |               |        |                  |               |        |
| a.                      |                  |               |        |                  |               |        |                  |               |        |
| b.                      |                  |               |        |                  |               |        |                  |               |        |
| <b>Aquaculture</b>      |                  |               |        |                  |               |        |                  |               |        |
| <i>Commercial</i>       |                  |               |        |                  |               |        |                  |               |        |
| a.                      |                  |               |        |                  |               |        |                  |               |        |
| b.                      |                  |               |        |                  |               |        |                  |               |        |
| <i>Artisan</i>          |                  |               |        |                  |               |        |                  |               |        |
| a.                      |                  |               |        |                  |               |        |                  |               |        |
| b.                      |                  |               |        |                  |               |        |                  |               |        |
| TOTAL                   |                  |               |        |                  |               |        |                  |               |        |

**Table 35. Estimated Post-disaster Production Losses of Livestock Beyond the Disaster Year**

Name of District:

| Livestock           | Year 1 Estimates |               |        | Year 2 Estimates |               |        | Year 3 Estimates |               |        |
|---------------------|------------------|---------------|--------|------------------|---------------|--------|------------------|---------------|--------|
|                     | Pre-Disaster     | Post-Disaster | Losses | Pre-Disaster     | Post-Disaster | Losses | Pre-Disaster     | Post-Disaster | Losses |
|                     | Kips             | Kips          | Kips   | Kips             | Kips          | Kips   | Kips             | Kips          | Kips   |
| <b>For Meat</b>     |                  |               |        |                  |               |        |                  |               |        |
| Buffalo             |                  |               |        |                  |               |        |                  |               |        |
| Cattle              |                  |               |        |                  |               |        |                  |               |        |
| Pig                 |                  |               |        |                  |               |        |                  |               |        |
| Goat and sheep      |                  |               |        |                  |               |        |                  |               |        |
| Broilers            |                  |               |        |                  |               |        |                  |               |        |
| Others (Specify)    |                  |               |        |                  |               |        |                  |               |        |
| Eggs                |                  |               |        |                  |               |        |                  |               |        |
| Milk                |                  |               |        |                  |               |        |                  |               |        |
| <b>Work Animals</b> |                  |               |        |                  |               |        |                  |               |        |
| Buffalo             |                  |               |        |                  |               |        |                  |               |        |
| Cattle              |                  |               |        |                  |               |        |                  |               |        |

|        |  |  |  |  |  |  |  |  |  |
|--------|--|--|--|--|--|--|--|--|--|
| Layers |  |  |  |  |  |  |  |  |  |
| Others |  |  |  |  |  |  |  |  |  |
| TOTAL  |  |  |  |  |  |  |  |  |  |

**Table 36. Estimated Post-disaster Losses From Fees on Irrigation Beyond the Disaster Year**

Name of District:

| Name and Description of the Irrigation Facility | Year 1 Estimate of Fees |               |        | Year 2 Estimate of Fees |               |        | Year 3 Estimate of Fees |               |        |
|---|-------------------------|---------------|--------|-------------------------|---------------|--------|-------------------------|---------------|--------|
|   | Pre-Disaster            | Post-Disaster | Losses | Pre-Disaster            | Post-Disaster | Losses | Pre-Disaster            | Post-Disaster | Losses |
|   | Kips                    | Kips          | Kips   | Kips                    | Kips          | Kips   | Kips                    | Kips          | Kips   |
| 1.  |                         |               |        |                         |               |        |                         |               |        |
| 2.  |                         |               |        |                         |               |        |                         |               |        |
| 3.  |                         |               |        |                         |               |        |                         |               |        |
| 4.  |                         |               |        |                         |               |        |                         |               |        |
| Total   |                         |               |        |                         |               |        |                         |               |        |

Notes in filling out Tables 32 to 36:

- Years 1, 2 and 3 refer to the years after the disaster has occurred.
- “Pre-disaster estimate” is the original estimated value of production (in Kips) for the year under consideration *if there was no disaster*. This should be available at the MAF.
- “Post-disaster estimate” is the revised estimated value of production (in Kips) for the year under consideration *after a disaster has occurred*. This will be based on the estimates of the assessment team.
- “Losses” refers to the difference between the pre- and post-disaster estimates.

#### Step 2.5. Summarize Losses for the Years After The disaster Occurred

- Based on the previous tables, a summary of the estimated losses in agriculture could be made using the table below.

**Table 37. Summary of Future Losses in Agriculture, in Kips**

Name of District:

| Sub-sector          | Losses (in Kips) |        |        |       |
|---------------------|------------------|--------|--------|-------|
|                     | Year 1           | Year 2 | Year 3 | Total |
| Crops               |                  |        |        |       |
| Permanent Crops     |                  |        |        |       |
| Fisheries           |                  |        |        |       |
| Livestock           |                  |        |        |       |
| Forestry and Timber |                  |        |        |       |
| Irrigation          |                  |        |        |       |
| Others              |                  |        |        |       |
| TOTAL               |                  |        |        |       |

#### Step 2.6. Summarize Damages and Losses in the Agriculture Sector in a District

- The assessment for all the sub-sectors should be consolidated to create a summary of damages and losses in a district, as shown in the table below.

**Table 38. Summary of Damages and Losses in Agriculture in a District**

Name of District:

| Sub-sector          | For the Disaster Year (Kips) |        | Losses After the Disaster Year (Kips) |        |        | Total (Kips) |
|---------------------|------------------------------|--------|---------------------------------------|--------|--------|--------------|
|                     | Damages                      | Losses | Year 1                                | Year 2 | Year 3 |              |
| Crops               |                              |        |                                       |        |        |              |
| Permanent Crops     |                              |        |                                       |        |        |              |
| Fisheries           |                              |        |                                       |        |        |              |
| Livestock           |                              |        |                                       |        |        |              |
| Forestry and Timber |                              |        |                                       |        |        |              |
| Irrigation          |                              |        |                                       |        |        |              |
| Others              |                              |        |                                       |        |        |              |
| TOTAL               |                              |        |                                       |        |        |              |

**Step 2.7. Summarize Damages and Losses in the Agriculture Sector in a Province**

- Once the summary table (Table 37) for each affected district has been filled out, the below table should be used for summarizing information at the province level. Each affected province should fill up a similar table.
- The provincial office should make this data available to the assessment team visiting from the central level during field assessment.

**Table 38. Summary of Damages and Losses in Agriculture in a Province**

Name of Province:

| District                              | For the Disaster Year (Kips) |        | Losses After the Disaster Year (Kips) |        |        | Total (Kips) |
|---------------------------------------|------------------------------|--------|---------------------------------------|--------|--------|--------------|
|                                       | Damages                      | Losses | Year 1                                | Year 2 | Year 3 |              |
| District 1 (Add the name of district) |                              |        |                                       |        |        |              |
| Crops                                 |                              |        |                                       |        |        |              |
| Permanent Crops                       |                              |        |                                       |        |        |              |
| Fisheries                             |                              |        |                                       |        |        |              |
| Livestock                             |                              |        |                                       |        |        |              |
| Forestry and Timber                   |                              |        |                                       |        |        |              |
| Irrigation                            |                              |        |                                       |        |        |              |
| Others                                |                              |        |                                       |        |        |              |
| District 2 (Add the name of district) |                              |        |                                       |        |        |              |
| Crops                                 |                              |        |                                       |        |        |              |
| Permanent Crops                       |                              |        |                                       |        |        |              |
| Fisheries                             |                              |        |                                       |        |        |              |
| Livestock                             |                              |        |                                       |        |        |              |
| Forestry and Timber                   |                              |        |                                       |        |        |              |
| Irrigation                            |                              |        |                                       |        |        |              |
| Others                                |                              |        |                                       |        |        |              |
| District 3 (Add the name of district) |                              |        |                                       |        |        |              |
| District 4 (Add the name of district) |                              |        |                                       |        |        |              |



|       |  |  |  |  |  |  |
|-------|--|--|--|--|--|--|
| TOTAL |  |  |  |  |  |  |
|-------|--|--|--|--|--|--|

Notes in filling out Table 38:

- The information for all the districts affected in the province should be included in the summary.

### Step 2.8. Summarize Damages and Losses in the Agriculture Sector Nationwide

- Once the summary table (Table 38) for each affected province has been filled out, the below table should be used by the central level assessment team for summarizing information at the national level. This is to be filled out after the field assessment is over.

**Table 39. Summary of Damages and Losses in Agriculture Nationwide**

Nationwide

|                                   | For the Disaster Year<br>(Kips) |        | Losses After the Disaster Year<br>(Kips) |        |        | Total<br>(Kips) |
|-----------------------------------|---------------------------------|--------|--|--------|--------|-----------------|
|                                   | Damages                         | Losses | Year 1                                   | Year 2 | Year 3 |                 |
| Province 1 (Add name of province) |                                 |        |  |        |        |                 |
| Crops                             |                                 |        |  |        |        |                 |
| Permanent Crops                   |                                 |        |  |        |        |                 |
| Fisheries                         |                                 |        |  |        |        |                 |
| Livestock                         |                                 |        |  |        |        |                 |
| Forestry and Timber               |                                 |        |  |        |        |                 |
| Irrigation                        |                                 |        |  |        |        |                 |
| Others                            |                                 |        |  |        |        |                 |
| Province 2 (Add name of province) |                                 |        |  |        |        |                 |
| Crops                             |                                 |        |  |        |        |                 |
| Permanent Crops                   |                                 |        |  |        |        |                 |
| Fisheries                         |                                 |        |  |        |        |                 |
| Livestock                         |                                 |        |  |        |        |                 |
| Forestry and Timber               |                                 |        |  |        |        |                 |
| Irrigation                        |                                 |        |  |        |        |                 |
| Others                            |                                 |        |  |        |        |                 |
| Province 3 (Add name of province) |                                 |        |  |        |        |                 |
| Province 4 (Add name of province) |                                 |        |  |        |        |                 |
| TOTAL                             |                                 |        |  |        |        |                 |

Notes in filling out Table 39:

- The information for all the provinces affected by the disaster should be included in the summary.

## Step 3: Estimate recovery and reconstruction needs

### Step 3.1 Setting the recovery and reconstruction strategy for agriculture and forestry sector:

- While the damage and loss assessment is being undertaken, the MAF in consultation with their counterparts in affected provinces, Ministry of Planning and Investment, National Disaster Management Office, and in partnership with development partners involved in the agriculture sector in Lao PDR, should develop the strategy to be followed for recovery and reconstruction of the sector. Some of the broad content of the strategy could include the following:

- Identifying sector-specific factors which will contribute to 'build back better' or high resilience of the agriculture sector.
- Possibilities of relocation of agricultural facilities situated in high risk areas.
- Possible incentives to private agri-business owners for reconstruction of damaged facilities and stock with higher standards of resilience.
- Enhancing and strengthening medium to long-term disaster risk reduction related issues in the agriculture sector such as integrating hazard resilience standards in design and construction of all new farm buildings, retrofitting of existing facilities situated in high risk areas, improving of disaster risk reduction measures such as crop and animal selection, etc.
- Policy guidelines and strategies in financing the recovery and reconstruction activities in the sector covering both the public and private.

### Step 3.2. Estimating recovery and reconstruction needs of the agriculture sector

- The quantification of damage and losses will enable the estimation of financial requirements to achieve full recovery of the sector and to reconstruct the facilities that were destroyed or damaged.
- The value of losses is used to estimate the amount required to achieve recovery of the sector, and the value of damage is used to estimate the financial requirements for the reconstruction of agricultural facilities.
- This estimation of financial needs for recovery and reconstruction should be broken down by districts and provinces.

#### Step 3.2.1 Estimating recovery needs

Possibly recovery related activities in agriculture sector could include:

- **Cash- and food-for-work schemes:** To immediately restore personal and family incomes, cash- and food-for-work schemes may be implemented. Implementing food-for-work or a combination of cash-for-work to rehabilitate/reconstruct damaged irrigation systems, immediate repair of agriculture-related facilities town halls, public schools, health centers, etc. can provide temporary employment while farmers are waiting to plant and harvest. This can be in combination with adopting the labor-intensive reconstruction method.

The cost of emergency employment schemes (cash- and food-for-work) will be determined by the number of people affected (especially the number of poor farmers) and the immediate work that must be done like repair of irrigation systems, farm-to-market roads, school buildings, etc. A percentage of the total estimated repair costs will determine how many people can be employed for a duration of time. The assessment specialist can coordinate with the infrastructure experts as to the number of farmers that can be employed. Using labor-intensive methods (using more people instead of equipment) can maximize employment opportunities.

- **Direct subsidy to crop growers:** Recovery activities in the crop sub-sector normally include the provision of inputs required for replanting such as fertilizers, seeds, pesticides and farming tools or rental of farm machineries. These can be extended to farmers who are ready to resume their normal work on their lands through a direct grant or subsidy or through appropriate lines of credit for those who are credit-worthy. To the extent possible, seeds, tools, etc. that will be distributed should be resistant to natural hazards (like floods and/or drought) in the area/s. According to the Guidance Note of the World bank and the Global Facility for Disaster Reduction and Recovery entitled: Estimation of Post-Disaster needs for Recovery and Reconstruction notes, the amount of recovery needs can be estimated by an agronomist or agricultural economist as a fraction of the value of production losses of the crops.
- **Provision of animals and the necessary veterinary and other related services:** To restore livestock and prevent any outbreak of animal diseases, assistance in the provision of animals and veterinary medicines and other services like feeds should be provided. Any new and remaining livestock and poultry must be protected from diseases and starvation to ensure meat supply, eggs and other related products. Distributing and protecting the buffalos will enable farmers to resume work on their farms while livestock and chickens will provide additional source of income and food. In cases of drought and other hydro-meteorological disasters, a scheme of animal food provision and of re-planting of pasture may be required. The amount needed for both schemes can be estimated based on the value of losses.

- **Pond repairs and re-stocking of fingerlings: Recovery of the fisheries sub-sector** can include the assistance in the repairs of fish cages, ponds or fish traps and the provision of tools and gears as well as fingerlings to replace the depleted aquaculture and fisheries stock. These activities can be extended through grants or donation of tools and/or soft-term credit. It is assumed here that the repairs necessary are in accordance with the 'building back principle'. If the damages to fish ponds and other fisheries structures will require major construction, the assistance should be included in the reconstruction needs.
- **Food supply stabilization.** The destruction of crops, livestock and other agricultural outputs due to the disaster may adversely affect the balance of food supply within and outside the areas affected. The assessment team must be able to assess the gaps in food supply within the disaster year and beyond to enable the government to stabilize the food supply and their prices. The cost of stabilizing food supply will be the value of the supply gaps multiplied by the unit costs of the respective food items over a specified period. It should be noted, however, that in estimating the food requirements, the donations of food aid donors should be factored in. In most instances, food subsidy or assistances are integrated with food-for-work schemes. In cases where importation of food items is needed, the government may directly engage in the procurement. If private firms will be undertake the importation, exemption from duties and taxes can be granted to exporters to lower the cost of food supply. The following table can be used for the analysis of food requirements for food supply stabilization.

**Table 38. Pre- and Post-Disaster Estimated Food Requirements Per Year in the Area, in Kilograms**

| Food items | Pre-disaster (Kgs) |             |     | Post-disaster (Kgs) |     | Year 1 (Kgs) |     | Year 2 (Kgs) |     |
|------------|--------------------|-------------|-----|---------------------|-----|--------------|-----|--------------|-----|
|            | Output             | Consumption | Gap | Output              | Gap | Output       | Gap | Output       | Gap |
|            | A                  | B           | C   | D                   | E   | F            | G   | H            | I   |
| Rice       |                    |             |     |                     |     |              |     |              |     |
| Beef       |                    |             |     |                     |     |              |     |              |     |
| Poultry    |                    |             |     |                     |     |              |     |              |     |
| Fish       |                    |             |     |                     |     |              |     |              |     |
| Corn       |                    |             |     |                     |     |              |     |              |     |
| Vegetables |                    |             |     |                     |     |              |     |              |     |
| Root crops |                    |             |     |                     |     |              |     |              |     |
| Others     |                    |             |     |                     |     |              |     |              |     |
| Total      |                    |             |     |                     |     |              |     |              |     |

Notes in filling out Table 38:

- Column 1 is for the food items normally consumed in the area under consideration.
- Column 2 is for the pre-disaster (without disaster scenario) output (production) and consumption of the food items by the population in the area.
- "Gap" in column C refers to the food items consumed but not produced in the area. The gap must come outside the area to augment or fill the food requirements of the population. In formula, Column C = Column A – Column B.
- Column 3 is for the post-disaster estimated output or production of the food items in the area. The "Gap" refers to the difference between the pre- and post-disaster gaps. The post-disaster gap will be the post-disaster output (Column D) less the pre-disaster consumption (Column B). In formula, Column E = Column D - Column B.
- The same will apply for the years after the disaster. Year 1 gap, Column G = Column F – Column B while year 2 gap, Column I = Column H – Column B.
- The above table assumes that pre-disaster consumption will not change and that no mass out-migration will occur.
- The estimated food supply gaps must enable recovery planners to design measures, like food importation, to maintain the food requirements and health conditions of the affected population.

- Again, the cost of stabilizing food supply will be the value of the supply gaps multiplied by the unit costs of the respective food items over a specified time period.

The cost of each of the above mentioned activities would have been estimated as part of loss assessment. The MAF can use the table below to put forward their recommendation to MPI for activities related to recovery needs:

**Table 39. Summary of Recovery Needs in the Agriculture Sector**

| Possible Assistance by Economic Activities of People Affected | Type and Amount of Assistance Needed (Kips) |        | Total Amount Needed (Kips) | Foreign Cost Component (US\$) |
|---|---|--------|----------------------------|-------------------------------|
|   | Grant assistance or subsidy                 | Credit |                            |                               |
| Cash- and food-for-work schemes.                              |   |        |                            |                               |
| Direct subsidy to crop growers                                |   |        |                            |                               |
| Provision of animals and the necessary veterinary services    |   |        |                            |                               |
| Pond repairs and re-stocking of fingerlings                   |   |        |                            |                               |
| Food supply stabilization                                     |   |        |                            |                               |
| Others  |   |        |                            |                               |
| <b>TOTAL</b>  |   |        |                            |                               |

Notes in filling out Table 39:

- Part of Column 1 (Food Supply Stabilization) is the amount required to stabilize or maintain the pre-disaster food balance within and outside the affected areas. The amount can be found in Table 38. If importation will be resorted to, the price of the food items must be the international price.
- Column 2 is for the type and amount of assistance needed by the people in the sub-sectors. For example, seedlings that are recommended to given for free to crop growers should indicate the amount under the grant column.
- Column 3 is for the total amount needed in Kips which is the total of the grant, credit and others.
- “Others” may include other alternative livelihood activities that may be extended to the affected people in the sector.
- Column 4 is the foreign cost component, which is the amount of foreign currency in US Dollars, that may be required if there are imported equipment or materials needed in assisting the sub-sectors.

### **Step 3.2.2. Estimating reconstruction needs**

To estimate the value of reconstruction needs of the agriculture sector, the following formula is to be used:

#### **1. Crops**

In the crops sub- sector, there are three main types of possible schemes for reconstruction.

First, a program of reconstruction of irrigation and drainage systems with improved, disaster-resilient standards should be developed. For example, irrigation canals may need extra retrofitting than just restoration to its pre-disaster condition. Normally, such reconstruction scheme would need to be rebuilt under a very fast mode to ensure that their temporary absence would not exacerbate the stalled productive activities of farmers in the disaster-affected areas.

The second possible program is the reconstruction of storage facilities where agricultural inputs and products are stored, again following improved construction standards. According to the Guidance Note of the World bank and the Global Facility for Disaster Reduction and Recovery entitled: Estimation of Post-Disaster needs for Recovery and Reconstruction notes, the estimation of the financial requirements for these programs can be made using the following formula:

Agriculture Reconstruction Needs = A \* Agriculture Infrastructure Damage Value

where A is a disaster-resilience coefficient, whose value may range from 1.10 to 1.30, depending on the improved degree of construction standards required in the affected country for this type of structures, which would have been defined in the reconstruction strategy adopted after the disaster. Civil, irrigation engineers or agricultural engineers familiar with disaster-resilient construction standards would be able to define the coefficients.

A third program will be the reconstruction or the replanting of permanent trees and plantations after they have been destroyed by the disaster. The financial needs for such a program must be estimated in the basis of the cost of re-planting the destroyed trees, using disaster-resistant varieties. Agricultural engineers and agronomists should be entrusted with the estimation.

### **Livestock**

A disaster may decimate the animal stock and affect related physical facilities. Animal stock required for consumption of the meat, milk and other derivatives must be replaced at the earliest possible time to ensure the livelihoods and the food availability for the population of the affected areas and the country.

For reconstruction purposes, two main types of schemes can be defined and implemented. First, a program of animal stock replacement can be implemented utilizing disaster-resilient species that can better adapt in the affected areas. This can include in-kind provision of animals for the poor and government-subsidized credit schemes for the acquisition of animal stocks. The MAF can distribute livestock and other animals that are resilient to floods (or droughts as the case may be) and other hazards in the affected areas.

Second, a program of reconstruction of physical facilities like animal sheds should be developed using an improved, disaster-resilient standard of construction. This program may include grants to poor livestock owners and soft-term credit lines and partial government subsidies for the same purpose focusing on small and medium enterprises (SMEs).

The financial requirements for such programs are to be estimated on the basis of the value of damage for the physical assets and for the animal stock, with due increments for the improved and disaster-resilient features that are to be adopted as part of the reconstruction strategy. According to the Guidance Note of the World Bank and the Global Facility for Disaster Reduction and Recovery entitled: Estimation of Post-Disaster needs for Recovery and Reconstruction notes, the following two formulas can be used for such estimation:

1. Livestock Replacement Needs =  $L \times \text{Value of animal stock}$

where L is a coefficient for the introduction of disaster-resilient animal varieties, whose value may range from 1.10 to 1.30. The actual value of the coefficient that should be adopted would depend on the degree of resilience to be achieved, in comparison to the existing animal stock. An experienced veterinarian would be required for the definition of this coefficient.

2. Livestock Infrastructure Reconstruction Needs =  $L_i \times \text{Value of Livestock Infrastructure}$

Where  $L_i$  is a disaster-resilience coefficient, whose value may range from 1.10 to 1.30, depending on the improved degree of construction standards required in the affected country for this type of structures which should be defined in the reconstruction strategy adopted after the disaster. Civil or agricultural engineers familiar with disaster-resilient construction standards would be able to define those coefficients.

### **Fisheries and aquaculture**

Disasters may result in the destruction of physical assets that are essential in fisheries and aquaculture like boats and engines for artisan and commercial fishing activities, docking stations, ponds and other associated facilities and equipment. In the reconstruction stage, replacement or repair of such assets must be addressed efficiently and using improved, disaster-resilient standards thus assuring their future sustainability.

There are three possible components of reconstruction for this sector. The first one refers to the replacement of boats and engines, with improved capacity, quality and technology, for artisan and commercial fishermen. Depending on the target population, this may include in-kind donations of equipment for the poor or artisan fisher folk and/or concessional credit lines for the acquisition of such equipment for SMEs that engage in commercial fishing activities.

The second scheme refers to reconstruction of docking and other associated facilities, which are usually publicly owned and operated, using improved, disaster-resilient standards. The third scheme covers the reconstruction of aquaculture ponds and associated equipment replacement, using improved and disaster-resilient standards, through soft-term credit programs channeled to SMEs via the development banks and/or the commercial banks. According to the Guidance Note of the World Bank and the Global Facility for Disaster Reduction and Recovery entitled: Estimation of Post-Disaster needs for Recovery and Reconstruction notes, the following formulas may be used for the estimation of financial requirements for reconstruction in this sector:

#### 1. Equipment Replacement Needs = $F * \text{Damage to Fishing Equipment}$

where  $F$  is a disaster-resilient coefficient whose value may range from 1.10 to 1.35, depending on the desired degree of improvement and disaster resiliency that is defined in the reconstruction strategy. Fishery experts with long-standing experience on the sector would be able to define the adopted value of this coefficient.

#### 2. Reconstruction Needs = $F_i * \text{Damage to Fishery Infrastructure}$

Where  $F_i$  is the fishery and aquaculture infrastructure disaster-resilience coefficient, whose value may range from 1.10 to 1.40, depending on the desired degree of disaster resiliency to be achieved as defined in the “building-back-better” reconstruction strategy. Civil engineers and fishery/aquaculture experts with long-standing experience in their sector should define the values to be adopted.

Reconstruction activities should include both public as well as private sector in agriculture and they may require different types of financing strategy. Possible reconstruction related activities in the agriculture sector could include the following:

- Reconstruction and repair of agricultural structures like storage buildings, animal sheds, etc. under a building-back-better strategy to ensure future disaster resilience through the adoption and enforcement of improved construction standards.
- Structural retro-fitting of undamaged or partially damaged agricultural facilities so that they are not affected by disaster event in the future. The costs for such a scheme must be estimated on an ad hoc basis, for which architects and civil engineers would need to define the new standards up to which retro-fitting should aim, and should estimate the additional funding required for it.
- Relocation of vital facilities (like main storage of grains and other harvests) to safe areas, as necessary. In this case, the additional costs land acquisition, and basic services provision (water, sanitation, electricity, etc) should be included.
- Replacement of agricultural equipment and machinery that were destroyed may be included in the reconstruction needs, unless they have been covered under the recovery needs. Included here are all the sub-sectors like tractors for the crop sub-sector, boats and engines for fisheries sub-sector, etc.
- Dispersal of animal stock and/or the development of breeding stations to re-populate the decimated animal population. Appropriate types of animal breed may be chosen to adapt to disaster-prone areas.
- Provision of seedlings to replace the permanent crops that were totally destroyed.
- Soft-term credit for reconstruction and repair of private agricultural businesses. Such schemes can be accompanied by technical assistance for improved disaster resilient standards of construction.

The MAF can use the below table to put forward their recommendation to MPI for activities related to reconstruction needs:

**Table 40. Reconstruction Needs of the Agriculture Sector**

| Assistance to the Agriculture Sector   | Reconstruction Needs (Kips) |        |       | Total Reconstruction Needs (Kips) | Foreign Cost Component (US\$) |
|--|-----------------------------|--------|-------|-----------------------------------|-------------------------------|
|  | Grant                       | Credit | Total |                                   |                               |
| Reconstruction and repair of agricultural structures                               |                             |        |       |                                   |                               |
| Structural retro-fitting of undamaged or partially damaged agricultural facilities |                             |        |       |                                   |                               |
| Relocation of vital facilities   |                             |        |       |                                   |                               |
| Replacement of agricultural equipment and machinery                                |                             |        |       |                                   |                               |
| Dispersal of animal stock  |                             |        |       |                                   |                               |
| Development of breeding stations   |                             |        |       |                                   |                               |
| Provision of seedlings to replace the permanent crops                              |                             |        |       |                                   |                               |
| Soft-term credit for private agricultural businesses                               |                             |        |       |                                   |                               |
| Others   |                             |        |       |                                   |                               |
| <b>Total</b>   |                             |        |       |                                   |                               |

Notes in filling out Table 40:

- The foreign cost component is the amount of foreign currency in US Dollars that will be required to procure imported materials such as cement, steel, etc. for the construction of mitigation infrastructure.

### *Step 3.2.3. Prioritize post-disaster needs in the agriculture sector*

Competing needs usually arise after a disaster. Each sector would normally compete with one another for scarce resources or the budget that the national government will allocate. It is, therefore, important that there are identified priorities even among the sub-sectors within the sector itself. For instance, in the agriculture sector, the MAF must be able to justify why agriculture should be prioritized and which sub-sectors are priorities over the others. The following should be considered:

- Effects on the Food Supply**

Damage to agriculture will immediately result to the reduction of food supply which can have serious impact on health and nutrition especially of the vulnerable groups.

- The socio-economic impact on families and women**

This concern should include the socio-economic impact of disasters on people engaged in agriculture especially those living below and in the border of the poverty line. In Lao PDR, more people depend on the agriculture sector for their source of income and, in most instances, these people in agriculture are among the poorest. The above two concerns are further explained in the macroeconomic and household impact assessment.

- Contribution of agriculture to other sectors**

There are agricultural products which are major inputs of other industries. For instance, if corn is the basic ingredient of animal feeds, its supply reduction will also cause increase the prices of feeds which will eventually inflate the prices of poultry products affecting a greater number of people. The MAF, therefore, should analyze the chain of adverse impacts that damages and losses to agriculture can cause especially to the food processing industries that rely on their primary inputs from the agriculture sector. The assessment must be able to provide an indication of the reduction of supply of raw materials to agricultural processing industries or other industries whose prime inputs are coming from the agriculture sector. The MAF must advise the MIC on the potential shortfalls in the primary inputs



from the agriculture sector. This will enable the MIC to assess any potential reduction in output of the manufacturing sector.

- **Contribution of agriculture to foreign earnings**

If the damages and losses in certain crops or livestock or timber products are for export, foreign earnings will decrease if the recovery of the sector will not be prioritized. The MAF with the assistance of the MPI can further analyze the impact of the reduction of foreign earnings to the national economy.

- **Potential threats or hazards created by the disaster**

There may be some hazards that may have been created by the past disasters such as a landslide threat caused by extensive rains or potential flooding of rice and corn lands brought about by destroyed irrigation systems or dikes. If the potential losses to agriculture from these threats are extensive, the MAF should consider mitigation as top priority.

- **Environmental effects**

One of the aftermaths of a disaster event is the destruction of some environmentally sensitive areas. For instance, some watershed areas may be put at risk by landslides or the destruction of the forest that sustains it. Environmental concerns must be included in the criteria for prioritizing programs and projects for recovery.

Further, in the agriculture sector, quick recovery efforts must be undertaken since a great number of people depend on the sector for their source of income and food supply. Even people not affected directly by the disaster can suffer the consequence of lower food supply or higher cost of food items. Priority in recovery should be the stabilization of personal and family incomes and subsequently food supply. As such, urgent assistance to restore incomes, revive economic activities and stabilize food supply should be implemented. There are certain options that can be implemented through policy measures to expedite recovery and reconstruction, among them are:

- **Production credit.** A credit scheme with soft terms, like low interest rate with longer repayment periods, can provide farmers and growers the resources to buy production inputs and revive their agricultural activities immediately. Credit schemes should be made available to all the sub-sectors of agriculture (crops, livestock, fisheries and forestry). Credit can be channeled through existing government programs or through the private banking system with a government guarantee. This scheme can be implemented through a policy directive that will not need any monetary outlay from the government except for the liability associated with the guarantee. According to the Guidance Note of the World Bank and the Global Facility for Disaster Reduction and Recovery entitled: Estimation of Post-Disaster needs for Recovery and Reconstruction notes, the amount of financing or needs for the credit program can be estimated as a fraction of the value of production losses under fishery and aquaculture which usually from 25 to 40 per cent of the production losses.
- **Income and importation tax breaks to affected farmers and firms:** Exempting farmers and agricultural firms from paying certain taxes for a certain period, say 2 years, will enable them to invest more due to the savings they will derive from such exemptions. Farmers can be exempted from paying income taxes while agricultural suppliers can be exempted from import or sales taxes which can be passed on to small farmers. This scheme can be implemented through a policy directive which will not need any monetary outlay from the government.

The MAF, together with the MPI and MOF, should be able to analyze the best possible option or the combination of programs and policies in financing the recovery phase, especially those that require credit and tax exemptions.

#### **Step 4. Develop short, medium and long-term projects and designing implementation plan**

Recovery and reconstruction needs identified above would need to be broken down in short, medium and long-term needs. Following are some examples of projects in the agriculture sector, which can be undertaken as short, medium and long-term:



- **Short-term projects.** Short-term projects are normally those that are very crucial immediately after disaster with a view to cushion the impact on family incomes and resume the economic activities in the affected areas. Among them are:
  - Introduction of labor-intensive construction program such as “food for work” or “cash for work”.
  - Emergency repairs and maintenance that includes fixing the damaged animal sheds, storage buildings, etc. so that agricultural activities can be restored to normal conditions as soon as possible.
  - Procurement of vital equipment and machinery
- **Medium-term projects/programs.** These types of projects are normally in support of sustained recovery of the sector with duration of generally 3 to 5 years. Projects can include:
  - Construction of alternate markets, storage, etc. in safer areas.
  - Construction of new irrigation facilities.
  - Program of intensified retrofitting of existing agricultural facilities
  - Support to protect farms and other agricultural lands from future flooding and landslides.
- **Longer-term projects/programs.** The projects that are included in the long-term category are generally those that need further research, studies and/or engineering designs before real construction begins. It is not uncommon to have long-term projects that will take 5 to 10 years to be completed. Included here are, among others:
  - Support to establish alternative means of agriculture to mitigate possible disaster occurrence in the high risk zones (HRZs) for flood- or landslide-affected areas.
  - Research and development on disaster-resistant crops, livestock, etc.
  - Relocation of existing facilities like markets, storage, etc. with better construction standards to enable them to withstand against future disasters.

The identified needs should have a rough schedule of implementation outlining at the very least the activities, timing and budget required for all the programs and projects. The following techniques can be considered:

- Identify the specific projects according to their relative urgency or priority in relation to recovery.
- Plot the timeline of activities of all the projects, with the urgent ones on top, in a Gantt chart with the corresponding funding requirement. This will assist the MPI in programming the necessary funds over a certain time period, like on a quarterly or annual basis.
- Identify and include in the list of projects that need further feasibility studies which may be funded by foreign grants.
- To the extent possible, a logical framework (log frame) should be created for each of the project proposed for inclusion in the recovery plan.

## Step 5: Inputs for Macro-Economic and Household Impact Analysis

The damage and losses to the agriculture sector can affect the macro economy. To the extent possible that the MAF can, it should analyze the potential impacts on the following indicators, which will be used by MPI for undertaking the macro-economic impact analysis:

- **Gross Domestic Product (GDP)** - The loss of the contribution to the national economy of income generated directly or indirectly by the agriculture sector may reduce GDP. Information on production losses for the year that the disaster occurred and beyond must be estimated.
- **Balance of Payment** – Lower exports of agricultural products arising from production losses will reduce export earnings while importation of staple food to meet increase in demand, raw materials and equipment to replace damaged ones will increase outflow of foreign currency.

The damage assessment should include estimations of the reduction of agricultural exports and the value of repair and reconstruction items that must be imported from abroad including equipment, machinery, construction materials, etc. Also, any importation of commodities to fill the demand gap must be estimated and be reflected in potential effects on the balance of payment.

- **Fiscal Balance** -The impact on the fiscal balance for the agriculture sector may be twofold: on the current and the capital accounts of the budget. In the first case, the unexpected expenditures to

finance the immediate needs of the sector combined with possible lower tax revenues from private enterprises. In the second case, the government may resort to more borrowings/fresh loans for the recovery and reconstruction of the sector after a disaster which can result into higher budget deficit.

The assessment must provide an indication on the fiscal balance of the government in relation to the duration of providing emergency assistance and other unexpected expenditures. Furthermore, incentives or tax breaks for those affected by the disaster must also be viewed from the point of view of the fiscal balance.

- **Prices or Inflation** - Prices of food commodities could go high if the destruction of the sector is massive. Food security must be insured by the government to avert any health and nutrition problems. Also, the prices of other products may rise if agricultural products are prime inputs to their production.
- **Employment** - There can be a big reduction in employment if the destruction is huge in the sector where most of the poor are engaged in. This may contribute in the increase of poverty level as a result of decreased employment.

The following information must be estimated by MAF and delivered to the MPI for further integration in the macro-economic analysis:

- Items and amount needed for the recovery and reconstruction activities that are not produced locally in Lao PDR and have to be imported from other countries. These should be estimated and expressed in percentage of total recovery and reconstruction needs to be used for the analysis of impact on the balance of payment.
- The total value of higher government expenditures (over and above the regular budget appropriations) and reduction in revenues. These will be used for the analysis of fiscal sector impact.

**On a household level, the following may be considered by the MAF in the analysis.**

- **Effects on the Food Supply**
  - The reduction of food supply due to the damage in agriculture can have serious impact on health and nutrition especially of the vulnerable groups if immediate assistance is not extended. Furthermore, without assistance, a planting season may be missed by the farmers, which will result in the scarcity of basic food supply causing inflation not only in the disaster-affected areas but also in other districts or even nationwide.
  - The MAF (with the assistance perhaps of the MOH and the MSWL) should conduct an analysis of the food balance within and outside the disaster-affected area/s to ensure food security and avert any health and nutrition problems especially on the poor. The analysis should cover the pre- and post disaster food supply vis-à-vis the pre-disaster nutritional food requirements and health status of the community (especially of children, women and the elderly).
- **Number of people affected and the socio-economic impact on families, women and other groups.**

The socio-economic impact of disasters on people engaged in agriculture may be devastating especially to those living below and in the border of the poverty line. The analysis should show the potential impacts on a family in terms of income loss and its consequences on health; education; conditions of women, children and the elderly; among others. There are possibilities too of increase in crime rates, marginalization of the most vulnerable, etc. Using the information presented in the tables earlier, the MAF can justify the prioritization of agriculture with the following:

- About 80% of the Lao people are engaged in agriculture and the poorest groups are dependent on this sector. Delays in assisting these groups will exacerbate their socio-economic conditions. For instance, prolonged loss of income may also result in deteriorating health conditions and the children getting out of school to help their families earn a living, among others. In effect, not prioritizing the agriculture sector for recovery may result in more expenses for the government in terms of welfare support for the people in the agriculture sector.

- Delay of assistance may further put farmers in debt. It must be remembered that poor farmers usually incur debts for their production inputs. Crop destruction will render them unable to meet their financial obligations without assistance from the government.
- The condition of women may be severely affected by a disaster event. The impact on women should be looked into in consideration of their possible new roles as breadwinners for their families; double burden or additional work in the farms and on the house; potential abuse like trafficking; health hazards; etc.
- A special assessment can be made on the impacts on indigenous peoples in Lao PDR.

## Step 6. Write the assessment report

The following format may be considered in writing the assessment chapter of the agriculture sector:

- Brief background on agriculture sector in Lao PDR
- Overview of impacts of the disaster on the agriculture sector
- Damage and Loss quantification
  - Damage and Loss by province (or district)
- Proposed strategies for recovery and reconstruction of the agriculture sector
- Needs estimation for recovery and reconstruction of the agriculture sector

The report of the agriculture sector should be written by the MAF in close partnership with development partners involved in assessment of the sector. Once completed, the report should be submitted to MPI for inclusion in the final report.

## Section 3

### *Terms of reference of the assessment team*

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#### 3.1 Formation of pre-identified assessment teams within MAF

- Pre-identified team should be formed with officials from various departments of MAF. These officials would need to have a good understanding on the performance of agriculture sector (including all sub-sectors within agriculture) and should have also undergone prior training on the damage, loss and needs assessment.
- This pre-identified team would also be responsible for building the capacity of officials from MAF at national and sub-national levels in undertaking assessment to create a cadre of sectoral experts within the country who can undertake damage, loss and needs assessment in the agriculture sector.

#### 3.2 Composition of the assessment team

- Being a wide sector with several sub-sectors within it (such as crops, livestock, fisheries, forestry, irrigation etc), it is proposed that a six member inter-disciplinary team be formed by the MAF for undertaking assessment of the agriculture sector.
- At the central level, the assessment team should be comprised of officials drawn from the following departments of MAF
  - Department of Planning
  - Department of Agriculture
  - Department of Livestock and Fisheries
  - Department of Forestry
  - Department of Irrigation
- At the field level, the assessment team should be comprised of officials from the following
  - Provincial Agriculture and Forestry Service/District Agriculture and Forestry Extension Officers
- Specific experts required within the team would include the following:
  - Agronomists
  - Agro-economists

- Livestock/Fisheries specialist
- Foresters
- Civil, irrigation and rural development engineers
- Among the skills necessary in the assessment team are expertise on the cost estimation of crops, livestock, fisheries, forestry and irrigation; planning (including scheduling of activities); and familiarity with agricultural supply or value chain (from the primary inputs to final outputs), among others.
- It is recommended that there should be alternate members in the pre-identified assessment team to ensure the availability of qualified manpower to undertake the assessment when needed.

### 3.3 Tasks of the assessment team

- Gathering of the pre-identified team from MAF after the disaster event based on the order received from MPI
- Consultation with development partners involved in Agriculture Sector and who will join the assessment team
- Undertaking quick orientation on the assessment methodology for the assessment team
- Working closely with relevant departments of MAF at national and provincial/district and other relevant ministries, the team members will be responsible for compiling baseline information required for undertaking the post-disaster needs assessment
- Undertake field visits in disaster affected areas and work closely with Provincial and/or District Agricultural and Forestry Extension Officer to collect information on damage and losses.
- Based on information collected, conduct damage and loss assessment for the sector. Simultaneously in close consultation with relevant agencies such as National Disaster Management Office and development partners, formulate the recovery and reconstruction strategy of the Agriculture Sector
- Estimating the recovery and reconstruction needs based on the strategy and damage and loss assessment results
- Write the assessment report specific to the Agriculture sector with analyses on the sub-sectors including the possible impacts on individual farmers and their families and the effects of a possible supply shortage, among others.
- Present the findings of the assessment report to the decision makers within the MAF and other development partners for broader consultation.
- Finalize the report based on the inputs received from broader consultation and submit to MPI for inclusion in the disaster recovery plan.

### 3.4 Assessment timeline

- Ideally, the post-disaster damage, loss and needs assessment takes from 2 to 5 weeks.
- The assessment is usually started once the rapid impact and needs assessment for emergency and relief support is completed and the relief and response phase of the disasters is over or well underway.
- In the first week the overall planning of the assessment would take place and would include the following issues:
  - Baseline data collection
  - Agree on ToR
  - Team composition selection
  - Orientation Training on damage, loss and needs assessment
  - Discussion on formulating recovery and reconstruction strategy for agriculture sector
- Second and third week is the assessment stage and would include the following
  - Field survey
  - Calculation of Damage and losses for agriculture sector
- Fourth week of the assessment is the analysis stage and would include the following
  - Finalizing recovery and reconstruction strategy for agriculture sector
  - Estimating recovery and reconstruction needs for agriculture sector
  - Report drafting
  - Consultation within sector to seek inputs on the report

- Submission of sector report to MPI
- Finalisation of report by MPI
- Fifth week of the assessment is launch and dissemination of the report

## ***Guidance Note 6: Damage, loss and needs assessment of Manufacturing, Trade and Private Services Sub-sectors in Lao PDR***

### ***Table of Contents***

- Introduction to this Guidance Note
- Section 1: Methodology for damage, loss and needs assessment in the manufacturing, trade and service sector in Lao PDR
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  - Step 1 : Analysis of pre-disaster situation of the manufacturing, trade and servicesector
  - Step 2 : Estimating damages and losses
  - Step 3 : Estimating recovery and reconstruction needs
  - Step 4 : Developing short, medium and long-term projects and designing implementation plan
  - Step 5 : Inputs for macroeconomic impact analysis
  - Step 6 : Writing the assessment report
- Section 3: Terms of reference of Assessment Team

### ***Introduction to this Guidance Note***

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- This Guidance Note is a part of the Handbook on Post-disaster recovery and reconstruction planning of Lao PDR, which consists of fifteen Guidance Notes, for various sectors, on damage loss and needs assessment.
- This Guidance Note is to be used for assessing impacts of a disaster event in the manufacturing, trade and private services (MTS) sub-sectors, which will be referred to as the “sub-sectors” from herein, in Lao PDR. The sub-sectors in this case consist of various activities that will be enumerated in the succeeding sections.
- The Guidance Note is to be used by the team assigned from the Ministry of Industry and Commerce (MIC) of the Government of Lao PDR and working in close coordination with its provincial department and district offices as well as agencies such as the national Statistical Center, Ministry of Planning and Investment, National Disaster Management Office of Lao PDR and development partners involved in manufacturing and trade sector in Lao PDR.

## ***Section 1. Methodology for damage, loss and needs assessment in the manufacturing, trade and private services sub-sectors in Lao PDR***

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- This methodology for undertaking post-disaster damage, loss and needs assessment is originally derived from the Methodology for estimating the socio-economic and environmental effects of disasters, developed by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) as further enhanced by the World Bank.
- The methodology for estimating recovery and reconstruction needs (described in step 3 under section 2 of this Guidance Note) is derived from the Guidance Note of the World Bank and The Global Facility for Disaster Reduction and Recovery entitled: Estimation of Post-Disaster needs for Recovery and Reconstruction.
- The ECLAC methodology uses two terminologies; namely Damage and Losses as explained below:
  - **Damages.** In the manufacturing, trade and private services sub-sectors, damages will include:
    - Total or partial destruction of physical assets and infrastructure including structures, equipment, machineries, computers, office furniture etc.
    - These destructions would occur at the time of the disaster or shortly after the disaster and estimated in terms of physical units of assets that may be totally or partially destroyed.
    - Damages are valued as the cost of repair of partially destroyed assets and the cost of replacement of assets or goods that were totally damaged. The unit prices for replacement would be those that prevailed just before the disaster occurred that would allow rebuilding the education facilities to the same characteristics prior to the disaster.
  - **Losses.** Losses are the changes in economic flows during the period of reconstruction following the disaster. In the sub-sectors, losses can result from:
    - Foregone income from operations after the structures of businesses, factories, equipment and machineries were destroyed by disasters.
    - Additional expenses to clean and rehabilitate the factory or business site after destruction.
    - Possible higher cost of operation that may arise after the disaster, such as payment of higher rates of electricity from alternative sources, or acquiring raw materials from alternative sources, or renting temporary premises while repairing or rebuilding the original premises

These losses would continue during the entire period of reconstruction and recovery and are expressed in monetary values at current prices.

## ***Section 2*** ***Steps in undertaking damage, loss and needs assessment***

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### **Step 1. Analysis of pre-disaster situation**

#### **Step 1.1. Identify and gather information on the businesses existing in the Sub-sectors**

- The first step of undertaking the assessment is collecting information on pre-disaster situation in each of the sub-sectors. The pre-disaster quantity, types and annual production of business establishments in the sub-sectors should be defined. The MIC must ensure that the information is readily available prior to a disaster and can be accessed immediately after a disaster event for post-disaster needs assessment purposes. The MIC can focus on companies that are major contributors to the economy. As identified in the National Socio-economic Development Plan (NSEDPlan), the sub-sectors have:
  - Construction materials (cement, steel bars, tiles for walls, flooring and roofing, etc.)
  - Beverages (beer, soft drinks, water, etc.)
  - Garments

- Wood products
- Cigarette and tobacco
- Chemicals (pharmaceuticals, paints, etc.)
- Finance like banks, insurance, etc.
- Trading like garments, computers, gasoline, etc.
- Services like construction, laundry, repair shops, etc.
- Others as may be determined by the MIC

- The set of information below can be gathered from the indicated sources:

**Table 1. Types and sources of baseline information**

| Type of Information/Data   | Available at   |   |                           |                                   | Name of source document |
|--|--|---|---------------------------|-----------------------------------|-------------------------|
|  | Ministry/ Bureau/ Division   | Provincial Office/ Division   | District Office/ Division | Other Sources                     |                         |
| Number of various types of businesses in a district by classification as to whether micro, small, medium or large and ownership (public or private). | Department of Domestic Trade of the Ministry of Industry and Commerce (MIC)<br><br>The latest survey of business establishments conducted by the government's statistical office | Local government units where these businesses register before operating |                           | Chambers of commerce and industry |                         |
| Average output per month per year of various manufacturing, trade and services firms or businesses classified according to products in the district  | Department of Domestic Trade of the Ministry of Industry and Commerce (MIC)  | Local government units  |                           | Year-end reports of the firms     |                         |

**Step 1.2: Collect baseline data of businesses in the disaster-affected districts**

- The baseline data on number and description of business and firms should be collected and summarized using the below table for each of the district affected by the disaster.
- The classification of the businesses or firms in the district – whether cottage, micro, small, medium or large – shall be in accordance with the definition of the government.

**Table 2. Business or firms and their description**

Name of District:

| Type of firm                  | Number           |         |        |         |        |         |        |         |        |         |
|-------------------------------|------------------|---------|--------|---------|--------|---------|--------|---------|--------|---------|
|                               | Cottage Industry |         | Micro  |         | Small  |         | Medium |         | Large  |         |
|                               | Public           | Private | Public | Private | Public | Private | Public | Private | Public | Private |
| <b>Manufacturing</b>          |                  |         |        |         |        |         |        |         |        |         |
| <i>Construction materials</i> |                  |         |        |         |        |         |        |         |        |         |
| Cement                        |                  |         |        |         |        |         |        |         |        |         |
| Steel bars                    |                  |         |        |         |        |         |        |         |        |         |
| Tiles                         |                  |         |        |         |        |         |        |         |        |         |
| Others                        |                  |         |        |         |        |         |        |         |        |         |
| <i>Beverages</i>              |                  |         |        |         |        |         |        |         |        |         |



|                      |  |  |  |  |  |  |  |  |  |
|----------------------|--|--|--|--|--|--|--|--|--|
| Beer                 |  |  |  |  |  |  |  |  |  |
| Softdrinks           |  |  |  |  |  |  |  |  |  |
| Water                |  |  |  |  |  |  |  |  |  |
| Others               |  |  |  |  |  |  |  |  |  |
| <i>Chemicals</i>     |  |  |  |  |  |  |  |  |  |
| Pharmaceutical       |  |  |  |  |  |  |  |  |  |
| Paints               |  |  |  |  |  |  |  |  |  |
| Others               |  |  |  |  |  |  |  |  |  |
| <i>Agro-industry</i> |  |  |  |  |  |  |  |  |  |
| Food processing      |  |  |  |  |  |  |  |  |  |
| Paper                |  |  |  |  |  |  |  |  |  |
| Others               |  |  |  |  |  |  |  |  |  |
| <i>Others</i>        |  |  |  |  |  |  |  |  |  |
| Garments             |  |  |  |  |  |  |  |  |  |
| Wood products        |  |  |  |  |  |  |  |  |  |
| Tobacco              |  |  |  |  |  |  |  |  |  |
| Leather              |  |  |  |  |  |  |  |  |  |
| Others               |  |  |  |  |  |  |  |  |  |
| <b>Trading</b>       |  |  |  |  |  |  |  |  |  |
| Vehicles             |  |  |  |  |  |  |  |  |  |
| Gasoline             |  |  |  |  |  |  |  |  |  |
| Computers            |  |  |  |  |  |  |  |  |  |
| Office Equipment     |  |  |  |  |  |  |  |  |  |
| Office Supplies      |  |  |  |  |  |  |  |  |  |
| Home appliances      |  |  |  |  |  |  |  |  |  |
| Garments             |  |  |  |  |  |  |  |  |  |
| Agricultural Stores  |  |  |  |  |  |  |  |  |  |
| Other retail shops   |  |  |  |  |  |  |  |  |  |
| <b>Services</b>      |  |  |  |  |  |  |  |  |  |
| Finance (Banks)      |  |  |  |  |  |  |  |  |  |
| Insurance            |  |  |  |  |  |  |  |  |  |
| Repair shops         |  |  |  |  |  |  |  |  |  |
| Construction         |  |  |  |  |  |  |  |  |  |
| Laundry shops        |  |  |  |  |  |  |  |  |  |
| Restaurants          |  |  |  |  |  |  |  |  |  |
| Equipment Installers |  |  |  |  |  |  |  |  |  |
| Body care            |  |  |  |  |  |  |  |  |  |
| Other services       |  |  |  |  |  |  |  |  |  |
| TOTAL                |  |  |  |  |  |  |  |  |  |

### Step 1.3. Select sample businesses

- Considering the number of firms in the sector/sub-sector, it will be difficult to assess all the affected businesses after a disaster. To expedite the assessment, the following can be undertaken:
  - Select sample representative businesses from Table 2 which can be surveyed after a disaster occurred. The sample selection of firms must represent all the existing ones in the area or district according to their:
    - Categories in the sector. The categories will include the businesses of all types included in Table 2.
    - Size of structures and other assets of the firms. The selected firms must represent the common or average size of structures and assets within their categories. For example, medium-sized firms in the various categories with the same structures and number of floors can be a sub-group while microenterprises with the same type of structures and numbers of floors can be another sub-group.
    - Other criteria that the assessment team may deem appropriate. This can include the scope of business operations (large, medium, small and micro), method of production, etc.
    - The MIC assessment team, in coordination with the provincial and district offices, must select which among the various firms in the area can represent the existing businesses in the sector/sub-sector.

## Step 2. Estimating damage and losses

- While the assessment team at the central level is collecting the baseline information, field assessment should be undertaken by the district assessment team to count the number of affected businesses assess the damages and losses suffered by the sub-sectors from the particular disaster event.

### Step 2.1. Gather information on the number of affected businesses in the district.

- After a disaster, the district assessment team should undertake a field visit to identify the various types of businesses affected. The following table can be used.

**Table 3. Business or firms affected by the disaster**

Name of District:

| Type of firm                  | Number           |         |        |         |        |         |        |         |        |         |
|-------------------------------|------------------|---------|--------|---------|--------|---------|--------|---------|--------|---------|
|                               | Cottage Industry |         | Micro  |         | Small  |         | Medium |         | Large  |         |
|                               | Public           | Private | Public | Private | Public | Private | Public | Private | Public | Private |
| <b>Manufacturing</b>          |                  |         |        |         |        |         |        |         |        |         |
| <i>Construction materials</i> |                  |         |        |         |        |         |        |         |        |         |
| Cement                        |                  |         |        |         |        |         |        |         |        |         |
| Steel bars                    |                  |         |        |         |        |         |        |         |        |         |
| Tiles                         |                  |         |        |         |        |         |        |         |        |         |
| Others                        |                  |         |        |         |        |         |        |         |        |         |
| <i>Beverages</i>              |                  |         |        |         |        |         |        |         |        |         |
| Beer                          |                  |         |        |         |        |         |        |         |        |         |
| Softdrinks                    |                  |         |        |         |        |         |        |         |        |         |
| Water                         |                  |         |        |         |        |         |        |         |        |         |
| Others                        |                  |         |        |         |        |         |        |         |        |         |
| <i>Chemicals</i>              |                  |         |        |         |        |         |        |         |        |         |
| Pharmaceutical                |                  |         |        |         |        |         |        |         |        |         |
| Paints                        |                  |         |        |         |        |         |        |         |        |         |
| Others                        |                  |         |        |         |        |         |        |         |        |         |

*Agro-industry*

|                 |  |  |  |  |  |  |  |  |  |  |
|-----------------|--|--|--|--|--|--|--|--|--|--|
| Food processing |  |  |  |  |  |  |  |  |  |  |
| Paper           |  |  |  |  |  |  |  |  |  |  |
| Others          |  |  |  |  |  |  |  |  |  |  |

*Others*

|               |  |  |  |  |  |  |  |  |  |  |
|---------------|--|--|--|--|--|--|--|--|--|--|
| Garments      |  |  |  |  |  |  |  |  |  |  |
| Wood products |  |  |  |  |  |  |  |  |  |  |
| Tobacco       |  |  |  |  |  |  |  |  |  |  |
| Leather       |  |  |  |  |  |  |  |  |  |  |
| Others        |  |  |  |  |  |  |  |  |  |  |

**Trading**

|                     |  |  |  |  |  |  |  |  |  |  |
|---------------------|--|--|--|--|--|--|--|--|--|--|
| Vehicles            |  |  |  |  |  |  |  |  |  |  |
| Gasoline            |  |  |  |  |  |  |  |  |  |  |
| Computers           |  |  |  |  |  |  |  |  |  |  |
| Office Equipment    |  |  |  |  |  |  |  |  |  |  |
| Office Supplies     |  |  |  |  |  |  |  |  |  |  |
| Home appliances     |  |  |  |  |  |  |  |  |  |  |
| Garments            |  |  |  |  |  |  |  |  |  |  |
| Agricultural Stores |  |  |  |  |  |  |  |  |  |  |
| Other retail shops  |  |  |  |  |  |  |  |  |  |  |

**Services**

|                      |  |  |  |  |  |  |  |  |  |  |
|----------------------|--|--|--|--|--|--|--|--|--|--|
| Finance (Banks)      |  |  |  |  |  |  |  |  |  |  |
| Insurance            |  |  |  |  |  |  |  |  |  |  |
| Repair shops         |  |  |  |  |  |  |  |  |  |  |
| Construction         |  |  |  |  |  |  |  |  |  |  |
| Laundry shops        |  |  |  |  |  |  |  |  |  |  |
| Restaurants          |  |  |  |  |  |  |  |  |  |  |
| Equipment Installers |  |  |  |  |  |  |  |  |  |  |
| Body care            |  |  |  |  |  |  |  |  |  |  |
| Other services       |  |  |  |  |  |  |  |  |  |  |
| <b>TOTAL</b>         |  |  |  |  |  |  |  |  |  |  |

**Step 2.2: Assess damages to structure and other assets and the estimated losses of the firms**

- Since there may be many businesses and firms damaged in the event, it is recommended to undertake a survey of the representative firms described in section 1.3. The firms to be surveyed should take into consideration the number and types of businesses and firms under Table 3 above.
- Using the below questionnaire (Form 1), the assessment team at the district level should undertake a survey of selected business and firms. They can send the questionnaire to the pre-identified firms and choose to visit selected firms to clarify information/responses provided in the questionnaire.

## Form 1. Survey of damages and losses

| Questionnaire Identification Number: |                     | Date:                               |          |
|--------------------------------------|---------------------|-------------------------------------|----------|
| Question Number                      | Questions           | Response                            |          |
| 1                                    | Name of Company     |                                     |          |
|                                      | Address             |                                     |          |
| 2                                    | Number/Road/Village |                                     |          |
| 3                                    | District            |                                     |          |
| 4                                    | Province            |                                     |          |
| 5                                    | Contact Number      |                                     |          |
| 6                                    | Type of Firm        | Response Options and/or Description | Response |
|                                      |                     | <b>Manufacturing</b>                |          |
|                                      |                     | <i>Construction materials</i>       |          |
|                                      |                     | Cement                              | 1        |
|                                      |                     | Steel bars                          | 2        |
|                                      |                     | Tiles                               | 3        |
|                                      |                     | Others                              | 4        |
|                                      |                     | <i>Beverages</i>                    |          |
|                                      |                     | Beer                                | 5        |
|                                      |                     | Softdrinks                          | 6        |
|                                      |                     | Water                               | 7        |
|                                      |                     | Others                              | 8        |
|                                      |                     | <i>Chemicals</i>                    |          |
|                                      |                     | Pharmaceutical                      | 9        |
|                                      |                     | Paints                              | 10       |
|                                      |                     | Others                              | 11       |
|                                      |                     | <i>Agro-industry</i>                |          |
|                                      |                     | Food processing                     | 12       |
|                                      |                     | Paper                               | 13       |
|                                      |                     | Others                              | 14       |
|                                      |                     | <i>Others</i>                       |          |
|                                      |                     | Garments                            | 15       |
|                                      |                     | Wood products                       | 16       |
|                                      |                     | Tobacco                             | 17       |
|                                      |                     | Leather                             | 18       |
|                                      |                     | Others                              | 19       |
|                                      |                     | <b>Trading</b>                      |          |
|                                      |                     | Vehicles                            | 20       |
|                                      |                     | Gasoline                            | 21       |
|                                      |                     | Computers                           | 22       |
|                                      |                     | Office Equipment                    | 23       |

|   |                                 |                      |    |
|---|---------------------------------|----------------------|----|
|   |                                 | Office Supplies      | 24 |
|   |                                 | Home appliances      | 25 |
|   |                                 | Garments             | 26 |
|   |                                 | Agricultural Stores  | 27 |
|   |                                 | Other retail shops   | 28 |
|   |                                 | <b>Services</b>      |    |
|   |                                 | Finance (Banks)      | 29 |
|   |                                 | Insurance            | 30 |
|   |                                 | Repair shops         | 31 |
|   |                                 | Construction         | 32 |
|   |                                 | Laundry shops        | 33 |
|   |                                 | Restaurants          | 34 |
|   |                                 | Equipment Installers | 35 |
|   |                                 | Body care            | 36 |
|   |                                 | Other services       | 37 |
| 7 | What do you process or produce? | Goods                | 1  |
|   |                                 | Service              | 2  |
| 8 | Ownership                       | Private              | 1  |
|   |                                 | Public               | 2  |
| 9 | Classification                  | Micro or Cottage     | 1  |
|   |                                 | Small                | 2  |
|   |                                 | Medium               | 3  |
|   |                                 | Large                | 4  |

#### Business Operations

| Question Number | Questions  | Response Options and/or Description | Response |
|-----------------|--|-------------------------------------|----------|
| 1               | Has the business been affected by the disaster?                            | Yes                                 | 1        |
|                 |  | No      If no, go to Q3             | 2        |
| 2               | If yes, in what way has the business been affected?<br>[multiple response] | Damage to premises                  | 1        |
|                 |  | Damage to equipment/ machinery      | 2        |
|                 |  | Damage to finished product          | 3        |
|                 |  | Shortage of labor                   | 4        |
|                 |  | Shortage/lack of electricity        | 5        |
|                 |  | Shortage/lack of water              | 6        |
|                 |  | Shortage/lack of raw materials      | 7        |
|                 |  | Productivity decline                | 8        |
|                 |  | Stoppage of operations              | 9        |
|                 |  | Demand decline for services         | 10       |
|                 |  | Other (specify)                     | 11       |
| 3               | Had the business stopped due to (indicate name of disaster)                | Yes                                 | 1        |
|                 |  | No      If no, go to Q9             | 2        |

|                                      |   |  |   |
|--------------------------------------|---|--|---|
| 4                                    | Is the business currently in operation?   | Yes  | 1 |
|                                      |   | No If no, go to Q6   | 2 |
| 5                                    | If yes, after what time period the business were in operation again?  | Within a week  | 1 |
|                                      |   | Within two weeks   | 2 |
|                                      |   | Within a month   | 3 |
|                                      |   | Within two months  | 4 |
|                                      |   | I don't know   | 5 |
| 6                                    | If no, when do you anticipate being able to start operation again?  | Within a week  | 1 |
|                                      |   | Within two weeks   | 2 |
|                                      |   | Within a month   | 3 |
|                                      |   | Within three months  | 4 |
|                                      |   | I don't know   | 5 |
| 7                                    | How much is your estimated income loss due to the stoppage for the current year?                                      | (Value in local currency)                                  |   |
| 8                                    | How much is your estimated income loss due to the stoppage for next year?   | (Value in local currency)                                  |   |
| 9                                    | How much is your estimated increase in production cost for the current year?  | (Value in local currency)                                  |   |
| 10                                   | How much is your estimated increase in production cost for next year?   | (Value in local currency)                                  |   |
| 11                                   | How much is your estimated increase in production cost for the year after next?                                       | (Value in local currency)                                  |   |
| 12                                   | How much did you spend for cleaning up and other unexpected expenses?   | (Value in local currency)                                  |   |
| <b>Number of employees</b>           |   |  |   |
| 13                                   | Total number of employees pre-disaster  | Number of employees before the disaster                    |   |
| 14                                   | Total number of employees in the business now   | Number of employees now                                    |   |
| 15                                   | If different from now, how many of your employees were killed?  | Number of employees killed by the disaster                 |   |
| 16                                   | If different from now, how many of your employees were injured due to disaster and are not attending the job anymore? | Number of employees injured due to the disaster            |   |
| 17                                   | If different from now, how many of your employees left because they need to attend their home due to this disaster?   | Number of employees who left due to disaster               |   |
| 18                                   | If different from now, how many of your employees were laid off because the business is reduced due to the disaster?  | Number of employees that were laid off due to the disaster |   |
| <b>Business output/revenue level</b> |   |  |   |
| 19                                   | What was the average output/revenue per month in pre-disaster time?   | Value (in local currency)                                  |   |
| 20                                   | What is the average out-put/revenue per month now?  | Value (in local currency)                                  |   |
| 21                                   | If different, how much has it been reduced in percentage (base value is pre-disaster time)                            | In percentage  |   |

|   |  |  |   |
|---|--|--|---|
| 22  | When do you anticipate output/revenue back to its pre-disaster level?  | Within a week  | 1 |
|   |  | Within two weeks   | 2 |
|   |  | Within a month   | 3 |
|   |  | Within three months  | 4 |
|   |  | I don't know   | 5 |
| 23  | Aside from the losses due to work stoppage, how much do you think will be your estimated total income loss for the current year before you reach your pre-disaster income level?   | For the disaster year<br>(Value in local currency)         |   |
| 24  | If income losses will go beyond the current year, how much do you think will be your estimated total income loss for next year before you reach your pre-disaster income level?    | For Year 1 After the Disaster<br>(Value in local currency) |   |
| 25  | If income losses will go beyond next year, how much do you think will be your estimated total income loss for the year after next before you reach your pre-disaster income level? | For Year 2 After the Disaster<br>(Value in local currency) |   |
| <b>Damage of building structure, asset and stock</b>        |  |  |   |
| 26  | Was the building structure damaged by the disaster?  | Yes  | 1 |
|   |  | No      If no, go to Q28                                   | 2 |
| 27  | If yes, how much money it would take to repair/restore the damaged building structure?   | Value in local currency                                    |   |
| 28  | Were other assets damaged by the disaster?   | Yes  | 1 |
|   |  | No      If no, go to Q30                                   | 2 |
| 29  | If yes, what was the value of other assets that were damaged by the disaster?  | Value in local currency                                    |   |
| 30  | Was the raw materials stock damaged by the disaster?   | Yes  | 1 |
|   |  | No      If no, go to Q32                                   | 2 |
| 31  | If yes, what was the value of the raw materials stock that has been damaged by the disaster?   | Value in local currency                                    |   |
| <b>Impact on supply chain, market and financial support</b> |  |  |   |
| 32  | How have your customers been affected?<br>[multiple response]  | No problem with customers                                  | 1 |
|   |  | Services have been delayed                                 | 2 |
|   |  | Services cannot be made                                    | 3 |
|   |  | <i>Bookings cancelled</i>                                  | 4 |
|   |  | Other (specify)  | 5 |
| 33  | What sort of difficulties are you experiencing getting your goods/services to the market?<br>[multiple response]   | No problems  | 1 |
|   |  | Lack and increased cost of transport                       | 2 |
|   |  | Lower demand for our services                              | 3 |
|   |  | Lack /insufficiency of working capital                     | 4 |
|   |  | Other (specify)  | 5 |
| 34  | How have your suppliers been affected?   | Suppliers not affected                                     | 1 |

|   |   |  |   |
|---|---|--|---|
|   | [multiple response]   | Raw materials scarce/not available     | 2   |
|   |   | Higher price for raw materials         | 3   |
|   |   | Other (specify)                        | 4   |
| 35  | How has your access to finance been affected?   | No problems                            | 1   |
|   |   | Difficulty in paying outstanding loans | 2   |
|   |   | Need to renegotiate existing loans     | 3   |
|   | [multiple response]   | Need soft term fresh loans             | 4   |
|   |   | Other (specify)                        | 5   |
| 36  | Have you or the bank lost records?  | Yes                                    | 1   |
|   |   | No                                     | 2   |
| 37  | Is your business insured for disaster (in terms of assets and losses?)  | Yes                                    | 1   |
|   |   | No If No, go to Question 39            | 2   |
| 38  | How much is the worth of the insurance  |  |   |
| <b>Respondent's suggestion on how government can help to restore the business</b> |   |  |   |
| 39  | What are the most important steps that the government can take to help your business to get back on its feet again?<br>Give maximum 3 suggestions | 1.                                     | This is an open-ended question that will be coded later |
|   |   | 2.                                     |   |
|   |   | 3.                                     |   |

Notes in using Form 1:

- The assessment team can use the form in surveying the damages and losses to the firms that were identified before the disaster occurred. The damages and losses are incorporated in the form from which they can be estimated.
- The numbers after the response options are codes that can be encircled as a response and used for processing the survey results.
- Question number 39 is for the opinions of the businessmen affected.
- In estimating certain losses, the assessment team and the respondents must take into consideration the effects of the damages of other sectors such as power, water supply and transportation sectors.

### Step 2.3. Summarize the information on damages in the district

- The information gathered from sample firms through the survey can be consolidated in a single table according to the type of output or service they produce or provide. Applying the assessed damage to the actual number of firms affected by the disaster will give an estimate of the total damages to the sector. The following table shows the damages and how they are estimated.

**Table 4. Damages of Business Firms, in Kips**

Name of District:

| Firms                  | Actual Number of Firms Affected |        | Number of Firms Surveyed | Damages of Surveyed Firms (Kips) |        |        |                | Total Damages of Affected Firms (Kips) |
|------------------------|---------------------------------|--------|--------------------------|----------------------------------|--------|--------|----------------|--|
|                        | Private                         | Public |                          | Structures                       | Assets | Others | Average Damage |  |
|                        | A                               | B      |                          | C                                | D      | E      | F              | G                                      |
| Manufacturing          |                                 |        |                          |                                  |        |        |                |  |
| Construction materials |                                 |        |                          |                                  |        |        |                |  |



|                      |  |  |  |  |  |  |  |  |
|----------------------|--|--|--|--|--|--|--|--|
| Cement               |  |  |  |  |  |  |  |  |
| Steel bars           |  |  |  |  |  |  |  |  |
| Tiles                |  |  |  |  |  |  |  |  |
| Others               |  |  |  |  |  |  |  |  |
| <i>Beverages</i>     |  |  |  |  |  |  |  |  |
| Beer                 |  |  |  |  |  |  |  |  |
| Softdrinks           |  |  |  |  |  |  |  |  |
| Water                |  |  |  |  |  |  |  |  |
| Others               |  |  |  |  |  |  |  |  |
| <i>Chemicals</i>     |  |  |  |  |  |  |  |  |
| Pharmaceuticals      |  |  |  |  |  |  |  |  |
| Paints               |  |  |  |  |  |  |  |  |
| Others               |  |  |  |  |  |  |  |  |
| <i>Agro-industry</i> |  |  |  |  |  |  |  |  |
| Food processing      |  |  |  |  |  |  |  |  |
| Paper                |  |  |  |  |  |  |  |  |
| <i>Others</i>        |  |  |  |  |  |  |  |  |
| Garments             |  |  |  |  |  |  |  |  |
| Wood products        |  |  |  |  |  |  |  |  |
| Tobacco              |  |  |  |  |  |  |  |  |
| Leather              |  |  |  |  |  |  |  |  |
| Other Products       |  |  |  |  |  |  |  |  |
| <b>Trading</b>       |  |  |  |  |  |  |  |  |
| Vehicles             |  |  |  |  |  |  |  |  |
| Gasoline             |  |  |  |  |  |  |  |  |
| Computers            |  |  |  |  |  |  |  |  |
| Office Equipment     |  |  |  |  |  |  |  |  |
| Office Supplies      |  |  |  |  |  |  |  |  |
| Home appliances      |  |  |  |  |  |  |  |  |
| Garments             |  |  |  |  |  |  |  |  |
| Agricultural Stores  |  |  |  |  |  |  |  |  |
| Other retail shops   |  |  |  |  |  |  |  |  |
| <b>Services</b>      |  |  |  |  |  |  |  |  |
| Finance (Banks)      |  |  |  |  |  |  |  |  |
| Insurance            |  |  |  |  |  |  |  |  |
| Repair shops         |  |  |  |  |  |  |  |  |
| Construction         |  |  |  |  |  |  |  |  |
| Laundry shops        |  |  |  |  |  |  |  |  |
| Restaurants          |  |  |  |  |  |  |  |  |
| Equipment Installers |  |  |  |  |  |  |  |  |

|                |  |  |  |  |  |      |  |
|----------------|--|--|--|--|--|------|--|
| Body care      |  |  |  |  |  |      |  |
| Other services |  |  |  |  |  |      |  |
| TOTAL          |  |  |  |  |  | N.A. |  |

In filling in Table 4, the following should be noted:

- The information on damages in the above table is the consolidation of the information provided by the firms through the questionnaire.
- In column 2, the number of firms is the actual number of firms affected by the disaster in the area (*including those that were not part of the survey*) segregated by ownership. The total number of firms affected can be determined through an actual visit to the disaster area.
- Column 3 contains the aggregate damages of all the surveyed firms engaged in similar activities under various classifications – structure, assets (equipment, machinery), others.
- “Others” under the damages column can include stocks, raw materials, and other inputs to production.
- The “average damage” will be the sum of damages to structures, assets (equipment, etc.) and others of the surveyed firms divided by the total number of firms surveyed.
- In formula, total damages will be: Column G = (Column D + Column E + Column F) / Column C.
- The “Total Damages” will be the average damage multiplied by the total number of firms affected.
- In formula, it will be Column H = Column G x (Column A + Column B).
- It is important to remember that damages included in the above table are valued as the cost of repair or replacement at pre-disaster prices.

#### Step 2.4. Estimating the losses in the district

- There are damages - like the collapse of structures, destruction of equipment, loss of access to markets, etc. – which can cause temporary work stoppages or reduction of production or sales resulting to income losses to the firms. The total estimated losses will be the value in Kips of foregone production or sales until the factories, shops and/or services resume operations up to the pre-disaster level plus the resulting higher production cost and all other unexpected expenses. Thus it is important to estimate the losses for the disaster year as well as the years following the disaster till recovery is completed.
- Based on the survey conducted, the losses of firms can be consolidated or summarized to come up with an aggregate value of losses.

##### Step 2.4.1 Losses incurred within the year the disaster occurred

- Based on the survey conducted, the losses of firms can be consolidated or summarized to come up with an aggregate value of losses for the year the disaster occurred as shown in Table 4.

**Table 5. Losses incurred by surveyed firms in the year of the disaster, in Kips**

Name of District:

| Firms         | Revenue Losses       |                         | Total Revenue Losses | Others                 |                       |             | Average Losses | Grand Total of Losses |
|---------------|----------------------|-------------------------|----------------------|------------------------|-----------------------|-------------|----------------|-----------------------|
|               | Due to work stoppage | Due to income reduction |                      | Higher Production Cost | Cleaning Up of Debris | Other Costs |                |                       |
|               | A                    | B                       |                      | C                      | D                     | E           |                |                       |
| Manufacturing |                      |                         |                      |                        |                       |             |                |                       |
| Construction  |                      |                         |                      |                        |                       |             |                |                       |
| Cement        |                      |                         |                      |                        |                       |             |                |                       |
| Steel bars    |                      |                         |                      |                        |                       |             |                |                       |
| Tiles         |                      |                         |                      |                        |                       |             |                |                       |
| Others        |                      |                         |                      |                        |                       |             |                |                       |
| Beverages     |                      |                         |                      |                        |                       |             |                |                       |

|                        |  |  |  |  |  |  |  |  |
|------------------------|--|--|--|--|--|--|--|--|
| Beer                   |  |  |  |  |  |  |  |  |
| Softdrinks             |  |  |  |  |  |  |  |  |
| Water                  |  |  |  |  |  |  |  |  |
| Others                 |  |  |  |  |  |  |  |  |
| <i>Chemicals</i>       |  |  |  |  |  |  |  |  |
| Pharmaceutic<br>als    |  |  |  |  |  |  |  |  |
| Paints                 |  |  |  |  |  |  |  |  |
| Others                 |  |  |  |  |  |  |  |  |
| <i>Agro-industry</i>   |  |  |  |  |  |  |  |  |
| Food<br>processing     |  |  |  |  |  |  |  |  |
| Paper                  |  |  |  |  |  |  |  |  |
| <i>Others</i>          |  |  |  |  |  |  |  |  |
| Garments               |  |  |  |  |  |  |  |  |
| Wood<br>products       |  |  |  |  |  |  |  |  |
| Tobacco                |  |  |  |  |  |  |  |  |
| Leather                |  |  |  |  |  |  |  |  |
| Other<br>Products      |  |  |  |  |  |  |  |  |
| <b>Trading</b>         |  |  |  |  |  |  |  |  |
| Vehicles               |  |  |  |  |  |  |  |  |
| Gasoline               |  |  |  |  |  |  |  |  |
| Computers              |  |  |  |  |  |  |  |  |
| Office<br>Equipment    |  |  |  |  |  |  |  |  |
| Office Supplies        |  |  |  |  |  |  |  |  |
| Home<br>appliances     |  |  |  |  |  |  |  |  |
| Garments               |  |  |  |  |  |  |  |  |
| Agricultural<br>Stores |  |  |  |  |  |  |  |  |
| Construction<br>Stores |  |  |  |  |  |  |  |  |
| Other retail<br>shops  |  |  |  |  |  |  |  |  |
| <b>Services</b>        |  |  |  |  |  |  |  |  |
| Finance<br>(Banks)     |  |  |  |  |  |  |  |  |
| Repair shops           |  |  |  |  |  |  |  |  |
| Laundry shops          |  |  |  |  |  |  |  |  |
| Restaurants            |  |  |  |  |  |  |  |  |

|                      |      |      |  |  |  |      |  |
|----------------------|------|------|--|--|--|------|--|
| Equipment Installers |      |      |  |  |  |      |  |
| Body care            |      |      |  |  |  |      |  |
| Other services       |      |      |  |  |  |      |  |
| TOTAL                | N.A. | N.A. |  |  |  | N.A. |  |

In filling in Table 5, the following should be noted:

- Table 5 is a consolidated result of the assessment of the firms that were surveyed. The values are aggregate of all firms or companies with similar products/outputs.
- Losses should be segregated as private and public.
- The “Total Revenue Losses” in Column C is the sum of income losses due to work stoppage and reduction of income of the firms for the year that the disaster occurred. In formula, this is Column C = Column A + Column B.
- Higher production cost will occur when certain types of business activities will require added costs to produce or deliver the same type or quantity of goods and/or services after a disaster. This may be due to higher cost of power, water, communications, etc. The added amount required will be the value of added (higher) production cost.
- The “Higher Production Cost”, “Cost of Cleaning Up Debris” and “Other Costs” refer to the other unexpected expenses which are part of the estimated losses of the firms, in Kips, for the year that the disaster occurred.
- “Other costs” may include the cost of carrying out information campaigns or advertisements to inform their clients about their status and other similar activities.
- The “Average Losses” will be the sum of total revenue losses plus the higher production cost, cost of cleaning up and other costs divided by the total number of firms surveyed. In formula, average losses will be:  $\text{Column G} = (\text{Column C} + \text{Column D} + \text{Column E} + \text{Column F}) / \text{Number of Firms Surveyed}$  (which is in Table 3)).
- The “Grand Total of Losses” is the value of the Average Losses of the firms surveyed in (Column G) multiplied by the Actual Number of Firms Affected (the sum of Columns A and B of Table 3). The Grand Total of Losses will, therefore, consider all the affected firms, even those that were not included in the survey.

#### Step 2.4.2. Losses incurred beyond the year the disaster occurred

- Based on the survey conducted, the losses of firms can be consolidated or summarized to come up with an aggregate value of losses for the years beyond the disaster occurred as shown in Table 6.

**Table 6. Estimated Losses Beyond the Disaster Year**

| Name of District     |                |                        |             |              |                |                        |             |              |
|----------------------|----------------|------------------------|-------------|--------------|----------------|------------------------|-------------|--------------|
| Firms                | Year 1 Losses  |                        |             |              | Year 2 Losses  |                        |             |              |
|                      | Revenue Losses | Higher Production Cost | Other Costs | Total Losses | Revenue Losses | Higher Production Cost | Other Costs | Total Losses |
|                      | A              | B                      | C           | D            | E              | F                      | G           | H            |
| <b>Manufacturing</b> |                |                        |             |              |                |                        |             |              |
| <i>Construction</i>  |                |                        |             |              |                |                        |             |              |
| Cement               |                |                        |             |              |                |                        |             |              |
| Steel bars           |                |                        |             |              |                |                        |             |              |
| Tiles                |                |                        |             |              |                |                        |             |              |
| Others               |                |                        |             |              |                |                        |             |              |
| <i>Beverages</i>     |                |                        |             |              |                |                        |             |              |
| Beer                 |                |                        |             |              |                |                        |             |              |
| Softdrinks           |                |                        |             |              |                |                        |             |              |

|                      |  |  |  |  |  |  |  |  |
|----------------------|--|--|--|--|--|--|--|--|
| Water                |  |  |  |  |  |  |  |  |
| Others               |  |  |  |  |  |  |  |  |
| <i>Chemicals</i>     |  |  |  |  |  |  |  |  |
| Pharmaceuticals      |  |  |  |  |  |  |  |  |
| Paints               |  |  |  |  |  |  |  |  |
| Others               |  |  |  |  |  |  |  |  |
| <i>Agro-industry</i> |  |  |  |  |  |  |  |  |
| Food processing      |  |  |  |  |  |  |  |  |
| Paper                |  |  |  |  |  |  |  |  |
| <i>Others</i>        |  |  |  |  |  |  |  |  |
| Garments             |  |  |  |  |  |  |  |  |
| Wood products        |  |  |  |  |  |  |  |  |
| Tobacco              |  |  |  |  |  |  |  |  |
| Leather              |  |  |  |  |  |  |  |  |
| Other Products       |  |  |  |  |  |  |  |  |
| <b>Trading</b>       |  |  |  |  |  |  |  |  |
| Vehicles             |  |  |  |  |  |  |  |  |
| Gasoline             |  |  |  |  |  |  |  |  |
| Computers            |  |  |  |  |  |  |  |  |
| Office Equipment     |  |  |  |  |  |  |  |  |
| Office Supplies      |  |  |  |  |  |  |  |  |
| Home appliances      |  |  |  |  |  |  |  |  |
| Garments             |  |  |  |  |  |  |  |  |
| Agricultural Stores  |  |  |  |  |  |  |  |  |
| Construction Stores  |  |  |  |  |  |  |  |  |
| Other retail shops   |  |  |  |  |  |  |  |  |
| <b>Services</b>      |  |  |  |  |  |  |  |  |
| Finance (Banks)      |  |  |  |  |  |  |  |  |
| Repair shops         |  |  |  |  |  |  |  |  |
| Laundry shops        |  |  |  |  |  |  |  |  |
| Restaurants          |  |  |  |  |  |  |  |  |
| Equipment Installers |  |  |  |  |  |  |  |  |
| Body care            |  |  |  |  |  |  |  |  |
| Other services       |  |  |  |  |  |  |  |  |
| TOTAL                |  |  |  |  |  |  |  |  |

In filling in Table 6, the following should be noted:

- The estimation of losses is the same as calculating the losses for the year that the disaster occurred as shown in the previous table.

- It must be noted that there is a possibility that certain types of firms may experience higher revenues when recovery and reconstruction activities start. For example, construction supply stores may experience increase in demand for cement, steel, etc. while repair shops may likewise experience higher revenues from increased demand for repairing damaged vehicles, household appliances, etc.
- It is, therefore, possible that certain firms in the sub-sectors will not experience losses for a longer period but instead gain from the resulting increase in demand for their goods or services. The assessment team must be able to predict future impacts on revenues of the firms. This can be done by analyzing previous post-disaster statistical data and consulting with business owners on their previous post-disaster experiences.

#### Step 2.5. Summarize damages and losses in the district as per size of the businesses and firms

- Based on the information gathered in the previous tables, a summary table would need to be developed by the district assessment team for total damages and losses in each of the sub-sector. This summary should reflect the damage and losses as per the size of the firm (micro/cottage, small, medium and large) in order to guide the formulation of recovery strategy and implementation of needs.
- The number of affected micro/cottage, small, medium and large businesses can be generated from the count of affected business contained in Table 3 and the survey undertaken (Form 1).
- The following table can be used to summarize the damages and losses.

**Table 7. Summary of Damages and Losses in the Disaster Year, According to the Size of the Firms**

| Firms                | Number of Firms According to Size |   |   |       |   |   |        |   |   |       |   |   |
|----------------------|-----------------------------------|---|---|-------|---|---|--------|---|---|-------|---|---|
|                      | Micro                             |   |   | Small |   |   | Medium |   |   | Large |   |   |
|                      | No.                               | D | L | No.   | D | L | No.    | D | L | No.   | D | L |
| <b>Manufacturing</b> |                                   |   |   |       |   |   |        |   |   |       |   |   |
| <i>Construction</i>  |                                   |   |   |       |   |   |        |   |   |       |   |   |
| Cement               |                                   |   |   |       |   |   |        |   |   |       |   |   |
| Steel bars           |                                   |   |   |       |   |   |        |   |   |       |   |   |
| Tiles                |                                   |   |   |       |   |   |        |   |   |       |   |   |
| Others               |                                   |   |   |       |   |   |        |   |   |       |   |   |
| <i>Beverages</i>     |                                   |   |   |       |   |   |        |   |   |       |   |   |
| Beer                 |                                   |   |   |       |   |   |        |   |   |       |   |   |
| Softdrinks           |                                   |   |   |       |   |   |        |   |   |       |   |   |
| Water                |                                   |   |   |       |   |   |        |   |   |       |   |   |
| Others               |                                   |   |   |       |   |   |        |   |   |       |   |   |
| <i>Chemicals</i>     |                                   |   |   |       |   |   |        |   |   |       |   |   |
| Pharmaceuticals      |                                   |   |   |       |   |   |        |   |   |       |   |   |
| Paints               |                                   |   |   |       |   |   |        |   |   |       |   |   |
| Others               |                                   |   |   |       |   |   |        |   |   |       |   |   |
| <i>Agro-industry</i> |                                   |   |   |       |   |   |        |   |   |       |   |   |
| Food processing      |                                   |   |   |       |   |   |        |   |   |       |   |   |
| Paper                |                                   |   |   |       |   |   |        |   |   |       |   |   |
| <i>Others</i>        |                                   |   |   |       |   |   |        |   |   |       |   |   |
| Garments             |                                   |   |   |       |   |   |        |   |   |       |   |   |
| Wood products        |                                   |   |   |       |   |   |        |   |   |       |   |   |
| Tobacco              |                                   |   |   |       |   |   |        |   |   |       |   |   |



|                 |  |  |  |  |  |  |  |  |  |
|-----------------|--|--|--|--|--|--|--|--|--|
| 1. Micro        |  |  |  |  |  |  |  |  |  |
| 2. Small        |  |  |  |  |  |  |  |  |  |
| 3. Medium       |  |  |  |  |  |  |  |  |  |
| 4. Large        |  |  |  |  |  |  |  |  |  |
| <b>Trading</b>  |  |  |  |  |  |  |  |  |  |
| 1. Micro        |  |  |  |  |  |  |  |  |  |
| 2. Small        |  |  |  |  |  |  |  |  |  |
| 3. Medium       |  |  |  |  |  |  |  |  |  |
| 4. Large        |  |  |  |  |  |  |  |  |  |
| <b>Services</b> |  |  |  |  |  |  |  |  |  |
| 1. Micro        |  |  |  |  |  |  |  |  |  |
| 2. Small        |  |  |  |  |  |  |  |  |  |
| 3. Medium       |  |  |  |  |  |  |  |  |  |
| 4. Large        |  |  |  |  |  |  |  |  |  |
| TOTAL           |  |  |  |  |  |  |  |  |  |

In filling in Table 8, the following should be noted:

- The information required in the above table are those that are contained in the tables of damages and losses.
- The segregation of public and private damages and losses can assist in strategizing for reconstruction and recovery.

#### Step 2.7. Summarizing Damages and Losses in the Province

- Based on the summary for the districts affected, a similar summary can show the magnitude and scope of damages and losses province-wide, as shown in the following table.

**Table 9. Summary of Damages and Losses in the Province**

Name of Province:

| Names of District | Within the Disaster Year |        |         |        | Losses Beyond the Disaster Year |        |         |        | Total Effects |
|-------------------|--------------------------|--------|---------|--------|---------------------------------|--------|---------|--------|---------------|
|                   | Damages                  |        | Losses  |        | Year 1                          |        | Year 2  |        |               |
|                   | Private                  | Public | Private | Public | Private                         | Public | Private | Public | (Kips)        |
| District 1        |                          |        |         |        |                                 |        |         |        |               |
| 1. Micro          |                          |        |         |        |                                 |        |         |        |               |
| 2. Small          |                          |        |         |        |                                 |        |         |        |               |
| 3. Medium         |                          |        |         |        |                                 |        |         |        |               |
| 4. Large          |                          |        |         |        |                                 |        |         |        |               |
| District 2        |                          |        |         |        |                                 |        |         |        |               |
| 1. Micro          |                          |        |         |        |                                 |        |         |        |               |
| 2. Small          |                          |        |         |        |                                 |        |         |        |               |
| 3. Medium         |                          |        |         |        |                                 |        |         |        |               |
| 4. Large          |                          |        |         |        |                                 |        |         |        |               |
| District 3        |                          |        |         |        |                                 |        |         |        |               |
| 1. Micro          |                          |        |         |        |                                 |        |         |        |               |



|                  |  |  |  |  |  |  |  |  |  |
|------------------|--|--|--|--|--|--|--|--|--|
| 2. <i>Small</i>  |  |  |  |  |  |  |  |  |  |
| 3. <i>Medium</i> |  |  |  |  |  |  |  |  |  |
| 4. <i>Large</i>  |  |  |  |  |  |  |  |  |  |
| TOTAL            |  |  |  |  |  |  |  |  |  |

#### Step 2.8. Summarize Damages and Losses Nationwide

- Once the summary table for each affected provinces have been filled out, the table below should be used by the central level assessment team for summarizing information at the national level. This is to be filled out after the field assessment is over.

**Table 10. Summary of Damages and Losses at the national level**

| Names of Provinces | Within the Disaster Year |        |         |        | Losses Beyond the Disaster Year |        |         |        | Total Effects (Kips) |
|--------------------|--------------------------|--------|---------|--------|---------------------------------|--------|---------|--------|----------------------|
|                    | Damages                  |        | Losses  |        | Year 1                          |        | Year 2  |        |                      |
|                    | Private                  | Public | Private | Public | Private                         | Public | Private | Public |                      |
| Province 1         |                          |        |         |        |                                 |        |         |        |                      |
| 1. Micro           |                          |        |         |        |                                 |        |         |        |                      |
| 2. Small           |                          |        |         |        |                                 |        |         |        |                      |
| 3. Medium          |                          |        |         |        |                                 |        |         |        |                      |
| 4. Large           |                          |        |         |        |                                 |        |         |        |                      |
| Province 2         |                          |        |         |        |                                 |        |         |        |                      |
| 1. Micro           |                          |        |         |        |                                 |        |         |        |                      |
| 2. Small           |                          |        |         |        |                                 |        |         |        |                      |
| 3. Medium          |                          |        |         |        |                                 |        |         |        |                      |
| 4. Large           |                          |        |         |        |                                 |        |         |        |                      |
| Province 3         |                          |        |         |        |                                 |        |         |        |                      |
| 1. Micro           |                          |        |         |        |                                 |        |         |        |                      |
| 2. Small           |                          |        |         |        |                                 |        |         |        |                      |
| 3. Medium          |                          |        |         |        |                                 |        |         |        |                      |
| 4. Large           |                          |        |         |        |                                 |        |         |        |                      |
| TOTAL              |                          |        |         |        |                                 |        |         |        |                      |

### Step 3. Estimate recovery and reconstruction needs for the MTS sector

#### Step 3.1 Set the recovery and reconstruction strategy for the MTS sector

- While the damage and loss assessment is being undertaken, the MIC in consultation with their counterparts in affected provinces, the Ministry of Planning and Investment, the National Disaster Management Office, and in partnership with development partners involved in the sector in Lao PDR, should develop the strategy to be followed for recovery and reconstruction. Some of the broad content of the strategy could include the following:
  - Identifying sector-specific factors which will contribute to 'build back better' of the MTS sector.
  - Possible incentives to private MTS firms for reconstruction of damaged facilities and stock with higher standards of resilience.
  - Enhancing and strengthening medium to long-term disaster risk reduction related issues in the sector such as integrating hazard resilience standards in design and construction of all new buildings, retrofitting of existing facilities situated in high risk areas, improving of safety and other disaster risk reduction measures including the training of personnel on disaster preparedness measures, etc.

- Policy guidelines and strategies in financing the recovery and reconstruction activities in the sector covering both the public and private.
- To assist the sector, the MIC can identify policy measures that will enable them to recover without necessarily having the government spending for the costs required. There are certain options that can be implemented through policy measures to expedite recovery and reconstruction of the MTS sector. Among them are:
  - Income tax breaks for private firms such as:
    - Temporary reduction or freeze or deferment in the collection of tax;
    - Temporary freeze on basic service charges in the utilization of certain services over the time of the recovery phase;
    - Non-collection of property taxes for the duration of the recovery period;
    - Exemption from registration fees for replacements of the destroyed equipment and machinery over a certain period of time.
  - Subsidizing construction materials and equipment to be imported by MTS firms during the recovery and reconstruction phase through an exemption from paying customs duties and other levies.

The MIC, together with the MPI and MOF, should be able to analyze the best possible option/s or the combination of policies in financing the recovery phase, especially those that require subsidies and tax exemptions.

### 3.2. Estimating recovery and reconstruction needs

- The quantification of damage and losses will enable the estimation of financial requirements to achieve full recovery of the sector and to reconstruct the facilities that were destroyed or damaged.
- The value of losses is used to estimate the amount required to achieve recovery of the sector while the value of damage is used to estimate the financial requirements for replacement or reconstruction of the affected assets in the sector.
- This estimation of financial needs for recovery and reconstruction should be broken down by districts and provinces

#### Step 3.2.1. Estimating recovery needs

- In the MTS sector, quick recovery efforts must be undertaken especially if a great number of people and related businesses depend on it for their economic activities. Recovery activities should include those that will enable firms to resume their normal operations.
- Based on the Guidance Note developed by the World Bank and the Global Facility for Disaster Reduction and Recovery entitled: Estimation of post-disaster needs for recovery and reconstruction, the following methodology can be adopted for estimating the recovery needs:
  - To estimate the value of recovery needs of the sector, the following formula for the recovery of industrial structural facilities can be used:

$$\text{Recapitalization Needs} = B * \text{Production losses}$$

where B is a coefficient that usually ranges from 0.25 to 0.45, depending on the capital intensity of activities in the manufacturing, trade and services sectors/sub-sectors. An expert experienced in the sub-sectors and thoroughly familiar with the different types and sizes of businesses in the affected area should be able to estimate the actual recovery needs.

On the other hand, since traders may not have sufficient working capital after disasters that would limit the scope and speed of their economic recovery, their recovery needs may be defined as a function of the estimated value of sales losses. The following formula is to be used for the estimation of the needs in the trade sub-sector:

$$\text{Commerce Recapitalization Needs} = C * \text{Sales losses}$$

where C is a coefficient that usually ranges from 0.20 to 0.35, depending on the capital intensity of each type or branch of commercial or trade activity. An experienced trade economist familiar with the different types and sizes of trade establishments in the affected country can estimate the actual value of the coefficient. For trade and industry, the data obtained from the field survey and/or sample field survey should provide some information on the sources and amounts of funding available to traders and manufacturers for recapitalization. It may include *inter alia* use of savings, family remittances, insurance proceeds, and expanded credit from suppliers that can be used to adjust overall re-capitalization needs.

- Some of the possible recovery-related activities in the MTS sector can include credits, grants or subsidies for:
  - Recapitalization of operating expenses
  - Procurement of vital equipment and machinery

The following table shows the recovery needs of the sub-sectors.

**Table 11. Summary of Recovery Needs**

| Sub-sectors   | Type and Amount of Assistance Needed (Kips) |        |        |        | Total Amount Needed (Kips) | Foreign Cost Component (US\$) |
|---------------|---|--------|--------|--------|----------------------------|-------------------------------|
|               | Grant/ Subsidy                              | Credit | Equity | Others |                            |                               |
| Manufacturing |   |        |        |        |                            |                               |
| Trade         |   |        |        |        |                            |                               |
| Services      |   |        |        |        |                            |                               |
| <b>TOTAL</b>  |   |        |        |        |                            |                               |

Notes in filling out Table 11:

- The various types of firms affected under the main sub-sectors should be enumerated under manufacturing, trade and services.
- In column 2, the MIC assessment team must identify the types of assistance that will be extended to the sub-sectors.
- Since most of the damaged firms may be private, the MIC may choose to extend credit rather than outright cash assistance. Public enterprises may need cash equity.
- Credit can be extended through existing government conduits or through private banking institutions with government guarantee.

### Step 3.2.2. Estimation of Reconstruction Needs

- Based on the Guidance Note developed by the World Bank and the Global Facility for Disaster Reduction and Recovery entitled: Estimation of post-disaster needs for recovery and reconstruction, the following methodology can be adopted for estimating the reconstruction needs:
  - To estimate the value of reconstruction needs of the sector, the following formula for the reconstruction of industrial structural facilities can be used:

$$\text{Industrial Reconstruction Needs} = I_r * \text{Damage to Industrial Facilities}$$

Where  $I_r$  is a coefficient for disaster resilience reconstruction whose value may range from 1.10 to 1.40, depending on the degree of disaster resistance that may be desired and on the definitions of the reconstruction strategy. Engineers, with special expertise and relevant experience in each type or branch of the industry that has been affected by the disaster may be able to define the value of the coefficient to be adopted.

- For equipment and machinery, the following formula can be used:

$$\text{Equipment Replacement Needs} = I_e * \text{Damage to Industrial Equipment and Machinery}$$

Where  $le$  is a coefficient of technological innovation with a value ranging from 0.90 to 1.40, depending on the efficiency in technological production that is desired in the reconstruction strategy. Again, an engineer with experience in each type or branch of the industry would be able to define the value of coefficients to be adopted.

- For the trade sub-sector, a similar formula of improving trade or commerce facilities with improved, disaster-resilient standards together with the replacement equipment and other materials. Such reconstruction may be achieved through the establishment of appropriate term credit lines channeled through the commercial banks to meet the needs of SMEs, and a government-subsidized scheme of financing for micro-traders that may not be credit worthy. The financial needs for these schemes may be estimated on the basis of the following formula:

$$\text{Trade Reconstruction Needs} = Tr * \text{Trade Asset Damage}$$

Where  $Tr$  is a coefficient for disaster resilience whose value may range from 1.10 to 1.35, depending on the comparison between construction standards pre- and post-disaster, as defined in the reconstruction strategy. Civil engineers dedicated to construction of commercial facilities should be able to define the accurate value of this coefficient.

The possible reconstruction-related activities in the MTS sector could include the following. It is to be noted that since the MTS firms are mostly private in nature, financing their needs can come through soft-term credit schemes for reconstruction and repair of their damaged assets. Such schemes can be accompanied by technical assistance for improved disaster resilient standards of construction.

- Replacement or reconstruction of affected structures
- Procurement of equipment and machinery
- Technical assistance for improved standards of construction

The MIC can use the table below to put forward their recommendation to MPI for activities related to reconstruction needs.

**Table 12. Reconstruction Needs**

| Possible Assistance to the MTS Firms                 | Reconstruction Needs (Kips) |        |        | Total Amount Needed (Kips) | Foreign Cost Component (US\$) |
|--|-----------------------------|--------|--------|----------------------------|-------------------------------|
|  | Grant                       | Credit | Others |                            |                               |
| Replacement or reconstruction of affected structures |                             |        |        |                            |                               |
| Procurement of equipment and machinery               |                             |        |        |                            |                               |
| Technical assistance                                 |                             |        |        |                            |                               |
| Others   |                             |        |        |                            |                               |
| Total  |                             |        |        |                            |                               |

In filling in Table 12, the following should be noted:

- Column 1 should enumerate the list of reconstruction activities/projects required by the various firms in the MTS sector.
- The reconstruction needs under the 'credit' column normally refer to the assistance that will be extended to damaged firms owned by the private sector and is expected to be repaid over time. If the government will extend assistance to the private sector without repayment required, the amount of assistance should be under the 'grant' column. Government-owned facilities are assumed to be financed by the government without repayment from the said facilities. As such the amount should be under the 'grant' column, otherwise in the credit column. "Others" can include equity from the government if it decides to do so.
- The foreign cost component is the amount of foreign currency in US Dollars that may be required if there are imported equipment or materials needed. This information is important for MPI in determining potential balance of payment impacts.

- The last column is for the main ministry responsible for the implementation.

## Step 4. Developing short, medium and long-term projects and designing implementation plan

Recovery and Reconstruction needs identified above would need to be broken down in short, medium and long-term needs. Following are some examples of projects in the MTS sector, which can be undertaken as short, medium and long-term:

- **Short-term projects.** Short-term projects are crucial immediately after disaster with a view to resume economic activities in the areas affected. To achieve this, the following short-term initiatives/projects can be introduced:
  - Tax incentive schemes to the affected firms and businesses.
  - Credit assistance to the firms through government or private banks.
- **Medium-term projects/programs.** Medium-term programs and projects can include:
  - Assistance in training on relevant disaster risk reduction like preparedness, structural mitigation (retrofitting), search and rescue in mines, etc.
- **Longer-term projects/programs**
  - Technical assistance in the relocation of existing facilities and the construction of new structures with better standards so that they can stand against future disaster.

The identified needs should have a rough schedule of implementation outlining at the very least the activities, timing and budget required for all the programs and projects. The following techniques can be considered:

- Identify the specific projects according to their relative urgency or priority in relation to recovery.
- Plot the timeline of activities of all the projects, with the urgent ones on top, in a Gantt chart with the corresponding funding requirement. This will assist the MPI in programming the necessary funds over a certain time period, like on a quarterly or annual basis.
- Identify and include in the list of projects that need further feasibility studies which may be funded by foreign grants.
- To the extent possible, a logical framework (log frame) should be created for each of the project proposed for inclusion in the recovery plan. Log frames are normally enough for foreign donors to consider project proposals.

## Step 5. Inputs for macro-economic and household impact analysis

The damages and losses to the MTS sector can affect the macro economy. To the extent possible that the MIC can, it should collect the following information, which will be used by MPI for undertaking the macro-economic impact analysis

- **Gross Domestic Product (GDP):** The loss of the contribution of the MTS sector may decrease the national income.
- **Fiscal Balance:** The fiscal balance should be analyzed from the point of view of the assistance that the government will be extended to the sector. First, tax incentives will lower the revenues of the government. Second, if and when the government decides to spend directly for the recovery of the sector, the government may resort to more borrowings/fresh loans which can result into higher budget deficit.
- **Balance of Payment:** The items and amount needed for the recovery and reconstruction of the sector that are not produced locally in Lao PDR and have to be imported from other countries will increase the balance of trade deficit. To analyze the impact on the balance of payment, this amount should be estimated and expressed in percentage of total recovery and reconstruction needs.
- **Prices or Inflation:** Prices of construction materials could go up if the destruction of the sector is massive and will require extensive procurement of building materials.
- **Employment:** There can be a big reduction in employment if the extent of destruction will cause stoppage of operations of the firms. Employment losses will contribute to the increase in poverty level.
- To the extent possible, the assessment team must also provide an analysis of impacts on personal or household situation which can include the effects of the families of those who might lose their

jobs from the sector. The MPI can use such analysis in the assessment of the overall disaster impacts.

## Step 6. Write the assessment report

- The following format may be considered for writing the assessment chapter of the mining sector:
  - Brief background on the MTS sector in Lao PDR
  - Overview of impacts of the disaster on the MTS sector
  - Damage and Loss quantification
  - Damage and Loss by province (or district)
  - Proposed strategies for recovery and reconstruction of the MTS sector
  - Needs estimation for recovery and reconstruction of the MTS sector
- The report of the sector should be written by MIC in close partnership with development partners involved in the same sector and once completed should be submitted to MPI for inclusion in the final report.

## Section 3

### *Terms of reference of assessment team*

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#### 3.1 Formation of pre-identified assessment teams within MIC

- Pre-identified team should be formed with officials from MIC. These officials would need to have a good understanding on the performance of the MTS sector, construction of facilities and should have also undergone prior training on the damage, loss and needs assessment.

#### 3.2 Composition of the assessment team

- At the central level the assessment team should comprise of the following:
  - Officials from Department of Planning of MIC
  - Officials from Department of Trade of the MIC
  - Development Partners involved in the MTS sector
  - A representative from the MTS sector, as may be deemed necessary by the MIC
- At the field level the assessment team should comprise of the following:
  - Provincial Department of the MIC
  - District Office of the MIC
- Specific expertise required within the team would include the following:
  - Civil Engineer/Structural Engineers
  - Manufacturing, trade and services sector specialists

#### 3.3 Task of assessment team

- Gathering of the pre-identified team from MIC after the disaster event based on the order received from MPI
- Consultation with development partners involved in the MTS sector who will join the assessment team
- Undertaking quick orientation on the assessment methodology for the assessment team
- Working closely with relevant departments of the MIC at national level and provincial/district and responsible for compiling baseline information.
- Undertaking field visits in disaster affected areas and working closely with District and Provincial MIC Offices and collecting information on damage and losses
- Based on information collected, undertaking damage and loss assessment for the sector, simultaneously in close consultation with relevant agencies such as National Disaster Management Office and development partners, formulate the recovery and reconstruction strategy for the MTS sector
- Estimating the recovery and reconstruction needs based on the strategy and damage and loss assessment results
- Writing the assessment report for the MTS sector

- Presentation of the findings of the assessment report to the decision makers within the MIC and other development partners for broader consultation.
- Finalization of the report based on the inputs received from broader consultation and submission to MPI

### 3.4 Assessment timeline

- Ideally, the post-disaster damage, loss and needs assessment takes from 2 to 5 weeks.
- The assessment is usually started once the rapid impact and needs assessment for emergency and relief support is completed and the relief and response phase of the disasters is over or well underway.
- In the first week the overall planning of the assessment would take place and would include the following issues:
  - Baseline data collection
  - Agree on ToR
  - Team composition selection
  - Orientation Training on damage, loss and needs assessment
  - Discussion on formulating recovery and reconstruction strategy for the sector
  - Finalization of questionnaire for undertaking sample survey
- Second and Third week is the assessment stage and would include the following
  - Field survey
  - Calculation of Damage and losses for the sector
- Fourth week of the assessment is the analysis stage and would include the following
  - Finalizing recovery and reconstruction strategy for the sector
  - Estimating recovery and reconstruction needs for the sector
  - Report drafting
  - Consultation within sector to seek inputs on the report
  - Submission of sector report to MPI
  - Finalisation of report by MPI
- Fifth week of the assessment is launch and dissemination of the report

## ***Guidance Note 7:***

### ***Damage, loss and needs assessment for the Mining Sector in Lao PDR***

## ***Table of Contents***

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  - Step 2: Estimating damages and losses
  - Step 3: Estimating recovery and reconstruction needs
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  - Step 5: Inputs for macroeconomic impact analysis
  - Step 6: Writing the assessment report
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## ***Introduction to this Guidance Note***

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- **This Guidance Note** is a part of the Handbook on Post-disaster recovery and reconstruction planning of Lao PDR, which consists of fifteen Guidance Notes, for various sectors, on damage loss and needs assessment.
- This Guidance Note is to be used for assessing impacts of a disaster event in the mining sector in Lao PDR. Included in this sector are private and public companies and firms that are engaged in mining various types of metals. The mining assets would include, among others, the physical structures (buildings, tunnels, etc.) as well as equipment and machineries (loaders, trucks, etc.) and furniture inside the structures.
- The Guidance Note is to be used by the team assigned from the **Ministry of Energy and Mines (MEM)** of the Government of Lao PDR to undertake the post-disaster damage, loss and needs assessment working in close coordination with its provincial and district offices as well as the Ministry of Planning and Investment and the National Disaster Management Office (NDMO) of Lao PDR as well as the development partners involved in the mining sector in the country.



## Section 1

### *Methodology for damage, loss and needs assessment in the mining sector in Lao PDR.*

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- This methodology for undertaking damage, loss and needs assessment is originally derived from the Methodology for estimating the socio-economic and environmental effects of disasters, developed by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) as enhanced further by the World Bank.
- The methodology for estimating recovery and reconstruction needs (described in step 3 under section 2 of this Guidance Note) is derived from the Guidance Note of the World Bank and The Global Facility for Disaster Reduction and Recovery entitled: Estimation of Post-Disaster needs for Recovery and Reconstruction.
- The ECLAC methodology uses two terminologies; namely Damage and Losses as explained below:
  - **Damages.** In the mining sector, damages are the cost or value of total or partial destruction of physical assets and infrastructure such as mining installations (tunnels systems, storage) buildings, equipments, vehicle, goods such as mineral ores and raw materials etc.

Damages are the cost of:

- repair for the partially damaged assets and;
- replacement of totally destroyed ones.

These destructions would occur at the time of the disaster or shortly after the disaster and estimated in terms of physical units of assets that may be totally or partially destroyed. Damages are valued as the cost of repair of partially destroyed assets and the cost of replacement of assets or goods that were totally damaged. The unit prices for replacement would be those that prevailed just before the disaster occurred that would allow rebuilding the mining facilities to the same characteristics prior to the disaster.

- **Losses.** Losses are the changes in economic flows during the period of recovery and reconstruction following the disaster and are expressed in monetary values at current prices. In the sector, losses can result from:
  - Foregone income or lower revenues from mining operations after the infrastructure in the sites (tunnels, etc.) and assets (equipment and machineries) were destroyed by disasters reducing the productive capacity of the firm.
  - Future income or lower revenues due to the destruction of mining lands by floods and landslides. If land is destroyed, it may take years before they can be productive again.
  - Possible higher cost of operation that may arise after the disaster, such as in payment of higher rates of electricity from alternative sources, or acquiring goods and services from alternative sources, or renting temporary premises while repairing or rebuilding the original premises
  - Other unexpected expenditure such as demolition and removal of debris and other rehabilitation works for the site after destruction.

Losses can continue during the entire period of recovery and reconstruction. It is expressed in monetary values at current prices.

## Section 2

### *Steps in undertaking damage, loss and needs assessment*

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#### Step 1: Analysis of pre-disaster situation

##### Step 1.1: Understand what is meant by baseline data in mining sector

- The first step of undertaking the assessment is the collection of information on pre-disaster situation in the sector. The following table shows the type of baseline information to be collected and their typical sources:

**Table 1: Type and Sources for baseline information for mining sector**

| Type of Information/Data   | Available at                                      |                             |                           |               | Name of source document |
|--|---|-----------------------------|---------------------------|---------------|-------------------------|
|  | Ministry/ Bureau/ Division                        | Provincial Office/ Division | District Office/ Division | Other Sources |                         |
| Number and types (by output) of public and private mining firms/companies                              | Ministry of Energy and Mines/ Department of Mines |                             |                           |               |                         |
| Average gross output and income per year of various types of public and private mining firms/companies |   |                             |                           |               |                         |

**Step 1.2: Collect baseline data for each of the disaster-affected district**

- Before field assessment begins, the baseline data should be collected and summarized for each of the disaster-affected district by using the following table.
- The data is to be compiled by the assessment team at the national/central level (see section 3.2 of this Guidance Note) with necessary inputs from the provincial departments and district offices of the concerned Ministry.

**Table 2: Baseline information for mining firms/companies**

Name of District:

| Types of Mining Firms/Companies | Total number of firms by ownership |         | Number of Employees |        | Average Output for the Last 3 Years | Average Income for the Last 3 Year |
|---------------------------------|------------------------------------|---------|---------------------|--------|-------------------------------------|------------------------------------|
|                                 | Public                             | Private | Male                | Female | (Tons)                              | (Kip)                              |
| Coal                            |                                    |         |                     |        |                                     |                                    |
| Lignite                         |                                    |         |                     |        |                                     |                                    |
| Barite                          |                                    |         |                     |        |                                     |                                    |
| Zinc                            |                                    |         |                     |        |                                     |                                    |
| Tin                             |                                    |         |                     |        |                                     |                                    |
| Limestone                       |                                    |         |                     |        |                                     |                                    |
| Copper                          |                                    |         |                     |        |                                     |                                    |
| Lead                            |                                    |         |                     |        |                                     |                                    |
| Phosphorous                     |                                    |         |                     |        |                                     |                                    |
| Potassium                       |                                    |         |                     |        |                                     |                                    |
| Iron                            |                                    |         |                     |        |                                     |                                    |
| Others                          |                                    |         |                     |        |                                     |                                    |
| TOTAL                           |                                    |         |                     |        |                                     |                                    |

In filling in the above Table 2, the following should be noted:

- Column 1 is for the mining firms and the types of minerals mined.
- Column 2 is for the number of mining firms by type ownership.
- Column 3 is for the number of employees by sex in the mining firms by type of minerals mined.
- Column 4 is the average output for the last 3 years of the various minerals mined by all the firms.
- Column 5 is for the average revenues or income for the last 3 years earned by firms in the sector.

## Step 2. Estimating Damages and Losses in the Mining Sector

- While the assessment team at the central level is collecting the baseline information, field assessment should be undertaken by the district assessment team to assess the damages and losses suffered by the sector from the particular disaster event.
- Since there may not be many mining firms that were damaged by a disaster in a district, the district assessment team should start assessing the individual firms impacted by the disaster.
- It is recommended for the assessment team to visit the mining firms' officers and technical personnel since there are certain information (like scale of operation, types of equipment, etc.) that may only be known to their mining experts and engineers. However, if the firms are inaccessible during the assessment, and considering that there are not too many mining firms in Lao PDR, a survey questionnaire can instead be sent to these firms to assess the impacts of the disaster. The following questionnaire (Form 1) can be used.
- The results of assessment of individual firms should be compiled district-wise in a summary table to reflect the damage and losses for the entire sector in the district.

### Step 2.1. Gather information on damages and estimated losses of mining firms

- Using the baseline data, the assessment team can coordinate with the affected firms to collect information on their damages and estimated losses. The following survey form can be used.

#### Form 1. Survey of damages and losses

| Questionnaire Identification Number: |                                 | Date:                               |          |
|--------------------------------------|---------------------------------|-------------------------------------|----------|
| Question Number                      | Questions                       | Response                            |          |
| 1                                    | Name of Company                 |                                     |          |
|                                      | Address                         |                                     |          |
| 2                                    | Number/Road/Village             |                                     |          |
| 3                                    | District                        |                                     |          |
| 4                                    | Province                        |                                     |          |
| 5                                    | Contact Number                  |                                     |          |
| 6                                    | Type of Minerals Mined          | Response Options and/or Description | Response |
|                                      |                                 | Coal                                | 1        |
|                                      |                                 | Lignite                             | 2        |
|                                      |                                 | Barite                              | 3        |
|                                      |                                 | Zinc                                | 4        |
|                                      |                                 | Tin                                 | 5        |
|                                      |                                 | Limestone                           | 6        |
|                                      |                                 | Copper                              | 7        |
|                                      |                                 | Lead                                | 8        |
|                                      |                                 | Phosphorous                         | 9        |
|                                      |                                 | Potassium                           | 10       |
|                                      |                                 | Iron                                | 11       |
|                                      | Others (specify))               | 12                                  |          |
| 7                                    | What do you process or produce? | Goods                               | 1        |
|                                      |                                 | Service                             | 2        |
| 8                                    | Ownership                       | Private                             | 1        |
|                                      |                                 | Public                              | 2        |

## Business Operations

| Question Number | Questions  | Response Options and/or Description | Response |
|-----------------|--|-------------------------------------|----------|
| 1               | Has the business been affected by the disaster?                                  | Yes                                 | 1        |
|                 |  | No If no, go to Q3                  | 2        |
| 2               | If yes, in what way has the business been affected?<br>[multiple response]       | Damage to premises                  | 1        |
|                 |  | Damage to equipment/machinery       | 2        |
|                 |  | Damage to finished product          | 3        |
|                 |  | Shortage of labor                   | 4        |
|                 |  | Shortage/lack of electricity        | 5        |
|                 |  | Shortage/lack of water              | 6        |
|                 |  | Shortage/lack of raw materials      | 7        |
|                 |  | Productivity decline                | 8        |
|                 |  | Stoppage of operations              | 9        |
|                 |  | Demand decline for services         | 10       |
|                 |  | Other (specify)                     | 11       |
| 3               | Had the business stopped due to (indicate name of disaster)                      | Yes                                 | 1        |
|                 |  | No If no, go to Q9                  | 2        |
| 4               | Is the business currently in operation?  | Yes                                 | 1        |
|                 |  | No If no, go to Q6                  | 2        |
| 5               | If yes, after what time period the business were in operation again?             | Within a week                       | 1        |
|                 |  | Within two weeks                    | 2        |
|                 |  | Within a month                      | 3        |
|                 |  | Within two months                   | 4        |
|                 |  | I don't know                        | 5        |
| 6               | If no, when do you anticipate being able to start operation again?               | Within a week                       | 1        |
|                 |  | Within two weeks                    | 2        |
|                 |  | Within a month                      | 3        |
|                 |  | Within three months                 | 4        |
|                 |  | I don't know                        | 5        |
| 7               | How much is your estimated income loss due to the stoppage for the current year? | (Value in local currency)           |          |
| 8               | How much is your estimated income loss due to the stoppage for next year?        | (Value in local currency)           |          |
| 9               | How much is your estimated increase in production cost for the current year?     | (Value in local currency)           |          |
| 10              | How much is your estimated increase in production cost for next year?            | (Value in local currency)           |          |
| 11              | How much is your estimated increase in production cost for the year after next?  | (Value in local currency)           |          |
| 12              | How much did you spend for cleaning up and other unexpected expenses?            | (Value in local currency)           |          |

## Number of employees

|  |  |  |   |
|--|--|--|---|
| 13   | Total number of employees pre-disaster   | Number of employees before the disaster                    |   |
| 14   | Total number of employees in the business now  | Number of employees now                                    |   |
| 15   | If different from now, how many of your employees were killed?   | Number of employees killed by the disaster                 |   |
| 16   | If different from now, how many of your employees were injured due to disaster and are not attending the job anymore?  | Number of employees injured due to the disaster            |   |
| 17   | If different from now, how many of your employees left because they need to attend their home due to this disaster?  | Number of employees who left due to disaster               |   |
| 18   | If different from now, how many of your employees were laid off because the business is reduced due to the disaster?   | Number of employees that were laid off due to the disaster |   |
| <b>Business output/revenue level</b>                 |  |  |   |
| 19   | What was the average output/revenue per month in pre-disaster time?  | Value (in local currency)                                  |   |
| 20   | What is the average out-put/revenue per month now?   | Value (in local currency)                                  |   |
| 21   | If different, how much has it been reduced in percentage (base value is pre-disaster time)   | In percentage  |   |
| 22   | When do you anticipate output/revenue back to its pre-disaster level?  | Within a week  | 1 |
|  |  | Within two weeks   | 2 |
|  |  | Within a month   | 3 |
|  |  | Within three months  | 4 |
|  |  | I don't know   | 5 |
| 23   | Aside from the losses due to work stoppage, how much do you think will be your estimated total income loss for the current year before you reach your pre-disaster income level?   | For the disaster year<br>(Value in local currency)         |   |
| 24   | If income losses will go beyond the current year, how much do you think will be your estimated total income loss for next year before you reach your pre-disaster income level?    | For Year 1 After the Disaster<br>(Value in local currency) |   |
| 25   | If income losses will go beyond next year, how much do you think will be your estimated total income loss for the year after next before you reach your pre-disaster income level? | For Year 2 After the Disaster<br>(Value in local currency) |   |
| <b>Damage of building structure, asset and stock</b> |  |  |   |
| 26   | Was the building structure damaged by the disaster?  | Yes  | 1 |
|  |  | No      If no, go to Q28                                   | 2 |
| 27   | If yes, how much money it would take to repair/restore the damaged building structure?   | Value in local currency                                    |   |
| 28   | Were other assets damaged by the disaster?   | Yes  | 1 |
|  |  | No      If no, go to Q30                                   | 2 |

|   |   |  |   |
|---|---|--|---|
| 29  | If yes, what was the value of other assets that were damaged by the disaster?   | Value in local currency                |   |
| 30  | Was the raw materials stock damaged by the disaster?  | Yes                                    | 1   |
|   |   | No      If no, go to Q32               | 2   |
| 31  | If yes, what was the value of the raw materials stock that has been damaged by the disaster?  | Value in local currency                |   |
| <b>Impact on supply chain, market and financial support</b>                       |   |  |   |
| 32  | How have your customers been affected?<br><br>[multiple response]   | No problem with customers              | 1   |
|   |   | Services have been delayed             | 2   |
|   |   | Services cannot be made                | 3   |
|   |   | Bookings cancelled                     | 4   |
|   |   | Other (specify)                        | 5   |
| 33  | What sort of difficulties are you experiencing getting your goods/services to the market?<br><br>[multiple response]                              | No problems                            | 1   |
|   |   | Lack and increased cost of transport   | 2   |
|   |   | Lower demand for our services          | 3   |
|   |   | Lack /insufficiency of working capital | 4   |
|   |   | Other (specify)                        | 5   |
| 34  | How have your suppliers been affected?<br><br>[multiple response]   | Suppliers not affected                 | 1   |
|   |   | Raw materials scarce/not available     | 2   |
|   |   | Higher price for raw materials         | 3   |
|   |   | Other (specify)                        | 4   |
| 35  | How has your access to finance been affected?<br><br>[multiple response]  | No problems                            | 1   |
|   |   | Difficulty in paying outstanding loans | 2   |
|   |   | Need to renegotiate existing loans     | 3   |
|   |   | Need soft term fresh loans             | 4   |
|   |   | Other (specify)                        | 5   |
| 36  | Have you or the bank lost records?  | Yes                                    | 1   |
|   |   | No                                     | 2   |
| 37  | Is your business insured for disaster (in terms of assets and losses?)  | Yes                                    | 1   |
|   |   | No (If no go to Question 39)           | 2   |
| 38  | How much is the worth of your insurance?  | Value of insurance in local currency   |   |
| <b>Respondent's suggestion on how government can help to restore the business</b> |   |  |   |
| 39  | What are the most important steps that the government can take to help your business to get back on its feet again?<br>Give maximum 3 suggestions | 1.                                     | This is an open-ended question that will be coded later |
|   |   | 2.                                     |   |
|   |   | 3.                                     |   |

Notes in using Form 1:

- The assessment team can use the form in surveying the damages and losses to the firms that were identified before the disaster occurred. The damages and losses are incorporated in the form from which they can be estimated.
- The numbers after the response options are codes that can be encircled as a response and used for processing the survey results.
- Question number 39 is for the opinions of the businessmen affected.
- In estimating certain losses, the assessment team and the respondents must take into consideration the effects of the damages of other sectors such as power, water supply and transportation sectors.

### Step 2.2. Summarize the information on damages

- The information gathered from the firms can be consolidated in a single table according to the type of output they produce. The following table will summarize the damages based on the questionnaire.

**Table 3. Damages of Business Firms, in Kips**

Name of District:

| Mining Firms | Number of Firms Affected |        | Damages (Kips) |        |        | Total Damages (Kips) |
|--------------|--------------------------|--------|----------------|--------|--------|----------------------|
|              | Private                  | Public | Structures     | Assets | Others |                      |
|              | A                        | B      | C              | D      | E      |                      |
| Coal         |                          |        |                |        |        |                      |
| Lignite      |                          |        |                |        |        |                      |
| Barite       |                          |        |                |        |        |                      |
| Zinc         |                          |        |                |        |        |                      |
| Tin          |                          |        |                |        |        |                      |
| Limestone    |                          |        |                |        |        |                      |
| Copper       |                          |        |                |        |        |                      |
| Lead         |                          |        |                |        |        |                      |
| Phosphorous  |                          |        |                |        |        |                      |
| Potassium    |                          |        |                |        |        |                      |
| Iron         |                          |        |                |        |        |                      |
| Others       |                          |        |                |        |        |                      |

In filling in Table 3, the following should be noted:

- The information on damages in the above table is the consolidation of the information provided by the firms through the questionnaire.
- In column 2, the number of firms is the actual number of firms affected by the disaster in the area (district) segregated by ownership.
- Column 3 contains the aggregate damages of all the surveyed firms under various classifications – structure, assets (equipment, machinery), others.
- “Others” under the damages column can include stocks, raw materials, and other inputs to production.
- The “Total Damages” in Column F = Column C + Column D + Column E.
- It is important to remember that damages included in the above table are valued as the cost of repair or replacement at pre-disaster prices.

### Step 2.3. Estimate the Losses

- There are damages - like the collapse of structures, destruction of equipment, loss of access to markets, etc. – which can cause temporary work stoppages or reduction of production or sales

resulting to income losses to the firms. This loss can continue till entire recovery and reconstruction is achieved and hence, it is important to estimate the loss for the disaster year as well as the years beyond the disaster wherever applicable.

**Step 2.3.1: Losses incurred within the year the disaster occurred**

- Based on the survey conducted, the losses of firms can be consolidated or summarized to come up with an aggregate value of losses for the year the disaster occurred as shown in Table 4.

**Table 4. Losses incurred by firms in the year of the disaster, in Kips**

Name of District:

| Firms       | Revenue Losses (Kips) |                         | Total Revenue Losses (Kips) | Others (Kips)          |                       |             | Total Losses (Kips) |
|-------------|-----------------------|-------------------------|-----------------------------|------------------------|-----------------------|-------------|---------------------|
|             | Due to work stoppage  | Due to income reduction |                             | Higher Production Cost | Cleaning Up of Debris | Other Costs |                     |
|             | A                     | B                       | C                           | D                      | E                     | F           | G                   |
| Coal        |                       |                         |                             |                        |                       |             |                     |
| Private     |                       |                         |                             |                        |                       |             |                     |
| Public      |                       |                         |                             |                        |                       |             |                     |
| Lignite     |                       |                         |                             |                        |                       |             |                     |
| Private     |                       |                         |                             |                        |                       |             |                     |
| Public      |                       |                         |                             |                        |                       |             |                     |
| Barite      |                       |                         |                             |                        |                       |             |                     |
| Private     |                       |                         |                             |                        |                       |             |                     |
| Public      |                       |                         |                             |                        |                       |             |                     |
| Zinc        |                       |                         |                             |                        |                       |             |                     |
| Private     |                       |                         |                             |                        |                       |             |                     |
| Public      |                       |                         |                             |                        |                       |             |                     |
| Tin         |                       |                         |                             |                        |                       |             |                     |
| Private     |                       |                         |                             |                        |                       |             |                     |
| Public      |                       |                         |                             |                        |                       |             |                     |
| Limestone   |                       |                         |                             |                        |                       |             |                     |
| Private     |                       |                         |                             |                        |                       |             |                     |
| Public      |                       |                         |                             |                        |                       |             |                     |
| Copper      |                       |                         |                             |                        |                       |             |                     |
| Private     |                       |                         |                             |                        |                       |             |                     |
| Public      |                       |                         |                             |                        |                       |             |                     |
| Lead        |                       |                         |                             |                        |                       |             |                     |
| Private     |                       |                         |                             |                        |                       |             |                     |
| Public      |                       |                         |                             |                        |                       |             |                     |
| Phosphorous |                       |                         |                             |                        |                       |             |                     |
| Private     |                       |                         |                             |                        |                       |             |                     |
| Public      |                       |                         |                             |                        |                       |             |                     |
| Potassium   |                       |                         |                             |                        |                       |             |                     |



|                         |  |  |  |  |  |  |  |
|-------------------------|--|--|--|--|--|--|--|
| Private                 |  |  |  |  |  |  |  |
| Public                  |  |  |  |  |  |  |  |
| <b>Iron</b>             |  |  |  |  |  |  |  |
| Private                 |  |  |  |  |  |  |  |
| Public                  |  |  |  |  |  |  |  |
| <b>Others (Specify)</b> |  |  |  |  |  |  |  |
| <b>TOTAL</b>            |  |  |  |  |  |  |  |

In filling in Table 4, the following should be noted:

- The information in the above Table 4 is the consolidation of the information provided by the firms through the survey. The values are aggregate of all firms or companies with similar products/ outputs.
- Losses should be segregated as private and public. If the firms affected are all private firms, the data should be in the 'private' rows.
- The "Total Revenue Losses" in Column C is the sum of income losses due to work stoppage and reduction of income of the firms for the year that the disaster occurred. In formula, this is Column C = Column A + Column B.
- Higher production cost will occur when minerals under various stages of production (unfinished products) are destroyed. The amount of investment put into these unfinished products will be the value of added (higher) production cost to produce the same quantity of output within the same year. Moreover, higher production cost will also occur when certain types of processes in the sector will require added costs. This may be due to higher cost of power, water, communications, etc. The added amount required to obtain the same output will also be the value of added (higher) production cost.
- The total losses will be: Column G = Column C + Column D + Column E + Column F

#### *Step 2.3.2: Losses incurred beyond the year the disaster occurred*

- Based on the responses of the firms that were surveyed, losses beyond the disaster year can also be estimated.

**Table 5. Estimated Losses Beyond the Disaster Year**

Name of District:

| Mining Firms   | Year 1 Losses  |                        |             |              | Year 2 Losses  |                        |             |              |
|----------------|----------------|------------------------|-------------|--------------|----------------|------------------------|-------------|--------------|
|                | Revenue Losses | Higher Production Cost | Other Costs | Total Losses | Revenue Losses | Higher Production Cost | Other Costs | Total Losses |
|                | A              | B                      | C           |              | D              | E                      | F           | G            |
| <b>Coal</b>    |                |                        |             |              |                |                        |             |              |
| Private        |                |                        |             |              |                |                        |             |              |
| Public         |                |                        |             |              |                |                        |             |              |
| <b>Lignite</b> |                |                        |             |              |                |                        |             |              |
| Private        |                |                        |             |              |                |                        |             |              |
| Public         |                |                        |             |              |                |                        |             |              |
| <b>Barite</b>  |                |                        |             |              |                |                        |             |              |
| Private        |                |                        |             |              |                |                        |             |              |
| Public         |                |                        |             |              |                |                        |             |              |
| <b>Zinc</b>    |                |                        |             |              |                |                        |             |              |
| Private        |                |                        |             |              |                |                        |             |              |

|                         |  |  |  |  |  |  |  |
|-------------------------|--|--|--|--|--|--|--|
| Public                  |  |  |  |  |  |  |  |
| <b>Tin</b>              |  |  |  |  |  |  |  |
| Private                 |  |  |  |  |  |  |  |
| Public                  |  |  |  |  |  |  |  |
| <b>Limestone</b>        |  |  |  |  |  |  |  |
| Private                 |  |  |  |  |  |  |  |
| Public                  |  |  |  |  |  |  |  |
| <b>Copper</b>           |  |  |  |  |  |  |  |
| Private                 |  |  |  |  |  |  |  |
| Public                  |  |  |  |  |  |  |  |
| <b>Lead</b>             |  |  |  |  |  |  |  |
| Private                 |  |  |  |  |  |  |  |
| Public                  |  |  |  |  |  |  |  |
| <b>Phosphorous</b>      |  |  |  |  |  |  |  |
| Private                 |  |  |  |  |  |  |  |
| Public                  |  |  |  |  |  |  |  |
| <b>Potassium</b>        |  |  |  |  |  |  |  |
| Private                 |  |  |  |  |  |  |  |
| Public                  |  |  |  |  |  |  |  |
| <b>Iron</b>             |  |  |  |  |  |  |  |
| Private                 |  |  |  |  |  |  |  |
| Public                  |  |  |  |  |  |  |  |
| <b>Others (Specify)</b> |  |  |  |  |  |  |  |
| <b>TOTAL</b>            |  |  |  |  |  |  |  |

In filling in Table 5, the following should be noted:

- The estimation of losses is the same as calculating the losses for the year that the disaster occurred as shown in the previous table.
- The assessment team, in consultation with the firms, must be able to predict future impacts on revenues. This can be done by analyzing previous post-disaster statistical data and consulting with business owners on their previous post-disaster experiences.

#### Step 2.4. Summarize damages and losses of mining firms in the district

- Based on the information gathered, a summary can show the magnitude and scope of damages and losses. In summarizing damages and losses, the following are assumed:
- Damages are incurred during the year that the disaster occurred while losses can extend way beyond the disaster year.
- The assessment team, in consultation with the owners of the firms, can estimate the losses across the years until the firms reach their pre-disaster operating and income levels.

**Table 6. Summary of Damages and Losses to Mining Firms in the District**

Name of District:

| Mining Firms     | Within the Disaster Year |        |         |        | Losses Beyond the Disaster Year |        |         |        | Total Effects (Kips) |
|------------------|--------------------------|--------|---------|--------|---------------------------------|--------|---------|--------|----------------------|
|                  | Damages                  |        | Losses  |        | Year 1                          |        | Year 2  |        |                      |
|                  | Private                  | Public | Private | Public | Private                         | Public | Private | Public |                      |
| Coal             |                          |        |         |        |                                 |        |         |        |                      |
| Lignite          |                          |        |         |        |                                 |        |         |        |                      |
| Barite           |                          |        |         |        |                                 |        |         |        |                      |
| Zinc             |                          |        |         |        |                                 |        |         |        |                      |
| Tin              |                          |        |         |        |                                 |        |         |        |                      |
| Limestone        |                          |        |         |        |                                 |        |         |        |                      |
| Copper           |                          |        |         |        |                                 |        |         |        |                      |
| Lead             |                          |        |         |        |                                 |        |         |        |                      |
| Phosphorous      |                          |        |         |        |                                 |        |         |        |                      |
| Potassium        |                          |        |         |        |                                 |        |         |        |                      |
| Iron             |                          |        |         |        |                                 |        |         |        |                      |
| Others (Specify) |                          |        |         |        |                                 |        |         |        |                      |
| TOTAL            |                          |        |         |        |                                 |        |         |        |                      |

In filling in Table 6, the following should be noted:

- The information required in the above table are those that are contained in the tables of damages and losses.
- The segregation of public and private damages and losses can assist in strategizing for reconstruction and recovery.

**Step 2.5. Summarize Damages and Losses of Mining Firms in the Province**

- Based on the summary for the districts affected, a similar summary can show the magnitude and scope of damages and losses province-wide, as shown in the following table.

**Table 7. Summary of Damages and Losses to Mining Firms in the Province**

Name of Province:

| Names of District | Within the Disaster Year |        |         |        | Losses Beyond the Disaster Year |        |         |        | Total Effects<br><br>(Kips) |
|-------------------|--------------------------|--------|---------|--------|---------------------------------|--------|---------|--------|-----------------------------|
|                   | Damages                  |        | Losses  |        | Year 1                          |        | Year 2  |        |                             |
|                   | Private                  | Public | Private | Public | Private                         | Public | Private | Public |                             |
| District 1        |                          |        |         |        |                                 |        |         |        |                             |
| District 2        |                          |        |         |        |                                 |        |         |        |                             |
| District 3        |                          |        |         |        |                                 |        |         |        |                             |
| District 4        |                          |        |         |        |                                 |        |         |        |                             |
| District 5        |                          |        |         |        |                                 |        |         |        |                             |
| TOTAL             |                          |        |         |        |                                 |        |         |        |                             |

**Step 2.6. Summarize Damages and Losses of Mining Firms Nationwide**

- Once the summary table for each affected provinces have been filled out, the table below should be used by the central level assessment team for summarizing information at the national level. This is to be filled out after the field assessment is over.

**Table 8. Summary of Damages and Losses According to Ownership in the Province, in Kips**

| Names of Provinces | Within the Disaster Year |        |         |        | Losses Beyond the Disaster Year |        |         |        | Total Effects (Kips) |
|--------------------|--------------------------|--------|---------|--------|---------------------------------|--------|---------|--------|----------------------|
|                    | Damages                  |        | Losses  |        | Year 1                          |        | Year 2  |        |                      |
|                    | Private                  | Public | Private | Public | Private                         | Public | Private | Public |                      |
| Province 1         |                          |        |         |        |                                 |        |         |        |                      |
| Province 2         |                          |        |         |        |                                 |        |         |        |                      |
| Province 3         |                          |        |         |        |                                 |        |         |        |                      |
| Province 4         |                          |        |         |        |                                 |        |         |        |                      |
| Province 5         |                          |        |         |        |                                 |        |         |        |                      |
| TOTAL              |                          |        |         |        |                                 |        |         |        |                      |

### Step 3. Estimate recovery and reconstruction needs for the mining sector

#### Step 3.1 Set the recovery and reconstruction strategy for the mining sector

- While the damage and loss assessment is being undertaken, the MEM in consultation with their counterparts in affected provinces, the Ministry of Planning and Investment, the National Disaster Management Office, and in partnership with development partners involved in the sector in Lao PDR, should develop the strategy to be followed for recovery and reconstruction. Some of the broad content of the strategy could include the following:
  - Identifying sector-specific factors which will contribute to 'build back better' of the mining sector.
  - Possible incentives to private mining firms for reconstruction of damaged facilities and stock with higher standards of resilience.
  - Enhancing and strengthening medium to long-term disaster risk reduction related issues in the sector such as integrating hazard resilience standards in design and construction of all new buildings, retrofitting of existing facilities situated in high risk areas, improving of safety and other disaster risk reduction measures including the training of personnel on disaster preparedness measures, search and rescue in mines, etc.
  - Policy guidelines and strategies in financing the recovery and reconstruction activities in the sector covering both the public and private.
- In the mining sector, quick recovery efforts must be undertaken especially if a great number of people and related businesses depend on it for their economic activities. Recovery activities should include those that will enable firms to resume their normal operations. To assist the sector, the MEM can identify policy measures that will enable them to recover without necessarily having the government spending for the costs required. There are certain options that can be implemented through policy measures to expedite recovery and reconstruction of the private mining sector. Among them are:
  - Income tax breaks for private firms such as:
    - Temporary reduction or freeze or deferment in the collection of tax;
    - Temporary freeze on basic service charges in the utilization of certain services over the time of the recovery phase;
    - Non-collection of property taxes for the duration of the recovery period;
    - Exemption from registration fees for replacements of the destroyed equipment and machinery over a certain period of time.
  - Subsidizing construction materials and equipment to be imported by private mining firms during the recovery and reconstruction phase through an exemption from paying customs duties and other levies.

The MEM, together with the MPI and MOF, should be able to analyze the best possible option/s or the combination of policies in financing the recovery phase, especially those that require subsidies and tax exemptions.

### 3.2 Estimating recovery and reconstruction needs

- The quantification of damage and losses will enable the estimation of financial requirements to achieve full recovery of the sector and to reconstruct the facilities that were destroyed or damaged.
- The value of losses is used to estimate the amount required to achieve recovery of the sector while the value of damage is used to estimate the financial requirements for replacement or reconstruction of the affected assets in the sector.
- This estimation of financial needs for recovery and reconstruction should be broken down by districts and provinces.

#### Step 3.2.1. Estimating recovery needs

- In the mining sector, quick recovery efforts must be undertaken especially if a great number of people and related businesses depend on it for their economic activities. Recovery activities should include those that will enable firms to resume their normal operations.
- The Guidance Note developed by the World Bank and the Global Facility for Disaster Reduction and Recovery entitled: Estimation of post-disaster needs for recovery and reconstruction, has developed a methodology for the estimation of recovery needs of manufacturing sector which can be adopted for the mining sector
- To estimate the value of recovery needs of the mining sector, the following formula for the recovery of industrial structural facilities can be used:

Recapitalization Needs = B \* Production losses

where B is a coefficient that usually ranges from 0.25 to 0.45, depending on the capital intensity of activities in the mining sector. An expert experienced in the sector and thoroughly familiar with the different types and sizes of mining firms in the affected area should be able to estimate the actual recovery needs.

- On the other hand, since mining firms may not have sufficient working capital after disasters that would limit the scope and speed of their economic recovery, their recovery needs may be defined as a function of the estimated value of sales losses. The following formula is to be used for the estimation of the recovery needs in the mining sector:

Mining Recapitalization Needs = C \* Sales losses

where C is a coefficient that usually ranges from 0.20 to 0.35, depending on the capital intensity of each type or branch of mining activity. An experienced mining engineer and/or economist familiar with the different types and sizes of mining firms in Lao PDR can estimate the actual value of the coefficient. The data obtained from the field survey and/or sample field survey should provide some information on the sources and amounts of funding available to mining firms for recapitalization. It may include *inter alia* use of savings, insurance proceeds, and expanded credit from suppliers that can be used to adjust overall re-capitalization needs.

- Some of the possible recovery-related activities in the mining sector can include:
  - Recapitalization of operating expenses
  - Procurement of vital equipment and machinery
- The possible sources of financing for the said activities in the mining sector can include:
- Credit Schemes. The expansion of soft-term credit to facilitate re-capitalization of mining firms can complement tax breaks. Such schemes can be implemented through either the national development bank/s and/or the private banking system. If the Government cannot provide such financing directly, it can provide a guarantee for credits granted by private banks.
- Equity. In some special cases, the government may opt to provide equity in private firms instead of subsidy or credit or tax exemptions.

- Direct subsidy. If needed, and in accordance the recovery and reconstruction financing strategy, the government may extend other forms of direct subsidy to enable the private firms to recover immediately.

Again, the MEM, together with MPI and MOF, should be able to analyze the best possible option/s or the combination of policies in financing the recovery phase.

The following table can show the recovery needs of the sector.

**Table 9. Summary of Recovery Needs in the Mining Sector**

| Mining Firms     | Type and Amount of Assistance Needed (Kips) |        |             |        |         |        | Total Amount Needed (Kips) |        | Foreign Cost Component (US\$) |
|------------------|---|--------|-------------|--------|---------|--------|----------------------------|--------|-------------------------------|
|                  | Credit                                      |        | Cash Equity |        | Others  |        |                            |        |                               |
|                  | Private                                     | Public | Private     | Public | Private | Public | Private                    | Public |                               |
| Coal             |   |        |             |        |         |        |                            |        |                               |
| Lignite          |   |        |             |        |         |        |                            |        |                               |
| Barite           |   |        |             |        |         |        |                            |        |                               |
| Zinc             |   |        |             |        |         |        |                            |        |                               |
| Tin              |   |        |             |        |         |        |                            |        |                               |
| Limestone        |   |        |             |        |         |        |                            |        |                               |
| Copper           |   |        |             |        |         |        |                            |        |                               |
| Lead             |   |        |             |        |         |        |                            |        |                               |
| Phosphorous      |   |        |             |        |         |        |                            |        |                               |
| Potassium        |   |        |             |        |         |        |                            |        |                               |
| Iron             |   |        |             |        |         |        |                            |        |                               |
| Others (Specify) |   |        |             |        |         |        |                            |        |                               |
| TOTAL            |   |        |             |        |         |        |                            |        |                               |

In filling in Table 9, the following should be noted:

- Column 1 is for the various mining firms according to their minerals-output.
- Column 2 enumerates the possible assistance that the mining firms may need. Since most of the businesses are private in nature by ownership, the government may extend more of credit than outright cash grant or equity. Public enterprises may need cash equity.
- Credit can be extended through existing government conduits.
- Others can include subsidy should the government decides to subsidize private mining firms.

### **Step 3.2.2. Estimation of Reconstruction Needs**

- Based on the Guidance Note developed by the World Bank and the Global Facility for Disaster Reduction and Recovery entitled: Estimation of post-disaster needs for recovery and reconstruction, the following methodology can be adopted for estimating the recovery needs:
  - a. To estimate the value of reconstruction needs of the sector, the following formula for the reconstruction of industrial structural facilities can be used:

$$\text{Industrial Reconstruction Needs} = Ir * \text{Damage to Industrial Facilities}$$

where  $I_r$  is a coefficient for disaster resilience reconstruction whose value may range from 1.10 to 1.40, depending on the degree of disaster resistance that may be desired and on the definitions of the reconstruction strategy. Engineers, with special expertise and relevant experience in the mining industry that has been affected by the disaster may be able to define the value of the coefficient to be adopted.

- b. For equipment and machinery, the following formula can be used:

$$\text{Equipment Replacement Needs} = I_e * \text{Damage to Industrial Equipment and Machinery}$$

where  $I_e$  is a coefficient of technological innovation with a value ranging from 0.90 to 1.40, depending on the efficiency in technological production that is desired in the reconstruction strategy. Again, an engineer with experience in the mining industry would be able to define the value of coefficients to be adopted.

It is to be noted that since the mining firms are mostly private in nature, financing their needs can come through soft-term credit schemes for reconstruction and repair of their damaged assets. Such schemes can be accompanied by technical assistance for improved disaster resilient standards of construction. The possible reconstruction-related activities in the mining sector could include the following.

- ▶ Replacement or reconstruction of affected structures
- ▶ Procurement of equipment and machinery
- ▶ Technical assistance for improved standards of construction

The above reconstruction needs are those that are outside the immediate needs for recovery. The MEM can use the table below to put forward their recommendation to MPI for activities related to reconstruction needs.

**Table 10. Reconstruction Needs of the Mining Sector**

| Possible Assistance to Mining Firms                  | Reconstruction Needs (Kips) |        | Total Reconstruction Needs | Foreign Cost Component (US\$) |
|--|-----------------------------|--------|----------------------------|-------------------------------|
|  | Grant                       | Credit |                            |                               |
| Replacement or reconstruction of affected structures |                             |        |                            |                               |
| Procurement of equipment and machinery               |                             |        |                            |                               |
| Technical assistance                                 |                             |        |                            |                               |
| Others   |                             |        |                            |                               |
| Total  |                             |        |                            |                               |

In filling in Table 10, the following should be noted:

- Column 1 should enumerate the list of reconstruction activities/projects required by the various firms in the sector.
- The reconstruction needs under the 'credit' column normally refer to the assistance that will be extended to damaged firms owned by the private sector and is expected to be repaid over time. If the government will extend assistance to the private sector without repayment required, the amount of assistance should be under the 'grant' column. Government-owned facilities are assumed to be financed by the government without repayment from the said facilities. As such the amount should be under the 'grant' column, otherwise in the credit column.
- The foreign cost component is the amount of foreign currency in US Dollars that may be required if there are imported equipment or materials needed. This information is important for MPI in determining potential balance of payment impacts.

## Step 4. Developing short, medium and long-term projects and designing implementation plan

Recovery and Reconstruction needs identified above would need to be broken down in short, medium and long-term needs. Following are some examples of projects in the mining sector, which can be undertaken as short, medium and long-term:

- **Short-term projects.** Short-term projects are crucial immediately after disaster with a view to resume economic activities in the areas affected. To achieve this, the following short-term initiatives/projects can be introduced:
  - Tax incentive schemes to the affected firms and businesses.
  - Credit assistance to the firms through government or private banks.
- **Medium-term projects/programs.** Medium-term programs and projects can include:
  - Assistance in training on relevant disaster risk reduction like preparedness, structural mitigation (mine tunnel retrofitting), search and rescue in mines, etc.
- **Longer-term projects/programs**
  - Technical assistance in the relocation of existing facilities and the construction of new structures with better standards so that they can stand against future disaster.

The identified needs should have a rough schedule of implementation outlining at the very least the activities, timing and budget required for all the programs and projects. The following techniques can be considered:

- Identify the specific projects according to their relative urgency or priority in relation to recovery.
- Plot the timeline of activities of all the projects, with the urgent ones on top, in a Gantt chart with the corresponding funding requirement. This will assist the MPI in programming the necessary funds over a certain time period, like on a quarterly or annual basis.
- Identify and include in the list of projects that need further feasibility studies which may be funded by foreign grants.
- To the extent possible, a logical framework (log frame) should be created for each of the project proposed for inclusion in the recovery plan. Log frames are normally enough for foreign donors to consider project proposals.

## Step 5. Inputs for macro-economic and household impact analysis

The damages and losses to the mining sector can affect the macro economy. To the extent possible that the MEM can, it should collect the following information and analyze the impacts, which will be used by MPI for undertaking the macro-economic impact analysis

- **Gross Domestic Product (GDP):** The loss of the contribution of mining sector, being one of the biggest contributor to the annual GDP, may decrease the national income.
- **Fiscal Balance:** The fiscal balance should be analyzed from the point of view of the assistance that the government will be extended to the sector. First, tax incentives will lower the revenues of the government. Second, if and when the government decides to spend directly for the recovery of the sector, the government may resort to more borrowings/fresh loans which can result into higher budget deficit.
- **Balance of Payment:** The items and amount needed for the recovery and reconstruction of the sector that are not produced locally in Lao PDR and have to be imported from other countries will increase the balance of trade deficit. To analyze the impact on the balance of payment, this amount should be estimated and expressed in percentage of total recovery and reconstruction needs.
- **Prices or Inflation:** Prices of construction materials could go up if the destruction of the sector is massive and will require extensive procurement of building materials.
- **Employment:** There can be a big reduction in employment if the extent of destruction will cause stoppage of operations of the firms. Employment losses will contribute to the increase in poverty level.
- To the extent possible, the assessment team must also provide an analysis of impacts on personal or household situation which can include the effects of the families of those who might lose their jobs from the sector. The MPI can use such analysis in the assessment of the overall disaster impacts.



## Step 6. Write the assessment report

- The following format may be considered for writing the assessment chapter of the mining sector:
  - Brief background on the mining sector in Lao PDR
  - Overview of impacts of the disaster on the mining sector
  - Damage and Loss quantification
  - Damage and Loss by province (or district)
  - Proposed strategies for recovery and reconstruction of the mining sector
  - Needs estimation for recovery and reconstruction of the mining sector
- The report of the mining sector should be written by MEM in close partnership with development partners involved in the same sector and once completed should be submitted to MPI for inclusion in the final report.

## Section 3

### *Terms of reference of assessment team*

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#### 1.1 Formation of pre-identified assessment teams within the MEM

- Pre-identified team should be formed with officials from MEM. These officials would need to have a good understanding on the performance of the mining sector, construction of facilities and should have also undergone prior training on the damage, loss and needs assessment.

#### 3.2 Composition of the assessment team

- At the central level the assessment team should comprise of the following:
  - Officials from Department of Planning of MEM
  - Officials from Department of Mines of MEM
  - Development Partners involved in the mining sector
  - A representative from the mining sector, as may be deemed necessary by the MEM
- At the field level the assessment team should comprise of the following:
  - Provincial Department of the MEM
  - District Office of the MEM
- Specific expertise required within the team would include the following:
  - Mining Engineers/Civil Engineer/Structural Engineers
  - Geologists and other mining sector specialist

#### 3.3 Task of assessment team

- Gathering of the pre-identified team from MEM after the disaster event based on the order received from MPI
- Consultation with development partners involved in the mining sector who will join the assessment team
- Undertaking quick orientation on the assessment methodology for the assessment team
- Working closely with relevant departments of the MEM at national level and provincial/district and responsible for compiling baseline information.
- Undertaking field visits in disaster affected areas and working closely with District and Provincial MEM Offices and collecting information on damage and losses
- Based on information collected, undertaking damage and loss assessment for the sector, simultaneously in close consultation with relevant agencies such as National Disaster Management Office and development partners, formulate the recovery and reconstruction strategy for the mining sector
- Estimating the recovery and reconstruction needs based on the strategy and damage and loss assessment results

- Writing the assessment report for the mining sector
- Presentation of the findings of the assessment report to the decision makers within the MEM and other development partners for broader consultation.
- Finalization of the report based on the inputs received from broader consultation and submission to MPI

### 3.4 Assessment timeline

- Ideally, the post-disaster damage, loss and needs assessment takes from 2 to 5 weeks.
- The assessment is usually started once the rapid impact and needs assessment for emergency and relief support is completed and the relief and response phase of the disasters is over or well underway.
- In the first week the overall planning of the assessment would take place and would include the following issues:
  - Baseline data collection
  - Agree on ToR
  - Team composition selection
  - Orientation Training on damage, loss and needs assessment
  - Discussion on formulating recovery and reconstruction strategy for the sector
- Second and third week is the assessment stage and would include the following
  - Field survey
  - Calculation of Damage and losses for the sector
- Fourth week of the assessment is the analysis stage and would include the following
  - Finalizing recovery and reconstruction strategy for the sector
  - Estimating recovery and reconstruction needs for the sector
  - Report drafting
  - Consultation within sector to seek inputs on the report
  - Submission of sector report to MPI
  - Finalisation of report by MPI
- Fifth week of the assessment is launch and dissemination of the report

## ***Guidance Note 8:***

### ***Damage, loss and needs assessment for the Power Supply Sector in Lao PDR***

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  - Step 5: Inputs for macroeconomic impact analysis
  - Step 6: Writing the assessment report
- Section 3: Terms of reference of Assessment Team

## ***Introduction to this Guidance Note:***

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- **This Guidance Note** is a part of the Handbook on Post-disaster recovery and reconstruction planning of Lao PDR, which consists of fifteen Guidance Notes, for various sectors, on damage loss and needs assessment.
- This Guidance Note is to be used for assessing impacts of a disaster event in the **power supply sector** in Lao PDR.
- The Guidance Note is to be used by the team responsible for undertaking assessment of power supply sector and led by the Ministry of Energy and Mines (MEM) of the Government of Lao PDR and working in close consultation with agencies such as National Statistical Center, Ministry of Planning and Investment and National Disaster Management Office of Lao PDR and in close partnership with development partners involved in the sector.

## Section 1

### *Methodology for damage, loss and needs assessment in the powersupply sector in Lao PDR*

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- This methodology for undertaking post-disaster damage, loss and needs assessment is derived from the Methodology for estimating the socio-economic and environmental effects of disasters, developed by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) as further enhanced by the World Bank (WB).
- The methodology for estimating recovery and reconstruction needs (described in step 3 under section 2 of this Guidance Note) is derived from the Guidance Note of the World Bank and The Global Facility for Disaster Reduction and Recovery entitled: Estimation of Post-Disaster needs for Recovery and Reconstruction.
- The ECLAC methodology uses two terminologies; namely Damage and Losses as explained below:
  - **Damages.** In the power supply, damages are cost of: a) repair of partially destroyed assets and/or b) replacement of totally destroyed physical assets and infrastructure under each of the components of the power sector such as:
    - Power generation plants
    - Transmission subsystems, including high-voltage power lines and transformers
    - Distribution grids

Damages occur at the time of, or shortly after the disaster and are to be measured in physical terms (such as kilometers of power lines) for which monetary replacement values are subsequently estimated.

The unit costs to be adopted for repair or replacement must not be affected by scarcity or inflation arising after the disaster, as appropriate adjustments will be made in the final stage of overall reconstruction planning.

- **Losses.** In the power sector, losses will include the following:
  - Sales in electricity not made due to the stoppage of the power system while the system is under repair or to be reconstructed after a disaster. This can include both short-term repairs and longer-term reconstruction.
  - Foregone sales in electricity due to the decline in demand from the consumer sectors (manufacturing, commerce, agriculture, residential users, public lighting, etc.) that may have been destroyed until they are reconstructed
  - Higher cost of operation which will occur when damaged power units are substituted by alternative stand-by plants that have a higher unit cost of production or when electricity has to be imported from a different system whose unit operating costs are higher than the affected system.
  - Additional expenses to clean up the debris of destruction.
  - In the power sector losses occur until:
    - Full capacity and supply has been re-established in all system components
    - User demand (in all sectors) has been restored to pre-disaster levels
  - Losses are expressed in monetary value at current values.

## Section2

### Steps in undertaking damage, loss and needs assessment

#### Step1. Analysis of pre-disaster situation

##### Step 1.1: Identify and gather information on the power sector

- The first step of undertaking the assessment is collecting information on the pre-disaster power supply conditions in order to ascertain the baseline for damage, loss and needs assessment. The following baseline information are required:

**Table 1: Type and Sources for baseline information for power supply sector**

| Type of Information/Data  | Available at                                       |                             |                           |                 | Name of source document |
|---|--|-----------------------------|---------------------------|-----------------|-------------------------|
|   | Ministry/ Bureau/ Division                         | Provincial Office/ Division | District Office/ Division | Other Sources   |                         |
| Number of power firms and their respective capacities   | Ministry of Energy and Mines/ Department of Energy |                             |                           |                 |                         |
| Historical electricity sales (KWh) per user-sector  |  |                             |                           | Power companies |                         |
| Historical electricity rates (Kips/Kwh and US\$/KWh), per user-sector                         |  |                             |                           |                 |                         |
| Electricity sales projections, per user sector, for current and at least two subsequent years |  |                             |                           |                 |                         |
| Repair and replacement cost of various components of electrical system                        |  |                             |                           |                 |                         |

##### Step 1.2: Collect baseline data for each of the disaster-affected district

- The baseline data of each type of power plants/firms should be collected and summarized using the table 2 and table 3:

**Table 2: Baseline information on power plants/firms in the district**

| Name of Power Plant        |   |                        |                          |                     |
|----------------------------|---|------------------------|--------------------------|---------------------|
| Type of Power Plant        | Hydropower ( ) Coal ( ) Diesel ( ) Others ( ) |                        |                          |                     |
| Ownership                  | Private ( ) State-owned enterprise ( )        |                        |                          |                     |
| Location (District)        |   |                        |                          |                     |
| Assets in the sub-systems  | Installed Capacity                            | Unit cost of operation | Average Replacement Cost | Average Repair Cost |
|                            | (KW)  | (Kip/KW-hr)            | (Kips)                   | (Kips)              |
| <b>Power Generation</b>    |   |                        |                          |                     |
| Structures                 | N.A.  | N.A.                   |                          |                     |
| Equipment                  | N.A.  | N.A.                   |                          |                     |
| Machinery                  | N.A.  | N.A.                   |                          |                     |
| Vehicles                   | N.A.  | N.A.                   |                          |                     |
| Others                     | N.A.  | N.A.                   |                          |                     |
| <b>Transmission system</b> |   |                        |                          |                     |

|                           |      |      |  |  |
|---------------------------|------|------|--|--|
| Structures                | N.A. | N.A. |  |  |
| Equipment                 | N.A. | N.A. |  |  |
| Machinery                 | N.A. | N.A. |  |  |
| Vehicles                  | N.A. | N.A. |  |  |
| Others                    | N.A. | N.A. |  |  |
| <b>Distribution grids</b> |      |      |  |  |
| Structures                | N.A. | N.A. |  |  |
| Equipment                 | N.A. | N.A. |  |  |
| Machinery                 | N.A. | N.A. |  |  |
| Vehicles                  | N.A. | N.A. |  |  |
| Others                    | N.A. | N.A. |  |  |
| <b>Others</b>             | N.A. | N.A. |  |  |

Notes in filling out Table 2.

- The 'power generation', 'transmission system' and 'distribution grids' are the main sub-systems of the power supply system.
- Under each sub-system are the types of assets that belong to them.
- If there are more than one power supply firm in the district, a separate baseline information should be made.
- Average repair costs of structures can be broken down as:
  - Roof per square meter
  - Walls per square meter
  - Floor per square meter
  - Electrical and plumbing systems per repair

**Table 3: Baseline information on power supply sector**

|  |               |           |           |           |              |        |        |
|--|---------------|-----------|-----------|-----------|--------------|--------|--------|
| Name of Power Firm   |               |           |           |           |              |        |        |
| Provinces Covered by Service                                     |               |           |           |           |              |        |        |
| Energy demand, rates and sales                                   | Type of Users | Year (-)3 | Year (-)2 | Year (-)1 | Current Year | Year 1 | Year 2 |
| Electricity sales by sector in KWh (past three years)            | Residential   |           |           |           | N.A.         | N.A.   | N.A.   |
|  | Industrial    |           |           |           | N.A.         | N.A.   | N.A.   |
|  | Commercial    |           |           |           | N.A.         | N.A.   | N.A.   |
|  | Agriculture   |           |           |           | N.A.         | N.A.   | N.A.   |
|  | Others        |           |           |           | N.A.         | N.A.   | N.A.   |
| Rates paid by each user sector in Kip/KWh (past three years)     | Residential   |           |           |           |              | N.A.   | N.A.   |
|  | Industrial    |           |           |           |              | N.A.   | N.A.   |
|  | Commercial    |           |           |           |              | N.A.   | N.A.   |
|  | Agriculture   |           |           |           |              | N.A.   | N.A.   |
|  | Other         |           |           |           |              | N.A.   | N.A.   |
| Electricity demand projections in KWh (current and next 2 years) | Residential   | N.A.      | N.A.      | N.A.      |              |        |        |
|  | Industrial    | N.A.      | N.A.      | N.A.      |              |        |        |
|  | Commercial    | N.A.      | N.A.      | N.A.      |              |        |        |
|  | Agriculture   | N.A.      | N.A.      | N.A.      |              |        |        |
|  | Others        | N.A.      | N.A.      | N.A.      |              |        |        |

Note in filling out Table 3.

- The 'provinces covered by service' refers to the provinces which procure electricity from the power plant. It is not uncommon that a single power plant supplies electricity to one or more provinces.
- N.A. means not applicable

## Step 2. Estimate damage and losses in the power supply sector

- While the assessment team at the central level is collecting the baseline information, field assessment should be undertaken by the district assessment team to assess the damages and losses suffered by the sector from the particular disaster event.
- Since there may not be many power supply firms that were damaged by a disaster in a district, the district assessment team should start assessing the individual firms impacted by the disaster. The results should be compiled district-wise in a summary table to reflect the damage and losses for the entire sector in the district.
- It should be noted that since there is a possibility that only one power firm supplies electricity to a number of districts or provinces, caution should be exercised to avoid double counting. It is recommended that the district that should assess the damages and losses of the power firm is the district where the main office of the power firm is located.

### Step 2.1. Estimate damages

- The items that can be damaged in the sector are the components of the power supply system which are the a) power generation system or plants, b) transmission sub-systems and c) electricity distribution grids. In each of these systems, the following are the general types of assets:
  - Structures such as dams, office buildings, storage buildings, etc.
  - Equipment and machinery like generators, transformers, turbines, etc.
  - Vehicles, tools, and stock materials and supplies like cables, etc.
  - Office equipment and furniture like computers, etc.
- For each of the damaged component, repair and reconstruction costs should be estimated. These costs must not be affected by scarcity or inflation arising from the disaster. The time needed to reconstruct the damages must also be known.
- Aside from field visits to the disaster sites, the assessment team should consult with officers of the power firm/s to ascertain the extent and value of the damages and the estimated period before the power can be fully restored to their pre-disaster level. The experts in the power firm/s can estimate more accurately the damages of their respective firms. Moreover, considering that some of the damages may cover a wide area that may be inaccessible to the assessment team, the people in the power firm/s can get the data quicker from their colleagues in the field.
- The assessment specialist can classify the damage as completely destroyed and partially damaged. The following can be taken as guidance for classification of completely destroyed and partially damaged, however, it is best to get feedback from national experts before the assessment begins:
  - Completely destroyed: All facilities which are visibly completely destroyed and those that have suffered irreparable structural damage.
  - Partially damaged: power supply facilities that can be repaired at less than 40 percent of the reconstruction cost.
- The value of totally damaged assets can be summarized in the following table.

**Table 4. Value of totally damaged assets to power supply in a district**

|                      |   |
|----------------------|---|
| Name of Power Firm   |   |
| Type of Power Supply | Hydropower ( ) Coal ( ) Diesel ( ) Others ( ) |
| Ownership            | Public ( ) Private ( )                        |
| Location (District)  |   |

| Damage to Structures and Assets | Totally destroyed structures and assets |                                 |                                    | Total damages<br>(Kips) | Average Time to Replace<br>(Months) |
|---------------------------------|---|---------------------------------|------------------------------------|-------------------------|-------------------------------------|
|                                 | Number of totally destroyed             | Average Replacement Cost (Kips) | Value of Reusable Materials (Kips) |                         |                                     |
|                                 | A                                       | B                               | C                                  | D                       | E                                   |
| <b>Power Generation</b>         |   |                                 |                                    |                         |                                     |
| Structures                      |   |                                 |                                    |                         |                                     |
| Equipment                       |   |                                 |                                    |                         |                                     |
| Machinery                       |   |                                 |                                    |                         |                                     |
| Vehicles                        |   |                                 |                                    |                         |                                     |
| Others                          |   |                                 |                                    |                         |                                     |
| <b>Transmission system</b>      |   |                                 |                                    |                         |                                     |
| Structures                      |   |                                 |                                    |                         |                                     |
| Equipment                       |   |                                 |                                    |                         |                                     |
| Machinery                       |   |                                 |                                    |                         |                                     |
| Vehicles                        |   |                                 |                                    |                         |                                     |
| Others                          |   |                                 |                                    |                         |                                     |
| <b>Distribution grids</b>       |   |                                 |                                    |                         |                                     |
| Structures                      |   |                                 |                                    |                         |                                     |
| Equipment                       |   |                                 |                                    |                         |                                     |
| Machinery                       |   |                                 |                                    |                         |                                     |
| Vehicles                        |   |                                 |                                    |                         |                                     |
| Others                          |   |                                 |                                    |                         |                                     |
| TOTAL                           |   |                                 |                                    |                         |                                     |

Notes for filling table 4:

- 'Average Replacement Cost' will be the average pre-disaster value of the structures and assets that were totally destroyed.
- There are various machineries and equipment in the power systems. They should be assessed especially those that are vital to the operation.
- Although the structure or contents of the structure are totally destroyed, there will still be some re-usable materials that have salvage values. For instance, some wood or iron can be re-used for reconstruction while damaged equipment can be sold as scrap. The salvage values must be subtracted from the replacement cost.
- According to the WB guidance notes, typically around 10-40 percent of materials can be re-used after a disaster.
- In formula, the total damages will be (Column D) = [(Column A) x (Column B)] – Column C.
- The partially destroyed assets can be determined by estimating:
  - ♦ the parts of the structures that were damaged; and
  - ♦ the quantity of equipment and other assets damaged and their respective average repair costs.
- The value of partially damaged assets can be summarized in the following table.

**Table 5. Value of damages from partially destroyed assets in the power supply sector**

|                      |   |
|----------------------|---|
| Name of Power Firm   |   |
| Type of Power Supply | Hydropower ( ) Coal ( ) Diesel ( ) Others ( ) |



| Ownership                               | Public ( )                   |                                     | Private ( ) |                                       |             |                                |                         |   |                                    |  |
|---|------------------------------|-------------------------------------|-------------|---------------------------------------|-------------|--------------------------------|-------------------------|---|------------------------------------|--|
| Location (District)                     |                              |                                     |             |                                       |             |                                |                         |   |                                    |  |
| Structures (by Sub-system)              | Partially damaged structures |                                     |             |                                       |             |                                | Others<br>Kips/<br>Unit | Value of<br>Reusable<br>Materials<br>Kips | Total<br>Cost of<br>Repair<br>Kips | Average<br>Time to<br>Repair<br>Months |
|   | Roof                         |                                     | Walls       |                                       | Floor       |                                |                         |   |                                    |  |
|   | Area<br>SqM                  | Repair<br>Cost<br>Kips/<br>SqM      | Area<br>SqM | Repair<br>Cost<br>Kips/<br>SqM        | Area<br>SqM | Repair<br>Cost<br>Kips/<br>SqM |                         |   |                                    |  |
|   | A                            | B                                   | C           | D                                     | E           | F                              |                         |   |                                    |  |
| Power Generation Structure              |                              |                                     |             |                                       |             |                                |                         |   |                                    |  |
| Transmission system Structure           |                              |                                     |             |                                       |             |                                |                         |   |                                    |  |
| Distribution Grid Structure             |                              |                                     |             |                                       |             |                                |                         |   |                                    |  |
| Others                                  |                              |                                     |             |                                       |             |                                |                         |   |                                    |  |
| <b>Total</b>                            |                              |                                     |             |                                       |             |                                |                         |   |                                    | N.A.                                   |
| Partially Damaged Assets by Sub-systems | Quantity Damaged<br>(Units)  | Average Repair Cost<br>(Kips/ Unit) |             | Value of Reusable Materials<br>(Kips) |             | Total Cost of Repair<br>(Kips) |                         | Average Time to Repair<br>(Month)         |                                    |  |
|   | A                            | B                                   | C           | D                                     | E           |                                |                         |   |                                    |  |
| <b>Power Generation</b>                 |                              |                                     |             |                                       |             |                                |                         |   |                                    |  |
| Equipment                               |                              |                                     |             |                                       |             |                                |                         |   |                                    |  |
| Machinery                               |                              |                                     |             |                                       |             |                                |                         |   |                                    |  |
| Others                                  |                              |                                     |             |                                       |             |                                |                         |   |                                    |  |
| <b>Transmission system</b>              |                              |                                     |             |                                       |             |                                |                         |   |                                    |  |
| Equipment                               |                              |                                     |             |                                       |             |                                |                         |   |                                    |  |
| Machinery                               |                              |                                     |             |                                       |             |                                |                         |   |                                    |  |
| Others                                  |                              |                                     |             |                                       |             |                                |                         |   |                                    |  |
| <b>Distribution grids</b>               |                              |                                     |             |                                       |             |                                |                         |   |                                    |  |
| Equipment                               |                              |                                     |             |                                       |             |                                |                         |   |                                    |  |
| Machinery                               |                              |                                     |             |                                       |             |                                |                         |   |                                    |  |
| Others                                  |                              |                                     |             |                                       |             |                                |                         |   |                                    |  |
| <b>Others</b>                           |                              |                                     |             |                                       |             |                                |                         |   |                                    |  |
| <b>Total</b>                            |                              |                                     |             |                                       |             |                                |                         |   |                                    |  |
| <b>Grand Total</b>                      |                              |                                     |             |                                       | N.A.        |                                |                         |   |                                    |  |

Notes in filling out Table 5:

- The various equipment, machinery and other assets are the ones enumerated in the baseline information on Table 2.

- The total value of damage due to partially destroyed structures will be the total cost of repair computed as:  

$$\text{Column I} = (\text{Column A} \times \text{Column B}) + (\text{Column C} \times \text{Column D}) + (\text{Column E} \times \text{Column F}) + \text{Column G} - \text{Column H}$$
- For the partially destroyed assets, the value of damages will be the repair cost of the number of damaged quantity multiplied by average repair cost of each, computed as:  

$$\text{Column D} = \text{Column A} \times \text{Column B} - \text{Column C}$$
- Other assets in the sub-systems will include the stocks or assets like cables, electric posts, etc.
- In calculating damages, the unit cost of reconstruction should be based on pre-disaster value that would allow rebuilding to the same characteristics of the assets prior to the disaster.

Based on the information collected from power firms, the damages can be summarized in the following table.

**Table 6. Summary of damages to the power sector in a district**

| Name of Power Firm                         |   |                                      |              |   |                                 |              |                      |
|--|---|--------------------------------------|--------------|---|---------------------------------|--------------|----------------------|
| Location (Name of District):               |   |                                      |              |   |                                 |              |                      |
| Type of power plants and their sub-systems | Number of totally destroyed assets for reconstruction |                                      |              | Number of partially destroyed assets for repair |                                 |              | Total damages (Kips) |
|  | Unit  | Average Replacement Cost (Kips/Unit) | Total (Kips) | Unit  | Average Repair Cost (Kips/Unit) | Total (Kips) |                      |
|  | A   | B                                    | C            | D   | E                               | F            | G                    |
| <b>Hydro power</b>                         |   |                                      |              |   |                                 |              |                      |
| Power Generation                           |   |                                      |              |   |                                 |              |                      |
| Transmission system                        |   |                                      |              |   |                                 |              |                      |
| Distribution grids                         |   |                                      |              |   |                                 |              |                      |
| Others                                     |   |                                      |              |   |                                 |              |                      |
| <b>Coal</b>                                |   |                                      |              |   |                                 |              |                      |
| Power Generation                           |   |                                      |              |   |                                 |              |                      |
| Transmission system                        |   |                                      |              |   |                                 |              |                      |
| Distribution grids                         |   |                                      |              |   |                                 |              |                      |
| Others                                     |   |                                      |              |   |                                 |              |                      |
| <b>Diesel</b>                              |   |                                      |              |   |                                 |              |                      |
| Power Generation                           |   |                                      |              |   |                                 |              |                      |
| Transmission system                        |   |                                      |              |   |                                 |              |                      |
| Distribution grids                         |   |                                      |              |   |                                 |              |                      |
| Others                                     |   |                                      |              |   |                                 |              |                      |
| <b>Others</b>                              |   |                                      |              |   |                                 |              |                      |
| <b>TOTAL</b>                               |   |                                      |              |   |                                 |              |                      |

Notes in filling out Table 6:

- 'Average Reconstruction Cost' for the totally destroyed assets and 'Average Repair Cost' for the partially destroyed will be the averages of the damages of the assets that were assessed by the team.
- Total for replacement or reconstruction is:  $(\text{Column A} \times \text{Column B}) = \text{Column C}$

- Total for repair is: (Column D x Column E) = Column F
- 'Total damages'(Column G) = Column C + Column F

### Step 2.2. Estimate losses. Losses in the power sector will include:

- Losses due to lower revenues which can be due to:
  - Drop in electricity supply due to damage to power plants.
  - Drop in user demand due to partial destruction of housing, industry and lower economy activity.
- Losses due to higher operational cost which can occur when:
  - substituting a damaged power plant with another one that has higher unit operational costs.
  - importing power and energy from another nearby system at prices that are higher than damaged system's own production costs.
  - there is cost of temporary inter-connection with other system
  - there is overtime payment for workers working on immediate rehabilitation of the electric service.
- "Higher Operating Costs" is only expected if the power firm/s cannot pass on directly the full value of the added operating cost to the end-users. It is assumed here that any increase in operating cost (in Kips/KWh) will not be passed on to electricity users.
- Other losses such as demolition and removal of debris.
  - The cost of cleaning up operations will depend on the extent of destruction due to the disaster.
- In estimating losses, an objective calendar or schedule of repair and reconstruction of the power supply sector and related assets must be developed. This schedule should take into consideration the availability and schedule of adequate financing, replacement of machinery, equipment and skilled labor that will enable the return of pre-disaster conditions of electrical service supply.
- In close consultation with specialist of other sectors, a demand/supply recovery curve can be developed based on reconstruction schedule of the other sectors.
- The following table can be used to assess the losses suffered by the power firm in the disaster year.

**Table 7. Losses of a power firm**

| Name of power firm        |   |                              |                                |                          |                                 |                |
|---------------------------|---|------------------------------|--------------------------------|--------------------------|---------------------------------|----------------|
| Type of power firm        | Hydropower ( ) Coal ( ) Diesel ( ) Others ( ) |                              |                                |                          |                                 |                |
| Ownership                 | Public ( ) Private ( )                        |                              |                                |                          |                                 |                |
| Location (District)       |   |                              |                                |                          |                                 |                |
| Source of Losses          | Projected Sales per Day                       |                              | Sales Reduction<br>(Kw-hr)/day | Rate<br>(Kips/<br>Kw-hr) | Estimated<br>Duration<br>(Days) | Loss<br>(Kips) |
|                           | Pre-disaster<br>(Kw-hr)/day                   | Post-disaster<br>(Kw-hr)/day |                                |                          |                                 |                |
| Type of Users             | A   | B                            | C                              | D                        | E                               | F              |
| Residential               |   |                              |                                |                          |                                 |                |
| Industrial                |   |                              |                                |                          |                                 |                |
| Commercial                |   |                              |                                |                          |                                 |                |
| Agriculture               |   |                              |                                |                          |                                 |                |
| Others                    |   |                              |                                |                          |                                 |                |
| Operating Cost            | Pre-disaster<br>(Kips/day)                    |                              | Post-disaster<br>(Kips/day)    |                          | Estimated<br>Duration<br>(Days) | Loss<br>(Kips) |
| Cost of cleaning up       |   |                              |                                |                          |                                 |                |
| Other urgent expenditures |   |                              |                                |                          |                                 |                |
| <b>TOTAL</b>              |   |                              |                                |                          |                                 |                |

Notes in filling out Table 7:

- Reduction in sales can be due to the reduction in the capacity of the power plant to produce electricity due to the damages caused by the disaster or due to the reduction in demand of the various types of users that were adversely affected by the same disaster.
- 'Estimated duration' refers to the total length of time starting from the reduction in sales (after the disaster) up to the time when sales returns to the pre-disaster level.
- Loss in revenue = (Pre-disaster electricity consumption minus post-disaster consumption) x (Electricity Rate) x (Duration until consumption is restored into pre-disaster level). In formula:

Loss (Column F) = Column C x Column D x Column E  
where Column C = Column A–Column B.

- Losses due to higher operational cost = (Post-disaster operational cost per day) minus (Pre-disaster operational cost per day) x (Number of days).
- Losses can extend beyond the year that the disaster occurred and these should be reflected in the loss assessment. The results of damage assessment will provide the estimate of time required to repair and reconstruct the affected structures as well as the capacity of the sector to recover. This will determine the duration when losses will be suffered.
- A similar analysis should be made for the losses in the future years. If the estimated number of days where losses will be incurred will go beyond the year that the disaster occurred, the estimated losses should be segregated per year.
- It should be noted that losses occurring in user-sectors such as residential, industrial, agricultural due to lack of electricity are to be estimated in those sectors and not in the power sector.
- Based on the estimation of the assessment team, the losses for the all the firms in the power sector for the year that the disaster occurred and beyond can be summarized in the following table.

**Table 8. Summary of total losses in the power sector**

Name of Power Firm/s:

Location (Name of District):

| Loss by type of power plant | Amount in Disaster Year (Kip) |         | Amount in Year 1 (Kip) |         | Amount in Year 2 (Kip) |         | Total Losses (Kip) |         |
|-----------------------------|-------------------------------|---------|------------------------|---------|------------------------|---------|--------------------|---------|
|                             | Public                        | Private | Public                 | Private | Public                 | Private | Public             | Private |
| <b>Hydropower plant</b>     |                               |         |                        |         |                        |         |                    |         |
| Higher cost of operation    |                               |         |                        |         |                        |         |                    |         |
| Lower revenues              |                               |         |                        |         |                        |         |                    |         |
| Cleaning up                 |                               |         |                        |         |                        |         |                    |         |
| Others                      |                               |         |                        |         |                        |         |                    |         |
| <b>Coal</b>                 |                               |         |                        |         |                        |         |                    |         |
| Higher cost of operation    |                               |         |                        |         |                        |         |                    |         |
| Lower revenues              |                               |         |                        |         |                        |         |                    |         |
| Cleaning up                 |                               |         |                        |         |                        |         |                    |         |
| Others                      |                               |         |                        |         |                        |         |                    |         |
| <b>Diesel</b>               |                               |         |                        |         |                        |         |                    |         |
| Higher cost of operation    |                               |         |                        |         |                        |         |                    |         |
| Lower revenues              |                               |         |                        |         |                        |         |                    |         |
| Cleaning up                 |                               |         |                        |         |                        |         |                    |         |
| Others                      |                               |         |                        |         |                        |         |                    |         |
| Total losses                |                               |         |                        |         |                        |         |                    |         |

### Step 2.3. Summarize the damages and losses in power supply sector in a district

- Based on estimation of the assessment team, the damages and losses can be summarized in the following table.

**Table 8. Summary of damages and losses in the district**

Name of Power Firm/s:

Location (Name of District):

| Types of power plants | Within the Disaster Year |         |        |         | Losses Beyond Disaster Year |         |        |         |        |         |
|-----------------------|--------------------------|---------|--------|---------|-----------------------------|---------|--------|---------|--------|---------|
|                       | Damages                  |         | Losses |         | Year 1                      |         | Year 2 |         | Year 3 |         |
|                       | Public                   | Private | Public | Private | Public                      | Private | Public | Private | Public | Private |
| Hydropower            |                          |         |        |         |                             |         |        |         |        |         |
| Coal                  |                          |         |        |         |                             |         |        |         |        |         |
| Diesel                |                          |         |        |         |                             |         |        |         |        |         |
| Others                |                          |         |        |         |                             |         |        |         |        |         |
| TOTAL                 |                          |         |        |         |                             |         |        |         |        |         |

### Step 2.4. Summarize the damages and losses in power supply sector in the province

- Based on the summary for the districts affected, a similar summary can show the magnitude and scope of damages and losses province-wide, as shown in the following table.

**Table 8. Summary of damages and losses in the province**

Name of Province:

| District   | Within the Disaster Year |         |        |         | Losses Beyond Disaster Year |         |        |         |        |         |
|------------|--------------------------|---------|--------|---------|-----------------------------|---------|--------|---------|--------|---------|
|            | Damages                  |         | Losses |         | Year 1                      |         | Year 2 |         | Year 3 |         |
|            | Public                   | Private | Public | Private | Public                      | Private | Public | Private | Public | Private |
| District 1 |                          |         |        |         |                             |         |        |         |        |         |
| District 2 |                          |         |        |         |                             |         |        |         |        |         |
| District 3 |                          |         |        |         |                             |         |        |         |        |         |
| District 4 |                          |         |        |         |                             |         |        |         |        |         |
| TOTAL      |                          |         |        |         |                             |         |        |         |        |         |

### Step 2.5. Summarize Damages and Losses of Power Supply Firms Nationwide

- Once the summary table for each affected provinces have been filled out, the table below should be used by the central level assessment team for summarizing information at the national level. This is to be filled out after the field assessment is over.

**Table 9. Summary of Damages and Losses at the national level**

| Province   | Within the Disaster Year |        |         |        | Losses Beyond the Disaster Year |        |         |        | Total Effects (Kips) |
|------------|--------------------------|--------|---------|--------|---------------------------------|--------|---------|--------|----------------------|
|            | Damages                  |        | Losses  |        | Year 1                          |        | Year 2  |        |                      |
|            | Private                  | Public | Private | Public | Private                         | Public | Private | Public |                      |
| Province 1 |                          |        |         |        |                                 |        |         |        |                      |
| Province 2 |                          |        |         |        |                                 |        |         |        |                      |
| Province 3 |                          |        |         |        |                                 |        |         |        |                      |

|            |  |  |  |  |  |  |  |  |  |
|------------|--|--|--|--|--|--|--|--|--|
| Province 4 |  |  |  |  |  |  |  |  |  |
| Province 5 |  |  |  |  |  |  |  |  |  |
| TOTAL      |  |  |  |  |  |  |  |  |  |

### Step 3. Estimate recovery and reconstruction needs for the power supply sector

#### Step 3.1 Set the recovery and reconstruction strategy for the power supply sector

- While the damage and loss assessment is being undertaken, the MEM in consultation with their counterparts in affected provinces, the Ministry of Planning and Investment, the National Disaster Management Office, and in partnership with development partners involved in the sector in Lao PDR, should develop the strategy to be followed for recovery and reconstruction. Some of the broad content of the strategy could include the following:
  - Identifying sector-specific factors which will contribute to 'build back better' of the power sector.
  - Possible incentives to private power firms for reconstruction of damaged facilities and stock with higher standards of resilience.
  - Enhancing and strengthening medium to long-term disaster risk reduction related issues in the sector such as integrating hazard resilience standards in design and construction of all new buildings, retrofitting of existing facilities situated in high risk areas, improving of safety and other disaster risk reduction measures including the training of personnel on disaster preparedness measures, etc.
  - Policy guidelines and strategies in financing the recovery and reconstruction activities in the sector covering both the public and private.
- In the power sector, quick recovery efforts must be undertaken especially if a great number of people and related businesses depend on it for their economic activities. Recovery activities should include those that will enable firms to resume their normal operations. To assist the sector, the MEM can identify policy measures that will enable them to recover without necessarily having the government spending for the costs required. There are certain options that can be implemented through policy measures to expedite recovery and reconstruction of the private power sector. Among them are:
  - Income tax breaks for private firms such as:
    - Temporary reduction or freeze or deferment in the collection of tax;
    - Temporary freeze on basic service charges in the utilization of certain services over the time of the recovery phase;
    - Non-collection of property taxes for the duration of the recovery period;
    - Exemption from registration fees for replacements of the destroyed equipment and machinery over a certain period of time.
  - Subsidizing construction materials and equipment to be imported by private power firms during the recovery and reconstruction phase through an exemption from paying customs duties and other levies.
  - The MEM, together with the MPI and MOF, should be able to analyze the best possible option/s or the combination of policies in financing the recovery phase, especially those that require subsidies and tax exemptions.

#### 3.2 Estimating recovery and reconstruction needs

- The quantification of damage and losses will enable the estimation of financial requirements to achieve full recovery of the sector and to reconstruct the facilities that were destroyed or damaged.
- The value of losses is used to estimate the amount required to achieve recovery of the sector while the value of damage is used to estimate the financial requirements for replacement or reconstruction of the affected assets in the sector.
- This estimation of financial needs for recovery and reconstruction should be broken down by districts and provinces

##### Step 3.2.1. Estimating recovery needs

Some of the possible recovery-related activities in the power sector can include:

- Repairs of the damages to the transmission and distribution system which are normally affected by strong winds and floods, as in the case of Lao PDR. Among the repairs that may be required are cable wires, transformers and others.
- Urgent repairs of generating systems that have been damaged
- Emergency procurement of alternate generators or connecting to other existing power grids to supply the needs of basic lifelines like hospitals, police and military needs, transportation, etc.
- Clearing of debris that may have affected the various sub-systems of the power sector. In some cases, this may be part of repairs like the clearing of trees that fell off the power lines.
- Assistance to electricity users in checking or repairing their individual electrical installations to assure safety after the disaster.
- Freezing of electricity billings can be adopted as a recovery measure at least in those cases where no metering exists and where a fixed rate is charged to users, until full recovery of the service is achieved.

The following table shows the recovery needs of the power sector.

**Table 10. Summary of Recovery Needs in the Power Sector**

| Possible Assistance by<br>Type of Power Plants          | Type and Amount of Assistance Needed (Kips) |        |         |        |         |        | Total<br>Amount<br>Needed<br>(Kips) | Foreign Cost<br>Component<br>(US\$) |
|---|---|--------|---------|--------|---------|--------|-------------------------------------|-------------------------------------|
|   | Grant/ Subsidy                              |        | Credit  |        | Others  |        |                                     |                                     |
|   | Private                                     | Public | Private | Public | Private | Public |                                     |                                     |
| Hydro power   |   |        |         |        |         |        |                                     |                                     |
| Urgent repair or replacement of equipment and machinery |   |        |         |        |         |        |                                     |                                     |
| Interconnection   |   |        |         |        |         |        |                                     |                                     |
| Procurement of vital supplies                           |   |        |         |        |         |        |                                     |                                     |
| Cleaning operations                                     |   |        |         |        |         |        |                                     |                                     |
| Others (Specify)  |   |        |         |        |         |        |                                     |                                     |
| Coal  |   |        |         |        |         |        |                                     |                                     |
| Urgent repair or replacement of equipment and machinery |   |        |         |        |         |        |                                     |                                     |
| Interconnection   |   |        |         |        |         |        |                                     |                                     |
| Procurement of vital supplies                           |   |        |         |        |         |        |                                     |                                     |
| Cleaning operations                                     |   |        |         |        |         |        |                                     |                                     |
| Others (Specify)  |   |        |         |        |         |        |                                     |                                     |
| Diesel  |   |        |         |        |         |        |                                     |                                     |
| Urgent repair or replacement of equipment and machinery |   |        |         |        |         |        |                                     |                                     |
| Interconnection   |   |        |         |        |         |        |                                     |                                     |
| Procurement of vital supplies                           |   |        |         |        |         |        |                                     |                                     |
| Cleaning operations                                     |   |        |         |        |         |        |                                     |                                     |
| Others (Specify)  |   |        |         |        |         |        |                                     |                                     |

## TOTAL

Notes in filling out Table 10:

- Column 1 is for the items by type of power plant that will need financing after the disaster.
- Column 2 is for the type and amount of assistance needed by the sector by ownership.
- Column 3 is for the total amount needed in Kips which is the total of the grant, credit and other assistance.
- “Others” may include equity or donations from other donors.
- Column 4 is the foreign cost component, which is the amount of foreign currency in US Dollars, that may be required if there are imported equipment or materials needed in assisting the sub-sectors.

### Step 3.2.2. Estimate Reconstruction Needs

- Based on the Guidance Note developed by the World Bank and the Global Facility for Disaster Reduction and Recovery entitled: Estimation of post-disaster needs for recovery and reconstruction, the following methodology can be adopted for estimating the reconstruction needs:

- To estimate the value of reconstruction needs of the sector, the following formula for the reconstruction of industrial structural facilities can be used:

$$\text{Industrial Reconstruction Needs} = I_r * \text{Damage to Industrial Facilities}$$

Where  $I_r$  is a coefficient for disaster resilience reconstruction whose value may range from 1.10 to 1.40, depending on the degree of disaster resistance that may be desired and on the definitions of the reconstruction strategy. Engineers, with special expertise and relevant experience in the mining industry that has been affected by the disaster may be able to define the value of the coefficient to be adopted.

- For equipment and machinery, the following formula can be used:

$$\text{Equipment Replacement Needs} = I_e * \text{Damage to Industrial Equipment and Machinery}$$

Where  $I_e$  is a coefficient of technological innovation with a value ranging from 0.90 to 1.40, depending on the efficiency in technological production that is desired in the reconstruction strategy. Again, an engineer with experience in the mining industry would be able to define the value of coefficients to be adopted.

- It is to be noted that since the power firms are revenue-generating enterprises, financing their needs can come through soft-term credit schemes for the reconstruction and repair of their damaged assets. Such schemes can be accompanied by technical assistance for improved disaster resilient standards of construction. The possible reconstruction-related activities in the power sector could include the following:
  - Replacement or reconstruction of affected structures
  - Procurement of equipment and machinery
  - Technical assistance for improved standards of construction

The MEM can use the table below to put forward their recommendation to MPI for activities related to reconstruction needs.

**Table 11. Reconstruction Needs of the Power Sector**

| Possible Assistance to Power Firms                   | Reconstruction Needs (Kips) |        | Total Reconstruction Needs | Foreign Cost Component (US\$) |
|--|-----------------------------|--------|----------------------------|-------------------------------|
|  | Grant                       | Credit |                            |                               |
| Replacement or reconstruction of affected structures |                             |        |                            |                               |
| Procurement of equipment and                         |                             |        |                            |                               |



|                      |  |  |  |  |
|----------------------|--|--|--|--|
| machinery            |  |  |  |  |
| Technical assistance |  |  |  |  |
| Others               |  |  |  |  |
| Total                |  |  |  |  |

In filling in Table 11, the following should be noted:

- Column 1 should enumerate the list of reconstruction activities/projects required by the various firms in the sector. The enumerated needs here are those that are outside the more urgent recovery needs.
- The reconstruction needs under the 'credit' column normally refer to the assistance that will be extended to damaged firms owned by the private sector and is expected to be repaid over time. If the government will extend assistance to the private sector without repayment required, the amount of assistance should be under the 'grant' column. Government-owned firms are assumed to be financed by the government without repayment from the said firms. As such the amount should be under the 'grant' column, otherwise in the credit column.
- The foreign cost component is the amount of foreign currency in US Dollars that may be required if there are imported equipment or materials needed. This information is important for MPI in determining potential balance of payment impacts.

#### Step 4. Developing short, medium and long-term projects and designing implementation plan

- Recovery and Reconstruction needs identified above would need to be broken down in short, medium and long-term needs. Following are some examples of projects in the power sector, which can be undertaken as short, medium and long-term:
- **Short-term projects.** Short-term projects are crucial immediately after disaster with a view to resume economic activities in the areas affected. To achieve this, the following short-term initiatives/projects can be introduced:
  - Immediate repairs and rehabilitation of affected sub-systems.
  - Credit assistance and tax schemes can be extended to affected firms.
- **Medium-term projects/programs.** Medium-term programs and projects can include:
  - Construction of alternate plants in safer areas.
  - Protection of watersheds to protect dams, etc.
- Longer-term projects/programs
  - Relocation of existing facilities like power plants, sub-stations, etc. with better standards than the ones prevailing presently, so that it can stand against future disaster.
- The identified needs should have a rough schedule of implementation outlining at the very least the activities, timing and budget required for all the programs and projects. The following techniques can be considered:
  - Identify the specific projects according to their relative urgency or priority in relation to recovery.
  - Plot the timeline of activities of all the projects, with the urgent ones on top, in a Gantt chart with the corresponding funding requirement. This will assist the MPI in programming the necessary funds over a certain time period, like on a quarterly or annual basis.
  - Identify and include in the list of projects that need further feasibility studies which may be funded by foreign grants.
  - To the extent possible, a logical framework (log frame) should be created for each of the project proposed for inclusion in the recovery plan. Log frames are normally enough for foreign donors to consider project proposals.

#### Step 5. Inputs for macro-economic and household impact analysis

- The damages and losses to the power sector can affect the macro economy. To the extent possible that the MEM can, it should collect the information and analyze their impacts on the following, which will be used by MPI for undertaking the macro-economic impact analysis

- **Gross Domestic Product (GDP):** The loss of the contribution of power sector, being one of the biggest contributor to the annual GDP, may decrease the national income.
  - **Fiscal Balance:** The fiscal balance should be analyzed from the point of view of the assistance that the government will be extended to the sector. First, tax incentives will lower the revenues of the government. Second, if and when the government decides to spend directly for the recovery of the sector, the government may resort to more borrowings/fresh loans which can result into higher budget deficit.
  - **Balance of Payment:** The items and amount needed for the recovery and reconstruction of the sector that are not produced locally in Lao PDR and have to be imported from other countries will increase the balance of trade deficit. To analyze the impact on the balance of payment, this amount should be estimated and expressed in percentage of total recovery and reconstruction needs.
- A. **Prices or Inflation:** The production of commodities using electricity may drop if the supply of electricity will be diminished. This will result in the reduction of supply which will result in the rise of prices for the said commodities. On the other hand, construction materials could go up if the destruction of the power sector is massive and will require extensive procurement of building materials.
- B. **Employment:** There can be a big reduction in employment if the extent of destruction will cause stoppage of operations of other firms in the sectors that utilizes power. Employment losses will contribute to the increase in poverty level.
- C. To the extent possible, the assessment team must also provide an analysis of impacts on personal or household situation which can include the effects of the families of those who might lose their jobs from the other sectors. The MPI can use such analysis in the assessment of the overall disaster impacts.

## Step 6. Write the assessment report

- The following format may be considered for writing the assessment chapter of the power sector:
  - Brief background on the power sector in Lao PDR
  - Overview of impacts of the disaster on the power sector
  - Damage and Loss quantification
    - Damage and Loss by province (or district)
  - Proposed strategies for recovery and reconstruction of the power sector
  - Needs estimation for recovery and reconstruction of the power sector
- The report of the power sector should be written by MEM in close partnership with development partners involved in the same sector and once completed should be submitted to MPI for inclusion in the final report.

## Section 3

### *Terms of reference of assessment team*

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#### 3.1 Formation of pre-identified assessment teams within MES

- Pre-identified team should be formed with officials from MEM. These officials would need to have a good understanding on the performance of the power sector, construction of facilities and should have also undergone prior training on the damage, loss and needs assessment.

### 3.2 Composition of the assessment team

- At the central level the assessment team should comprise of the following:
  - Officials from Department of Planning of MEM
  - Officials from Department of Energy of MEM
  - Development Partners involved in the power sector
  - A representative from the power sector, as may be deemed necessary by the MEM
- At the field level the assessment team should comprise of the following:
  - Provincial Department of the MEM
  - District Office of the MEM
- Specific expertise required within the team would include the following:
  - Electrical Engineers/Civil Engineer/Structural Engineers
  - Power sector economist

### 3.3 Task of assessment team

- Gathering of the pre-identified team from MEM after the disaster event based on the order received from MPI
- Consultation with development partners involved in the power sector who will join the assessment team
- Undertaking quick orientation on the assessment methodology for the assessment team
- Working closely with relevant departments of the MEM at national level and provincial/district and responsible for compiling baseline information.
- Undertaking field visits in disaster affected areas and working closely with District and Provincial MEM Offices and collecting information on damage and losses
- Based on information collected, undertaking damage and loss assessment for the sector, simultaneously in close consultation with relevant agencies such as National Disaster Management Office and development partners, formulate the recovery and reconstruction strategy for the power sector
- Estimating the recovery and reconstruction needs based on the strategy and damage and loss assessment results
- Writing the assessment report for the power sector
- Presentation of the findings of the assessment report to the decision makers within the MEM and other development partners for broader consultation.
- Finalization of the report based on the inputs received from broader consultation and submission to MPI

### 3.4 Assessment timeline

- Ideally, the post-disaster damage, loss and needs assessment takes from 2 to 5 weeks.
- The assessment is usually started once the rapid impact and needs assessment for emergency and relief support is completed and the relief and response phase of the disasters is over or well underway.
- In the first week the overall planning of the assessment would take place and would include the following issues:
  - Baseline data collection
  - Agree on ToR
  - Team composition selection
  - Orientation Training on damage, loss and needs assessment
  - Discussion on formulating recovery and reconstruction strategy for the sector
- Second and third week is the assessment stage and would include the following
  - Field survey
  - Calculation of Damage and losses for the sector
- Fourth week of the assessment is the analysis stage and would include the following
  - Finalizing recovery and reconstruction strategy for the sector

- - Estimating recovery and reconstruction needs for the sector
  - Report drafting
  - Consultation within sector to seek inputs on the report
  - Submission of sector report to MPI
  - Finalisation of report by MPI
- Fifth week of the assessment is launch and dissemination of the report

## ***Guidance Note 9:***

### ***Damage, loss and needs assessment for the Tourism Sector in Lao PDR***

## ***Table of Contents***

- **Introduction to this Guidance Note**
- **Section 1: Methodology for damage, loss and needs assessment in the tourism sector in Lao PDR**
- **Section 2: Steps in undertaking damage, loss and needs assessment**
  - Step 1: Analysis of pre-disaster situation of the tourism sector
  - Step 2: Estimating damages and losses
  - Step 3: Estimating recovery and reconstruction needs
  - Step 4: Developing short, medium and long-term projects and designing implementation plan
  - Step 5: Inputs for macroeconomic impact analysis
  - Step 6: Writing the assessment report
- **Section 3: Terms of reference of Assessment Team**

## ***Introduction to this Guidance Note***

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- This Guidance Note is a part of the Handbook on Post-disaster recovery and reconstruction planning of Lao PDR, which consists of fifteen Guidance Notes, for various sectors, on damage loss and needs assessment.
- This Guidance Note is to be used for assessing impacts of a disaster event in the tourism sector in Lao PDR. The tourism sector normally consists of facilities that cater to both local and foreign tourism like accommodations, entertainment and other related businesses.
- The Guidance Note is to be used by the team assigned from the Ministry of Information, Culture and Tourism (MICT) of the Government of Lao PDR and working in close coordination with its provincial and district offices as well as agencies such as the National Statistical Center, Ministry of Planning and Investment, National Disaster Management Office of Lao PDR and development partners involved in tourism sector in Lao PDR.

## Section 1

### *Methodology for damage, loss and needs assessment in the tourism sector in Lao PDR*

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- This methodology for undertaking post-disaster damage, loss and needs assessment is originally derived from the Methodology for estimating the socio-economic and environmental effects of disasters, developed by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) as enhanced further by the World Bank.
- The methodology for estimating recovery and reconstruction needs (described in step 3 under section 2 of this Guidance Note) is derived from the Guidance Note of the World Bank and The Global Facility for Disaster Reduction and Recovery entitled: Estimation of Post-Disaster needs for Recovery and Reconstruction.
- The ECLAC methodology uses two terminologies; namely Damage and Losses as explained below:

**Damages.** In the tourism sector, damages are the totally or partially destroyed physical assets and infrastructure – structures, equipment, machineries, computers, office furniture etc. The values of damages are the cost of:

- repair for the partially damaged assets and;
- replacement of totally destroyed ones.

These damages may occur at the time of, or shortly after the disaster and is to be measured in physical terms for which monetary value is subsequently estimated.

3. **Losses.** Losses are the changes in economic flows during the period of reconstruction following the disaster. In the sector, losses can result from:
  - Foregone income from operations after the hotels, guest-houses and other tourism-related businesses were destroyed by disasters.
  - Additional expenses to clean and rehabilitate the business sites after destruction.
  - Possible higher cost of operation that may arise after the disaster, such as in payment of higher rates of electricity from alternative sources, or acquiring goods and services from alternative sources, or renting temporary premises while repairing or rebuilding the original premises

These losses would continue during the entire period of recovery and reconstruction and expressed in monetary values at current prices

## Section 2

### *Steps in undertaking damage, loss and needs assessment*

---

#### Step 1. Analysis of pre-disaster situation

##### Step 1.1. Identify and gather information on the businesses existing in the sector

- The first step of undertaking the assessment is collecting information on pre-disaster situation in each of the sub-sectors. The pre-disaster quantity, types and annual income of business establishments in the sector should be defined. The MICT must ensure that the information is readily available prior to a disaster and can be accessed immediately after a disaster event for post-disaster needs assessment purposes. The MICT can focus on hotels, resorts, tourism sites and other facilities that are major components of the tourism sector. The set of information below can be gathered from the indicated sources:

**Table 1.Types and possible sources of baseline information**

| Type of Information/Data  | Available at  |   |                           |                    | Name of source document |
|---|---|---|---------------------------|--------------------|-------------------------|
|   | Ministry/ Bureau/ Division  | Provincial Office/ Division   | District Office/ Division | Other Sources      |                         |
| Number of:<br>Hotels according to their types<br>1. Guest houses<br>2. Resorts<br>3. Others<br>4. Ownership (private or public).  | Department of Tourism, Ministry of Information, Culture and Tourism (DOT/MICT)<br><br>Department of Domestic Trade of the Ministry of Industry and Commerce (MIC) | Local government units where these businesses register before operating |                           | Hotel associations |                         |
| Number of tourist areas like:<br>1. Natural attractions<br>2. Religious and cultural sites<br>3. Zoos and parks<br>4. Tourist entertainment centers<br>5. Ownership (private or public) | DOT/MICT  |   |                           |                    |                         |
| Average number of tourists coming into Lao PDR per month per year   | MICT<br><br>Latest government survey  |   |                           |                    |                         |
| Average number of foreign and local tourists per month per year in a district   | Association of travel agencies  |   |                           |                    |                         |
| Average number of days that local and foreign tourists stay in the district   | Immigration authorities at the airports, ports and land border crossings  |   |                           |                    |                         |
| Average rate charged by various types of tourist accommodations (hotels of all types, guest houses, resorts, etc.) per day  |   |   |                           |                    |                         |
| Average amount of expenditures per day of foreign and local tourists  |   |   |                           |                    |                         |

**Step 1.2.Collect baseline data for each of the disaster-affected districts**

- The baseline data on number and description of tourism related establishments should be collected and summarized using the below table for each of the district affected by the disaster.

**Table 2. Tourism Establishments**

Name of District:

| Establishments                         | Number of Establishments by Ownership |        | Type of Structure |                   |                 |                   |                   |
|--|---------------------------------------|--------|-------------------|-------------------|-----------------|-------------------|-------------------|
|  |                                       |        | 1 to 4 Floors     |                   |                 | 5 and More Floors |                   |
|  | Private                               | Public | All Concrete      | Concrete and Wood | Wood and Bamboo | All Concrete      | Concrete and Wood |
| Hotels                                 |                                       |        |                   |                   |                 |                   |                   |
| <i>Five-star</i>                       |                                       |        |                   |                   |                 |                   |                   |
| <i>Four-star</i>                       |                                       |        |                   |                   |                 |                   |                   |
| <i>Three-star</i>                      |                                       |        |                   |                   |                 |                   |                   |
| <i>Two-star</i>                        |                                       |        |                   |                   |                 |                   |                   |
| <i>One-star</i>                        |                                       |        |                   |                   |                 |                   |                   |
| Guest Houses                           |                                       |        |                   |                   |                 |                   |                   |
| Resorts                                |                                       |        |                   |                   |                 |                   |                   |
| Tourism Sites                          |                                       |        |                   |                   |                 |                   |                   |
| <i>Parks</i>                           |                                       |        |                   |                   |                 |                   |                   |
| <i>Others (Specify)</i>                |                                       |        |                   |                   |                 |                   |                   |
| Tourist Restaurants                    |                                       |        |                   |                   |                 |                   |                   |
| Tourist Entertainment Centers          |                                       |        |                   |                   |                 |                   |                   |
| Travel Agencies                        |                                       |        |                   |                   |                 |                   |                   |
| Other Tourism establishments (Specify) |                                       |        |                   |                   |                 |                   |                   |
| TOTAL                                  |                                       |        |                   |                   |                 |                   |                   |

In filling in the above Table 2, the following should be noted:

- Tourist sites mentioned here will include those that are privately owned and not those under the responsibility of the MICT. The tourist sites under the MICT will be assessed separately.
- A summary can be made for each district in a province.

The above table will provide the assessment team with an overall picture of the tourism sector in the district – the location where tourists go, the number of accommodations available, etc. - which they can use in post-disaster damage and loss assessment.

### Step 1.3. Select the Sample Businesses

- Considering the number of tourism establishments may be large, it will be difficult to assess all the affected businesses after a disaster. To expedite the assessment, the following can be undertaken:
  - Select sample representative businesses to be surveyed. The sample selection of firms must represent all the existing ones in the area or district according to their:
    - Categories in the sector. The categories will include hotels of all types, guesthouses, resorts and all the others included in Table 2.
    - Size of structures and other assets of the firms. The selected firms must represent the common or average size of structures and assets within their categories. For example, hotels in the various categories with the same structures and number of floors can be a sub-group while guesthouses with the same type of structures and numbers of floors can be another sub-group. Resorts can also be grouped according to the type of their structures.
    - Other criteria that the assessment team may deem appropriate. This can include the scope of business operations, etc. if they are readily available.



The MICT assessment team, in coordination with the provincial and district offices, must select which among the various firms in the area can represent the existing businesses in the sector.

## Step 2. Estimating damage and losses

- While the assessment team at the central level is collecting the baseline information, field assessment should be undertaken by the district assessment team to assess the damages and losses suffered by the sub-sectors from the particular disaster event.
- Since there may be many tourism related establishments affected by the event, it is recommended to undertake survey of the representative types of firms described in section 1.3.

### Step 2.1. Gather information on damages to structure and other assets and the estimated losses

- Using the questionnaire below (Form 1), the assessment team at the district level should undertake a survey of selected tourism establishments. They can send the questionnaire to the pre-identified tourism establishments and choose to visit selected ones to clarify information/responses provided in the questionnaire.

### Form 1. Survey of damages and losses

| Questionnaire Identification Number: |                                 | Date:                               |          |
|--------------------------------------|---------------------------------|-------------------------------------|----------|
| Question Number                      | Questions                       | Response                            |          |
| 1                                    | Name of Company                 |                                     |          |
|                                      | Address                         |                                     |          |
| 2                                    | Number/Road/Village             |                                     |          |
| 3                                    | District                        |                                     |          |
| 4                                    | Province                        |                                     |          |
| 5                                    | Contact Number                  |                                     |          |
| 6                                    | Type of Business                | Response Options and/or Description | Response |
|                                      |                                 | Five-star hotel                     | 1        |
|                                      |                                 | Four-star hotel                     | 2        |
|                                      |                                 | Three-star hotel                    | 3        |
|                                      |                                 | Two-star hotel                      | 4        |
|                                      |                                 | One-star hotel                      | 5        |
|                                      |                                 | Guest house                         | 6        |
|                                      |                                 | Resort                              | 7        |
|                                      |                                 | Park                                | 8        |
|                                      |                                 | Tourist restaurant                  | 9        |
|                                      |                                 | Tourist entertainment center        | 10       |
|                                      |                                 | Travel agency                       | 11       |
|                                      |                                 | Others (specify))                   | 12       |
| 7                                    | What do you process or produce? | Goods                               | 1        |
|                                      |                                 | Service                             | 2        |
| 8                                    | Ownership                       | Private                             | 1        |
|                                      |                                 | Public                              | 2        |
| <b>Business Operations</b>           |                                 |                                     |          |
| Question                             | Questions                       | Response Options and/or Description | Response |

| Number                     |  |   |    |
|----------------------------|--|---|----|
| 1                          | Has the business been affected by the disaster?                                  | Yes                                     | 1  |
|                            |  | No      If no, go to Q3                 | 2  |
| 2                          | If yes, in what way has the business been affected?<br>[multiple response]       | Damage to premises                      | 1  |
|                            |  | Damage to equipment/machinery           | 2  |
|                            |  | Damage to finished product              | 3  |
|                            |  | Shortage of labor                       | 4  |
|                            |  | Shortage/lack of electricity            | 5  |
|                            |  | Shortage/lack of water                  | 6  |
|                            |  | Shortage/lack of raw materials          | 7  |
|                            |  | Productivity decline                    | 8  |
|                            |  | Stoppage of operations                  | 9  |
|                            |  | Demand decline for services             | 10 |
|                            |  | Other (specify)                         | 11 |
| 3                          | Had the business stopped due (indicate name of disaster)                         | Yes                                     | 1  |
|                            |  | No      If no, go to Q9                 | 2  |
| 4                          | Is the business currently in operation?  | Yes                                     | 1  |
|                            |  | No      If no, go to Q6                 | 2  |
| 5                          | If yes, after what time period the business were in operation again?             | Within a week                           | 1  |
|                            |  | Within two weeks                        | 2  |
|                            |  | Within a month                          | 3  |
|                            |  | Within two months                       | 4  |
|                            |  | I don't know                            | 5  |
| 6                          | If no, when do you anticipate being able to start operation again?               | Within a week                           | 1  |
|                            |  | Within two weeks                        | 2  |
|                            |  | Within a month                          | 3  |
|                            |  | Within three months                     | 4  |
|                            |  | I don't know                            | 5  |
| 7                          | How much is your estimated income loss due to the stoppage for the current year? | (Value in local currency)               |    |
| 8                          | How much is your estimated income loss due to the stoppage for next year?        | (Value in local currency)               |    |
| 9                          | How much is your estimated increase in production cost for the current year?     | (Value in local currency)               |    |
| 10                         | How much is your estimated increase in production cost for next year?            | (Value in local currency)               |    |
| 11                         | How much is your estimated increase in production cost for the year after next?  | (Value in local currency)               |    |
| 12                         | How much did you spend for cleaning up and other unexpected expenses?            | (Value in local currency)               |    |
| <b>Number of employees</b> |  |   |    |
| 13                         | Total number of employees pre-disaster   | Number of employees before the disaster |    |
| 14                         | Total number of employees in the   | Number of employees now                 |    |

|  |  |  |   |
|--|--|--|---|
|  | business now   |  |   |
| 15   | If different from now, how many of your employees were killed?   | Number of employees killed by the disaster                 |   |
| 16   | If different from now, how many of your employees were injured due to disaster and are not attending the job anymore?  | Number of employees injured due to the disaster            |   |
| 17   | If different from now, how many of your employees left because they need to attend their home due to this disaster?  | Number of employees who left due to disaster               |   |
| 18   | If different from now, how many of your employees were laid off because the business is reduced due to the disaster?   | Number of employees that were laid off due to the disaster |   |
| <b>Business output/revenue level</b>                 |  |  |   |
| 19   | What was the average output/revenue per month in pre-disaster time?  | Value (in local currency)                                  |   |
| 20   | What is the average out-put/revenue per month now?   | Value (in local currency)                                  |   |
| 21   | If different, how much has it been reduced in percentage (base value is pre-disaster time)   | In percentage  |   |
| 22   | When do you anticipate output/revenue back to its pre-disaster level?  | Within a week  | 1 |
|  |  | Within two weeks   | 2 |
|  |  | Within a month   | 3 |
|  |  | Within three months  | 4 |
|  |  | I don't know   | 5 |
| 23   | Aside from the losses due to work stoppage, how much do you think will be your estimated total income loss for the current year before you reach your pre-disaster income level?   | For the disaster year<br>(Value in local currency)         |   |
| 24   | If income losses will go beyond the current year, how much do you think will be your estimated total income loss for next year before you reach your pre-disaster income level?    | For Year 1 After the Disaster<br>(Value in local currency) |   |
| 25   | If income losses will go beyond next year, how much do you think will be your estimated total income loss for the year after next before you reach your pre-disaster income level? | For Year 2 After the Disaster<br>(Value in local currency) |   |
| <b>Damage of building structure, asset and stock</b> |  |  |   |
| 26   | Was the building structure damaged by the disaster?  | Yes  | 1 |
|  |  | No      If no, go to Q28                                   | 2 |
| 27   | If yes, how much money it would take to repair/restore the damaged building structure?   | Value in local currency                                    |   |
| 28   | Were other assets damaged by the disaster?   | Yes  | 1 |
|  |  | No      If no, go to Q30                                   | 2 |
| 29   | If yes, what was the value of other assets that were damaged by the disaster?  | Value in local currency                                    |   |

|   |   |  |   |
|---|---|--|---|
| 30  | Was the raw materials stock damaged by the disaster?  | Yes                                    | 1   |
|   |   | No If no, go to Q32                    | 2   |
| 31  | If yes, what was the value of the raw materials stock that has been damaged by the disaster?  | Value in local currency                |   |
| <b>Impact on supply chain, market and financial support</b>                       |   |  |   |
| 32  | How have your customers been affected?<br>[multiple response]   | No problem with customers              | 1   |
|   |   | Services have been delayed             | 2   |
|   |   | Services cannot be made                | 3   |
|   |   | Bookings cancelled                     | 4   |
|   |   | Other (specify)                        | 5   |
| 33  | What sort of difficulties are you experiencing getting your goods/services to the market?<br>[multiple response]                                  | No problems                            | 1   |
|   |   | Lack and increased cost of transport   | 2   |
|   |   | Lower demand for our services          | 3   |
|   |   | Lack /insufficiency of working capital | 4   |
|   |   | Other (specify)                        | 5   |
| 34  | How have your suppliers been affected?<br>[multiple response]   | Suppliers not affected                 | 1   |
|   |   | Raw materials scarce/not available     | 2   |
|   |   | Higher price for raw materials         | 3   |
|   |   | Other (specify)                        | 4   |
| 35  | How has your access to finance been affected?<br>[multiple response]  | No problems                            | 1   |
|   |   | Difficulty in paying outstanding loans | 2   |
|   |   | Need to renegotiate existing loans     | 3   |
|   |   | Need soft term fresh loans             | 4   |
|   |   | Other (specify)                        | 5   |
| 36  | Have you or the bank lost records?  | Yes                                    | 1   |
|   |   | No                                     | 2   |
| 37  | Is your business insured for disaster (in terms of assets and losses?)  | Yes                                    | 1   |
|   |   | No If No, go to Question No. 39        | 2   |
| 38  | How much is the worth of your insurance?  | Value of insurance in local currency   |   |
| <b>Respondent's suggestion on how government can help to restore the business</b> |   |  |   |
| 39  | What are the most important steps that the government can take to help your business to get back on its feet again?<br>Give maximum 3 suggestions | 1.                                     | This is an open-ended question that will be coded later |
|   |   | 2.                                     |   |
|   |   | 3.                                     |   |

Notes in using Form 1:

- The assessment team can use the form in surveying the damages and losses to the firms that were identified before the disaster occurred. The damages and losses are incorporated in the form from which they can be estimated.
- The numbers after the response options are codes that can be encircled as a response and used for processing the survey results.

- Question number 38 is for the opinions of the businessmen affected.
- In estimating certain losses, the assessment team and the respondents must take into consideration the effects of the damages of other sectors such as power, water supply and transportation sectors.

### Step 2.2. Summarize the information on damages in the district

- The information gathered from all the individual firms can be consolidated in a single table according to the type of output or service they provide. This will provide an estimate on the reduction of supply of tourism services.

**Table 3. Damages of Firms and Other Tourism Establishments**

Name of District:

| Establishments                         | Actual Number of Firms Affected |        | Number of Firms Surveyed | Damages of Surveyed Firms (Kips) |        |        |                | Total Damages of Affected Firms (Kips) |
|--|---------------------------------|--------|--------------------------|----------------------------------|--------|--------|----------------|--|
|  | Private                         | Public |                          | Structures                       | Assets | Others | Average Damage |  |
|  | A                               | B      |                          | D                                | E      | F      | G              |  |
| Hotels                                 |                                 |        |                          |                                  |        |        |                |  |
| <i>Five-star</i>                       |                                 |        |                          |                                  |        |        |                |  |
| <i>Four-star</i>                       |                                 |        |                          |                                  |        |        |                |  |
| <i>Three-star</i>                      |                                 |        |                          |                                  |        |        |                |  |
| <i>Two-star</i>                        |                                 |        |                          |                                  |        |        |                |  |
| <i>One-star</i>                        |                                 |        |                          |                                  |        |        |                |  |
| Guest Houses                           |                                 |        |                          |                                  |        |        |                |  |
| Resorts                                |                                 |        |                          |                                  |        |        |                |  |
| Tourism Sites                          |                                 |        |                          |                                  |        |        |                |  |
| <i>Parks</i>                           |                                 |        |                          |                                  |        |        |                |  |
| <i>Others (Specify)</i>                |                                 |        |                          |                                  |        |        |                |  |
| Tourist Restaurants                    |                                 |        |                          |                                  |        |        |                |  |
| Tourist Entertainment Centers          |                                 |        |                          |                                  |        |        |                |  |
| Travel Agencies                        |                                 |        |                          |                                  |        |        |                |  |
| Other Tourism establishments (Specify) |                                 |        |                          |                                  |        |        |                |  |
| TOTAL                                  |                                 |        |                          |                                  |        |        | N.A.           |  |

In filling in Table 3, the following should be noted:

- Except for Columns A and B, the information on damages in the above table is the consolidation of the information provided by the firms through the questionnaire.
- In Columns A and B, the number of firms is the actual number of firms affected by the disaster in the area (*including those that were not part of the survey*) segregated by ownership. The total number of firms affected can be determined through an actual visit to the disaster area.
- Column 3 contains the aggregate damages of all the surveyed firms engaged in similar activities under various classifications – structure, assets (equipment, machinery), others.
- “Others” under the damages column can include stocks, raw materials, and other inputs to production.

- The “average damage” will be the sum of damages to structures, assets (equipment, etc.) and others of the surveyed firms divided by the total number of firms surveyed.
- In formula, total damages will be: **Column G = (Column D + Column E + Column F) / Column C.**
- The “Total Damages” will be the average damage multiplied by the total number of firms affected.
- In formula, it will be **Column H = Column G x (Column A + Column B).**
- It is important to remember that damages included in the above table are valued as the cost of repair or replacement at pre-disaster prices.

### Step 2.3. Estimate the losses in the district

- There are damages - like the collapse of structures, destruction of equipment, loss of access to markets, etc. – which can cause temporary work stoppages or reduction of production or sales resulting in income losses to the tourism firms.
- It is important to note that these damages will cause losses since their impacts will accrue in the future flows of revenues. The total estimated losses will be the value in Kips of foregone production or sales until tourism facilities resume operations up to the pre-disaster level plus the resulting higher production cost and all other unexpected expenses.

#### Step 2.3.1 Losses within the year the disaster occurred

- Based on the survey conducted, the losses of firms can be consolidated or summarized to come up with an aggregate value of losses for the year the disaster occurred as shown in Table 4.

**Table 4. Losses incurred by surveyed establishments/ firms**

Name of District:

| Firms                         | Revenue Losses       |                         | Total Revenue Losses | Others                 |                       |             | Average Losses | Grand Total of Losses |
|-------------------------------|----------------------|-------------------------|----------------------|------------------------|-----------------------|-------------|----------------|-----------------------|
|                               | Due to work stoppage | Due to income reduction |                      | Higher Production Cost | Cleaning Up of Debris | Other Costs |                |                       |
|                               | A                    | B                       |                      | D                      | E                     | F           |                |                       |
| Hotels                        |                      |                         |                      |                        |                       |             |                |                       |
| Five-star                     |                      |                         |                      |                        |                       |             |                |                       |
| Four-star                     |                      |                         |                      |                        |                       |             |                |                       |
| Three-star                    |                      |                         |                      |                        |                       |             |                |                       |
| Two-star                      |                      |                         |                      |                        |                       |             |                |                       |
| One-star                      |                      |                         |                      |                        |                       |             |                |                       |
| Guest Houses                  |                      |                         |                      |                        |                       |             |                |                       |
| Resorts                       |                      |                         |                      |                        |                       |             |                |                       |
| Tourism Sites                 |                      |                         |                      |                        |                       |             |                |                       |
| Parks                         |                      |                         |                      |                        |                       |             |                |                       |
| Others (Specify)              |                      |                         |                      |                        |                       |             |                |                       |
| Tourist Restaurants           |                      |                         |                      |                        |                       |             |                |                       |
| Tourist Entertainment Centers |                      |                         |                      |                        |                       |             |                |                       |
| Travel Agencies               |                      |                         |                      |                        |                       |             |                |                       |
| Other Tourism Firms (Specify) |                      |                         |                      |                        |                       |             |                |                       |
| TOTAL                         |                      |                         |                      |                        |                       |             |                |                       |

In filling in Table 4, the following should be noted:

- Table 4 is a consolidated result of the assessment of the firms that were surveyed. The values are aggregate of all firms or companies with similar category.
- Losses should be segregated as private and public.
- The “Total Revenue Losses” in Column C is the sum of income losses due to work stoppage and reduction of income of the firms for the year that the disaster occurred. In formula, this is Column C = Column A + Column B.
- Higher production cost will occur when certain types of business activities will require added costs to produce or deliver the same type or quantity of goods and/or services after a disaster. This may be due to higher cost of power, water, communications, etc. The added amount required will be the value of added (higher) production cost.
- The “Higher Production Cost”, “Cost of Cleaning Up Debris” and “Other Costs” are unexpected expenses which are part of the estimated losses of the firm in Kips for the year that the disaster occurred.
- “Other costs” may include the cost of carrying out information campaigns to attract foreign tourists
- The “Average Losses” will be the sum of total revenue losses plus the higher production cost, cost of cleaning up and other costs divided by the total number of firms surveyed. In formula, average losses will be: Column G = (Column C + Column D + Column E + Column F)/ Number of Firms Surveyed (which is in Table 3)).
- The “Grand Total of Losses” is the value of the Average Losses of the firms surveyed in (Column G) multiplied by the Actual Number of Firms Affected (the sum of Columns A and B of Table 3). The Grand Total of Losses will, therefore, consider all the affected firms, even those that were not included in the survey.

#### Step 2.3.2 Losses beyond the year of the disaster

- Based on the responses of the firms that were surveyed, losses beyond the disaster year can also be estimated.

**Table 5. Estimated Losses Beyond the Disaster Year**

Name of District:

|                         | Year 1 Losses  |                        |             |              | Year 2 Losses  |                        |             |              |
|-------------------------|----------------|------------------------|-------------|--------------|----------------|------------------------|-------------|--------------|
|                         | Revenue Losses | Higher Production Cost | Other Costs | Total Losses | Revenue Losses | Higher Production Cost | Other Costs | Total Losses |
|                         | A              | B                      | C           |              | D              | E                      | F           | G            |
| Hotels                  |                |                        |             |              |                |                        |             |              |
| <i>Five-star</i>        |                |                        |             |              |                |                        |             |              |
| <i>Four-star</i>        |                |                        |             |              |                |                        |             |              |
| <i>Three-star</i>       |                |                        |             |              |                |                        |             |              |
| <i>Two-star</i>         |                |                        |             |              |                |                        |             |              |
| <i>One-star</i>         |                |                        |             |              |                |                        |             |              |
| Guest Houses            |                |                        |             |              |                |                        |             |              |
| Resorts                 |                |                        |             |              |                |                        |             |              |
| Tourism Sites           |                |                        |             |              |                |                        |             |              |
| <i>Parks</i>            |                |                        |             |              |                |                        |             |              |
| <i>Others (Specify)</i> |                |                        |             |              |                |                        |             |              |
| Tourist Restaurants     |                |                        |             |              |                |                        |             |              |
| Tourist                 |                |                        |             |              |                |                        |             |              |

|                               |  |  |  |  |  |  |  |  |
|-------------------------------|--|--|--|--|--|--|--|--|
| Entertainment Centers         |  |  |  |  |  |  |  |  |
| Travel Agencies               |  |  |  |  |  |  |  |  |
| Other Tourism Firms (Specify) |  |  |  |  |  |  |  |  |
| TOTAL                         |  |  |  |  |  |  |  |  |

Notes in estimating losses beyond the disaster year:

- The estimation of losses is the same as calculating the losses for the year that the disaster occurred as shown in the previous table.
- It must be noted that there is a possibility that the losses in tourism may be localized. Some tourists who are already in the country may have cancelled their bookings in the hotels affected by the disaster and change their destination to other unaffected areas. In this case, the losses will only be incurred by the local tourism establishments without necessarily affecting the foreign exchange and other earnings of the macroeconomy. The losses in disaster-affected tourism areas may be a gain to other unaffected tourist areas. The assessment team must be conscious of this possibility and highlight this in their report to the MPI.
- The assessment team must be able to predict future impacts on revenues of the firms. This can be done by analyzing previous post-disaster statistical data and consulting with business owners on their previous post-disaster experiences.

#### Step 2.4. Summarize Damages and Losses of Tourism Firms in the District

- Based on the information gathered, a summary can show the magnitude and scope of damages and losses. In summarizing damages and losses, the following are assumed:
  - Damages are incurred during the year that the disaster occurred while losses can extend way beyond the disaster year.
  - The assessment team, in consultation with the owner of the firms, can estimate the losses across the years until the firms reach their pre-disaster production and income levels.

**Table 6. Summary of Damages and Losses**

Name of District:

| Tourism Firms           | Disaster Year |        |         |        | Year 1  |        | Year 2  |        | Total Effects (Kips) |
|-------------------------|---------------|--------|---------|--------|---------|--------|---------|--------|----------------------|
|                         | Damages       |        | Losses  |        | Losses  |        | Losses  |        |                      |
|                         | Private       | Public | Private | Public | Private | Public | Private | Public |                      |
| Hotels                  |               |        |         |        |         |        |         |        |                      |
| <i>Five-star</i>        |               |        |         |        |         |        |         |        |                      |
| <i>Four-star</i>        |               |        |         |        |         |        |         |        |                      |
| <i>Three-star</i>       |               |        |         |        |         |        |         |        |                      |
| <i>Two-star</i>         |               |        |         |        |         |        |         |        |                      |
| <i>One-star</i>         |               |        |         |        |         |        |         |        |                      |
| Guest Houses            |               |        |         |        |         |        |         |        |                      |
| Resorts                 |               |        |         |        |         |        |         |        |                      |
| Tourism Sites           |               |        |         |        |         |        |         |        |                      |
| <i>Parks</i>            |               |        |         |        |         |        |         |        |                      |
| <i>Others (Specify)</i> |               |        |         |        |         |        |         |        |                      |
| Tourist Restaurants     |               |        |         |        |         |        |         |        |                      |
| Tourist Entertainment   |               |        |         |        |         |        |         |        |                      |



|  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|
| Centers                                |  |  |  |  |  |  |  |  |  |
| Travel Agencies                        |  |  |  |  |  |  |  |  |  |
| Other Tourism establishments (Specify) |  |  |  |  |  |  |  |  |  |
| TOTAL                                  |  |  |  |  |  |  |  |  |  |

In filling in Table 6, the following should be noted:

- The information required in the above table are those that are contained in the tables of damages and losses.
- The segregation of public and private damages and losses can assist in strategizing for reconstruction and recovery.

#### Step 2.5. Summarize Damages and Losses of Tourism in the Province

- Based on the summary for the districts affected, a similar summary can show the magnitude and scope of damages and losses province-wide, as shown in the following table.

**Table 7. Summary of Damages and Losses to Tourism Firms**

Name of Province:

| Names of District | Within the Disaster Year |        |         |        | Losses Beyond the Disaster Year |        |         |        | Total Effects |
|-------------------|--------------------------|--------|---------|--------|---------------------------------|--------|---------|--------|---------------|
|                   | Damages                  |        | Losses  |        | Year 1                          |        | Year 2  |        |               |
|                   | Private                  | Public | Private | Public | Private                         | Public | Private | Public | (Kips)        |
| District 1        |                          |        |         |        |                                 |        |         |        |               |
| District 2        |                          |        |         |        |                                 |        |         |        |               |
| District 3        |                          |        |         |        |                                 |        |         |        |               |
| District 4        |                          |        |         |        |                                 |        |         |        |               |
| District 5        |                          |        |         |        |                                 |        |         |        |               |
| TOTAL             |                          |        |         |        |                                 |        |         |        |               |

#### Step 2.6. Summarize damages and losses of tourism firms nationwide

- Once the summary table for each affected provinces have been filled out, the table below should be used by the central level assessment team for summarizing information at the national level. This is to be filled out after the field assessment is over.

**Table 8. Summary of Damages and Losses**

| Names of Provinces | Within the Disaster Year |        |         |        | Losses Beyond the Disaster Year |        |         |        | Total Effects |
|--------------------|--------------------------|--------|---------|--------|---------------------------------|--------|---------|--------|---------------|
|                    | Damages                  |        | Losses  |        | Year 1                          |        | Year 2  |        |               |
|                    | Private                  | Public | Private | Public | Private                         | Public | Private | Public | (Kips)        |
| Province 1         |                          |        |         |        |                                 |        |         |        |               |
| Province 2         |                          |        |         |        |                                 |        |         |        |               |
| Province 3         |                          |        |         |        |                                 |        |         |        |               |
| Province 4         |                          |        |         |        |                                 |        |         |        |               |
| Province 5         |                          |        |         |        |                                 |        |         |        |               |
| TOTAL              |                          |        |         |        |                                 |        |         |        |               |

## Step 3. Estimate recovery and reconstruction needs for the tourism sector

### Step 3.1 Set the recovery and reconstruction strategy for the tourism sector

- While the damage and loss assessment is being undertaken, the MICT in consultation with their counterparts in affected provinces, the Ministry of Planning and Investment, the National Disaster Management Office, and in partnership with development partners involved in the sector in Lao PDR, should develop the strategy to be followed for recovery and reconstruction. Some of the broad content of the strategy could include the following:
  - Identifying sector-specific factors which will contribute to 'build back better' of the tourism sector.
  - Possible incentives to private tourism firms for reconstruction of damaged facilities and stock with higher standards of resilience.
  - Enhancing and strengthening medium to long-term disaster risk reduction related issues in the sector such as integrating hazard resilience standards in design and construction of all new buildings, retrofitting of existing facilities situated in high risk areas, improving of safety and other disaster risk reduction measures including the training of personnel on disaster preparedness measures, etc.
  - Policy guidelines and strategies in financing the recovery and reconstruction activities in the sector covering both the public and private.

### 3.2. Estimating recovery and reconstruction needs

- The quantification of damage and losses will enable the estimation of financial requirements to achieve full recovery of the sector and to reconstruct the facilities that were destroyed or damaged.
- The value of losses is used to estimate the amount required to achieve recovery of the sector while the value of damage is used to estimate the financial requirements for replacement or reconstruction of the affected assets in the sector.
- This estimation of financial needs for recovery and reconstruction should be broken down by districts and provinces
- In the tourism sector, quick recovery efforts must be undertaken especially if a great number of people and related businesses depend on it for their economic activities. Recovery activities should include those that will enable firms to resume their normal operations. To assist the sector, the MICT can identify policy measures that will enable them to recover without necessarily having the government spending for the costs required. There are certain options that can be implemented through policy measures to expedite recovery and reconstruction of the private tourism sector. Among them are:
  - a. Income tax breaks for private firms such as:
    - Temporary reduction or freeze or deferment in the collection of tax;
    - Temporary freeze on basic service charges in the utilization of certain services over the time of the recovery phase;
    - Non-collection of property taxes for the duration of the recovery period;
    - Exemption from registration fees for replacements of the destroyed equipment and machinery over a certain period of time.
  - b. Subsidizing construction materials and equipment to be imported by private tourism firms during the recovery and reconstruction phase through an exemption from paying customs duties and other levies.

The MICT, together with the MPI and MOF, should be able to analyze the best possible option/s or the combination of policies in financing the recovery phase, especially those that require subsidies and tax exemptions.

#### Step 3.2.1. Estimating recovery needs

- Based on the Guidance Note developed by the World Bank and the Global Facility for Disaster Reduction and Recovery entitled: Estimation of post-disaster needs for recovery and reconstruction, the following methodology can be adopted for estimating the recovery needs
- To estimate the value of recovery needs of the sector, the following formula for the recovery of industrial structural facilities can be used:

Recapitalization Needs = B \* Production losses or Income losses

where B is a coefficient that usually ranges from 0.25 to 0.45, depending on the capital intensity of tourism activities. An expert experienced in the tourism sector and thoroughly familiar with the different types and sizes of businesses in the affected area should be able to estimate the actual coefficient that is applicable in estimating the recovery needs.

Some of the possible recovery-related activities in the tourism sector can include:

- **Promotional Campaigns.** The government can design and launch special information and promotional campaigns abroad, especially in the countries where the majority of tourists come from and/or in other countries that may be targeted for the future. Informing these countries that tourism facilities have been repaired or reconstructed can expedite the recovery of tourism. The amount needed for this program can be shared between the private sector and the government.
- **Credit Schemes.** The expansion of soft-term credit to facilitate re-capitalization of tourism firms can complement tax breaks. Such schemes can be implemented through either the national development bank/s and/or the private banking system. If the Government cannot provide such financing directly, it can provide a guarantee for credits granted by private banks.
- **Equity.** In some special cases, the government may opt to provide equity in private firms instead of subsidy or credit or tax exemptions.
- **Direct subsidy.** If needed, and in accordance the recovery and reconstruction financing strategy, the government may extend other forms of direct subsidy to enable the private firms to recover immediately.

Again, the MICT, together with MPI and MOF, should be able to analyze the best possible option/s or the combination of policies in financing the recovery phase.

The following table can show the recovery needs of the tourism sector.

**Table 9. Summary of Recovery Needs**

| Tourism Firms         | Type and Amount of Assistance Needed (Kips) |        |                  |        |         |        | Total Amount Needed (Kips) |        | Foreign Cost Component |
|-----------------------|---|--------|------------------|--------|---------|--------|----------------------------|--------|------------------------|
|                       | Credit                                      |        | Grant or Subsidy |        | Others  |        |                            |        |                        |
|                       | Private                                     | Public | Private          | Public | Private | Public | Private                    | Public |                        |
| Hotels                |   |        |                  |        |         |        |                            |        |                        |
| <i>Five-star</i>      |   |        |                  |        |         |        |                            |        |                        |
| <i>Four-star</i>      |   |        |                  |        |         |        |                            |        |                        |
| <i>Three-star</i>     |   |        |                  |        |         |        |                            |        |                        |
| <i>Two-star</i>       |   |        |                  |        |         |        |                            |        |                        |
| <i>One-star</i>       |   |        |                  |        |         |        |                            |        |                        |
| Guest Houses          |   |        |                  |        |         |        |                            |        |                        |
| Resorts               |   |        |                  |        |         |        |                            |        |                        |
| Tourism Sites         |   |        |                  |        |         |        |                            |        |                        |
| <i>Parks</i>          |   |        |                  |        |         |        |                            |        |                        |
| <i>Others</i>         |   |        |                  |        |         |        |                            |        |                        |
| Tourist Restaurants   |   |        |                  |        |         |        |                            |        |                        |
| Tourist Entertainment |   |        |                  |        |         |        |                            |        |                        |

|                           |  |  |  |  |  |  |  |  |  |
|---------------------------|--|--|--|--|--|--|--|--|--|
| Centers                   |  |  |  |  |  |  |  |  |  |
| Travel Agencies           |  |  |  |  |  |  |  |  |  |
| Other tourism firms       |  |  |  |  |  |  |  |  |  |
| Tourism promotion program |  |  |  |  |  |  |  |  |  |
| TOTAL                     |  |  |  |  |  |  |  |  |  |

In filling in Table 9, the following should be noted:

- Column 2 enumerates the possible assistance that the sector may need, according to the types of firms and their ownership. Since most of the tourism establishments are private in nature by ownership, the government may extend more of credit than outright cash grant or equity. Public enterprises may need cash equity.
- Credit can be extended through existing government conduits.
- “Others” may include equity, other tourism promotion campaigns, etc.

### Step 3.2.2. Estimation of Reconstruction Needs

- Based on the Guidance Note developed by the World Bank and the Global Facility for Disaster Reduction and Recovery entitled: Estimation of post-disaster needs for recovery and reconstruction, the following methodology can be adopted for estimating the reconstruction needs:

To estimate the value of reconstruction needs of the sector, the following formula for the reconstruction of industrial structural facilities can be used:

$$\text{Industrial Reconstruction Needs} = I_r * \text{Damage to Industrial Facilities}$$

Where  $I_r$  is a coefficient for disaster resilience reconstruction whose value may range from 1.10 to 1.40, depending on the degree of disaster resistance that may be desired and on the definitions of the reconstruction strategy. Engineers, with special expertise and relevant experience in the tourism industry that has been affected by the disaster may be able to define the value of the coefficient to be adopted.

For equipment and machinery, the following formula can be used:

$$\text{Equipment Replacement Needs} = I_e * \text{Damage to Industrial Equipment and Machinery}$$

Where  $I_e$  is a coefficient of technological innovation with a value ranging from 0.90 to 1.40, depending on the efficiency in technological production that is desired in the reconstruction strategy. Again, an engineer with experience in the tourism industry would be able to define the value of coefficients to be adopted.

The possible reconstruction-related activities in the tourism sector could include the following. It is to be noted that since the tourism firms are mostly private in nature, financing their needs can come through soft-term credit schemes for reconstruction and repair of their damaged assets. Such schemes can be accompanied by technical assistance for improved disaster resilient standards of construction.

- Replacement or reconstruction of affected structures
- Procurement of equipment and machinery
- Technical assistance for improved standards of construction

The MICT can use the table below to put forward their recommendation to MPI for activities related to reconstruction needs.

**Table 10. Reconstruction Needs of the Tourism Sector**

| Possible Assistance to the Tourism Firms             | Reconstruction Needs (Kips) |        |        | Foreign Cost Component (US\$) | Main Ministry Responsible |
|--|-----------------------------|--------|--------|-------------------------------|---------------------------|
|  | Grant                       | Credit | Others |                               |                           |
| Replacement or reconstruction of affected structures |                             |        |        |                               |                           |
| Procurement of equipment and machinery               |                             |        |        |                               |                           |
| Technical assistance                                 |                             |        |        |                               |                           |
| Others   |                             |        |        |                               |                           |
| Total  |                             |        |        |                               |                           |

In filling in Table 10, the following should be noted:

- Column 1 should enumerate the list of reconstruction activities/projects required by the various firms in the sector.
- The reconstruction needs under the 'credit' column normally refer to the assistance that will be extended to damaged firms owned by the private sector and is expected to be repaid over time. If the government will extend assistance to the private sector without repayment required, the amount of assistance should be under the 'grant' column. Government-owned facilities are assumed to be financed by the government without repayment from the said facilities. As such the amount should be under the 'grant' column, otherwise in the credit column. "Others" can include equity from the government if it decides to do so.
- The foreign cost component is the amount of foreign currency in US Dollars that may be required if there are imported equipment or materials needed. This information is important for MPI in determining potential balance of payment impacts.
- The last column is for the main ministry responsible for the implementation.

#### Step 4. Developing short, medium and long-term projects and designing implementation plan

Recovery and Reconstruction needs identified above would need to be broken down in short, medium and long-term needs. Following are some examples of projects in the tourism sector, which can be undertaken as short, medium and long-term:

- **Short-term projects.** Short-term projects are crucial immediately after disaster with a view to resume economic activities in the areas affected. To achieve this, the following short-term initiatives/projects can be introduced:
  - Tax incentive schemes to the affected firms and businesses.
  - Credit assistance to the firms through government or private banks.
- **Medium-term projects/programs.** Medium-term programs and projects can include:
  - Assistance in training on relevant disaster risk reduction like preparedness, structural mitigation (retrofitting), search and rescue in mines, etc.
- **Longer-term projects/programs**
  - Technical assistance in the relocation of existing facilities and the construction of new structures with better standards so that they can stand against future disaster.

The identified needs should have a rough schedule of implementation outlining at the very least the activities, timing and budget required for all the programs and projects. The following techniques can be considered:

- Identify the specific projects according to their relative urgency or priority in relation to recovery.
- Plot the timeline of activities of all the projects, with the urgent ones on top, in a Gantt chart with the corresponding funding requirement. This will assist the MPI in programming the necessary funds over a certain time period, like on a quarterly or annual basis.

- Identify and include in the list of projects that need further feasibility studies which may be funded by foreign grants.
- To the extent possible, a logical framework (log frame) should be created for each of the project proposed for inclusion in the recovery plan. Log frames are normally enough for foreign donors to consider project proposals.

## Step 5. Inputs for macro-economic and household impact analysis

The damages and losses to the tourism sector can affect the macro economy. To the extent possible that the MICT can, it should collect the following information, which will be used by MPI for undertaking the macro-economic impact analysis

- **Gross Domestic Product (GDP):** The loss of the contribution of the tourism sector, being one of the biggest contributor to the annual GDP, may decrease the national income.
- **Fiscal Balance:** The fiscal balance should be analyzed from the point of view of the assistance that the government will be extended to the sector. First, tax incentives will lower the revenues of the government. Second, if and when the government decides to spend directly for the recovery of the sector, the government may resort to more borrowings/fresh loans which can result into higher budget deficit.
- **Balance of Payment:** The items and amount needed for the recovery and reconstruction of the sector that are not produced locally in Lao PDR and have to be imported from other countries will increase the balance of trade deficit. To analyze the impact on the balance of payment, this amount should be estimated and expressed in percentage of total recovery and reconstruction needs.
- **Prices or Inflation:** Prices of construction materials could go up if the destruction of the sector is massive and will require extensive procurement of building materials.
- **Employment:** There can be a big reduction in employment if the extent of destruction will cause stoppage of operations of the firms. Employment losses will contribute to the increase in poverty level.
- To the extent possible, the assessment team must also provide an analysis of impacts on personal or household situation which can include the effects of the families of those who might lose their jobs from the sector. The MPI can use such analysis in the assessment of the overall disaster impacts.

## Step 6. Write the assessment report

- The following format may be considered for writing the assessment chapter of the mining sector:
  - Brief background on the tourism sector in Lao PDR
  - Overview of impacts of the disaster on the tourism sector
  - Damage and Loss quantification
    - Damage and Loss by province (or district)
  - Proposed strategies for recovery and reconstruction of the tourism sector
  - Needs estimation for recovery and reconstruction of the tourism sector
- The report of the tourism sector should be written by MICT in close partnership with development partners involved in the same sector and once completed should be submitted to MPI for inclusion in the final report.

## Section 3

### *Terms of reference of assessment team*

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#### 3.1 Formation of pre-identified assessment teams within MICT

- Pre-identified team should be formed with officials from MICT. These officials would need to have a good understanding on the performance of the tourism sector, construction of facilities and should have also undergone prior training on the damage, loss and needs assessment.

#### 3.2 Composition of the assessment team

- At the central level the assessment team should comprise of the following:
  - Officials from Department of Planning of MICT
  - Officials from Department of Tourism of the MICT
  - Development Partners involved in the tourism sector
  - A representative from the tourism sector, as may be deemed necessary by the MICT
- At the field level the assessment team should comprise of the following:
  - Provincial Department of the MICT
  - District Office of the MICT
- Specific expertise required within the team would include the following:
  - Civil Engineer/Structural Engineers
  - Tourism sector specialist

#### 3.3 Task of assessment team

- Gathering of the pre-identified team from MICT after the disaster event based on the order received from MPI
- Consultation with development partners involved in the tourism sector who will join the assessment team
- Undertaking quick orientation on the assessment methodology for the assessment team
- Working closely with relevant departments of the MICT at national level and provincial/district and responsible for compiling baseline information.
- Undertaking field visits in disaster affected areas and working closely with District and Provincial MICT Offices and collecting information on damage and losses
- Based on information collected, undertaking damage and loss assessment for the sector, simultaneously in close consultation with relevant agencies such as National Disaster Management Office and development partners, formulate the recovery and reconstruction strategy for the tourism sector
- Estimating the recovery and reconstruction needs based on the strategy and damage and loss assessment results
- Writing the assessment report for the tourism sector
- Presentation of the findings of the assessment report to the decision makers within the MICT and other development partners for broader consultation.
- Finalization of the report based on the inputs received from broader consultation and submission to MPI

#### 3.4 Assessment timeline

- Ideally, the post-disaster damage, loss and needs assessment takes from 2 to 5 weeks.
- The assessment is usually started once the rapid impact and needs assessment for emergency and relief support is completed and the relief and response phase of the disasters is over or well underway.
- In the first week the overall planning of the assessment would take place and would include the following issues:
  - Baseline data collection

- Agree on ToR
  - Team composition selection
  - Orientation Training on damage, loss and needs assessment
  - Discussion on formulating recovery and reconstruction strategy for the sector
- Second and Third week is the assessment stage and would include the following
  - Field survey
  - Calculation of Damage and losses for the sector
- Fourth week of the assessment is the analysis stage and would include the following
  - Finalizing recovery and reconstruction strategy for the sector
  - Estimating recovery and reconstruction needs for the sector
  - Report drafting
  - Consultation within sector to seek inputs on the report
  - Submission of sector report to MPI
  - Finalisation of report by MPI
- Fifth week of the assessment is launch and dissemination of the report



## ***Guidance Note 10:***

### ***Damage, loss and needs assessment of public buildings in Lao PDR***

## ***Table of contents***

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- Section 1: Methodology for damage, loss and needs assessment of public buildings in Lao PDR
- Section 2: Steps in undertaking damage, loss and needs assessment
  - Step 1: Analysis of pre-disaster situation of public buildings
  - Step 2: Estimating post-disaster damage and loss
  - Step 3: Estimating recovery and reconstruction needs
  - Step 4: Developing short, medium and long-term projects and designing implementation plan
  - Step 5: Inputs for macro-economic impact analysis
  - Step 6: Writing the assessment report
- Section 3: Terms of reference of assessment team

## ***Introduction to this Guidance Note***

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- This Guidance Note is a part of the Handbook on Post-disaster recovery and reconstruction planning of Lao PDR, which consists of fifteen Guidance Notes, for various sectors, on damage loss and needs assessment.
- This Guidance Note is to be used for undertaking post-disaster damage, loss and needs assessment of **public buildings** in Lao PDR. Public sector buildings are those that are owned by the government for office purposes, headquarters of the military, police and fire stations and other similar structures, which are not classified or included for assessment in the other sectors.
- Assessment of public buildings would include the physical structures as well as the belongings inside the structures.
- The Guidance Note is to be used by the team responsible for undertaking assessment of public buildings to be led by the Department of Housing and Urban Planning (DHUP) at Ministry of the Public Work and Transport (MPWT) of the Government of Lao PDR in cooperation with its provincial and district offices and other agencies such as National Statistical Center, Ministry of Planning and Investment, National Disaster Management Office of Lao PDR.

## Section 1

### Methodology for damage, loss and needs assessment of public buildings in Lao PDR

- This methodology for undertaking damage, loss and needs assessment is derived from the methodology for estimating the socio-economic and environmental effects of disasters, developed by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) as further enhanced by the World Bank.
- The methodology for estimating recovery and reconstruction needs (described in step 3 under section 2 of this Guidance Note) is derived from the Guidance Note of the World Bank and the Global Facility of Disaster Reduction and Recovery entitled: Estimation of Post-Disaster Needs for Recovery and Reconstruction.
- The ECLAC methodology uses two terminologies; namely Damage and Losses as explained below:

- a. **Damages.** In the case of public buildings, damages are the cost or value of total or partial destruction of physical assets and structures, in-house components of electricity and water supply/sanitation systems, elevators, generators, furniture, etc. Damages are the cost of:
  - repair for the partially damaged assets and;
  - replacement of totally destroyed ones.

These destructions would occur at the time of, or shortly after the disaster. It is to be measured in physical terms for which monetary replacement value is subsequently estimated. The unit prices for replacement would be those that prevailed just before the disaster occurred that would allow rebuilding of the houses to the same characteristics prior to the disaster.

- b. **Losses.** Losses are the changes in economic flows during the period of reconstruction following the disaster. In the case of public buildings, losses can result from:
  - Cost of relocation
  - Cost of providing temporary offices after the disaster
  - Lower revenue (revenue losses) from rents
  - Other unexpected expenditure such as demolition and removal of debris

Losses can continue during the entire period of recovery and reconstruction and even beyond the year that the disaster occurred. It is expressed in monetary values at current prices.

## Section 2

### Steps in undertaking damage, loss and needs assessment

#### Step1: Analysis of pre-disaster situation of public buildings

##### Step 1.1: Understand what is meant by baseline data

- The first step of undertaking the assessment is collecting information on the pre-disaster conditions in order to ascertain the baseline for damage, loss and needs assessment. The following table shows the type of baseline information to be collected and their typical sources:

**Table 1. Sources for baseline information for the sector**

| Type of Information/Data                    | Available at               |                             |                           |               | Name of Source Document |
|---|----------------------------|-----------------------------|---------------------------|---------------|-------------------------|
|   | Ministry/ Bureau/ Division | Provincial Office/ Division | District Office/ Division | Other Sources |                         |
| Total number public buildings in a district |                            |                             |                           |               |                         |
| Types of buildings in a districts           |                            |                             |                           |               |                         |

|  |  |  |  |  |  |
|--|--|--|--|--|--|
| Average construction cost of buildings per type/category           |  |  |  |  |  |
| Average repair costs per unit                                      |  |  |  |  |  |
| Average replacement cost of building contents per category         |  |  |  |  |  |
| Average value of monthly income from rent per category of building |  |  |  |  |  |

- As per the Census 2005, buildings in Lao PDR has been classified into two basic categories with further sub-categories:
  - Permanent
    - Concrete/Brick
    - Wooden
    - Concrete/Wooden
  - Temporary
    - Bamboo/Plywood/Grass
- Since in urban areas there are high rise building made of concrete and brick, it is suggested for assessment purposes to break down the category of concrete/brick houses in two further sub-categories:
  - Concrete/Brick Houses single storey
  - Concrete/Brick Houses multi- storey
- Since baseline data is available as per this classification, this same classification should be followed for undertaking the damage and loss assessment.

#### Step 1.2: Collect the baseline data for each of the disaster-affected district

- Before the field assessment begins, the baseline data is to be summarized for each of the disaster-affected district by using the following tables (Table 2 and Table 3)
- This data is to be compiled by the assessment team at the central level (see section 3.2 of this Guidance Note for composition of assessment team) with necessary inputs from the provincial departments and district officers of the concerned Ministry.

**Table 2. Baseline information on number of public buildings by category in a district**

Name of district:

| Building typology                   | Total number of buildings | Government agency owner |   |   | Total number of buildings for rent | Total number of users |      |
|-------------------------------------|---------------------------|-------------------------|---|---|------------------------------------|-----------------------|------|
|                                     |                           | X                       | Y | Z |                                    | Female                | Male |
| Mainly Concrete/Brick single storey |                           |                         |   |   |                                    |                       |      |
| Mainly Concrete/Brick multi-storey  |                           |                         |   |   |                                    |                       |      |
| Mainly Wooden                       |                           |                         |   |   |                                    |                       |      |
| Mainly Concrete/Wooden              |                           |                         |   |   |                                    |                       |      |
| Bamboo/plywood/grass                |                           |                         |   |   |                                    |                       |      |
| Total                               |                           |                         |   |   |                                    |                       |      |

Notes in filling out Table 2:

- The 'Government agency owner' refers to the Ministry or its department that owns the building. As needed the assessment team can add more column to fill this category
- There may be government buildings that rent out part of their spaces to the private sector.
- The 'Total number of users' refers to the number of people who utilize each type of the building.

**Table 3. Baseline information for the related costs of various types of buildings/structures**

| Building typology                   | Average Construction Cost (Kips/Sq M) | Average Repair Cost (Kips/Square meter) |      |       |        | Average Value of Contents (Kips) | Average Monthly Rent (Kips) |
|-------------------------------------|---------------------------------------|---|------|-------|--------|----------------------------------|-----------------------------|
|                                     |                                       | Roof                                    | Wall | Floor | Others |                                  |                             |
| Mainly Concrete/Brick single storey |                                       |   |      |       |        |                                  |                             |
| Mainly Concrete/Brick multi-storey  |                                       |   |      |       |        |                                  |                             |
| Mainly Wooden                       |                                       |   |      |       |        |                                  |                             |
| Mainly Concrete/Wooden              |                                       |   |      |       |        |                                  |                             |
| Bamboo/plywood/grass                |                                       |   |      |       |        |                                  |                             |

Notes in filling out Table 3:

- The average construction cost in Kips per square meter (Kips/SqM) refers to the value of the building or structure computed at the total cost of construction divided by the total floor area in square meters. The cost should be based on the pre-disaster existing values.
- The 'average repair cost' refers the value in Kips normally spent to repair the various types of the parts of the building units. 'Others' may include the average repair cost of, plumbing or electrical installations, etc.
- The 'Average Value of Contents' is a rough estimation of the value of the assets inside the whole structure or building. The value of the contents of the buildings will depend on the type of the occupant of the building/s. For instance, a military, police or fire station will have different contents and values within their structures as compared to the office of a certain Ministry. The baseline information must, therefore, identify each building and their contents.
- The 'average value of rent' is applicable only if the public building is rented out.

## Step 2: Estimating damage and losses in the case of public buildings affected by disaster

- While the assessment team at the central level is collecting the baseline information, field assessment should be undertaken by the district assessment team to assess the damages and losses suffered by public buildings from the particular disaster event.
- Since there may not be many public buildings in a district damaged by a disaster, during this stage, as much as possible individual public buildings impacted by the disaster should be assessed by the district assessment team and the results should be compiled district wise in a summary table to reflect the damage and losses for the district.

### Step 2.1. Estimation of damage: The following are the items that can be damaged in the sector.

- Structures: The damage assessment should include the effects on the structures of each type of building units. Direct interviews with private contractors or government officials involved in the construction and repair can be conducted during the field trip in order to validate unit costs of repair or replacement (which is already collected by the central assessment team as part of Table 3).
- Equipment, furniture, food supply and other machinery: The assessment should also include the contents of each type of building like furniture, elevators, generators, electronic equipment, etc.
- The assessment specialist can classify the damaged structure as completely destroyed and partially damaged. The following can be taken as guidance for classification of completely destroyed and partially damaged housing, however, it is best to get feedback from national experts in construction before the assessment begins:
  - Completely destroyed: All structures which are visibly completely destroyed and those that have suffered irreparable structural damage (damage to load bearing walls, columns, foundation, floor system, shear walls, staircase etc).
  - Partially Damaged: Structures that can be repaired at less than 40 percent of the reconstruction cost.

- The assessment specialist must be aware that different types of disasters can adversely affect structures and contents separately. Typhoons with strong winds and rains can cause the collapse of a building and the total destruction of its contents resulting in damages to structure and furniture, equipment and others. On the other hand, a concrete building may withstand a flood but the flood can totally or partially damage its contents. It is also possible that the contents of a building may be more valuable than the structure.
- The district assessment team can use the following table for undertaking quick assessment of individual public buildings.

**Table-4: Post-disaster damage assessment of individual public buildings**

| Check for the following during the assessment   |  | Write the answer in this column |
|---|--|---------------------------------|
| Which ministry/department does the affected public building belongs to?   |  |                                 |
| Location of the building (Village/Town)   |  |                                 |
| Type of Building  | Mainly concrete/brick single storey<br>Mainly concrete/brick multi-storey<br>Mainly wooden<br>Mainly concrete/wooden<br>Bamboo/Plywood/Grass |                                 |
| If building is rented out, how much rent does it earn per month (Kip/ per month)  |  |                                 |
| Number of users/workers   | Male   |                                 |
|   | Female   |                                 |
| Number of days the building is not functional after the disaster  |  |                                 |
| Was the functioning of the building shifted somewhere else temporarily because of disaster? If yes, how much was spent to set up the temporary building |  |                                 |
| Is the structure of the building  | Completely destroyed   |                                 |
|   | Partially destroyed  | Roof                            |
|   |  | Walls                           |
|   |  | Floor                           |
| How long will it take to repair the structure (Days)  |  |                                 |
| List the furniture and equipment damaged by the disaster  | Type   | Number damaged                  |
| 1   |  |                                 |
| 2   |  |                                 |
| 3   |  |                                 |
| 4   |  |                                 |
| 5   |  |                                 |
| 6   |  |                                 |
| 7   |  |                                 |
| 8   |  |                                 |
| 9   |  |                                 |
| 10  |  |                                 |

- After assessing the individual public buildings, the damages in a particular district can be summarized in the following tables (Table 5, Table 6 and Table 7):

**Table 5. Value of damages from totally destroyed buildings and their contents in a district**

Name of District:

| Type of buildings                   | Totally destroyed buildings |                                 | Value of Reusable Materials (Kips) | Total damages to structures (Kips) | Average Time to Replace (Months) |
|-------------------------------------|-----------------------------|---------------------------------|------------------------------------|------------------------------------|----------------------------------|
|                                     | Number of totally destroyed | Average Replacement Cost (Kips) |                                    |                                    |                                  |
|                                     |                             |                                 |                                    |                                    |                                  |
| Mainly Concrete/Brick single storey |                             |                                 |                                    |                                    |                                  |
| Mainly Concrete/Brick multi-storey  |                             |                                 |                                    |                                    |                                  |
| Mainly Wooden                       |                             |                                 |                                    |                                    |                                  |
| Mainly Concrete/Wooden              |                             |                                 |                                    |                                    |                                  |
| Bamboo/plywood/grass                |                             |                                 |                                    |                                    |                                  |
| Total                               |                             | N.A.                            |                                    |                                    | N.A.                             |
| Contents by Type of Building        | Number of totally destroyed | Average Replacement Cost (Kips) | Value of Reusable Materials (Kips) | Total damages to contents (Kips)   | Average Time to Replace (Months) |
| Mainly Concrete/Brick single storey |                             |                                 |                                    |                                    |                                  |
| Equipment                           |                             |                                 |                                    |                                    |                                  |
| Others                              |                             |                                 |                                    |                                    |                                  |
| Mainly Concrete/Brick multi-storey  |                             |                                 |                                    |                                    |                                  |
| Equipment                           |                             |                                 |                                    |                                    |                                  |
| Others                              |                             |                                 |                                    |                                    |                                  |
| Mainly Wooden                       |                             |                                 |                                    |                                    |                                  |
| Equipment                           |                             |                                 |                                    |                                    |                                  |
| Others                              |                             |                                 |                                    |                                    |                                  |
| Mainly Concrete/Wooden              |                             |                                 |                                    |                                    |                                  |
| Equipment                           |                             |                                 |                                    |                                    |                                  |
| Others                              |                             |                                 |                                    |                                    |                                  |
| Bamboo/plywood/grass                |                             |                                 |                                    |                                    |                                  |
| Equipment                           |                             |                                 |                                    |                                    |                                  |
| Others                              |                             |                                 |                                    |                                    |                                  |
| Total                               |                             |                                 |                                    |                                    |                                  |
| Grand Total                         |                             | N.A.                            |                                    |                                    | N.A.                             |

Notes for filling table 5:

- 'Average Replacement Cost' will be the average pre-disaster value of the buildings and their contents that were totally destroyed.
- 'Equipment' in the contents of each type of building will include elevators, electric generators, computers and other office equipment and other machineries while 'Others' refers to books, office supplies, food supply and other related materials.

- Although the structure or contents of the structure are totally destroyed, there will still be some re-usable materials that have salvage values. For instance, some wood or iron can be re-used for reconstruction while damaged equipment can be sold as scrap. The salvage values must be subtracted from the replacement cost.
- According to the experience in past disasters, typically around 10-40 percent of materials can be re-used after a disaster. (Source World Bank)
- In formula, the total damages will be (Column D) = [(Column A) x (Column B)] – Column C.
- Filling out column E is very important and should be done with the help of experienced engineers who have wide experience in construction sector in Lao PDR and the estimates should take into consideration factors such as the capacity of the construction sector, the availability of construction materials and labour, as well as the availability of adequate financing. This data in this column will be used into while calculating loss assessment for public buildings (step 2.2)

**Table 6. Value of damages from partially destroyed buildings and their contents in a district**

Name of District:

| Type of buildings                    | Partially damaged structures |                         |            |                          |                                  |                         | Others     | Value of Reusable Materials (Kips) | Total Cost of Repair (Kips)     | Average Time to Repair (Months) |
|--------------------------------------|------------------------------|-------------------------|------------|--------------------------|----------------------------------|-------------------------|------------|------------------------------------|---------------------------------|---------------------------------|
|                                      | Roof                         |                         | Walls      |                          | Floor                            |                         | Kips/ Unit |                                    |                                 |                                 |
|                                      | Area (SqM)                   | Repair Cost (Kips/ SqM) | Area (SqM) | Repair Cost (Kips/ SqM)  | Area (SqM)                       | Repair Cost (Kips/ SqM) |            |                                    |                                 |                                 |
|                                      | A                            | B                       | C          | D                        | E                                | F                       |            |                                    |                                 |                                 |
| Mainly Concrete/ Brick single storey |                              |                         |            |                          |                                  |                         |            |                                    |                                 |                                 |
| Mainly Concrete/ Brick multi-storey  |                              |                         |            |                          |                                  |                         |            |                                    |                                 |                                 |
| Mainly Wooden                        |                              |                         |            |                          |                                  |                         |            |                                    |                                 |                                 |
| Mainly Concrete/ Wooden              |                              |                         |            |                          |                                  |                         |            |                                    |                                 |                                 |
| Bamboo/ plywood/ grass               |                              |                         |            |                          |                                  |                         |            |                                    |                                 |                                 |
| Total                                |                              | N.A.                    |            | N.A.                     |                                  | N.A.                    |            |                                    |                                 | N.A.                            |
| Contents by Type of Building         |                              |                         |            | Quantity Damaged (Units) | Average Repair Cost (Kips/ Unit) |                         |            | Total Cost of Repair (Kips)        | Average Time to Repair (Months) |                                 |
|                                      |                              |                         |            | A                        | B                                |                         |            | C                                  | D                               |                                 |
| Mainly Concrete/Brick single storey  |                              |                         |            |                          |                                  |                         |            |                                    |                                 |                                 |
| Equipment                            |                              |                         |            |                          |                                  |                         |            |                                    |                                 |                                 |
| Others                               |                              |                         |            |                          |                                  |                         |            |                                    |                                 |                                 |
| Mainly Concrete/Brick multi-storey   |                              |                         |            |                          |                                  |                         |            |                                    |                                 |                                 |

|                        |  |      |  |  |      |
|------------------------|--|------|--|--|------|
| Equipment              |  |      |  |  |      |
| Others                 |  |      |  |  |      |
| Mainly Wooden          |  |      |  |  |      |
| Equipment              |  |      |  |  |      |
| Others                 |  |      |  |  |      |
| Mainly Concrete/Wooden |  |      |  |  |      |
| Equipment              |  |      |  |  |      |
| Others                 |  |      |  |  |      |
| Bamboo/plywood/grass   |  |      |  |  |      |
| Equipment              |  |      |  |  |      |
| Others                 |  |      |  |  |      |
| Others                 |  |      |  |  |      |
| Total                  |  | N.A. |  |  |      |
| Grand Total            |  |      |  |  | N.A. |

Notes in filling out Table 6:

- The total value of damage due to partially destroyed assets will be the total cost of repair computed as:  

$$\text{Column I} = (\text{Column A} \times \text{Column B}) + (\text{Column C} \times \text{Column D}) + (\text{Column E} \times \text{Column F}) + \text{Column G} - \text{Column H}$$
- The value for the average cost of repair per unit is found in the baseline information.
- “Others” may include the cost of electrical and plumbing systems repair, among others.
- For the contents of the buildings, the value of damages will be the repair cost of the number of damaged quantity multiplied by average repair cost of each, computed as:  

$$\text{Column C} = \text{Column x} \times \text{Column B}$$
- In calculating damages, the unit cost of reconstruction should be based on pre-disaster value that would allow rebuilding to the same characteristics of the assets prior to the disaster. The cost of repair should also exclude the value of the materials that can be re-used. Typically after a disaster around 10-40 percent of materials can be re-used.
- Filling out column J is very important and should be done with the help of experienced engineers who have wide experience in construction sector in Lao PDR and the estimates should take into consideration factors such as the capacity of the construction sector, the availability of construction materials and labour, as well as the availability of adequate financing. This data in this column will be used into while calculating loss assessment for public buildings (step 2.2)
- Once the total destroyed and partially damaged public buildings are assessed, the total damages in the district can be summarized using the following table:

**Table 7. Summary of damages to public buildings and their contents in a district**

| Type of building units              | Damages to buildings |                     | Damages to contents |                     | Total damages |
|-------------------------------------|----------------------|---------------------|---------------------|---------------------|---------------|
|                                     | Totally destroyed    | Partially destroyed | Totally destroyed   | Partially destroyed |               |
|                                     | A                    | D                   | D                   | E                   | F             |
| Mainly Concrete/Brick single storey |                      |                     |                     |                     |               |
| Mainly Concrete/Brick multi-storey  |                      |                     |                     |                     |               |
| Mainly Wooden                       |                      |                     |                     |                     |               |
| Mainly Concrete/Wooden              |                      |                     |                     |                     |               |
| Bamboo/plywood/grass                |                      |                     |                     |                     |               |
| Total                               |                      |                     |                     |                     |               |



**Step 2.2. Estimation of losses: Losses in the sector can come from the following:**

- Cost of relocation: If the public building is situated in a high-risk area, there may be a need to relocate it to a safer location. The cost of the permanent new building to the safer area will be a loss for the concerned ministry and should include cost of land, constructing the building, and other requirements such as water and power supply.
- Cost of temporary offices: If because of the damage to the public building, the functioning of the office/s situated in the building have to be moved to a temporary location, this cost of providing temporary office will be a loss to the concerned ministry and should be estimated based on the cost of setting up the temporary office and its operations for the total expected duration of the temporary office scheme.
- Losses due to lower revenues: Losses may arise from uncollected revenues from services and unearned rent from damaged buildings if such buildings lease some parts of their premises.
- Cost of other unexpected expenses. Included here are the cost of urgent repair and procurement of vital equipment, the demolition and removal of debris, retrieval of important documents, etc.
- Losses can extend beyond the year that the disaster occurred and these should be reflected in the loss assessment. The result of the damage assessment which provides the estimate for number of months required to reconstruct or repair affected structures and the capacity of the sector will determine the duration losses will be suffered.
- The district assessment team can use the following table for summarizing losses suffered by the public buildings in a district.

**Table 8. Summary of losses to public buildings in a district**

Name of District:

| Type of losses                                      | Amount in Disaster Year (Kip) | Amount in Year 1 (Kip) | Amount in Year2 (Kip) | Amount in Year 3 (Kip) | Total losses (Kips) |
|---|-------------------------------|------------------------|-----------------------|------------------------|---------------------|
| Cost of relocation                                  |                               |                        |                       |                        |                     |
| Temporary office                                    |                               |                        |                       |                        |                     |
| Loss from revenues and rent                         |                               |                        |                       |                        |                     |
| Urgent repairs of vital equipment and machinery     |                               |                        |                       |                        |                     |
| Urgent procurement of vital equipment and machinery |                               |                        |                       |                        |                     |
| Demolition costs                                    |                               |                        |                       |                        |                     |
| Removal of debris                                   |                               |                        |                       |                        |                     |
| Other losses (if any)                               |                               |                        |                       |                        |                     |
| <b>Total</b>  |                               |                        |                       |                        |                     |

Notes in filling out Table 8:

- The cost of temporary offices should include the following costs: a) land acquisition, b) building temporary structures, c) water supply, d) sanitation e) electricity at the site; and f) transport to/from work.
- Various government ministries and/or agencies will have different types of vital equipment to repair or procure in order for them to function as mandated. For instance, a destroyed fire station may need to have its damaged fire trucks immediately. All important equipment, machinery and other materials should therefore be enumerated.
- Losses are to broken down by calendar year, starting with the current year of the disaster, and subsequent years if they are foreseen. For example after the disaster, the cost incurred for setting up temporary offices will be a loss, but some portions of this cost (operating cost) may continue for months till the temporary offices stops functioning. Such costs should be estimated accordingly in the disaster year and if relevant in future years to come.
- The assessment team at the district level should estimate this time period of reconstruction and recovery and accordingly assess the losses. The assessment team at central and provincial level

with wider knowledge on the sector performance and capacity, during the field mission should validate this estimation.

### Step 2.3. Summarize Damages and Losses in Public Buildings in a district

- Based on the information gathered in the previous tables (Table 4 to Table 8), the table below can be used by the district assessment team for summarizing the total damages and losses suffered by public housing in a district.

**Table 9. Summary of damage and losses, in a district**

| Type of Buildings                   | Within the Disaster Year |        | Losses Beyond Disaster Year |        |        | Total |
|-------------------------------------|--------------------------|--------|-----------------------------|--------|--------|-------|
|                                     | Damages                  | Losses | Year 1                      | Year 2 | Year 3 |       |
| Mainly Concrete/Brick single storey |                          |        |                             |        |        |       |
| Mainly Concrete/Brick multi-storey  |                          |        |                             |        |        |       |
| Mainly Wooden                       |                          |        |                             |        |        |       |
| Mainly Concrete/Wooden              |                          |        |                             |        |        |       |
| Bamboo/plywood/grass                |                          |        |                             |        |        |       |
| TOTAL                               |                          |        |                             |        |        |       |

### Step 2.4. Summarize Damages and Losses suffered by Public Buildings in a province

- Once the summary table (Table 9) for each affected district has been filled out, the below table should be used for summarizing information at the province level. Each affected province should fill up a similar table.
- The provincial offices should make this data available to the assessment team visiting from the central level during field assessment. Depending on requirement the central level team along with representatives from provincial offices may undertake some validation of the data by visiting some specific districts.

**Table 10. Summary of damage and losses in a province**

Name of Province:

| Name of Districts (Type the name of the district below) | Within the Disaster Year |        | Losses Beyond Disaster Year |        |        | Total (Kips) |
|---|--------------------------|--------|-----------------------------|--------|--------|--------------|
|   | Damages                  | Losses | Year 1                      | Year 2 | Year 3 |              |
| District 1  |                          |        |                             |        |        |              |
| District 2  |                          |        |                             |        |        |              |
| District 3  |                          |        |                             |        |        |              |
| District 4  |                          |        |                             |        |        |              |
| District 5  |                          |        |                             |        |        |              |
| TOTAL   |                          |        |                             |        |        |              |

### Step 2.5. Summarize Damages and Losses in Public Buildings at the national level

- Once the summary table (Table 10) for each affected province has been filled out, the below table should be used by the central level assessment team for summarizing information at the national level. This is to be filled out after the field assessment is over.

**Table 11. Summary of damage and losses at the national level**

| Name of Province (Type the name of the province below) | Within the Disaster Year |        | Losses Beyond Disaster Year |        |        | Total (Kips) |
|--|--------------------------|--------|-----------------------------|--------|--------|--------------|
|  | Damages                  | Losses | Year 1                      | Year 2 | Year 3 |              |
| Province 1   |                          |        |                             |        |        |              |
| Province 2   |                          |        |                             |        |        |              |
| Province 3   |                          |        |                             |        |        |              |
| Province 4   |                          |        |                             |        |        |              |
| Province 5   |                          |        |                             |        |        |              |
| TOTAL  |                          |        |                             |        |        |              |

### Step 3. Estimating recovery and reconstruction needs for housing sector

#### Step 3.1 Setting the recovery and reconstruction strategy for public buildings:

- While the damage and loss assessment is being undertaken, the DHUP, MPWT in consultation with their counterparts in affected provinces, National Disaster Management Office, should develop the strategy to be followed for recovery and reconstruction of public buildings. Some of the broad content of the strategy could include the following:
  - Identifying factors which will contribute to 'build back better' of public housing
  - Possibilities of relocation of specific public buildings because of high risk, if required
  - Retrofitting of existing public buildings in high risk areas
  - Enhancing and strengthening medium to long term disaster risk reduction related issues in housing sector such as integrating hazard resilient standards in building codes, undertaking risk sensitive land-use planning, training of masons and engineers on hazard resilient construction etc.

#### Step 3.2 Estimating recovery and reconstruction needs

- The quantification of damage and losses will enable the estimation of financial requirements to achieve full recovery and to reconstruct the public buildings that were destroyed or damaged.
- The value of losses is used to estimate the amounts required to achieve recovery of the public buildings; and the value of damage are used to estimate the financial requirements for reconstruction.
- This estimation of financial needs for recovery and reconstruction is to be broken down by districts and provinces.

##### Step 3.2.1 Estimating recovery needs

Possible recovery related activities in the case of public buildings could include:

- Provision of temporary offices (which were housed in the damaged public building)
- Technical assistance in the repair of disaster-resilient buildings
- Urgent repair of vital equipment and materials. One of the urgent needs of the offices in the public buildings that were damaged will be on the recovery of important equipment and other materials that vital in the functions of the office. For example, fire trucks must be repaired immediately in order for them to respond to any future emergency.
- Retrieval of documents and/or demolition of debris. Another urgent need of the public buildings will be on the recovery of important documents and other materials that are needed in their respective lines of work.

DHUP can use the below table to put forward their summary of recommendation for recovery needs to MPI:

**Table 12. Summary of Recovery Needs in Public Buildings**

| Possible assistance for households affected from disaster                         | Total amount needed (KIPS) | Foreign Cost Component (US\$) |
|---|----------------------------|-------------------------------|
| Provision of temporary offices  |                            |                               |
| Technical assistance in repair and reconstruction of disaster-resilient buildings |                            |                               |
| Repair of vital equipment and materials   |                            |                               |
| Others  |                            |                               |
| Total   |                            |                               |

**Step 3.2.2. Estimating reconstruction needs**

Based on the Guidance Note developed by the World Bank and the Global Facility for Disaster Reduction and Recovery entitled: Estimation of post-disaster needs for recovery and reconstruction, the following methodology can be adopted for estimating the reconstruction needs:

- To estimate the value of reconstruction needs for public buildings, the following formula is to be used:

Reconstruction Needs = P \* Building Damage value,

Wherein

- P is a disaster-resilience coefficient whose value may usually range from 1.10 to 1.35. The actual value to be adopted would depend on the improved degree of construction standards or norms required. Civil engineers or architects familiar with disaster-resilient construction standards would be able to define those coefficients.
- Formula must be applied separately to each type of building unit that may have been destroyed, and the value of 'P' will vary from housing type to housing type

Possible reconstruction related activities in the case of public building could include the following:

- Specific program for reconstruction of improved public building may be implemented. The unit cost for such improved quality housing units must be estimated on the basis of the improvement characteristics that should also provide for disaster resilience.
- Relocation of public buildings: In case of affected area being unsuitable for reconstruction, suitable relocation of public buildings in safer area can be undertaken. In this case the need should include the cost of reconstruction plus the cost of land acquisition and provision of basic services of water and sanitation, electricity and other basic services.
- Retrofitting of public buildings
- Relocation of offices located in high risk areas

DHUP can use the below table to put forward their summary of recommendation for reconstruction needs to MPI:

**Table 13. Reconstruction Needs of the Public Buildings**

| Reconstruction Needs                                      | Reconstruction Needs (Kips) | Foreign Cost Component (US\$) | Main Ministry Responsible |
|---|-----------------------------|-------------------------------|---------------------------|
| Reconstruction of public building to higher standards     |                             |                               |                           |
| Scheme to retrofit public buildings                       |                             |                               |                           |
| Relocation of public buildings located in high risk areas |                             |                               |                           |
| Total   |                             |                               |                           |

## Step 4. Developing short, medium and long-term projects and designing implementation plan

Recovery and Reconstruction needs identified above would need to be broken down in short, medium and long term needs. Following are some examples of projects, which can be undertaken as short, medium and long term.

- **Short-term projects.** Short-term projects are crucial immediately after disaster. To achieve this, the following short-term initiatives/projects can be introduced:
  - Setting up temporary offices for the ones which were housed in affected public buildings
  - Immediate repair of damaged public buildings
  - Repair of vital equipments and materials
- **Medium-term projects/programs.** Medium-term programs and projects can include:
  - Undertake risk reduction measures in housing reconstruction to reduce future risk from disasters like retrofitting of undamaged public buildings.
  - Relocation of public buildings to safer locations.
  - Development of hazard resilient design specifications for construction of public works
- **Longer-term projects/programs**
  - Development of risk-sensitive land use plans

Based on the identified priority projects, the MPWT can plot the implementation periods of each project to determine the budgetary needs over the years. The following steps can be followed.

- Identify the specific projects according to their relative urgency or priority in relation to the recovery of the sector.
- Plot the timeline of activities of all the projects, with the urgent ones on top, in a Gantt chart with the corresponding funding requirement. This will assist the MPI in programming the necessary funds over a certain time period, like on a quarterly or annual basis.
- Identify the projects that need further feasibility studies which may be funded by foreign grants.
- To the extent possible, a logical framework (logframe) should be created for each of the project proposed for inclusion in the recovery plan.

## Step 5: Inputs for Macro-economic impact analysis

The damages and losses to the housing sector can affect the macro economy. To the extent possible the DHUP, MPWT should collect the following information that will be used by MPI for undertaking the macro-economic impact analysis.

- **Gross Domestic Product (GDP).** The loss of income from rentals as well as temporary suspension of government services due to damages to buildings can reduce the GDP
- **Fiscal Balance:** The impact on the fiscal balance for the private housing sector may be twofold: on the current and the capital accounts of the budget. In the first case, the unexpected expenditures to finance the temporary offices program combined with possible lower tax revenues from rental income will lower revenues. In the second case, the balance may be affected by the need to acquire fresh loans to partially finance reconstruction of public buildings that will increase expenditure.
- **Balance of Payments:** Items needed for reconstruction that are not produced locally in Lao PDR and have to be imported should be estimated and expressed in percentage of total reconstruction needs. This figure would be used for the analysis of the impact on the balance of payments.
- **Prices or Inflation:** Prices of construction materials could go high if the destruction of the construction sector is massive.

## Step 6. Write the assessment report

- The following format may be considered for writing the assessment chapter of public buildings:
- Overview of impacts of the disaster on public building
- Damage and Loss quantification
- Damage and Loss by province (or district)

- Proposed strategies for recovery and reconstruction of public buildings
- Needs estimation for recovery and reconstruction of public buildings

The report of the public buildings should be written by DHUP, MPWT and once completed should be submitted to MPI for inclusion in the final report.

## **Section 3**

### ***Terms of reference of assessment team for private housing***

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#### **3.1 Formation of pre-identified assessment teams MPWT**

- Pre-identified team should be formed with officials from Housing Division of DHUP, MPWT and Department of Planning of MPWT. These officials would need to have good understanding on the performance of the housing sector in Lao PDR and should have also undergone prior training on the damage, loss and needs assessment. The assessment team can be same the assessment team involved in assessing private housing.

#### **3.2 Composition of the assessment team**

- At the central level the assessment team should comprise of the following
  - Officials from Housing Division, Department of Housing and Urban Planning, MPWT
  - Department of Planning, MPWT
- At the field level the assessment team should comprise of the following
  - Provincial and District Housing Officers
- Specific expertise required within the team would include the following:
  - Civil Engineers/ Structural Engineers
  - Architects

#### **3.3 Task of assessment team**

- Gathering of the pre-identified team from Housing Division of DHUP, MPWT after the disaster event based on the order received from MPI
- Undertaking quick orientation on the assessment methodology for the assessment team
- Working closely with relevant departments of MPWT at national (such as Department of Planning) and provincial/district and responsible for compiling baseline information.
- Undertaking field visits in disaster affected areas and working closely with District and Provincial Housing Officers and collecting information on damage and losses
- Based on information collected, undertaking damage and loss assessment for the sector Simultaneously in close consultation with relevant agencies such as National Disaster Management Office, formulate the recovery and reconstruction strategy for private housing
- Estimating the recovery and reconstruction needs based on the strategy and damage and loss assessment results
- Writing the assessment report for public housing and submit to MPI

#### **3.4 Assessment timeline**

- Typically the post-disaster damage, loss and needs assessment takes from 2 to 5 weeks
- The assessment is usually started once the rapid impact and needs assessment for emergency and relief support is completed and the relief and response phase of the disasters is over or well underway
- In the first week the overall planning of the assessment would take place and would include the following issues:
  - Baseline data collection
  - Agree on ToR
  - Team Composition Methodology
  - Orientation Training on DALA

- Discussion on formulating recovery and reconstruction strategy for private housing
- Second and Third week is the assessment stage and would include the following
  - Field survey
  - Calculation of Damage and losses for public building
- Fourth week of the assessment is the analysis stage and would include the following
  - Finalizing recovery and reconstruction strategy for public building
  - Estimating recovery and reconstruction needs for public building
  - Report drafting
  - Consultation within the sector to seek inputs on the report
  - Submission of sector report to MPI
  - Finalisation of report by MPI
- Fifth week of the assessment is launch and dissemination of the report

## ***Guidance Note 11:***

### ***Damage, loss and needs assessment for the Transport Sector in Lao PDR***

## ***Table of contents***

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- **Section-1: Methodology for damage, loss and needs assessment in Transport Sector in Lao PDR**
- **Section 2: Steps in undertaking damage, loss and needs assessment**
  - Step 1: Analysis of pre-disaster situation of transport sector
  - Step 2: Estimating post-disaster damages and losses
  - Step 3: Estimating recovery and reconstruction needs
  - Step 4: Identify priority programs and projects and designing implementation plan
  - Step 5: Inputs for Macro-economic impact analysis
  - Step 6: Writing the assessment report
- **Section 3: Terms of reference of assessment team**

## ***Introduction to this Guidance Note***

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- This Guidance Note is a part of the Handbook on Post-disaster recovery and reconstruction planning of Lao PDR, which consists of fifteen Guidance Notes, for various sectors, on damage loss and needs assessment.
- This Guidance Note is to be used for undertaking damage, loss and needs assessment of the Transport Sector in Lao PDR after a disaster.
- The transport sector in this case consists of roads, bridges, inland waterways, airports and their auxiliary installations including equipment that include different kinds of vehicles. Also, it includes storerooms, sanitary services and administrative buildings that are related to transportation.
- The Guidance Note is to be used by the team responsible for undertaking assessment of transport sector led by Ministry of Public Works and Transport (MPWT) working in close consultation with agencies such as National Statistical Center, Ministry of Planning and Investment, National Disaster Management Office and development partners involved in the transport sector of Lao PDR.



## Section 1

### *Methodology for damage, loss and needs assessment in Transport Sector in Lao PDR*

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- This methodology for undertaking damage, loss and needs assessment is derived from the methodology for estimating the socio-economic and environmental effects of disasters developed by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) as further enhanced by the World Bank (WB).
- The methodology for estimating recovery and reconstruction needs (described in step 3 under section 2 of this Guidance Note) is derived from the Guidance Note of the World Bank and The Global Facility of Disaster Reduction and Recovery entitled: Estimating of Post-Disaster Needs for Recovery and Reconstruction.
- The ECLAC methodology uses two key terminologies; namely Damage and Losses, as explained below:

- **Damages:** In the transport sector, damages are the total or partial destruction of physical assets and infrastructure such as:
  - roads,
  - bridges and culverts,
  - airports and aircrafts,
  - inland waterways including ships, boats, ports and other assets
  - equipment, machineries, vehicle stock, etc.

The values of damages are the cost of:

- repair for the partially damaged assets and;
- replacement of totally destroyed ones.

Damage in transport sector will occur at the time of, or shortly after the disaster although some damages may become obvious only after a longer period. Damages are measured in physical terms (such as kilometers of roads) for which the monetary repair or replacement value is subsequently estimated.

- **Losses:** Losses are the change in economic flow during the period of recovery and reconstruction following the disaster. In transport sector, losses will include the following:
  - Urgent expenditures to re-establish traffic flows after transport assets have been affected like the cost of temporary Bailey-type bridges, detours, etc.;
  - Higher cost of transport due to the use of alternative, longer and lower quality roads over the recovery and reconstruction period;
  - Losses in revenue of the enterprises – public and private – that operate the transport services in the sector like bus companies, airlines, shipping lines as well as airports and ports, among others.
  - The cost of dredging river channels to enable vessels to dock; and
  - Other unexpected expenditures that may arise due to the disaster:
    - ▶ Losses will take place during the entire period of recovery and reconstruction of the sector and may stretch even beyond the year that the disaster occurred. It is expressed in monetary value at current prices.
    - ▶ Losses that may be incurred when perishable food supply did not reach the markets on the appropriate time due to damages in the normal routes of transportation should be accounted for in the agriculture sector and not in the transport sector. The same will apply for other sectors who have incurred losses due to the damages of transportation facilities.
    - ▶ Also, the income, damages and losses of foreign airlines should not be included in the assessment.

## Section 2

### Steps in undertaking damage, loss and needs assessment

#### Step1: Analyze pre-disaster situation in the transport sector

##### Step 1.1: Understand what is meant by baseline data:

- The first step of undertaking the assessment is collecting information on the pre-disaster transport conditions in order to ascertain the baseline for damage, loss and needs assessment. The following table shows the type of baseline information to be collected and their typical sources:

**Table 1. Baseline data and sources**

| Type of Information/Data  | Available at  |                             |                           |               | Name of source document |
|---|---|-----------------------------|---------------------------|---------------|-------------------------|
|   | Ministry/ Bureau/ Division                                    | Provincial Office/ Division | District Office/ Division | Other Sources |                         |
| Types of roads and bridges and their locations and construction costs   | Roads Technique and Environment Division, Department of Roads |                             |                           |               |                         |
| Length and width of roads and bridges by type   |   |                             |                           |               |                         |
| Road service coverage levels (urban and rural)  | Public Works and Transport Institute                          |                             |                           |               |                         |
| Vehicles by ownership, types and population served by roads and bridges   |   |                             |                           |               |                         |
| Repair Cost of roads (Kip/Km)   |   |                             |                           |               |                         |
| Reconstruction Cost of roads (Kip/Km)   |   |                             |                           |               |                         |
| Average replacement cost of vehicular stock (Kip)   |   |                             |                           |               |                         |
| Average repair cost of vehicular stock (Kip)  |   |                             |                           |               |                         |
| Replacement cost of bridges (Kip)   |   |                             |                           |               |                         |
| Repair cost of bridges (Kip)  |   |                             |                           |               |                         |
| Replacement cost of assets related to land transport terminal (Kip)   |   |                             |                           |               |                         |
| Average repair cost of assets related to land transport terminal (Kip)  |   |                             |                           |               |                         |
| Marginal operating cost of different types of vehicles  |   |                             |                           |               |                         |
| <b>Traffic counts</b>   |   |                             |                           |               |                         |
| Land Transportation Stations  |   |                             |                           |               |                         |
| Number of stations or terminal buildings, baggage handling equipment, furniture, computers and other equipment and machineries. |   |                             |                           |               |                         |
| Average number of population being served by the service  |   |                             |                           |               |                         |
| Annual income   |   |                             |                           |               |                         |
| Ownership by private and public   |   |                             |                           |               |                         |

|   |                                    |  |  |  |  |
|---|------------------------------------|--|--|--|--|
| <b>Land Transportation Companies</b>  | Department of Land Transportation  |  |  |  |  |
| Number of vehicles  |                                    |  |  |  |  |
| Average number of population being served by the service  |                                    |  |  |  |  |
| Ownership by private and public   |                                    |  |  |  |  |
| Estimated annual income   |                                    |  |  |  |  |
| <b>Inland water transportation</b>  | Department of Water Transportation |  |  |  |  |
| Number of ports and buildings, baggage handling equipment, furniture, computers and other equipment and machineries.    |                                    |  |  |  |  |
| Average number of population being served by the service  |                                    |  |  |  |  |
| Annual income   |                                    |  |  |  |  |
| Ownership by private and public   |                                    |  |  |  |  |
| Water Transportation Companies  |                                    |  |  |  |  |
| Number of boats/ferries   |                                    |  |  |  |  |
| Average number of population being served by the service  |                                    |  |  |  |  |
| Ownership by private and public   |                                    |  |  |  |  |
| Estimated annual income   |                                    |  |  |  |  |
| <b>Air transportation</b>   | Department of Aviation             |  |  |  |  |
| Number of airports and buildings, baggage handling equipment, furniture, computers and other equipment and machineries. |                                    |  |  |  |  |
| Average number of population being served by the service  |                                    |  |  |  |  |
| Annual income   |                                    |  |  |  |  |
| Ownership by private and public   |                                    |  |  |  |  |
| Air Transportation Companies  |                                    |  |  |  |  |
| Number of aircrafts   |                                    |  |  |  |  |
| Average number of population being served by the service  |                                    |  |  |  |  |
| Ownership by private and public   |                                    |  |  |  |  |
| Estimated annual income   |                                    |  |  |  |  |
| <b>Railways</b>   | Railway Authority under MPWT       |  |  |  |  |
| Assets  |                                    |  |  |  |  |
| Others  |                                    |  |  |  |  |

- As per the Roads and Bridge Department of MPWT, Road and Bridges in Lao PDR can be classified as follows:

- Roads
  - National Roads (N.R.)
  - Provincial Roads (P.R.)
  - District Roads (D.R.)
  - Urban Roads (U.R.)
  - Rural Roads (R.R.)
  - Bridges
- Depends on their location as per the road classification. For example bridge located on the National Road will be classified under N.R
- Since baseline data is available as per this classification, this same classification should be followed for undertaking the damage and loss assessment.

**Step 1.2: Collect the baseline data for each of the disaster-affected district:**

- Before the field assessment begins, the baseline data should be collected and summarized for each of the disaster-affected district by using the following tables (Table 2 to Table 7)
- This data is to be compiled by the assessment team at the central level (see section 3.2 of this Guidance Note for the composition of the assessment team) with necessary inputs from the provincial departments and district offices of the concerned Ministry.

**Table 2. Roads and bridges and their related number and costs in a district**

Name of District:

| Roads      | Total Length by classification |      |      |      |     | Replacement Cost | Average Repair Cost | Average Number of Users per Month |          |
|------------|--------------------------------|------|------|------|-----|------------------|---------------------|-----------------------------------|----------|
|            | N.R.                           | P.R. | D.R. | U.R. | R.R | (Kip/Km)         | (Kip/Km)            | Persons                           | Vehicles |
| Concrete   |                                |      |      |      |     |                  |                     |                                   |          |
| Asphalt    |                                |      |      |      |     |                  |                     |                                   |          |
| Bituminous |                                |      |      |      |     |                  |                     |                                   |          |
| Graveled   |                                |      |      |      |     |                  |                     |                                   |          |
| Earth      |                                |      |      |      |     |                  |                     |                                   |          |
| Bridges    | Number by classification       |      |      |      |     | Replacement Cost | Average Repair Cost | Average Number of Users per Month |          |
|            | N.R.                           | P.R. | D.R. | U.R. | R.R | (Kip/m)          | (Kip/m)             | Persons                           | Vehicles |
| Steel      |                                |      |      |      |     |                  |                     |                                   |          |
| Concrete   |                                |      |      |      |     |                  |                     |                                   |          |
| Wood       |                                |      |      |      |     |                  |                     |                                   |          |
| Others     |                                |      |      |      |     |                  |                     |                                   |          |

**Table 3. General types of land vehicles and other assets**

Name of District:

| Type of Vehicles | Number |         | Average Replacement Cost | Average Repair Cost | Average Operating Cost |
|------------------|--------|---------|--------------------------|---------------------|------------------------|
|                  | Public | Private | (Kip/Unit)               | (Kip/Unit)          | (Kips/Km)              |
| Heavy Trucks     |        |         |                          |                     |                        |

|                              |  |  |  |  |  |
|------------------------------|--|--|--|--|--|
| Trucks                       |  |  |  |  |  |
| Heavy busses                 |  |  |  |  |  |
| Medium busses                |  |  |  |  |  |
| Mini busses                  |  |  |  |  |  |
| Cars, pick-ups, light trucks |  |  |  |  |  |
| Tuk-tuks                     |  |  |  |  |  |
| Hand tractors                |  |  |  |  |  |
| Ox- or horse-driven carts    |  |  |  |  |  |
| Motorcycles                  |  |  |  |  |  |
| Bicycles                     |  |  |  |  |  |

Notes in filling out Table 3:

- Table 3 is for the general types of all vehicles using the roads and bridges and whether they are public or privately owned.
- The 'Average replacement cost', 'Average repair cost' and 'Average Operating Costs' refer to the pre-disaster values.

**Table 4. Transportation companies and their assets**

Name of District:

| Transportation companies             | Number |         | Average Replacement Cost | Average Repair Cost | Average Monthly Income | Average Monthly Operating Costs |
|--------------------------------------|--------|---------|--------------------------|---------------------|------------------------|---------------------------------|
|                                      | Public | Private | Kip/Unit                 | Kip/Unit            | Kips/Month             | Kips/Month                      |
| <b>Land transportation companies</b> |        |         |                          |                     |                        |                                 |
| Vehicles                             |        |         |                          |                     | N.A.                   | N.A.                            |
| Structures                           |        |         |                          |                     | N.A.                   | N.A.                            |
| Equipment                            |        |         |                          |                     | N.A.                   | N.A.                            |
| Others                               |        |         |                          |                     | N.A.                   | N.A.                            |
| <b>Airlines</b>                      |        |         |                          |                     |                        |                                 |
| Aircrafts                            |        |         |                          |                     | N.A.                   | N.A.                            |
| Structures                           |        |         |                          |                     | N.A.                   | N.A.                            |
| Equipment                            |        |         |                          |                     | N.A.                   | N.A.                            |
| Others                               |        |         |                          |                     | N.A.                   | N.A.                            |
| <b>Water transport companies</b>     |        |         |                          |                     |                        |                                 |
| Water crafts                         |        |         |                          |                     | N.A.                   | N.A.                            |
| Structures                           |        |         |                          |                     | N.A.                   | N.A.                            |
| Equipment                            |        |         |                          |                     | N.A.                   | N.A.                            |
| Others                               |        |         |                          |                     | N.A.                   | N.A.                            |
| <b>Railways</b>                      |        |         |                          |                     |                        |                                 |
| Trains                               |        |         |                          |                     | N.A.                   | N.A.                            |
| Structures                           |        |         |                          |                     | N.A.                   | N.A.                            |
| Equipment                            |        |         |                          |                     | N.A.                   | N.A.                            |

|        |  |  |  |  |      |      |
|--------|--|--|--|--|------|------|
| Others |  |  |  |  | N.A. | N.A. |
|--------|--|--|--|--|------|------|

Notes in filling out table 4:

- The vehicles of land transport companies can include some of those enumerated in Table 3, such as heavy, medium and mini busses as well as taxis and tuktuks.
- Transportation companies are those that operate businesses by transporting passengers by land (vehicles and train), air or sea.

**Table 5. Transportation facilities and other assets**

Name of District:

| Transportation facilities                     | Number |         | Average Replacement Cost | Average Repair Cost | Average Monthly Income | Average Monthly Operating Costs |
|---|--------|---------|--------------------------|---------------------|------------------------|---------------------------------|
|   | Public | Private | Kip/Unit                 | Kip/Unit            | Kips/Month             | Kips/Month                      |
| <b>Land transportation stations/terminals</b> |        |         |                          |                     |                        |                                 |
| Structures                                    |        |         |                          |                     | N.A.                   | N.A.                            |
| Equipment                                     |        |         |                          |                     | N.A.                   | N.A.                            |
| Others  |        |         |                          |                     | N.A.                   | N.A.                            |
| <b>Airports</b>                               |        |         |                          |                     |                        |                                 |
| Structures                                    |        |         |                          |                     | N.A.                   | N.A.                            |
| Equipment                                     |        |         |                          |                     | N.A.                   | N.A.                            |
| Others  |        |         |                          |                     | N.A.                   | N.A.                            |
| <b>Ports</b>                                  |        |         |                          |                     |                        |                                 |
| Structures                                    |        |         |                          |                     | N.A.                   | N.A.                            |
| Equipment                                     |        |         |                          |                     | N.A.                   | N.A.                            |
| Others  |        |         |                          |                     | N.A.                   | N.A.                            |
| <b>Railway stations</b>                       |        |         |                          |                     |                        |                                 |
| Structures                                    |        |         |                          |                     | N.A.                   | N.A.                            |
| Equipment                                     |        |         |                          |                     | N.A.                   | N.A.                            |
| Others  |        |         |                          |                     | N.A.                   | N.A.                            |

Note in filling out Table 5.

- Transportation facilities refer to those that are part of the general transport sector such as land transport stations/terminals, airports and water ports.
- The types of equipment in each of the sub-sectors can be enumerated, especially those that are important ones.
- The types of equipment in each of the sub-sectors can be enumerated, especially those that are important ones.
- Average cost of repair for structures can be broken down as follows:
  - Average cost of repair per square meter of roof (Kips/SqM)
  - Average cost of repair per square meter of wall (Kips/SqM)
  - Average cost of repair per square meter of floor (Kips/SqM)
  - Average cost of repair of electrical systems (Kips/repair)
  - Average cost of repair plumbing systems (Kips/repair)

**Table 6. Marginal operating cost of different types of vehicles (Kips/vehicle-km)**

| Type of road and terrain | Types of vehicle |   |   |   |   |   |   |   |   |    |    |
|--------------------------|------------------|---|---|---|---|---|---|---|---|----|----|
|                          | 1                | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Concrete                 |                  |   |   |   |   |   |   |   |   |    |    |
| <i>Flat</i>              |                  |   |   |   |   |   |   |   |   |    |    |
| <i>Rolling</i>           |                  |   |   |   |   |   |   |   |   |    |    |
| <i>Mountainous</i>       |                  |   |   |   |   |   |   |   |   |    |    |
| Asphalt                  |                  |   |   |   |   |   |   |   |   |    |    |
| <i>Flat</i>              |                  |   |   |   |   |   |   |   |   |    |    |
| <i>Rolling</i>           |                  |   |   |   |   |   |   |   |   |    |    |
| <i>Mountainous</i>       |                  |   |   |   |   |   |   |   |   |    |    |
| Bituminous               |                  |   |   |   |   |   |   |   |   |    |    |
| <i>Flat</i>              |                  |   |   |   |   |   |   |   |   |    |    |
| <i>Rolling</i>           |                  |   |   |   |   |   |   |   |   |    |    |
| <i>Mountainous</i>       |                  |   |   |   |   |   |   |   |   |    |    |
| Graveled                 |                  |   |   |   |   |   |   |   |   |    |    |
| <i>Flat</i>              |                  |   |   |   |   |   |   |   |   |    |    |
| <i>Rolling</i>           |                  |   |   |   |   |   |   |   |   |    |    |
| <i>Mountainous</i>       |                  |   |   |   |   |   |   |   |   |    |    |
| Earth                    |                  |   |   |   |   |   |   |   |   |    |    |
| <i>Flat</i>              |                  |   |   |   |   |   |   |   |   |    |    |
| <i>Rolling</i>           |                  |   |   |   |   |   |   |   |   |    |    |
| <i>Mountainous</i>       |                  |   |   |   |   |   |   |   |   |    |    |

Notes in filling out Table 6:

- The types of vehicles are those enumerated in Table 3, namely Type 1 are Heavy Trucks; Type 2 are Trucks; Type 3 are Heavy busses; Type 4 are medium busses; Type 5 are mini busses; Type 6 are cars, pick-ups, light trucks; Type 7 are tuk-tuks; Type 8 are hand tractors; Type 9 are ox- or horse-driven carts; Type 10 are motorcycles/motorbikes; Type 11 are bicycles.

**Table 7. Traffic flow in a district per month**

Name of district:

| Pre disaster traffic description           | Point to Point |        |        |        |        |
|--|----------------|--------|--------|--------|--------|
|  | A to B         | B to C | C to D | A to C | C to E |
| Distance (Km)                              |                |        |        |        |        |
| <b>Traffic flow (Thousand trips/month)</b> |                |        |        |        |        |
| <i>Heavy Trucks</i>                        |                |        |        |        |        |
| <i>Trucks</i>                              |                |        |        |        |        |
| <i>Heavy busses</i>                        |                |        |        |        |        |
| <i>Medium busses</i>                       |                |        |        |        |        |
| <i>Mini busses</i>                         |                |        |        |        |        |
| <i>Cars, pick-ups, light trucks</i>        |                |        |        |        |        |

|                                      |  |  |  |  |  |
|--------------------------------------|--|--|--|--|--|
| <i>Tuk-tuks</i>                      |  |  |  |  |  |
| <i>Hand tractors</i>                 |  |  |  |  |  |
| <i>Ox- or horse-driven carts</i>     |  |  |  |  |  |
| <i>Motorcycles</i>                   |  |  |  |  |  |
| <i>Bicycles</i>                      |  |  |  |  |  |
| <b>Average speed (Km/hr)</b>         |  |  |  |  |  |
| <i>Heavy Trucks</i>                  |  |  |  |  |  |
| <i>Trucks</i>                        |  |  |  |  |  |
| <i>Heavy busses</i>                  |  |  |  |  |  |
| <i>Medium busses</i>                 |  |  |  |  |  |
| <i>Mini busses</i>                   |  |  |  |  |  |
| <i>Cars, pick-ups, light trucks</i>  |  |  |  |  |  |
| <i>Tuk-tuks</i>                      |  |  |  |  |  |
| <i>Hand tractors</i>                 |  |  |  |  |  |
| <i>Ox- or horse-driven carts</i>     |  |  |  |  |  |
| <i>Motorcycles</i>                   |  |  |  |  |  |
| <i>Bicycles</i>                      |  |  |  |  |  |
| <b>Average trip duration (Hours)</b> |  |  |  |  |  |
| <i>Heavy Trucks</i>                  |  |  |  |  |  |
| <i>Trucks</i>                        |  |  |  |  |  |
| <i>Heavy busses</i>                  |  |  |  |  |  |
| <i>Medium busses</i>                 |  |  |  |  |  |
| <i>Mini busses</i>                   |  |  |  |  |  |
| <i>Cars, pick-ups, light trucks</i>  |  |  |  |  |  |
| <i>Tuk-tuks</i>                      |  |  |  |  |  |
| <i>Hand tractors</i>                 |  |  |  |  |  |
| <i>Ox- or horse-driven carts</i>     |  |  |  |  |  |
| <i>Motorcycles</i>                   |  |  |  |  |  |
| <i>Bicycles</i>                      |  |  |  |  |  |

Note in filling out Table 7:

- A, B, C, D, E represents the points or places within the district. The assessment team must identify the important traffic points or areas/places within and going out of the district.

## Step 2: Estimate post-disaster damage and losses in transport sector

- While the assessment team at the central level is collecting the baseline information, field assessment should be undertaken by the district assessment team to assess the damage and losses suffered by the transport sector from the particular disaster event.

### Step 2.1. Estimation of damages in transport sector:

- In the transport sector, all damages and their real extent may not be evident during the assessment; some of them may become obvious only after the initial phase of the disaster. The assessment team must, therefore, be aware that the value of damages can increase after the field visit has been undertaken.



- It is important that the assessment team should consult and validate information and data with the key personnel of all the transport sub-sectors (land, air and water). There are certain equipment and machineries, aside from structures, whose values can be accurately estimated by the experts in the sub-sectors.
- Moreover, foreign-owned assets in the sector like buses, airplanes and watercrafts should not be included in the assessment of damage and loss.

The following are the items that can be damaged in the sector:

#### 2.1.1. Estimation of damage in land transportation:

- **Roads and bridges.** Damages to roads and bridges are estimated as the cost required for the repair or replacement of roads or bridges after a disaster. The cost of emergency repair, like the setting up of provisional works to enable vehicular traffic to flow temporarily while the road or bridge is under reconstruction, should be included.
- **Vehicular stock.** The number of destroyed/damaged vehicles according to their types multiplied by their average cost of repair or replacement will give the value of damage. This should not include vehicular stock under other sectors such as agriculture, which will be accounted for under that sector.
- **Equipment, machinery and tools.** The same methodology is applied for equipment, machinery and tools. The number of destroyed/damaged equipment, machinery and tools in the land transport sector, according to various types, multiplied by their average cost of repair or replacement will give the value of damage.

The value of damages for totally destroyed and partially damaged assets in the land transportation sub-sector can be estimated using the Table 8 and Table 9 respectively.

**Table 8. Value of damages for totally destroyed land transport assets in a district**

Name of District:

| Type of structures and other assets | Totally destroyed assets for replacement |         |                          | Value of Reusable Materials | Total damages | Average Time to Repair |        |
|-------------------------------------|--|---------|--------------------------|-----------------------------|---------------|------------------------|--------|
|                                     | Units by Ownership                       |         | Average Replacement Cost |                             |               |                        | Total  |
|                                     | (Kilometers)                             |         | (Kips/Km)                |                             |               |                        | (Kips) |
|                                     | A  | B       | C                        | D                           | E             | F                      | G      |
| Roads                               | Public                                   | Private |                          |                             |               |                        |        |
| Concrete                            |  |         |                          |                             |               |                        |        |
| Asphalt                             |  |         |                          |                             |               |                        |        |
| Bituminous                          |  |         |                          |                             |               |                        |        |
| Graveled                            |  |         |                          |                             |               |                        |        |
| Earth                               |  |         |                          |                             |               |                        |        |
| Bridges                             | (Meters)                                 |         | (Kips/M)                 | (Kips)                      | (Kips)        | (Kips)                 | Months |
| Steel                               |  |         |                          |                             |               |                        |        |
| Concrete                            |  |         |                          |                             |               |                        |        |
| Wood                                |  |         |                          |                             |               |                        |        |
| Others                              |  |         |                          |                             |               |                        |        |
| Vehicles                            | Units                                    |         | (Kips/Unit)              | (Kips)                      | (Kips)        | (Kips)                 | Months |
| Heavy Trucks                        |  |         |                          |                             |               |                        |        |
| Trucks                              |  |         |                          |                             |               |                        |        |

|                                     |              |                    |               |               |               |               |
|-------------------------------------|--------------|--------------------|---------------|---------------|---------------|---------------|
| Heavy busses                        |              |                    |               |               |               |               |
| Medium busses                       |              |                    |               |               |               |               |
| Mini busses                         |              |                    |               |               |               |               |
| Cars, pick-ups, light trucks        |              |                    |               |               |               |               |
| Tuk-tuks                            |              |                    |               |               |               |               |
| Hand tractors                       |              |                    |               |               |               |               |
| Ox- or horse-driven carts           |              |                    |               |               |               |               |
| Motorcycles                         |              |                    |               |               |               |               |
| Bicycles                            |              |                    |               |               |               |               |
| <b>Land transportation stations</b> | <b>Units</b> | <b>(Kips/Unit)</b> | <b>(Kips)</b> | <b>(Kips)</b> | <b>(Kips)</b> | <b>Months</b> |
| <i>Structures</i>                   |              |                    |               |               |               |               |
| Terminal buildings                  |              |                    |               |               |               |               |
| Office buildings                    |              |                    |               |               |               |               |
| Others                              |              |                    |               |               |               |               |
| <i>Equipment</i>                    |              |                    |               |               |               |               |
| Baggage handling                    |              |                    |               |               |               |               |
| Tools                               |              |                    |               |               |               |               |
| Others                              |              |                    |               |               |               |               |
| <b>Other assets</b>                 |              |                    |               |               |               |               |
| Total                               |              | N.A.               |               |               |               | N.A.          |

Notes for filling table 8.

- 'Average Replacement Cost' will be the average pre-disaster values of the assets that were totally destroyed.
- Other assets can include fuel stock, spare parts, food stuff, etc.
- Although the structures are totally destroyed, there will still be some re-usable materials that have salvage values. For instance, some wood or iron can be re-used for reconstruction while damaged equipment can be sold as scrap. The salvage values must be subtracted from the replacement cost.
- According to experience in past disasters, typically around 10-40 percent of materials can be re-used after a disaster.
- In formula, the total damages will be (Column F) = Column D – Column E, where Column D = (Column A + Column B) x Column C, the quantity of totally destroyed assets multiplied by the average replacement cost.
- Filling out column G is very important and should be done with the help of experienced transportation engineers and planners who have wide experience in the sector in Lao PDR and the estimates should take into consideration factors such as capacity of the transport sector, the availability of construction material and labor, as well as the availability of adequate financing. This data will be required for calculating losses in the sector.

**Table 9. Value of damages for partially destroyed land transport assets in a district**

Name of District:

| Type of structures and other assets | Partially destroyed assets for repair |         |                     | Value of Reusable Materials | Total damages | Average Time to Repair |
|-------------------------------------|---------------------------------------|---------|---------------------|-----------------------------|---------------|------------------------|
|                                     | Units by Ownership                    |         | Average Repair Cost |                             |               |                        |
|                                     | (Kilometers)                          |         | (Kips/Km)           |                             |               |                        |
|                                     | A                                     | B       | C                   |                             |               |                        |
| <b>Roads</b>                        | Public                                | Private |                     |                             |               |                        |
| Concrete                            |                                       |         |                     |                             |               |                        |
| Asphalt                             |                                       |         |                     |                             |               |                        |
| Bituminous                          |                                       |         |                     |                             |               |                        |
| Graveled                            |                                       |         |                     |                             |               |                        |
| Earth                               |                                       |         |                     |                             |               |                        |
| <b>Bridges</b>                      | (Meters)                              |         | (Kips/M)            | (Kips)                      | (Kips)        | Months                 |
| Steel                               |                                       |         |                     |                             |               |                        |
| Concrete                            |                                       |         |                     |                             |               |                        |
| Wood                                |                                       |         |                     |                             |               |                        |
| Others                              |                                       |         |                     |                             |               |                        |
| <b>Vehicles</b>                     | Units                                 |         | (Kips/Unit)         | (Kips)                      | (Kips)        | Months                 |
| Heavy Trucks                        |                                       |         |                     |                             |               |                        |
| Trucks                              |                                       |         |                     |                             |               |                        |
| Heavy busses                        |                                       |         |                     |                             |               |                        |
| Medium busses                       |                                       |         |                     |                             |               |                        |
| Mini busses                         |                                       |         |                     |                             |               |                        |
| Cars, pick-ups, light trucks        |                                       |         |                     |                             |               |                        |
| Tuk-tuks                            |                                       |         |                     |                             |               |                        |
| Hand tractors                       |                                       |         |                     |                             |               |                        |
| Ox- or horse-driven carts           |                                       |         |                     |                             |               |                        |
| Motorcycles                         |                                       |         |                     |                             |               |                        |
| Bicycles                            |                                       |         |                     |                             |               |                        |
| <b>Land transportation stations</b> | Units                                 |         | (Kips/Unit)         | (Kips)                      | (Kips)        | Months                 |
| <i>Structures</i>                   |                                       |         |                     |                             |               |                        |
| Terminal buildings                  |                                       |         |                     |                             |               |                        |
| Office buildings                    |                                       |         |                     |                             |               |                        |
| Others                              |                                       |         |                     |                             |               |                        |
| <i>Equipment</i>                    |                                       |         |                     |                             |               |                        |
| Baggage handling                    |                                       |         |                     |                             |               |                        |
| Tools                               |                                       |         |                     |                             |               |                        |

|                     |  |  |      |  |  |      |
|---------------------|--|--|------|--|--|------|
| Others              |  |  |      |  |  |      |
| <b>Other assets</b> |  |  |      |  |  |      |
| Total               |  |  | N.A. |  |  | N.A. |

Notes for filling table 9.

- 'Average Repair Cost' will be the average pre-disaster values of the assets that were partially destroyed.
- All the other factors and explanations in Table 8 apply in Table 9.

#### Estimation of damage in Air transport:

- The estimation of damages to air transport system will include the cost of repair or replacement of affected physical assets of the air transport sub-sector such as structures (terminal buildings, hangars, runways, etc.) equipment (navigational aids, lighting system, baggage handling equipment, etc.), tools and various types of aircrafts, among others. It should be noted that airports have expensive equipment.
- Foreign-owned aircrafts and other related assets should not be included in the assessment.
- The damages to the air transport can be estimated using the following tables (Table 10 and Table 11).

**Table 10. Value of damages for totally destroyed air transport assets in a district**

Name of District:

| Type of structures and other assets | Totally destroyed assets for replacement |         |                          | Value of Reusable Materials | Total damages | Average Time to Repair |        |
|-------------------------------------|--|---------|--------------------------|-----------------------------|---------------|------------------------|--------|
|                                     | Units by Ownership                       |         | Average Replacement Cost |                             |               |                        | Total  |
|                                     | (Km)                                     |         | (Kips/Unit)              |                             |               |                        | (Kips) |
|                                     | A  | B       | C                        | D                           | E             | F                      | G      |
| Structures                          | Public                                   | Private |                          |                             |               |                        |        |
| Terminal buildings                  |  |         |                          |                             |               |                        |        |
| Runways (in Km)                     |  |         |                          |                             |               |                        |        |
| Hangars                             |  |         |                          |                             |               |                        |        |
| Others                              |  |         |                          |                             |               |                        |        |
| Equipment                           |  |         |                          |                             |               |                        |        |
| Navigational aids                   |  |         |                          |                             |               |                        |        |
| Baggage handling                    |  |         |                          |                             |               |                        |        |
| Others                              |  |         |                          |                             |               |                        |        |
| Aircrafts                           |  |         |                          |                             |               |                        |        |
| Airplanes                           |  |         |                          |                             |               |                        |        |
| Helicopters                         |  |         |                          |                             |               |                        |        |
| Others                              |  |         |                          |                             |               |                        |        |
| Other Assets                        |  |         |                          |                             |               |                        |        |
| Total                               |  |         |                          |                             |               |                        |        |

**Table 11. Value of damages for partially destroyed air transport assets in a district**

Name of District:

| Type of structures and other assets | Partially destroyed assets for repair |         |                     | Value of Reusable Materials | Total damages | Average Time to Repair |
|-------------------------------------|---------------------------------------|---------|---------------------|-----------------------------|---------------|------------------------|
|                                     | Units by Ownership                    |         | Average Repair Cost |                             |               |                        |
|                                     | (Units)                               |         | (Kips/Unit)         |                             |               |                        |
|                                     | A                                     | B       | C                   |                             |               |                        |
| Structures                          | Public                                | Private |                     |                             |               |                        |
| Terminal buildings                  |                                       |         |                     |                             |               |                        |
| Runways (in Km)                     |                                       |         |                     |                             |               |                        |
| Hangars                             |                                       |         |                     |                             |               |                        |
| Others                              |                                       |         |                     |                             |               |                        |
| <b>Equipment</b>                    |                                       |         |                     |                             |               |                        |
| Navigational aids                   |                                       |         |                     |                             |               |                        |
| Baggage handling                    |                                       |         |                     |                             |               |                        |
| Others                              |                                       |         |                     |                             |               |                        |
| <b>Aircrafts</b>                    |                                       |         |                     |                             |               |                        |
| Airplanes                           |                                       |         |                     |                             |               |                        |
| Helicopters                         |                                       |         |                     |                             |               |                        |
| Others                              |                                       |         |                     |                             |               |                        |
| <b>Other Assets</b>                 |                                       |         |                     |                             |               |                        |
| Total                               |                                       |         |                     |                             |               |                        |

Notes in filling out tables 10 and 11:

- Except for the assets, the factors and explanations for the land transport sub-sector applies for the above tables.
- Estimation of damage in **Water transport**:
  - The estimation of damages to water transport system will include inland shipping. (In Lao PDR, there is no maritime sub-sector). Included in the assessment should be the effects on physical assets of water transport such as ports, docking structures, terminal buildings, equipment, tools, boats and ferries, etc.
  - Foreign-owned watercrafts and other related assets should not be included in the assessment
  - The damages to the water transport can be estimated using the following tables (Table 12 and Table 13).

**Table 12. Value of damages for totally destroyed water transport assets in a district**

Name of District:

| Type of structures and other assets | Totally destroyed assets for replacement |         |                          | Value of Reusable Materials | Total damages | Average Time to Repair |
|-------------------------------------|--|---------|--------------------------|-----------------------------|---------------|------------------------|
|                                     | Units by Ownership                       |         | Average Replacement Cost |                             |               |                        |
|                                     | (Units)                                  |         | (Kips/Unit)              | (Kips)                      | (Kips)        | Months                 |
|                                     | A  | B       | C                        | D                           | E             | G                      |
| <b>Structures</b>                   | Public                                   | Private |                          |                             |               |                        |
| Terminal buildings                  |  |         |                          |                             |               |                        |
| Piers                               |  |         |                          |                             |               |                        |
| Others                              |  |         |                          |                             |               |                        |
| <b>Equipment</b>                    |  |         |                          |                             |               |                        |
| Navigational aids                   |  |         |                          |                             |               |                        |
| Baggage handling                    |  |         |                          |                             |               |                        |
| Others                              |  |         |                          |                             |               |                        |
| <b>Sea crafts</b>                   |  |         |                          |                             |               |                        |
| Boats                               |  |         |                          |                             |               |                        |
| Ferries                             |  |         |                          |                             |               |                        |
| Others                              |  |         |                          |                             |               |                        |
| <b>Other Assets</b>                 |  |         |                          |                             |               |                        |
| Total                               |  |         |                          |                             |               |                        |

**Table 13. Value of damages for partially destroyed water transport assets in a district**

Name of District:

| Type of structures and other assets | Partially destroyed assets for repair |         |                     | Value of Reusable Materials | Total damages | Average Time to Repair |
|-------------------------------------|---------------------------------------|---------|---------------------|-----------------------------|---------------|------------------------|
|                                     | Units by Ownership                    |         | Average Repair Cost |                             |               |                        |
|                                     | Units                                 |         | (Kips/Unit)         | (Kips)                      | (Kips)        | Months                 |
|                                     | A                                     | B       | C                   | D                           | E             | G                      |
| <b>Structures</b>                   | Public                                | Private |                     |                             |               |                        |
| Terminal buildings                  |                                       |         |                     |                             |               |                        |
| Piers                               |                                       |         |                     |                             |               |                        |
| Others                              |                                       |         |                     |                             |               |                        |
| <b>Equipment</b>                    |                                       |         |                     |                             |               |                        |
| Navigational aids                   |                                       |         |                     |                             |               |                        |
| Baggage handling                    |                                       |         |                     |                             |               |                        |
| Others                              |                                       |         |                     |                             |               |                        |
| <b>Sea crafts</b>                   |                                       |         |                     |                             |               |                        |
| Boats                               |                                       |         |                     |                             |               |                        |

|                     |  |  |  |  |  |  |
|---------------------|--|--|--|--|--|--|
| Ferries             |  |  |  |  |  |  |
| Others              |  |  |  |  |  |  |
| <b>Other Assets</b> |  |  |  |  |  |  |
| <b>Total</b>        |  |  |  |  |  |  |

Notes in filling out tables 12 and 13;

- Except for the assets, the factors and explanations for the land transport sub-sector applies for the above tables.

#### 2.1.4. Estimation of damage to Railway:

- Although the railway sub-sector is relatively new and small in Lao PDR, there is a potential that it can be damaged too. The following tables (Table 14 and Table 15) can be used to assess the damage.

**Table 14. Value of damages for totally destroyed railways assets in a district**

Name of District:

| Type of structures and other assets | Totally destroyed assets for replacement |         |                          |        | Value of Reusable Materials | Total damages | Average Time to Repair |
|-------------------------------------|--|---------|--------------------------|--------|-----------------------------|---------------|------------------------|
|                                     | Units by Ownership                       |         | Average Replacement Cost | Total  |                             |               |                        |
|                                     | (Units)                                  |         | (Kips/Unit)              | (Kips) |                             |               |                        |
|                                     | A  | B       | C                        | D      |                             |               |                        |
| Structures                          | Public                                   | Private |                          |        |                             |               |                        |
| Terminal buildings                  |  |         |                          |        |                             |               |                        |
| Tracks                              |  |         |                          |        |                             |               |                        |
| Others                              |  |         |                          |        |                             |               |                        |
| Equipment                           |  |         |                          |        |                             |               |                        |
| Navigational aids                   |  |         |                          |        |                             |               |                        |
| Baggage handling                    |  |         |                          |        |                             |               |                        |
| Others                              |  |         |                          |        |                             |               |                        |
| Rolling stock                       |  |         |                          |        |                             |               |                        |
| Trains                              |  |         |                          |        |                             |               |                        |
| Others                              |  |         |                          |        |                             |               |                        |
| Other Assets                        |  |         |                          |        |                             |               |                        |
| Total                               |  |         |                          |        |                             |               |                        |

**Table 15. Value of damages for partially destroyed railways assets in a district**

Name of District:

| Type of structures and other assets | Partially destroyed assets for repair |         |                     | Value of Reusable Materials | Total damages | Average Time to Repair |
|-------------------------------------|---------------------------------------|---------|---------------------|-----------------------------|---------------|------------------------|
|                                     | Units by Ownership                    |         | Average Repair Cost |                             |               |                        |
|                                     | Units                                 |         | (Kips/Unit)         | (Kips)                      | (Kips)        | Months                 |
|                                     | A                                     | B       | C                   | D                           | E             | G                      |
| <b>Structures</b>                   | Public                                | Private |                     |                             |               |                        |
| Terminal buildings                  |                                       |         |                     |                             |               |                        |
| Tracks                              |                                       |         |                     |                             |               |                        |
| Others                              |                                       |         |                     |                             |               |                        |
| <b>Equipment</b>                    |                                       |         |                     |                             |               |                        |
| Navigational aids                   |                                       |         |                     |                             |               |                        |
| Baggage handling                    |                                       |         |                     |                             |               |                        |
| Others                              |                                       |         |                     |                             |               |                        |
| <b>Rolling stock</b>                |                                       |         |                     |                             |               |                        |
| Trains                              |                                       |         |                     |                             |               |                        |
| Others                              |                                       |         |                     |                             |               |                        |
| <b>Other Assets</b>                 |                                       |         |                     |                             |               |                        |
| Total                               |                                       |         |                     |                             |               |                        |

Notes in filling out tables 14 and 15:

- Except for the assets, the factors and explanations for the land transport sub-sector applies for the above tables.

**2.1.5. Summarize the Damages to the Transport Sector in the District**

- Based on the assessment of the transport sub-sectors (step 2.1.1 to step 2.1.4.), a summary can be made using the following table:

**Table 16. Summary of damage to transport sector in a district**

Name of District:

| Type of structures and other assets | Number of totally destroyed |         |              | Number of partially destroyed |         |              | Total damages (Kips) |
|-------------------------------------|-----------------------------|---------|--------------|-------------------------------|---------|--------------|----------------------|
|                                     | Public                      | Private | Total (Kips) | Public                        | Private | Total (Kips) |                      |
|                                     | A                           | B       | C            | D                             | E       | F            | G                    |
| <b>Roads (in Km)</b>                |                             |         |              |                               |         |              |                      |
| Concrete                            |                             |         |              |                               |         |              |                      |
| Asphalt                             |                             |         |              |                               |         |              |                      |
| Bituminous                          |                             |         |              |                               |         |              |                      |
| Graveled                            |                             |         |              |                               |         |              |                      |
| Earth                               |                             |         |              |                               |         |              |                      |
| <b>Bridges (in M)</b>               |                             |         |              |                               |         |              |                      |
| Steel                               |                             |         |              |                               |         |              |                      |



|                                     |  |  |  |  |  |  |  |
|-------------------------------------|--|--|--|--|--|--|--|
| Concrete                            |  |  |  |  |  |  |  |
| Wood                                |  |  |  |  |  |  |  |
| Others                              |  |  |  |  |  |  |  |
| <b>Vehicles</b>                     |  |  |  |  |  |  |  |
| Heavy Trucks                        |  |  |  |  |  |  |  |
| Trucks                              |  |  |  |  |  |  |  |
| Heavy busses                        |  |  |  |  |  |  |  |
| Medium busses                       |  |  |  |  |  |  |  |
| Mini busses                         |  |  |  |  |  |  |  |
| Cars, pick-ups,<br>light trucks     |  |  |  |  |  |  |  |
| Tuk-tuks                            |  |  |  |  |  |  |  |
| Hand tractors                       |  |  |  |  |  |  |  |
| Ox- or horse-driven<br>carts        |  |  |  |  |  |  |  |
| Bicycles                            |  |  |  |  |  |  |  |
| <b>Land transportation stations</b> |  |  |  |  |  |  |  |
| Structures                          |  |  |  |  |  |  |  |
| Equipment                           |  |  |  |  |  |  |  |
| Others                              |  |  |  |  |  |  |  |
| <b>Airports</b>                     |  |  |  |  |  |  |  |
| Structures                          |  |  |  |  |  |  |  |
| Equipment                           |  |  |  |  |  |  |  |
| Others                              |  |  |  |  |  |  |  |
| <b>Aircrafts</b>                    |  |  |  |  |  |  |  |
| <b>Ports</b>                        |  |  |  |  |  |  |  |
| Structures                          |  |  |  |  |  |  |  |
| Equipment                           |  |  |  |  |  |  |  |
| Others                              |  |  |  |  |  |  |  |
| <b>Boats</b>                        |  |  |  |  |  |  |  |
| <b>Ferries</b>                      |  |  |  |  |  |  |  |
| <b>Railway</b>                      |  |  |  |  |  |  |  |
| Structures                          |  |  |  |  |  |  |  |
| Equipment                           |  |  |  |  |  |  |  |
| Others                              |  |  |  |  |  |  |  |
| <b>Other Assets</b>                 |  |  |  |  |  |  |  |
| TOTAL                               |  |  |  |  |  |  |  |

Notes in filling out Table 16:

- Although most of the transport facilities may be government owned, the assessment team must be able to identify also the private assets that were affected.
- In calculating damages, unit cost of replacement and repair should be based on pre-disaster value that would allow rebuilding to the same characteristics of the assets prior to the disaster.

**Step 2.2. Estimation of losses in transport sector: Losses in the transport sector will include the following:**

- Urgent expenditures to re-establish traffic flows after transport assets have been affected like the cost of temporary Bailey-type bridges, detours, etc.
- Higher cost of transport (vehicle operating costs) due to the use of alternative, longer and lower quality roads during the recovery and reconstruction period. This is calculated by getting the difference between the pre-disaster and post-disaster cost of maintenance and operation of various types of vehicles. Since there may be a huge number of vehicles that may be affected, the assessment team must be able estimate a rough post-disaster traffic count and a random survey of vehicle owners on their pre- and post-disaster operating costs. The results of the survey can be used as the average increase in operating costs among various types of vehicles.
- Losses in revenue of the transport enterprises, both public and private, like bus transport services and stations, airports and airlines, ports and shipping companies and other transport-related businesses. The assessment team must consult with airport, ports and land transportation authorities and private businesses to determine the expected losses of these businesses.
- Losses are to broken down by calendar year, starting with the current year of the disaster, and subsequent years if they are foreseen. Some of the losses may continue way beyond the year of the disaster till the entire recovery and reconstruction period is over. For example after the disaster, the cost incurred for a temporary bridge will be a loss, but the higher operating cost of vehicles may continue for months till the bridge is fully repaired. Such costs should be estimated accordingly in the disaster year and if relevant in future years to come.
- The district assessment team can use the following table for summarizing losses suffered by the transport sector in the district.

**Table 17. Losses in the public transport sector for the year that the disaster occurred in a district**

Name of District:

| Transportation Sector | Disaster Year                                     |                |                        |                |       |  |                |                        |                |       | Year 1                          |        |         | Year 2 |        |         |       |
|-----------------------|---|----------------|------------------------|----------------|-------|--|----------------|------------------------|----------------|-------|---------------------------------|--------|---------|--------|--------|---------|-------|
|                       | Types of Public Losses (in Kips) in Disaster Year |                |                        |                |       | Types of Private Losses (in Kips) in Disaster Year |                |                        |                |       | Total Losses (Public + Private) | Public | Private | Total  | Public | Private | Total |
|                       | Unexpected Expenditures                           | Revenue Losses | Higher Operating Costs | Other Expenses | Total | Unexpected Expenditures                            | Revenue Losses | Higher Operating Costs | Other Expenses | Total |                                 |        |         |        |        |         |       |
| A                     | B   | C              | D                      | E              | F     | G  | H              | I                      | J              | K     | L                               |        |         |        |        |         |       |
| Land transport        |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Temporary roads       |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Temporary bridges     |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Public Vehicles       |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Transport terminals   |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Transport companies   |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Others                |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Total                 |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Air transport         |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Temporary airports    |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Public airports       |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Public aircrafts      |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Others                |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Total                 |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Water transport       |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Temporary ports       |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Public ports          |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Public water crafts   |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Others                |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Total                 |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Railways              |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Temporary ports       |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Public ports          |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Public water crafts   |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Others                |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| Total                 |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |
| GRAND TOTAL           |   |                |                        |                |       |  |                |                        |                |       |                                 |        |         |        |        |         |       |

Notes in filling out Table 17:

- The losses in the public transport sector refer to those that will be incurred by the government such as revenues losses of state-owned enterprises and facilities, higher operating costs of government vehicles, etc.
- The losses in the private transport sector refer to those that will be incurred by the private businesses such as revenues losses of transport companies, facilities, higher operating costs of vehicles, etc.
- Column A is for the items that will incur losses while Columns B, C, D, and E are types of losses that the items in Column A will incur. For example:
  - Temporary roads, bridges, airports and ports will fall under the 'unexpected expenditure' of the government with values of the
  - Government vehicles, aircrafts, and water crafts may experience higher operating costs until the roads and/or bridges, airports and ports, respectively, are repaired;
  - Public airports, ports and land transport stations/terminals may experience losses both from lower revenues and higher operating costs.
  - Other losses will include cost of cleaning of airports, ports, and other similar expenses.
- Based on the assessment of the damages, the assessment team must be able to estimate the time period of reconstruction and recovery and accordingly assess the losses within and beyond the year that the disaster occurred. For example, if the repair of damaged roads and bridges will cause higher operating costs for private motorists and the public transport system (busses, taxis, tuktuks, etc.) beyond the year that the disaster occurred, the values of such costs should be included in the losses for the succeeding years.
- Other types of losses like lower revenues may continue way beyond the year of the disaster year till the entire recovery and reconstruction period is over.
- The assessment team at central and provincial levels with wider knowledge on the sector performance and capacity should be in a position to estimate this time period of reconstruction and recovery and accordingly assess the losses. They should validate such estimation of the extent of losses during the field mission.

### Step 2.3. Summarize Damage and Losses in transport sector in a district

- The losses in the transport sector in a district can be summarized in the following table covering the year that the disaster occurred and beyond.

**Table 18. Summary of damage and losses in transport sector in a district**

Name of District:

|                 | Amount in disaster year (Kip) |         |        |         | Losses beyond disaster year (Kips) |         |        |         |        |         |
|-----------------|-------------------------------|---------|--------|---------|------------------------------------|---------|--------|---------|--------|---------|
|                 | Damages                       |         | Losses |         | Year 1                             |         | Year 2 |         | Year 3 |         |
|                 | Public                        | Private | Public | Private | Public                             | Private | Public | Private | Public | Private |
| Land Transport  |                               |         |        |         |                                    |         |        |         |        |         |
| Air Transport   |                               |         |        |         |                                    |         |        |         |        |         |
| Water transport |                               |         |        |         |                                    |         |        |         |        |         |
| Railway         |                               |         |        |         |                                    |         |        |         |        |         |
| Total losses    |                               |         |        |         |                                    |         |        |         |        |         |

### Step 2.4. Summarize Damages and Losses in the transport sector in a province

- Once the summary table for each affected district has been filled out, the below table should be used for summarizing information at the province level. Each affected province should fill up a similar table.
- The provincial offices should make this data available to the assessment team visiting from the central level during field assessment. Depending on data requirement, the central level team along with representatives from provincial offices may undertake some validation of the data by visiting some specific districts.

**Table 19. Summary of damage and losses in the province**

Name of province:

| Name of districts | Within the Disaster Year |         |        |         | Losses Beyond Disaster Year |         |        |         | Total (Kips) |         |
|-------------------|--------------------------|---------|--------|---------|-----------------------------|---------|--------|---------|--------------|---------|
|                   | Damages                  |         | Losses |         | Year 1                      |         | Year 2 |         |              |         |
|                   | Public                   | Private | Public | Private | Public                      | Private | Public | Private | Public       | Private |
| District 1        |                          |         |        |         |                             |         |        |         |              |         |
| District 2        |                          |         |        |         |                             |         |        |         |              |         |
| District 3        |                          |         |        |         |                             |         |        |         |              |         |
| District 4        |                          |         |        |         |                             |         |        |         |              |         |
| District 5        |                          |         |        |         |                             |         |        |         |              |         |
| TOTAL             |                          |         |        |         |                             |         |        |         |              |         |

**Step 2.5. Summarize Damages and Losses in the Transport Sector at the national level**

- Once the summary table for each affected province has been filled out, the below table should be used by the central level assessment team for summarizing information at the national level. This is to be filled out after the field assessment is over.

**Table 20. Summary of damage and losses at the national level**

| Name of province | Within the Disaster Year |         |        |         | Losses Beyond Disaster Year |         |        |         | Total (Kips) |         |
|------------------|--------------------------|---------|--------|---------|-----------------------------|---------|--------|---------|--------------|---------|
|                  | Damages                  |         | Losses |         | Year 1                      |         | Year 2 |         |              |         |
|                  | Public                   | Private | Public | Private | Public                      | Private | Public | Private | Public       | Private |
| Province 1       |                          |         |        |         |                             |         |        |         |              |         |
| Province 2       |                          |         |        |         |                             |         |        |         |              |         |
| Province 3       |                          |         |        |         |                             |         |        |         |              |         |
| Province 4       |                          |         |        |         |                             |         |        |         |              |         |
| Province 5       |                          |         |        |         |                             |         |        |         |              |         |
| TOTAL            |                          |         |        |         |                             |         |        |         |              |         |

**Step 3: Estimating recovery and reconstruction needs of the transport sector****Step 3.1 Set the recovery and reconstruction strategy for the transport sector**

- While the damage and loss assessment is being undertaken, the MPWT in consultation with their counterparts in affected provinces, Ministry of Planning and Investment, National Disaster Management Office, and in partnership with development partners involved in the transport sector in Lao PDR, should develop the strategy to be followed for recovery and reconstruction of transport sector. Some of the broad content of the strategy could include the following:
  - Identifying sector-specific factors which will contribute to 'build back better' of the transport sector.
  - Possibilities of relocation of roads, bridges and transport facilities situated in high risk areas.
  - Possible incentives to private transportation business owners for reconstruction of damaged facilities and stock with higher standards of resilience.
  - Enhancing and strengthening medium to long-term disaster risk reduction related issues in the transport sector such as integrating hazard resilience standards in design and construction of all new buildings, retrofitting of existing facilities situated in high risk areas, improving of disaster risk reduction measures in airports and ports, training of personnel on disaster preparedness measures etc.
  - Policy guidelines and strategies in financing the recovery and reconstruction activities in the transport sector covering both the public and private.

### Step 3.2. Estimating recovery and reconstruction needs of the transport sector

- The quantification of damage and losses will enable the estimation of financial requirements to achieve full recovery of the transport sector and to reconstruct the facilities in the transport sector that were destroyed or damaged.
- The value of losses is used to estimate the amount required to achieve recovery of the transport sector, and the value of damage is used to estimate the financial requirements for reconstruction of transport facilities.
- This estimation of financial needs for recovery and reconstruction should be broken down by districts and provinces.

### Step 3.2. Estimate the recovery needs of the transport sector

In the transport quick recovery efforts must be undertaken since a great number of people and other sectors depend on it for their economic activities - employment, food supply, education, health, peace and order, etc. Even people not affected directly by the disaster can suffer the consequence of transport interruptions. To assist the private transport sector, the MPWT can identify policy measures that will enable them to recover without necessarily having the government spending for the costs required. There are certain options that can be implemented through policy measures to expedite recovery and reconstruction, among them are:

- Tax breaks to transport firms. Exempting firms from paying certain taxes for a certain period, say 2 years, will enable them to finance repairs immediately since they are assured that they will have savings from such exemptions. Reducing taxes even for a short term will be an incentive for the firms to act expeditiously. Some of the specific options are:
  - Temporary reduction or freeze in the collection of value-added tax;
  - Temporary elimination of import duties on essential items required as inputs to operations;
  - Temporary freeze on certain charges in the utilization of goods and services, like rent on government land where installations are located, over the time of the recovery phase;
  - Non-collection of property taxes or equipment registration fees that may have been destroyed by the disaster, especially those that were not insured, until they have been repaired, replaced or reconstructed.
- Credit. A credit scheme with soft terms, like low interest rate with longer repayment periods, can provide firms the resources to buy stocks, machinery and equipment that will normalize operations. Credit can be channeled through existing government programs or through the private banking system with a government guarantee. Again, this scheme can be implemented through a policy directive which will not need any monetary outlay from the government except for the liability associated with the guarantee.
- Equity. In some special cases, the government may opt to provide equity in private firms instead of subsidy or credit or tax exemptions.

The MPWT, together with the MPI and MOF, should be able to analyze the best possible option or the combination of programs and policies in financing the recovery phase, especially those that require credit and tax exemptions.

#### Step 3.2.1 Estimating recovery needs

For the recovery activities, the following are normally undertaken:

- Urgent restoration of at least minimum traffic flows through destroyed road sections and the acquisition and installation of Bailey-type bridges, in which cash-for-work schemes may play a very important role.
- Dredging of port and river navigation channels, to ensure a minimum of access and traffic flow after floods or other similar disasters.
- Urgent repairs of airports and the provision of vital needs like navigational aids and other safety-related equipment, among others.
- Procurement of important equipment and machinery needed for urgent repairs and restorations.
- Cash assistance clearing of debris and for overtime pay, as necessary.
- The cost of emergency repairs will be determined by the extent of destruction and the availability of necessary equipment and manpower, among others. For the public transport system, the

government budget is normally utilized. The repair of structures must be in accordance with the 'building back better' principle in the recovery and reconstruction strategy.

- The cost of each of the above mentioned activities would have been estimated as part of loss assessment. The MPWT can use the below table to put forward their recommendation to MPI for activities related to recovery needs:

**Table 21. Summary of Recovery Needs in the Transport Sector**

| Recovery needs                                 | Type and Amount of Assistance Needed (Kips) |        |        |        | Total Amount Needed (Kips) | Foreign Cost Component (US\$) |
|--|---|--------|--------|--------|----------------------------|-------------------------------|
|  | Grant/ Subsidy                              | Credit | Equity | Others |                            |                               |
| Urgent restoration of access roads and bridges |   |        |        |        |                            |                               |
| Urgent restoration of ports                    |   |        |        |        |                            |                               |
| Urgent repair and restoration of airports      |   |        |        |        |                            |                               |
| Procurement of vital equipment and machinery   |   |        |        |        |                            |                               |
| Cleaning operations                            |   |        |        |        |                            |                               |
| Overtime payments                              |   |        |        |        |                            |                               |
| Others (Specify)                               |   |        |        |        |                            |                               |
| <b>TOTAL</b>                                   |   |        |        |        |                            |                               |

Notes in filling out Table 21:

- Expenditures for government assets and properties should be placed under the grant/subsidy column including government financing extended as grants or subsidies for private transport facilities.
- Column 1 is for the items that will need financing after the disaster.
- Column 2 is for the type and amount of assistance needed by the sector.
- Column 3 is for the total amount needed in Kips which is the total of the grant, credit and other assistance.
- "Others" may include donations from other donors.
- Column 4 is the foreign cost component, which is the amount of foreign currency in US Dollars, that may be required if there are imported equipment or materials needed in assisting the sub-sectors.

### 3.2.2 Estimating Reconstruction Needs

Reconstruction activities should include both public as well as private transport businesses and may require different types of financing strategy. Possible reconstruction related activities in the transport sector could include the following:

- Reconstruction and repair of public roads, bridges, airports, ports and land transport stations under a building-back-better strategy to ensure future disaster resilience through the adoption and enforcement of improved construction standards. Such a program will be implemented by MPWT.
- Cost of replacing equipment and machinery that were destroyed may be included in the reconstruction needs, unless they have been covered under the recovery needs to provide temporary education services for the affected area.
- Structural retro-fitting of undamaged or partially damaged transport facilities so that they are not affected by disaster event in the future. The costs for such a scheme must be estimated on an ad hoc basis, for which architects and civil engineers would need to define the new standards up to which retro-fitting should aim, and should estimate the additional funding required for it.
- Relocation of vital transport facilities to safe areas, as necessary. In this case, the additional costs land acquisition, and basic services provision (water, sanitation, electricity, etc) should be included.
- Soft-term credit for reconstruction and repair of private transport businesses. Such schemes can be accompanied by technical assistance for improved disaster resilient standards of construction.

The MPWT can use the below table to put forward their recommendation to MPI for activities related to reconstruction needs:

**Table 22. Reconstruction needs of the Transport Sector**

| Reconstruction Needs           | 'Building Back Better' Reconstruction Needs (Kips) |        | Foreign Cost Component (US\$) | Main Ministry Responsible |
|--------------------------------|--|--------|-------------------------------|---------------------------|
|                                | Grant  | Credit |                               |                           |
| Reconstruction and repair of:  |  |        |                               |                           |
| Roads                          |  |        |                               |                           |
| Bridges                        |  |        |                               |                           |
| Airports                       |  |        |                               |                           |
| Ports                          |  |        |                               |                           |
| Land transport stations        |  |        |                               |                           |
| Others                         |  |        |                               |                           |
| Procurement of:                |  |        |                               |                           |
| Equipment                      |  |        |                               |                           |
| Machinery                      |  |        |                               |                           |
| Others                         |  |        |                               |                           |
| Structural retrofitting        |  |        |                               |                           |
| Relocation of vital facilities |  |        |                               |                           |
| Others (specify)               |  |        |                               |                           |
| Total                          |  |        |                               |                           |

In filling in Table 22, the following should be noted:

- The reconstruction needs of government-owned facilities are considered grant since the government itself will finance their reconstruction.
- Private sector needs may be financed through credit or outright grant depending on the strategy that the government will adopt.
- The foreign cost component is the amount of foreign currency in US Dollars that may be required if there are imported equipment or materials needed in assisting the firm.
- The last column is for the main agency responsible for the activities/needs identified by the sector.

#### Step 4. Develop short, medium and long-term projects and designing implementation plan

Recovery and reconstruction needs identified above would need to be broken down in short, medium and long-term needs. Following are some examples of projects in the transport sector, which can be undertaken as short, medium and long-term:

- **Short-term projects**
  - Emergency repairs and maintenance that includes fixing the damaged bridges; carrying out emergency maintenance of critical sections of the road network; and repairing the ferry ports and airports, so that the traffic flow can be restored to normal conditions and that emergency support can reach the victim.
  - Procurement of vital equipment and machinery
  - Introduction of labor incentive road and bridge reconstruction program such as “food for work” or “cash for work”.
- **Medium-term projects/programs**
  - Replacement of not-so-urgent equipment and machinery in the transport sector.
  - Construction of alternate road and bridge in safer areas.



- Program of intensified retrofitting of existing transport facilities
- Training or re-training of transport personnel on disaster risk reduction.
- **Longer-term projects/programs**
  - To stop riverbank erosion or to restore an eroded section, a permanent bank protection may be required.
  - Support to establish alternative means of transport that is appropriate in high risk zones of flood affected areas.
  - Improving transport infrastructure with better standards to stand against future disaster.

The identified needs should have a rough schedule of implementation outlining at the very least the activities, timing and budget required for all the programs and projects. The following techniques can be considered:

- Identify the specific projects according to their relative urgency or priority in relation to recovery.
- Plot the timeline of activities of all the projects, with the urgent ones on top, in a Gantt chart with the corresponding funding requirement. This will assist the MPI in programming the necessary funds over a certain time period, like on a quarterly or annual basis.
- Identify and include in the list of projects that need further feasibility studies which may be funded by foreign grants.
- To the extent possible, a logical framework (log frame) should be created for each of the project proposed for inclusion in the recovery plan.

### Step 5: Input for macro-economic and household impact analysis

The damages and losses to the transport sector can affect the macro-economy. To the extent possible that the MPWT can, should collect the following information, which will be used by MPI for undertaking the macro-economic impact analysis.

- **Gross Domestic Product (GDP):** The loss of the contribution to the national economy of income generated directly or indirectly by public work and transport sector;
- **Fiscal Balance:** The impact on the fiscal balance for the transport sector may be twofold: on the current and the capital accounts of the budget. In the first case, the unexpected expenditures to finance the temporary transport combined with possible lower tax revenues from private transport enterprises. In the second case, the government may resort to more borrowings/fresh loans for reconstruction of public work and transport sector after a disaster which can result into higher budget deficit,
- **Balance of Payment.** Items and amount needed for the recovery and reconstruction of the education sector that are not produced locally in Lao PDR and have to be imported from other countries. These should be estimated and expressed in percentage of total recovery and reconstruction needs to be used for the analysis of impact on the balance of payment.
- **Prices or Inflation:** Prices of construction materials could go high if the destruction of the public work and transport sector is massive.
- **Employment:** There can be a big reduction in employment particularly in private transport companies if the destruction is huge in transport sector that will contribute for the increased poverty as a result of decreased employment.
- **Households and gender.** To the extent possible, the assessment team must also provide an analysis of impacts on personal or household situation especially on women, children, the elderly and other vulnerable groups. These effects can be on the additional costs to families due to higher transportation costs, hardships for persons with disabilities commuters, possibility of increased danger of broken roads and bridges for women, children and the elderly, etc. The MPI can use such analysis in the assessment of the overall disaster impacts.

### Step 6: Write the assessment report

The following format may be considered in writing the assessment chapter of the transport sector:

- Brief background on transport sector in Lao PDR
- Overview of impacts of the disaster on the transport sector
- Damage and Loss quantification
- Damage and Loss by province (or district)

- Proposed strategies for recovery and reconstruction of the transport sector
- Needs estimation for recovery and reconstruction of the transport sector

The report of the transport sector should be written by the MPWT in close partnership with development partners involved in assessment of the sector. Once completed, the report should be submitted to MPI for inclusion in the final report.

## **Section 3**

### ***Terms of reference of assessment team***

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#### **3.1 Formation of pre-identified assessment teams within MPWT**

- Pre-identified team should be formed with officials from MPWT. These officials would need to have a good understanding on the performance of the transport sector and should have also undergone prior training on the damage, loss and needs assessment.

#### **3.2 Composition of the assessment team**

At the central level the assessment team should comprise of official from the following departments:

- Department of Road and Bridges, MPWT
- Civil Aviation
- Inland Water way
- Unified Road Management System and Public Work and Transport Institute
- Development Partners involved in the transport sector

At the field level the assessment team should comprise of the following:

- Provincial Department of Public Works and Transportation
- Representative from Provincial and National Road Management System
- District Office of Public Works and Transportation

- Specific expertise required within the team would include the following:
- Civil Engineer/Structural Engineers
- Air and water transport sector specialists
- Transport economist

#### **3.3 Task of assessment team**

- Gathering of the pre-identified team from MPWT after the disaster event based on the order received from MPI
- Consultation with development partners involved in Transport Sector and who will join the assessment team
- Undertaking quick orientation on the assessment methodology for the assessment team
- Working closely with relevant departments of MPWT at national (such as Department of Road and Transport) and provincial/district and responsible for compiling baseline information.
- Undertaking field visits in disaster affected areas and working closely with District and Provincial Offices of MPWT and collecting information on damage and losses
- Based on information collected, undertaking damage and loss assessment for the sector Simultaneously in close consultation with relevant agencies such as National Disaster Management Office and development partners, formulate the recovery and reconstruction strategy for Transport Sector
- Estimating the recovery and reconstruction needs based on the strategy and damage and loss assessment results
- Writing the assessment report for Transport Sector
- Presentation of the findings of the assessment report to the decision makers within the MPWT and other development partners for broader consultation.
- Finalization of the report based on the inputs received from broader consultation and submission to MPI

- Finalization of the report based on the inputs received from broader consultation

### 3.4 Assessment timeline

- Ideally, the post-disaster damage, loss and needs assessment takes from 2 to 5 weeks.
- The assessment is usually started once the rapid impact and needs assessment for emergency and relief support is completed and the relief and response phase of the disasters is over or well underway.
- In the first week the overall planning of the assessment would take place and would include the following issues:
  - Baseline data collection
  - Agree on ToR
  - Team composition selection
  - Orientation Training on damage, loss and needs assessment
  - Discussion on formulating recovery and reconstruction strategy for transport sector
- Second and third week is the assessment stage and would include the following
  - Field survey
  - Calculation of Damage and losses for Transport Sector
- Fourth week of the assessment is the analysis stage and would include the following
  - Finalizing recovery and reconstruction strategy for Transport Sector
  - Estimating recovery and reconstruction needs for Transport Sector
  - Report drafting
  - Consultation within sector to seek inputs on the report
  - Submission of sector report to MPI
  - Finalisation of report by MPI
- Fifth week of the assessment is launch and dissemination of the report

## ***Guidance Note 12:***

# ***Damage, loss and needs assessment for the urban water supply sector in Lao PDR***

## ***Table of Contents***

- Introduction to this Guidance Note
- Section 1: Methodology for damage, loss and needs assessment in the urban water supply sector in Lao PDR
- Section 2: Steps in undertaking post-disaster needs assessment
  - Step 1: Analysis of pre-disaster situation of the urban water supply sector
  - Step 2: Estimating damages and losses
  - Step 3: Estimating recovery and reconstruction needs
  - Step 4: Developing short, medium and long-term projects and designing implementation plan
  - Step 5: Inputs for macroeconomic impact analysis
  - Step 6: Writing the assessment report
- Section 3: Terms of reference of Assessment Team
  - Annex 1: Indicative diagram showing how to use the 'Tables' describe in this Guidance Notes

## ***Introduction to this Guidance Note***

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- This Guidance Note is a part of the Handbook on Post-disaster recovery and reconstruction planning of Lao PDR, which consists of fifteen Guidance Notes, for various sectors, on damage loss and needs assessment.
- This Guidance Note is to be used for undertaking damage, loss and needs assessment of **urban water supply (UWS) sector** in Lao PDR
- The urban water supply in this case consists of the infrastructure, equipment and the general functioning of water supply system in urban areas in Lao PDR, which is under the responsibility of the Department of Housing and Urban Planning (DHUP) of the Ministry of Public Works and Transport (MPWT).
- This Guidance Note does not cover rural water supply as it is dealt under a separate Guidance Note and its assessment be under the Ministry of Health.
- The Guidance Note is to be used by the team responsible for undertaking assessment of urban water supply sector to be led by the DHUP of the MPWT of the Government of Lao PDR and its local provincial and district counterpart offices working in close consultation with agencies such as National Statistical Center, Ministry of Planning and Investment and National Disaster Management Office of Lao PDR as well as in partnership with developed partners involved in water supply in urban areas of Lao PDR.

## Section 1

### ***Methodology for damage, loss and needs assessment in the urban water supply sector in Lao PDR.***

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- This methodology for undertaking damage, loss and needs assessment is derived from the methodology for estimating the socio-economic and environmental effects of disasters, developed by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) as further enhanced by the World Bank.
- **Damages in water supply sector.** Damages are generally the cost of repair of partially destroyed assets or the cost of replacement of totally destroyed assets which will include the various sub-systems like water supply, waste water and their individual components like dams, wells, treatment plants, pumping stations, pipelines, storage tanks, distribution grids, etc.

Damage occurs at the time of the disaster or shortly after the disaster and is to be measured in physical terms for which monetary replacement value is subsequently estimated. The unit costs to be adopted for repair or replacement should be the costs prevailing just before the disaster.

- **Losses in urban water supply sector.** Losses are generally the foregone revenues and additional expenses due to the disaster expressed in current (pre-disaster) prices. Among them are:
  - Loss in revenue due to non-provision of water to the users during the period of rehabilitation and reconstruction
  - Loss in revenue due to decrease in water demand because of mass destruction by the disaster in urban areas
  - Higher cost of chemicals to ensure quality of drinking water
  - Higher water distribution costs when using tanker trucks to reach users
  - Higher cost due to more intensive operation of systems to compensate for water losses in damaged system components
  - Cost of cleaning of treatment plants and other sub-systems after flooding and removal of debris
  - In the urban water supply sector losses occur until:
    - Full capacity and supply has been reestablished in all system components
    - User demand (in all sectors) has been restored to pre-disaster levels
    - It should be noted that manufacturers of bottled water and other similar industries are not under this sector. They should be considered under the manufacturing sector and services sector.
    - These losses would continue during the entire period of reconstruction and recovery and are expressed in monetary values at current prices.

## Section 2

### ***Steps in undertaking damage, loss and needs assessment***

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#### **Step 1. Analysis of pre-disaster situation of urban water supply sector**

##### **Step1.1: Understand what is meant by baseline data**

- The first step in undertaking the assessment is collecting information on the pre-disaster urban water supply conditions in order to ascertain the baseline for damage and loss assessment. The following baseline information is required:
  - Characteristics in terms of geographical or spatial location, installed capacities of production, treatment, pumping, conveyance, storage, distribution and other components of the urban water supply systems located in the area

- Statistical information on demand by the main user sectors, and their seasonal variation over the years and their projection for the next three years.
- Financial information on the enterprises that comprise the sector, including monthly operational data on revenues, production costs and rates charged to different user sectors.
- If possible, existing similar capacities in nearby systems or areas that may be used as alternative, temporary solutions after disasters.

The following Table 1 shows the typical sources for the baseline information:

**Table 1: Sources for baseline information for water supply sector**

| Type of Information/Data   | Available at                     |                                   |                                 |               | Name of Source Document |
|--|----------------------------------|-----------------------------------|---------------------------------|---------------|-------------------------|
|  | Ministry/<br>Bureau/<br>Division | Provincial<br>Office/<br>Division | District<br>Office/<br>Division | Other Sources |                         |
| Total number and ownership of water supply related structures            |                                  |                                   |                                 |               |                         |
| Capacity   |                                  |                                   |                                 |               |                         |
| Unit replacement costs   |                                  |                                   |                                 |               |                         |
| Cost of operations   |                                  |                                   |                                 |               |                         |
| Number of clients and their categories (household, commercial, industry) |                                  |                                   |                                 |               |                         |
| Data on water sales per month or year by sectors /user group             |                                  |                                   |                                 |               |                         |
| Rates per sector/user group  |                                  |                                   |                                 |               |                         |
| Water demand forecast  |                                  |                                   |                                 |               |                         |
| Financial information on enterprises                                     |                                  |                                   |                                 |               |                         |

The baseline situation in the urban water supply sector can be summarized in the following tables (Table 2, Table 3 and Table 4).

**Table 2. Baseline information on assets in urban water supply sector**

|                                   |                         |                             |                  |
|-----------------------------------|-------------------------|-----------------------------|------------------|
| Name of urban water supply system |                         |                             |                  |
| Location                          |                         |                             |                  |
| Ownership                         | Public ( )              | Private ( )                 |                  |
| Number of clients                 | Residential: ____       | Commercial: ____            | Industrial: ____ |
| Average Monthly Income            | Kips ____               |                             |                  |
| Water supply sub-systems          | Total Capacity (Liters) | Operating cost (Kips/Liter) |                  |
| Treatment plants                  |                         |                             |                  |
| Storage                           |                         |                             |                  |
| Distribution                      |                         |                             |                  |
| Other sub-systems                 |                         |                             |                  |

| Equipment                             | Average Replacement cost (Kips) | Unit Costs of Repair (Kips/Equipment) |      |       |                                |
|---------------------------------------|---------------------------------|---------------------------------------|------|-------|--------------------------------|
| a.                                    |                                 |                                       |      |       |                                |
| b.                                    |                                 |                                       |      |       |                                |
| c.                                    |                                 |                                       |      |       |                                |
| Water supply structures and equipment | Average Replacement cost (Kips) | Unit Costs of Repair (Kips/SqM)       |      |       | Other repair costs (Kips/unit) |
|                                       |                                 | Roof                                  | Wall | Floor |                                |
| Structures                            |                                 |                                       |      |       |                                |
| Treatment plants                      |                                 |                                       |      |       |                                |
| Storage                               |                                 |                                       |      |       |                                |
| Distribution                          |                                 |                                       |      |       |                                |
| Others                                |                                 |                                       |      |       |                                |

Note in filling out Table 2.

- Other sub-systems may include waste water collection, treatment and disposal.
- For the structures and equipment, the table can be expanded to include all the types of structures or buildings and equipment, especially those that are vital in the operation of the water supply system.
- Other repair costs can include cost of electrical repairs, etc.

**Table 3. Baseline information of water supply sector**

| Water Supply                               | Type of user | Year (-)3 | Year (-)2 | Year (-)1 | Current Year | Year 1 | Year 2 |
|--|--------------|-----------|-----------|-----------|--------------|--------|--------|
| Water demand by sector (cubic meter/month) | Residential  |           |           |           |              |        |        |
|  | Industrial   |           |           |           |              |        |        |
|  | Commercial   |           |           |           |              |        |        |
|  | Others       |           |           |           |              |        |        |
| Rates charged per user (Kips/liter)        | Residential  |           |           |           |              |        |        |
|  | Industrial   |           |           |           |              |        |        |
|  | Commercial   |           |           |           |              |        |        |
|  | Others       |           |           |           |              |        |        |
| Revenues (Kips/month)                      | Residential  |           |           |           |              |        |        |
|  | Industrial   |           |           |           |              |        |        |
|  | Commercial   |           |           |           |              |        |        |
|  | Others       |           |           |           |              |        |        |

Notes in filling out Table 3.

- The indicators for water supply refer to the past years, the present and the projection for the years to come.

## Step 2. Estimating damage and losses in the urban water supply (UWS) sector

- While the assessment team at the central level is collecting the baseline information, field assessment should be undertaken by the district assessment team to assess the damages and losses suffered by the sector from the particular disaster event.

- Since there may not be many urban water supply (UWS) facilities that were damaged by a disaster in a district, the district assessment team should start assessing the individual UWS facilities impacted by the disaster. The results should be compiled district-wise in a summary table to reflect the damage and losses for the entire sector in the district.

**Step 2.1. Estimation of damages:** The following are the items that can be damaged in the sector:

- **Structures.** Included in damages are the costs of repair or replacement of structures, installations and other infrastructure related to urban water supply
- **Each of the components of the UWS.** The components of the UWS can be further broken down as dams, wells, water-treatment plants, pumping stations, pipelines, storage tanks, distribution grids, etc. There are various equipment and machinery as well as supplies and other materials in the UWS sector which are parts of each component.
- For each of the damaged component, repair and reconstruction costs would be estimated. These costs must not be affected by scarcity or inflation arising from the disaster. The values must be the ones immediately prior to the disaster.
- It is recommended for the assessment team to visit the UWS officers and technical personnel since there are certain information (like scale of operation, types of equipment, etc.) that may only be known to their experts and engineers.

The assessment specialist can classify the damage as completely destroyed and partially damaged. The following can be taken as guidance for classification of completely destroyed and partially damaged. However, it is best to get feedback from national experts before the assessment begins:

- Completely destroyed: All facilities which are visibly completely destroyed and those that have suffered irreparable structural damage.
- Partially damaged: UWS facilities that can be repaired at less than 40 percent of the reconstruction cost.

The damages of an urban water supply system can be assessed using following table.

**Table 4. Value of totally damaged assets to urban water supply system in a district**

| Name of Urban Water Supply System |   |                                 |                                    |                      |                                  |
|-----------------------------------|---|---------------------------------|------------------------------------|----------------------|----------------------------------|
| Location (District)               |   |                                 |                                    |                      |                                  |
| Damage to Structures and Assets   | Totally destroyed structures and assets |                                 |                                    | Total damages (Kips) | Average Time to Replace (Months) |
|                                   | Number of totally destroyed             | Average Replacement Cost (Kips) | Value of Reusable Materials (Kips) |                      |                                  |
|                                   | A                                       | B                               | C                                  | D                    | E                                |
| <b>Water intake</b>               |   |                                 |                                    |                      |                                  |
| Structures                        |   |                                 |                                    |                      |                                  |
| Machinery/ Equipment              |   |                                 |                                    |                      |                                  |
| <b>Water treatment</b>            |   |                                 |                                    |                      |                                  |
| Structures                        |   |                                 |                                    |                      |                                  |
| Machinery/ Equipment              |   |                                 |                                    |                      |                                  |
| <b>Conveyance systems</b>         |   |                                 |                                    |                      |                                  |
| Structures                        |   |                                 |                                    |                      |                                  |
| Machinery/ Equipment              |   |                                 |                                    |                      |                                  |
| <b>Storage systems</b>            |   |                                 |                                    |                      |                                  |
| Structures                        |   |                                 |                                    |                      |                                  |
| Machinery/ Equipment              |   |                                 |                                    |                      |                                  |
| <b>Distribution networks</b>      |   |                                 |                                    |                      |                                  |



|                      |  |      |  |  |      |
|----------------------|--|------|--|--|------|
| Structures           |  |      |  |  |      |
| Machinery/ Equipment |  |      |  |  |      |
| <b>Others</b>        |  |      |  |  |      |
| <b>Total</b>         |  | N.A. |  |  | N.A. |

Notes for filling table 4.

- 'Average Replacement Cost' will be the average pre-disaster value of the structures and assets that were totally destroyed.
- There are various machineries and equipment in the UWS systems. They should be assessed especially those that are vital to the operation.
- Although the structure or contents of the structure are totally destroyed, there will still be some re-usable materials that have salvage values. For instance, some wood or iron can be re-used for reconstruction while damaged equipment can be sold as scrap. The salvage values must be subtracted from the replacement cost.
- According to the WB guidance notes, typically around 10-40 percent of materials can be re-used after a disaster.
- In formula, the total damages will be (Column D) = [(Column A) x (Column B)] – Column C.

The partially destroyed assets can be determined by estimating:

- the parts of the structures that were damaged; and
- the quantity of equipment and other assets damaged and their respective average repair costs.

The following table can be used in calculating the value of damages from partially destroyed assets.

**Table 5. Value of damages from partially destroyed urban water supply systems and their assets**

| Name of Urban Water Supply and/or Sanitation System |                              |                  |       |                |       |                   |        |                             |                      |                       |
|---|------------------------------|------------------|-------|----------------|-------|-------------------|--------|-----------------------------|----------------------|-----------------------|
| Location (District)                                 |                              |                  |       |                |       |                   |        |                             |                      |                       |
| Structures (by Sub-system)                          | Partially damaged structures |                  |       |                |       |                   | Others | Value of Reusable Materials | Total Cost of Repair | Average Time to Repai |
|   | Roof                         |                  | Walls |                | Floor |                   |        |                             |                      |                       |
|   | Area                         | Repair Cost      | Area  | Repair Cost    | Area  | Repair Cost       |        |                             |                      |                       |
|   | SqM                          | Kips/ SqM        | SqM   | Kips/ SqM      | SqM   | Kips/ SqM         |        | Kips/ Unit                  | Kips                 | Kips                  |
|   | A                            | B                | C     | D              | E     | F                 | G      | H                           | I                    | J                     |
| Water intake  |                              |                  |       |                |       |                   |        |                             |                      |                       |
| Water treatment                                     |                              |                  |       |                |       |                   |        |                             |                      |                       |
| Conveyance systems                                  |                              |                  |       |                |       |                   |        |                             |                      |                       |
| Storage systems                                     |                              |                  |       |                |       |                   |        |                             |                      |                       |
| Distribution networks                               |                              |                  |       |                |       |                   |        |                             |                      |                       |
| Other structures                                    |                              |                  |       |                |       |                   |        |                             |                      |                       |
| Total   | N.A.                         |                  | N.A.  |                | N.A.  |                   | N.A.   |                             |                      | N.A.                  |
| Assets (Machinery,                                  |                              | Quantity Damaged |       | Average Repair |       | Value of Reusable |        | Total Cost of Repair        |                      | Average               |

| Equipment and Others ) | (Units) | Cost<br>(Kips/ Unit) | Materials<br>(Kips | (Kips) | Time to<br>Repair<br>(Month) |
|------------------------|---------|----------------------|--------------------|--------|------------------------------|
|                        | A       | B                    | C                  | D      | E                            |
| Water intake           |         |                      |                    |        |                              |
| Water treatment        |         |                      |                    |        |                              |
| Conveyance systems     |         |                      |                    |        |                              |
| Storage systems        |         |                      |                    |        |                              |
| Distribution networks  |         |                      |                    |        |                              |
| Others                 |         |                      |                    |        |                              |
| <b>Total</b>           |         |                      |                    |        |                              |
| <b>Grand Total</b>     |         |                      |                    |        | N.A.                         |

Notes in filling out Table 5:

- The average repair costs of walls, roofs and floors are included in the baseline information.
- The various equipment, machinery and other assets are the ones enumerated in the baseline information on Table 2.
- The total value of damage due to partially destroyed assets will be the total cost of repair computed as:  

$$\text{Column I} = (\text{Column A} \times \text{Column B}) + (\text{Column C} \times \text{Column D}) + (\text{Column E} \times \text{Column F}) + \text{Column G} - \text{Column H}$$
- The value for the average cost of repair per unit is found in the baseline information.
- For the assets (contents of the buildings), the value of damages will be the average repair cost of damaged quantity multiplied by average repair cost of each less the value of reusable materials, computed as:  

$$\text{Column D} = \text{Column A} \times \text{Column B} - \text{Column C}$$
- In calculating damages, the unit cost of reconstruction should be based on pre-disaster value that would allow rebuilding to the same characteristics of the assets prior to the disaster.

After identifying the structures and equipment that were damaged, they can be grouped according to the sub-systems as shown in table below.

**Table 6. Summary of damages to urban water supply system in a district**

| Name of urban water supply and/or sanitation system |                      |               |           |             |                      |
|---|----------------------|---------------|-----------|-------------|----------------------|
| Name of District                                    |                      |               |           |             |                      |
| Ownership   |                      | Public ( )    |           | Private ( ) |                      |
| Sub-system  | Components           | Damage (Kips) |           |             | Total Damages (Kips) |
|   |                      | Structures    | Equipment | Others      |                      |
| Water supply  | Water intake         |               |           |             |                      |
|   | Water treatment      |               |           |             |                      |
|   | Conveyance systems   |               |           |             |                      |
|   | Storage systems      |               |           |             |                      |
|   | Distribution systems |               |           |             |                      |
|   | Others               |               |           |             |                      |
| <b>Total</b>  |                      |               |           |             |                      |

## Step 2.2 Estimating losses in water supply sector and sanitation

To estimate losses, an objective calendar or schedule of repair and reconstruction of the affected assets must be developed. This schedule should take into consideration the availability and schedule of adequate financing, replacement materials, equipment and machinery that will permit returning to pre-disaster conditions of service. Losses in the UWS sector will include:

- **Losses due to lower revenue in urban water supply sector.** The following are the possible causes of revenues losses:
  - Temporary or total suspension of operations while assets are under repair.
  - Drop in user demand due to partial destruction of housing and lower economy activity.
  - Any or all of the above will result in lesser revenues for the water supply firm/s. The revenue is estimated by the number of water consumption (liters per day or month) x rate (Kips per liter per day or month).
  - In formula, Loss in revenue = (Pre-disaster revenue estimate - post disaster revenue estimate)
- **Losses due to higher operational cost.** The water supply firm/s may experience the following which will result in higher operating costs to produce or supply the same pre-disaster output:
  - Use alternative sources of water to supply the users.
  - Higher cost of chemicals to ensure quality of drinking water.
  - Higher water distribution costs when using tanker trucks to reach users.
  - More intensive operation of systems to compensate for higher water losses in damaged system components.
- **Other losses.** Other unexpected expenses may be incurred by the firm/s such as:
  - Cleaning of sewerage systems and treatment plants after flooding.
  - Demolition and removal of debris.

The assessment team can consult the management of the urban water supply firm/s to estimate the losses due to the disaster, particularly losses that may go beyond the year that the disaster occurred. The table below can be used to assess the losses of the urban water supply system. Each UWS firm must be assessed.

**Table 7. Losses in urban water supply in the district**

| Name of Urban Water Supply System |                           |               |               |                                 |        |        |              |
|-----------------------------------|---------------------------|---------------|---------------|---------------------------------|--------|--------|--------------|
| Location (District)               |                           |               |               |                                 |        |        |              |
| Ownership                         | Public ( ) Private ( )    |               |               |                                 |        |        |              |
| Type of loss                      | Value of Losses (Kips)    |               |               |                                 |        |        |              |
|                                   | Disaster Year             |               |               | Losses Beyond the Disaster Year |        |        | Total Losses |
|                                   | Estimated Revenues (Kips) |               | Losses (Kips) | Year 1                          | Year 2 | Year 3 |              |
|                                   | Pre-disaster              | Post-disaster |               |                                 |        |        |              |
| Revenues                          |                           |               |               |                                 |        |        |              |
| Higher operating cost             |                           |               |               |                                 |        |        |              |
| Unexpected expenses               |                           |               |               |                                 |        |        |              |
| Others                            |                           |               |               |                                 |        |        |              |
| <b>Total</b>                      |                           |               |               |                                 |        |        |              |

Notes for filling in Table 7:

- “Higher Operating Costs” is only expected if the UWS firm/s cannot pass on directly the full value of the added operating cost to supply water to the end-users.
- Losses are to be estimated on a calendar-year basis, for the year in which the disaster occurred and the subsequent years of recovery and reconstruction. This is very important in the case of urban water supply, because it is quite possible that the water supply systems may be repaired and

reconstructed before the demand for its services recovers to pre-disaster levels in the affected area. This is especially true in major disasters, where due to large scale destruction of cities, the demand of water services will not recover to pre-disaster levels until full housing and industry reconstruction is achieved. In such cases, revenues for the service enterprises will not recover until full reconstruction of the housing sector is achieved.

- It is to be remembered that losses arising in water-user sectors such as industry, trade and tourism, as a result of the non-provision of water, are to be estimated and accounted for in each of those sectors, either as production losses and/or as higher production costs when alternative, higher-cost sources of water are chosen as interim solutions.
- If there are more than one UWS firm in the district, they must all be assessed.

### Step 2.3. Summarize Damages and Losses of the UWS in the district

Based on the assessment of the UWS in the districts as shown in the previous tables, the damage and loss of all the water supply systems can be summarized in the table below.

**Table 8. Summary of damages and losses**

Name of District:

| Name of UWS Firm | Within the Disaster Year |         |        |         | Losses Beyond Disaster Year |         |        |         |        |         |
|------------------|--------------------------|---------|--------|---------|-----------------------------|---------|--------|---------|--------|---------|
|                  | Damages                  |         | Losses |         | Year 1                      |         | Year 2 |         | Year 3 |         |
|                  | Public                   | Private | Public | Private | Public                      | Private | Public | Private | Public | Private |
| UWS 1            |                          |         |        |         |                             |         |        |         |        |         |
| UWS 2            |                          |         |        |         |                             |         |        |         |        |         |
| UWS 3            |                          |         |        |         |                             |         |        |         |        |         |
| TOTAL            |                          |         |        |         |                             |         |        |         |        |         |

### Step 2.4. Summarize Damages and Losses in UWS sector in a province

- Once the summary table for each affected district has been filled out, the table below should be used for summarizing information at the province level. Each affected province should fill up a similar table.
- The provincial offices should make this data available to the assessment team visiting from the central level during field assessment. The central level team along with representatives from provincial offices may undertake some validation of the data by visiting some specific districts where the UWS firms are located.

**Table 9. Summary of damage and losses in the UWS sector in the province**

Name of province:

| Name of districts (Type the name of the district below) | Within the Disaster Year |         |        |         | Losses Beyond Disaster Year |         |        |         | Total (Kips) |         |
|---|--------------------------|---------|--------|---------|-----------------------------|---------|--------|---------|--------------|---------|
|   | Damages                  |         | Losses |         | Year 1                      |         | Year 2 |         |              |         |
|   | Public                   | Private | Public | Private | Public                      | Private | Public | Private | Public       | Private |
| District 1  |                          |         |        |         |                             |         |        |         |              |         |
| District 2  |                          |         |        |         |                             |         |        |         |              |         |
| District 3  |                          |         |        |         |                             |         |        |         |              |         |
| District 4  |                          |         |        |         |                             |         |        |         |              |         |
| District 5  |                          |         |        |         |                             |         |        |         |              |         |
| TOTAL   |                          |         |        |         |                             |         |        |         |              |         |

### Step 2.5. Summarize Damages and Losses in the UWS sector at the national level

- Once the summary table for each affected province has been filled out, the table below should be used by the central level assessment team for summarizing information at the national level. This is to be filled out after the field assessment is over.

**Table 10. Summary of damage and losses of UWS sector at the national level**

| Name of Province (Type the name of the province below) | Within the Disaster Year |        | Losses Beyond Disaster Year |        |        | Total (Kips) |
|--|--------------------------|--------|-----------------------------|--------|--------|--------------|
|  | Damages                  | Losses | Year 1                      | Year 2 | Year 3 |              |
| Province 1   |                          |        |                             |        |        |              |
| Province 2   |                          |        |                             |        |        |              |
| Province 3   |                          |        |                             |        |        |              |
| Province 4   |                          |        |                             |        |        |              |
| Province 5   |                          |        |                             |        |        |              |
| <b>TOTAL</b>   |                          |        |                             |        |        |              |

### Step 3. Estimating recovery and reconstruction needs

#### Step 3.1 Set the recovery and reconstruction strategy for UWS sector

- While the damage and loss assessment is being undertaken, the DHUP in consultation with their counterparts in affected provinces, the Ministry of Planning and Investment, the National Disaster Management Office, and in partnership with development partners involved in the sector in Lao PDR, should develop the strategy to be followed for recovery and reconstruction. Some of the broad content of the strategy could include the following:
  - Identifying sector-specific factors which will contribute to 'build back better' of the UWS sector.
  - Possible incentives to UWS firms for reconstruction of damaged facilities and stock with higher standards of resilience.
  - Enhancing and strengthening medium to long-term disaster risk reduction related issues in the sector such as integrating hazard resilience standards in design and construction of all new buildings, retrofitting of existing facilities situated in high risk areas, improving of safety and other disaster risk reduction measures including the training of personnel on disaster preparedness measures, etc.
  - Policy guidelines and strategies in financing the recovery and reconstruction activities in the sector covering both the public and private.

#### 3.2 Estimating recovery and reconstruction needs

- The quantification of damage and losses will enable the estimation of financial requirements to achieve full recovery of the sector and to reconstruct the facilities that were destroyed or damaged.
- The value of losses is used to estimate the amount required to achieve recovery of the sector while the value of damage is used to estimate the financial requirements for replacement or reconstruction of the affected assets in the sector.
- This estimation of financial needs for recovery and reconstruction should be broken down by districts and provinces

In the UWS sector, quick recovery efforts must be undertaken especially if a great number of people and related businesses depend on it for their economic activities. Recovery activities should include those that will enable firms to resume their normal operations. To assist the sector, the DHUP can identify policy measures that will enable them to recover without necessarily having the government spending for the costs required. There are certain options that can be implemented through policy measures to expedite recovery and reconstruction of the UWS sector. Among them are:

- Income tax breaks for private firms such as:
  - Temporary reduction or freeze or deferment in the collection of taxes;
  - Temporary freeze on basic service charges in the utilization of certain services over the time of the recovery phase;
  - Non-collection of property taxes for the duration of the recovery period;

- Exemption from registration fees for replacements of the destroyed equipment and machinery over a certain period of time.
- Subsidizing construction materials and equipment to be imported by UWS firms during the recovery and reconstruction phase through an exemption from paying customs duties and other levies.

The DHUP, together with the MPI and MOF, should be able to analyze the best possible option/s or the combination of policies in financing the recovery phase, especially those that require subsidies and tax exemptions.

### *Step 3.2.1. Estimating recovery needs*

Some of the possible recovery-related activities in the UWS sector can include:

- Temporary schemes of water purification using either larger doses of chemicals or a salt-water purification plant. Since such schemes are more expensive ways of providing safe drinking water to affected populations, and whose costs may be beyond the ability of the affected utility enterprise, government assistance may be needed.
- Temporary provision of water using tanker trucks and/or bottled water, whenever the distribution system has been compromised by the disaster. Such a higher cost for water distribution would have been estimated as a loss in the assessment, and its duration would be a function of the time required for the repair or reconstruction of the damaged system.
- Urgent repairs of the damages to the various systems which are normally affected by strong winds and floods like water impounding, distribution channels and others.
- Urgent cleaning and repair of waste-water treatment and other related facilities.
- Emergency procurement of alternate distribution system to supply the needs of basic lifelines like hospitals, police and military needs, transportation, etc.
- Other unexpected expenses. After the disaster, there are unexpected expenses that will constitute losses like payment of overtime pay for workers, clearing of debris and rubbles, cleaning operations, etc.

Again, the DHUP, together with MPI and MOF, should be able to analyze the best possible option/s or the combination of policies in financing the recovery phase.

The following table can show the recovery needs of the sector.

**Table 11. Summary of Recovery Needs in the Water Sector**

| Possible Assistance   | Type and Amount of Assistance Needed (Kips) |        |        |        | Total Amount Needed (Kips) | Foreign Cost Component (US\$) |
|---|---|--------|--------|--------|----------------------------|-------------------------------|
|   | Grant/ Subsidy                              | Credit | Equity | Others |                            |                               |
| Temporary schemes of water purification                               |   |        |        |        |                            |                               |
| Temporary provision of water using tanker trucks and/or bottled water |   |        |        |        |                            |                               |
| Emergency procurement of alternate distribution system                |   |        |        |        |                            |                               |
| Emergency repair of equipment and machinery                           |   |        |        |        |                            |                               |
| Overtime pay  |   |        |        |        |                            |                               |
| Clearing and cleaning operations                                      |   |        |        |        |                            |                               |
| Others (Specify)  |   |        |        |        |                            |                               |
| <b>TOTAL</b>  |   |        |        |        |                            |                               |

Notes in filling out Table 11:

- Column 1 is for the activities that will need financing after the disaster.

- Column 2 is for the type and amount of assistance needed by the sector.
- Column 3 is for the total amount needed in Kips which is the total of the grant, credit and other assistance.
- “Others” may include donations from other donors.
- Column 4 is the foreign cost component, which is the amount of foreign currency in US Dollars, that may be required if there are imported equipment or materials needed in assisting the sub-sectors.

### Step 3.2.2. Estimation of Reconstruction Needs

A. Based on the Guidance Note developed by the World Bank and the Global Facility for Disaster Reduction and Recovery entitled Estimation of Post-disaster Needs for Recovery and Reconstruction, the following methodology can be adopted for estimating the reconstruction needs:

B. To estimate the value of reconstruction needs of the sector, the following formula for the reconstruction of industrial structural facilities can be used:

$$\text{Industrial Reconstruction Needs} = I_r * \text{Damage to Industrial Facilities}$$

where  $I_r$  is a coefficient for disaster resilience reconstruction whose value may range from 1.10 to 1.40, depending on the degree of disaster resistance that may be desired and on the definitions of the reconstruction strategy. Engineers, with special expertise and relevant experience in the UWSS that has been affected by the disaster may be able to define the value of the coefficient to be adopted.

For equipment and machinery, the following formula can be used:

$$\text{Equipment Replacement Needs} = I_e * \text{Damage to Industrial Equipment and Machinery}$$

where  $I_e$  is a coefficient of technological innovation with a value ranging from 0.90 to 1.40, depending on the efficiency in technological production that is desired in the reconstruction strategy. Again, an engineer with experience in the mining industry would be able to define the value of coefficients to be adopted.

The possible reconstruction-related activities in the UWS sector could include the following which can be accompanied by technical assistance for improved disaster resilient standards of construction.

- Replacement or reconstruction of affected structures
- Procurement of equipment and machinery
- Technical assistance for improved standards of construction

The DHUP can use the table below to put forward their recommendation to MPI for activities that are related to reconstruction.

**Table 12. Reconstruction needs of the urban water supply sector**

| Possible Assistance to UWS Sector                           | Reconstruction Needs (Kips) |        | Total Needs (Kips) | Foreign Cost Component (US\$) |
|---|-----------------------------|--------|--------------------|-------------------------------|
|   | Grant                       | Credit |                    |                               |
| Replacement or reconstruction of affected structures        |                             |        |                    |                               |
| Procurement of equipment and machinery                      |                             |        |                    |                               |
| Technical assistance for improved standards of construction |                             |        |                    |                               |
| Others  |                             |        |                    |                               |
| <b>Total</b>  |                             |        |                    |                               |

Notes in filling out Table 12:

- Column 1 should enumerate the list of reconstruction activities/projects required by the various firms in the sector.
- The reconstruction needs under the 'credit' column normally refer to the assistance that will be extended to damaged assets owned by the private sector and is expected to be repaid over time. If the UWS system is government-owned, the amount of assistance should be under the 'grant' column. Government-owned facilities are assumed to be financed by the government without repayment from the said facilities. As such the amount should be under the 'grant' column, otherwise in the credit column.
- The foreign cost component is the amount of foreign currency in US Dollars that may be required if there are imported equipment or materials needed. This information is important for MPI in determining potential balance of payment impacts.

#### Step 4. Developing short, medium and long-term projects and designing implementation plan

Recovery and reconstruction needs identified above would need to be broken down in short, medium and long-term needs. Following are some examples of projects in the UWS sector, which can be undertaken as short, medium and long-term:

- **Short-term projects.** Short-term projects are crucial immediately after disasters with a view to resume economic activities in the areas affected. To achieve this, the following short-term initiatives/projects can be introduced:
  - Tax incentive schemes to the affected UWS firms .
  - Emergency cash grants to immediately resume water supply.
- **Medium-term projects/programs.** Medium-term programs and projects can include:
  - Relocation of damaged structures or UWS sub-systems to safer location.
  - Replacement of materials, machinery and equipment.
  - Development of hazard resilient design specifications for construction of future UWS-related structures.
- Longer-term projects/programs
  - Retrofitting of structures and facilities of the UWS systems.

The identified needs should have a rough schedule of implementation outlining at the very least the activities, timing and budget required for all the programs and projects. The following techniques can be considered:

- Identify the specific projects according to their relative urgency or priority in relation to recovery.
- Plot the timeline of activities of all the projects, with the urgent ones on top, in a Gantt chart with the corresponding funding requirement. This will assist the MPI in programming the necessary funds over a certain time period, like on a quarterly or annual basis.
- Identify and include in the list of projects those that need further feasibility studies which may be funded by foreign grants.
- To the extent possible, a logical framework (log frame) should be created for each of the project proposed for inclusion in the recovery plan. Log frames are normally enough for foreign donors to consider project proposals.

#### Step 5. Inputs for Macro-economic impact analysis

The damages and losses to the UWS sector can affect the macroeconomy. To the extent possible that the DHUP can, the following macroeconomic impacts can be estimated.

- **Macroeconomic Impacts are:** The changes or alterations caused by disasters to the expected performance of the economy such as:
  - **Gross Domestic Product (GDP).** The loss of income can reduce the GDP.
  - **Fiscal Balance:** The impact on the fiscal balance for the water sector may be twofold: on the current and the capital accounts of the budget. In the first case, the unexpected expenditures to finance the temporary water supply program combined with possible lower tax revenues due to lower revenues. In the second case, the balance may be affected by the need to acquire fresh loans to partially finance reconstruction which will increase expenditure.



- **Prices or Inflation:** Prices of commodities could rise if the destruction of the UWS sector is massive. Factories may stop production if water supply, as input to production, is unavailable.
- **Employment:** There can be a big reduction in employment if factories will stop production which will contribute to an increase in poverty.
- For the macro-economic analysis, the following are important:
  - Items needed for reconstruction that are not produced locally in Lao PDR and have to be imported should be estimated and expressed in percentage of total reconstruction needs. This figure would be used for the analysis of the impact on the balance of payments.
  - The estimated share of the central government in the costs of the temporary water supply scheme, demolition and removal of rubble will have an impact on the fiscal budget.
  - The estimated loss of revenues will have an impact on the GDP.

## Step 6. Write the assessment report

- The following format may be considered for writing the assessment chapter of the sector:
  - Brief background on the UWS sector in Lao PDR
  - Overview of impacts of the disaster on the UWS sector
  - Damage and Loss quantification
  - Damage and Loss by province (or district)
    - Proposed strategies for recovery and reconstruction of the UWS sector
    - Needs estimation for recovery and reconstruction of the UWS sector
- The report of the UWS sector should be written by DHUP in close partnership with development partners involved in the same sector and once completed should be submitted to MPI for inclusion in the final report.

## Section 3

### *Terms of reference of assessment team*

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#### 3.1 Formation of pre-identified assessment teams within DHUP

- Pre-identified team should be formed with officials from DHUP. These officials would need to have a good understanding on the performance of the UWS sector, construction of facilities and should have also undergone prior training on the damage, loss and needs assessment.

#### 3.2 Composition of the assessment team

- At the central level the assessment team should comprise of the following:
  - Housing and Urban Planning Department of DHUP
  - Department of Public Works and Transport, MPWT
  - Development Partners involved in the water supply sector
- At the field level the assessment team should comprise of the following:
  - Provincial Department of the DHUP
  - District Office of the DHUP
- Specific expertise required within the team would include the following:
  - Civil Engineers
  - Sanitation Engineers,
  - Economist
  - Hydrologist/water resources expert

#### 3.3 Task of assessment team

- Gathering of the pre-identified team from the DHUP after the disaster event based on the order received from MPI

- Consultation with development partners involved in the UWS sector who will join the assessment team
- Undertaking quick orientation on the assessment methodology for the assessment team
- Working closely with relevant sections of the DHUP at national level and provincial/district and responsible for compiling baseline information.
- Undertaking field visits in disaster affected areas and working closely with District and Provincial DHUP Offices and collecting information on damage and losses
- Based on information collected, undertaking damage and loss assessment for the sector, simultaneously in close consultation with relevant agencies such as National Disaster Management Office and development partners, formulate the recovery and reconstruction strategy for the UWSS sector
- Estimating the recovery and reconstruction needs based on the strategy and damage and loss assessment results
- Writing the assessment report for the UWS sector
- Presentation of the findings of the assessment report to the decision makers within the DHUP and MPWT and other development partners for broader consultation.
- Finalization of the report based on the inputs received from broader consultation and submission to MPI

### 3.4 Assessment timeline

- Ideally, the post-disaster damage, loss and needs assessment takes from 2 to 5 weeks.
- The assessment is usually started once the rapid impact and needs assessment for emergency and relief support is completed and the relief and response phase of the disasters is over or well underway.
- In the first week the overall planning of the assessment would take place and would include the following issues:
  - Baseline data collection
  - Agree on ToR
  - Team composition selection
  - Orientation Training on damage, loss and needs assessment
  - Discussion on formulating recovery and reconstruction strategy for the sector
- Second and third week is the assessment stage and would include the following
  - Field survey
  - Calculation of Damage and losses for the sector
- Fourth week of the assessment is the analysis stage and would include the following
  - Finalizing recovery and reconstruction strategy for the sector
  - Estimating recovery and reconstruction needs for the sector
  - Report drafting
  - Consultation within sector to seek inputs on the report
  - Submission of sector report to MPI
  - Finalisation of report by MPI
- Fifth week of the assessment is launch and dissemination of the report

## ***Guidance Note: 13***

# ***Damage, loss and needs assessment of rural water supply system of Lao PDR***

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- Section 1: Methodology for damage, loss and needs assessment in the rural water supply and sanitation sector in Lao PDR
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  - Step 1: Analysis of pre-disaster situation of the mining sector
  - Step 2: Estimating damages and losses
  - Step 3: Estimating recovery and reconstruction needs
  - Step 4: Developing short, medium and long-term projects and designing implementation plan
  - Step 5: Inputs for macroeconomic impact analysis
  - Step 6: Writing the assessment report
- Section 3: Terms of reference of Assessment Team
  - Annex 1: Indicative diagram showing how to use the 'Tables' describe in this Guidance Notes

## ***Introduction to this Guidance Note***

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- This Guidance Note is a part of the Handbook on Post-disaster recovery and reconstruction planning of Lao PDR, which consists of fifteen Guidance Notes, for various sectors, on damage loss and needs assessment.
- This Guidance Note is to be used for undertaking damage, loss and needs assessment of the **rural water supply system (RWSS)** in Lao PDR
- The rural water supply system in this case consists of the infrastructure, equipment and general functioning of water supply system in rural areas in Lao PDR, which is under the responsibility of Ministry of Health. The rural water supply system in the rural areas of Lao PDR is generally made of simple hand pumps, pipes and water collection areas.
- The Guidance Note is to be used by the team assigned from the Ministry of Health (MoH), Government of Lao PDR working in close coordination with its provincial and district offices as well as agencies such as National Statistical Center, Ministry of Planning and Investment, National Disaster Management Office of Lao PDR and development partners involved in rural water supply sector.

## Section 1

### ***Methodology for damage, loss and needs assessment in the rural water supply and sanitation sector in Lao PDR.***

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- This methodology for undertaking damage, loss and needs assessment is derived from the methodology for estimating the socio-economic and environmental effects of disasters, developed by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) as further enhanced by the World Bank.
- The methodology for estimating recovery and reconstruction needs (described in step 3 under section 2 of this Guidance Note) is derived from the Guidance Note of the World Bank and The Global Facility for Disaster Reduction and Recovery entitled: Estimation of Post-Disaster Needs for Recovery and Reconstruction.
- The ECLAC methodology uses two terminologies; namely Damage and Losses as explained below:

- ♦ **Damages in rural water supply and sanitation sector.** Damages are generally the cost of repair of partially destroyed assets or the cost of replacement of totally destroyed assets. Physical assets in the sector will include wells, pumps, storage tanks, pipes, sewerage facilities, solid waste collection and disposal facilities.

Damage occurs at the time of the disaster or shortly after the disaster and is to be measured in physical terms for which monetary replacement value is subsequently estimated. The unit costs to be adopted for repair or replacement should be the costs prevailing just before the disaster.

- ♦ **Losses in rural water supply and sanitation sector.** Losses are generally the foregone revenues and additional expenses due to the disaster. Include are:
  - Loss in revenue due to non-provision of water to the users during the period of rehabilitation and reconstruction
  - Loss in revenue due to decrease in water demand because of mass destruction by the disaster in urban areas
  - Higher cost of chemicals to ensure quality of drinking water
  - Higher water distribution costs when using tanker trucks to reach users
  - Higher cost due to more intensive operation of systems to compensate for water losses in damaged system components
  - Cost of cleaning of sewerage systems and treatment plants after flooding and removal of debris
  - Higher transport cost to collect and dispose of solid waste

In most cases in Lao PDR, however, rural water supply is generally provided free by the national or local governments. As such no revenue losses will occur.

These losses would continue during the entire period of reconstruction and recovery and are expressed in monetary values at current prices.

## Section 2

### ***Steps in undertaking damage, loss and needs assessment***

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#### **Step 1. Analysis of pre-disaster situation of rural water supply and sanitation sector**

##### **Step 1.1: Understand what is meant by baseline data**

- The first step of undertaking the assessment is collecting information on the pre-disaster rural water supply and sanitation conditions in order to ascertain the baseline for damage, loss and needs assessment.

The following Table 1 shows the typical sources for the baseline information:

**Table 1: Type and sources for baseline information**

| Type of Information/Data   | Available at                     |                                   |                                 |                  | Name of Source Document |
|--|----------------------------------|-----------------------------------|---------------------------------|------------------|-------------------------|
|  | Ministry/<br>Bureau/<br>Division | Provincial<br>Office/<br>Division | District<br>Office/<br>Division | Other<br>Sources |                         |
| <b>Water supply and sanitation</b>   |                                  |                                   |                                 |                  |                         |
| Total number and ownership of water supply and sanitation related structures like wells, pumps, etc. |                                  |                                   |                                 |                  |                         |
| Capacity   |                                  |                                   |                                 |                  |                         |
| Unit replacement costs   |                                  |                                   |                                 |                  |                         |
| Cost of operations   |                                  |                                   |                                 |                  |                         |
| Number of clients/users  |                                  |                                   |                                 |                  |                         |

**Step 1.2: Collect baseline data for each of the disaster-affected district**

- Before field assessment begins, the baseline data should be collected and summarized for each of the disaster-affected district by using the following tables (Table 2)
- This data is to be compiled by the assessment team at the central level (see section 3.2 of this Guidance Note) with necessary inputs from the provincial departments and district offices of the concerned Ministry.

**Table 2: Baseline information on assets in water supply and sanitation**

| Name of water supply |                         |                     |                    |                                 |                                     |                       |
|----------------------|-------------------------|---------------------|--------------------|---------------------------------|-------------------------------------|-----------------------|
| Location (District)  |                         |                     |                    |                                 |                                     |                       |
| Number of clients    |                         |                     |                    |                                 |                                     |                       |
| Items                | Total Capacity (Liters) | Demand (Liters/day) | Rate (Kips/liter)  | Average Replacement cost (Kips) | Average Operating cost (Kips/Liter) | Monthly income (Kips) |
| Water supply         |                         |                     |                    |                                 |                                     |                       |
| Production wells     |                         |                     |                    |                                 |                                     | N.A.                  |
| Borehole             |                         |                     |                    |                                 |                                     | N.A.                  |
| Other sources        |                         |                     |                    |                                 |                                     | N.A.                  |
| Hand Pumps           |                         |                     |                    |                                 |                                     | N.A.                  |
| Electric Pumps       |                         |                     |                    |                                 |                                     | N.A.                  |
| Storage              |                         |                     |                    |                                 |                                     | N.A.                  |
| Pipes                |                         |                     |                    |                                 |                                     | N.A.                  |
| Solid Waste          | Total Capacity (Kilos)  | Demand (Kilos/day)  | Rate (Kips/kilo)   | Average Replacement cost (Kips) | Average Operating cost (Kips/Kilo)  | Monthly income (Kips) |
| Collection           |                         |                     |                    |                                 |                                     |                       |
| Disposal             |                         |                     |                    |                                 |                                     |                       |
| Sanitation           | Total Capacity          | Demand (Persons/d)  | Rate (Kips/person) | Average Replacement cost        | Average Operating cost              | Monthly income        |

|                 | (Cubic meter)                   | ay)                             | (if applicable) | (Kips) | (Kips/ Person usage)  | (Kips) (if applicable) |
|-----------------|---------------------------------|---------------------------------|-----------------|--------|-----------------------|------------------------|
| Public Latrines |                                 |                                 |                 |        |                       |                        |
| Others          |                                 |                                 |                 |        |                       |                        |
| Structures      | Average Replacement cost (Kips) | Unit Costs of Repair (Kips/SqM) |                 |        | Monthly income (Kips) |                        |
|                 |                                 | Roof                            | Wall            | Floor  |                       |                        |
| Buildings       |                                 |                                 |                 |        |                       | N.A.                   |
| Others          |                                 |                                 |                 |        |                       | N.A.                   |

Note in filling out Table 2:

- N.A. means “Not Applicable”
- The data on assets regarding rural water supply and sanitation at the household level will be assessed under private housing (such as private latrines, pumps used at household level etc.).

## Step 2: Estimating post-disaster damages and losses

- Once the baseline information is collected by the assessment team, field assessment would be undertaken to assess the damage suffered by the rural water supply systems and their corresponding losses from the particular disaster event. During this stage, individual RWS infrastructure impacted by the disaster should be assessed and then the assessment results should be compiled in a summary table to reflect the damage for the entire sector.

### Step 2.1. Estimation of damages: The following are the items that can be damaged in the sector:

- **Structures.** Included in the damages are the costs of repair or replacement of structures, installations and other infrastructure related to rural water supply
- **Equipment and machinery used in the RWSS.** The components of the RWSS can be further broken down as wells, water-treatment facilities, small pumping stations, pipelines, storage tanks, distribution pipes, etc.
- For each of the damaged equipment and machinery, repair and reconstruction costs should be estimated. These costs must not be affected by scarcity or inflation arising from the disaster. The values must be the ones immediately prior to the disaster.
- The assessment specialist can classify the damage as completely destroyed and partially damaged. The following can be taken as guidance for the classification although it is best to get feedback from national experts before the assessment begins:
  - Completely destroyed: All structures, equipment and machinery which are visibly completely destroyed and those that have suffered irreparable damage.
  - Partially damaged: RRWSS facilities that can be repaired at less than 40 percent of the reconstruction cost.
- The damages of a rural water supply system can be assessed using following table.

**Table 3. Value of totally damaged assets to rural water supply and sanitation in a district**

| Name of Rural Water Supply System |   |                                 |                                    |                         |                                     |
|-----------------------------------|---|---------------------------------|------------------------------------|-------------------------|-------------------------------------|
| District (District)               |   |                                 |                                    |                         |                                     |
| Type of Structures and Assets     | Totally destroyed structures and contents |                                 |                                    | Total damages<br>(Kips) | Average Time to Replace<br>(Months) |
|                                   | Number of totally destroyed               | Average Replacement Cost (Kips) | Value of Reusable Materials (Kips) |                         |                                     |
|                                   | A   | B                               | C                                  | D                       | E                                   |
| Structures                        |   |                                 |                                    |                         |                                     |
| Storage                           |   |                                 |                                    |                         |                                     |
| Pumping station                   |   |                                 |                                    |                         |                                     |
| Public latrines                   |   |                                 |                                    |                         |                                     |
| Other Facilities                  |   |                                 |                                    |                         |                                     |
| Total                             |   | N.A.                            |                                    |                         | N.A.                                |
| Other Assets                      | Number of totally destroyed               | Average Replacement Cost (Kips) | Value of Reusable Materials (Kips) | Total damages<br>(Kips) | Average Time to Replace<br>(Months) |
|                                   | A   | B                               | C                                  |                         |                                     |
|                                   | A   | B                               | C                                  | D                       | E                                   |
| Production wells                  |   |                                 |                                    |                         |                                     |
| Borehole                          |   |                                 |                                    |                         |                                     |
| Other sources                     |   |                                 |                                    |                         |                                     |
| Hand Pumps                        |   |                                 |                                    |                         |                                     |
| Electric Pumps                    |   |                                 |                                    |                         |                                     |
| Storage                           |   |                                 |                                    |                         |                                     |
| Pipes                             |   |                                 |                                    |                         |                                     |
| Vehicles                          |   |                                 |                                    |                         |                                     |
| Other assets                      |   |                                 |                                    |                         |                                     |
| Total                             |   | N.A.                            |                                    |                         | N.A.                                |

Notes for filling table 3:

‘Average Replacement Cost’ will be the average pre-disaster value of the structures and assets that were totally destroyed.

Although the structure or contents of the structure are totally destroyed, there will still be some re-usable materials that have salvage values. For instance, some wood or iron can be re-used for reconstruction while damaged equipment can be sold as scrap. The salvage values must be subtracted from the replacement cost.

According to the WB guidance notes, typically around 10-40 percent of materials can be re-used after a disaster.

In formula, the total damages will be (Column D) = [(Column A) x (Column B)] – Column C.

- The grand total refers to the sum of the damages to structures and other assets.

The partially destroyed assets can be determined by estimating:

- the parts of the structures that were partially damaged; and
- the quantity of equipment and other assets that were partially damaged and their respective average repair costs.

The following table can be used in calculating the value of damages from partially destroyed assets.

**Table 4. Value of damages from partially destroyed rural water supply systems and their assets**

|                                   |                              |                          |                                  |                         |                                    |                         |                             |                                    |                                |                                 |
|-----------------------------------|------------------------------|--------------------------|----------------------------------|-------------------------|------------------------------------|-------------------------|-----------------------------|------------------------------------|--------------------------------|---------------------------------|
| Name of Rural Water Supply System |                              |                          |                                  |                         |                                    |                         |                             |                                    |                                |                                 |
| Location (District)               |                              |                          |                                  |                         |                                    |                         |                             |                                    |                                |                                 |
| Structures                        | Partially damaged structures |                          |                                  |                         |                                    |                         | Others                      | Value of Reusable Materials (Kips) | Total Cost of Repair (Kips)    | Average Time to Repair (Months) |
|                                   | Roof                         |                          | Walls                            |                         | Floor                              |                         |                             |                                    |                                |                                 |
|                                   | Area (SqM)                   | Repair Cost (Kips/ SqM)  | Area (SqM)                       | Repair Cost (Kips/ SqM) | Area (SqM)                         | Repair Cost (Kips/ SqM) |                             |                                    |                                |                                 |
|                                   | A                            | B                        | C                                | D                       | E                                  | F                       | G                           | H                                  | I                              | J                               |
| Storage                           |                              |                          |                                  |                         |                                    |                         |                             |                                    |                                |                                 |
| Pumping station                   |                              |                          |                                  |                         |                                    |                         |                             |                                    |                                |                                 |
| Public latrines                   |                              |                          |                                  |                         |                                    |                         |                             |                                    |                                |                                 |
| Other Facilities                  |                              |                          |                                  |                         |                                    |                         |                             |                                    |                                |                                 |
| Total                             |                              |                          |                                  |                         |                                    |                         |                             |                                    |                                | N.A.                            |
| Assets                            |                              | Quantity Damaged (Units) | Average Repair Cost (Kips/ Unit) |                         | Value of Reusable Materials (Kips) |                         | Total Cost of Repair (Kips) |                                    | Average Time to Repair (Month) |                                 |
|                                   |                              | A                        | B                                |                         | C                                  |                         | D                           |                                    | E                              |                                 |
| Production wells                  |                              |                          |                                  |                         |                                    |                         |                             |                                    |                                |                                 |
| Borehole                          |                              |                          |                                  |                         |                                    |                         |                             |                                    |                                |                                 |
| Other sources                     |                              |                          |                                  |                         |                                    |                         |                             |                                    |                                |                                 |
| Hand Pumps                        |                              |                          |                                  |                         |                                    |                         |                             |                                    |                                |                                 |
| Electric Pumps                    |                              |                          |                                  |                         |                                    |                         |                             |                                    |                                |                                 |
| Pipes                             |                              |                          |                                  |                         |                                    |                         |                             |                                    |                                |                                 |
| Vehicles                          |                              |                          |                                  |                         |                                    |                         |                             |                                    |                                |                                 |
| Other assets                      |                              |                          |                                  |                         |                                    |                         |                             |                                    |                                |                                 |
| Total                             |                              |                          |                                  |                         |                                    |                         |                             |                                    |                                |                                 |
| Grand Total                       |                              |                          |                                  |                         |                                    |                         |                             |                                    | N.A.                           |                                 |

Notes in filling out Table 4:

- The average repair costs of walls, roofs and floors are included in the baseline information.
- The total value of damage due to partially destroyed assets will be the total cost of repair computed as:  

$$\text{Column I} = (\text{Column A} \times \text{Column B}) + (\text{Column C} \times \text{Column D}) + (\text{Column E} \times \text{Column F}) + \text{Column G} - \text{Column H}$$
- The value for the average cost of repair per unit is found in the baseline information.
- For the contents of the buildings, the value of damages will be the repair cost of the number of damaged quantity multiplied by average repair cost of each, computed as:  

$$\text{Column D} = \text{Column A} \times \text{Column B} - \text{Column C}$$



- In calculating damages, the unit cost of reconstruction should be based on pre-disaster value that would allow rebuilding to the same characteristics of the assets prior to the disaster.

After assessing the sector in the disaster areas, the damages can be summarized in the following tables.

**Table 5. Summary of damages to rural water supply systems**

| Name of Rural Water Supply System |                   |                     |                      |
|-----------------------------------|-------------------|---------------------|----------------------|
| Location (District)               |                   |                     |                      |
| Structures                        | Damages (Kips)    |                     | Total damages (Kips) |
|                                   | Totally destroyed | Partially destroyed |                      |
| Storage                           |                   |                     |                      |
| Pumping station                   |                   |                     |                      |
| Public latrines                   |                   |                     |                      |
| Other Facilities                  |                   |                     |                      |
| <b>Total</b>                      |                   |                     |                      |
| Assets                            | Damages (Kips)    |                     | Total damages (Kips) |
|                                   | Totally destroyed | Partially destroyed |                      |
| Production wells                  |                   |                     |                      |
| Borehole                          |                   |                     |                      |
| Other sources                     |                   |                     |                      |
| Hand Pumps                        |                   |                     |                      |
| Electric Pumps                    |                   |                     |                      |
| Pipes                             |                   |                     |                      |
| Vehicles                          |                   |                     |                      |
| Other assets                      |                   |                     |                      |
| <b>Total</b>                      |                   |                     |                      |
| <b>Grand Total</b>                |                   |                     |                      |

### Step 2.2. Estimating losses in rural supply sector and sanitation

To estimate losses, an objective calendar or schedule of repair and reconstruction of the affected assets must be developed. This schedule should take into consideration the availability and schedule of adequate financing, replacement materials, equipment and machinery that will permit returning to pre-disaster conditions of service. Losses in the RWSS sector will include:

- **Losses due to lower revenue.** If the RWSS is collecting fees from its users, the following are the possible causes of revenues losses:
  - Temporary or total suspension of operations while assets are under repair.
  - Drop in user demand due to partial destruction of housing and lower economy activity.
  - The revenue is estimated by the number of water consumption (liters per day or month) x rate (Kips per liter per day or month).
  - In formula, Loss in revenue = (Pre-disaster revenue estimate - post disaster revenue estimate)
- **Losses due to higher operational cost.** The RWSS may experience the following which will result in higher operating costs to produce or supply the same pre-disaster output:
  - Cost of developing new sources of water or use alternative sources of water to supply the users.
  - Cost of temporary sanitation facility
  - Higher cost of chemicals to ensure quality of drinking water.
  - Higher transport cost to collect and dispose of solid waste.

- **Other losses.** Other unexpected expenses may be incurred by the RWSS such as:
  - Demolition and removal of debris.

Losses are to be estimated on a calendar-year basis, for the year in which the disaster occurred and the subsequent years of recovery and reconstruction. Each RWSS must be assessed. The table below can be used to assess the losses of the urban water supply system.

**Table 6. Losses of the rural water supply system**

| Name of Rural Water Supply System                           |                                |                         |                         |                         |                     |
|---|--------------------------------|-------------------------|-------------------------|-------------------------|---------------------|
| Location (District)   |                                |                         |                         |                         |                     |
| Type of loss  | Amount in Disaster Year (Kips) | Amount in Year 1 (Kips) | Amount in Year 2 (Kips) | Amount in Year 3 (Kips) | Total Losses (Kips) |
| Cost of developing new sources of water                     |                                |                         |                         |                         |                     |
| Cost of temporary water supply scheme                       |                                |                         |                         |                         |                     |
| Cost of temporary sanitation facility                       |                                |                         |                         |                         |                     |
| Higher costs of chemicals                                   |                                |                         |                         |                         |                     |
| Higher transport cost to collect and dispose of solid waste |                                |                         |                         |                         |                     |
| Removal of debris or demolition costs                       |                                |                         |                         |                         |                     |
| Loss from fees (if applicable)                              |                                |                         |                         |                         |                     |
| Other losses (if any)                                       |                                |                         |                         |                         |                     |
| Total   |                                |                         |                         |                         |                     |

### Step 2.3. Summarize damages and losses in the rural water supply system in the district

- Based on the assessment of the districts as shown in the previous tables, the damage and loss of all the water supply systems in the district can be summarized in the table below.

**Table 7. Summary of damage and losses in a district**

| Name of District           |                          |        |                             |        |        |
|----------------------------|--------------------------|--------|-----------------------------|--------|--------|
| Name of Rural Water Supply | Within the Disaster Year |        | Losses Beyond Disaster Year |        |        |
|                            | Damages                  | Losses | Year 1                      | Year 2 | Year 3 |
| RWSS 1                     |                          |        |                             |        |        |
| RWSS 2                     |                          |        |                             |        |        |
| RWSS 3                     |                          |        |                             |        |        |
| Total                      |                          |        |                             |        |        |

Notes in filling out Table 7.

- Column 1 is for the name of rural water supply systems that were assessed by the team.
- The values for the damages and losses within the disaster year and the losses beyond the disaster year are based on the information from Tables 5 and 6.
- The summary of the damages and losses in the district will be consolidated to form the damages and losses of the rural water supply systems in the province affected.

### Step 2.4. Summarize Damages and Losses in RWSS sector in a province

- Once the summary table for each affected district has been filled out, the table below should be used for summarizing information at the province level. Each affected province should fill up a similar table.
- The provincial offices should make this data available to the assessment team visiting from the central level during field assessment. Depending on requirement the central level team along with representatives from provincial offices may undertake some validation of the data by visiting some specific districts.

**Table 8. Summary of damage and losses in the RWSS sector in the province**

Name of province:

| Name of districts<br>(Type the name of the district below) | Within the Disaster Year |         |        |         | Losses Beyond Disaster Year |         |        |         | Total (Kips) |         |
|--|--------------------------|---------|--------|---------|-----------------------------|---------|--------|---------|--------------|---------|
|  | Damages                  |         | Losses |         | Year 1                      |         | Year 2 |         |              |         |
|  | Public                   | Private | Public | Private | Public                      | Private | Public | Private | Public       | Private |
| District 1   |                          |         |        |         |                             |         |        |         |              |         |
| District 2   |                          |         |        |         |                             |         |        |         |              |         |
| District 3   |                          |         |        |         |                             |         |        |         |              |         |
| District 4   |                          |         |        |         |                             |         |        |         |              |         |
| District 5   |                          |         |        |         |                             |         |        |         |              |         |
| TOTAL  |                          |         |        |         |                             |         |        |         |              |         |

### Step 2.5. Summarize Damages and Losses in the RWSS sector at the national level

- Once the summary table for each affected province has been filled out, the table below should be used by the central level assessment team for summarizing information at the national level. This is to be filled out after the field assessment is over.

**Table 9. Summary of damage and losses at the national level**

| Name of Province (Type the name of the province below) | Within the Disaster Year |        | Losses Beyond Disaster Year |        |        | Total (Kips) |
|--|--------------------------|--------|-----------------------------|--------|--------|--------------|
|  | Damages                  | Losses | Year 1                      | Year 2 | Year 3 |              |
| Province 1   |                          |        |                             |        |        |              |
| Province 2   |                          |        |                             |        |        |              |
| Province 3   |                          |        |                             |        |        |              |
| Province 4   |                          |        |                             |        |        |              |
| Province 5   |                          |        |                             |        |        |              |
| TOTAL  |                          |        |                             |        |        |              |

## Step 3. Estimating recovery and reconstruction needs

### Step 3.1 Set the recovery and reconstruction strategy for RWSS sector

- While the damage and loss assessment is being undertaken, the MOH in consultation with their counterparts in affected provinces, the Ministry of Planning and Investment, the National Disaster Management Office, and in partnership with development partners involved in the sector in Lao PDR, should develop the strategy to be followed for recovery and reconstruction. Some of the broad content of the strategy could include the following:
  - Identifying sector-specific factors which will contribute to 'build back better' of the RWSS.

- B. Enhancing and strengthening medium to long-term disaster risk reduction related issues in the sector such as integrating hazard resilience standards in design and construction of all new buildings, retrofitting of existing facilities situated in high risk areas, etc.

### 3.2 Estimating recovery and reconstruction needs

- The quantification of damage will enable the estimation of financial requirements to reconstruct the facilities that were destroyed or damaged.
- This estimation of financial needs for recovery and reconstruction should be broken down by districts and provinces

For the RWSS, quick recovery efforts must be undertaken especially if a great number of poor people depend on it.

#### Step 3.2.1. Estimating recovery needs

Some of the possible recovery-related activities for the RWSS can include:

- Temporary schemes of water purification using either larger doses of chemicals or a salt-water purification plant. Since such schemes are more expensive ways of providing safe drinking water to affected populations, and whose costs may be beyond the ability of the affected RWSS, government assistance may be needed.
- Temporary provision of water using tanker trucks and/or bottled water. Such a higher cost for water distribution would have been estimated as a loss in the assessment, and its duration would be a function of the time required for the repair or reconstruction of the damaged system.
- Urgent repairs of the damages to the RWSS.
- Cleaning and clearing operations.

Again, the MOH, together with MPI and MOF, should be able to analyze the best possible option/s or the combination of policies in financing the recovery phase.

The following table can show the recovery needs of the sector.

**Table 10. Summary of Recovery Needs in the Rural Water Supply**

| Possible Assistance                                    | Type and Amount of Assistance Needed (Kips) |        |        |        | Total Amount Needed (Kips) | Foreign Cost Component (US\$) |
|--|---|--------|--------|--------|----------------------------|-------------------------------|
|  | Grant/ Subsidy                              | Credit | Equity | Others |                            |                               |
| Temporary schemes of water purification                |   |        |        |        |                            |                               |
| Temporary provision of water supply                    |   |        |        |        |                            |                               |
| Emergency procurement of alternate distribution system |   |        |        |        |                            |                               |
| Emergency repair of equipment and machinery            |   |        |        |        |                            |                               |
| Clearing and cleaning operations                       |   |        |        |        |                            |                               |
| Others (Specify)                                       |   |        |        |        |                            |                               |
| <b>TOTAL</b>   |   |        |        |        |                            |                               |

Notes in filling out Table 10:

- Since the RWSS are government-owned, their recovery needs will be generally a direct government grant or subsidy.

#### Step 3.2.2. Estimation of Reconstruction Needs

The reconstruction needs of the RWSS are expected to be shouldered by the government being a public social service. The following are the possible reconstruction needs of the RWSS.

**Table 11. Summary of Reconstruction Needs of the rural water supply and sanitation sector**

| Possible Assistance to UWSS Sector                          | Reconstruction Needs<br>(Kips) | Foreign Cost Component<br>(US\$) |
|---|--------------------------------|----------------------------------|
|   | Grant                          |                                  |
| Replacement or reconstruction of affected structures        |                                |                                  |
| Procurement of equipment and machinery                      |                                |                                  |
| Technical assistance for improved standards of construction |                                |                                  |
| Others  |                                |                                  |
| <b>Total</b>  |                                |                                  |

Notes in filling out Table 11:

- The foreign cost component will be the amount of foreign currency needed as part of the total cost.

#### Step 4. Developing short, medium and long-term projects and designing implementation plan

Recovery and Reconstruction needs identified above would need to be broken down in short, medium and long-term needs. Following are some examples of projects in the RWSS sector, which can be undertaken as short, medium and long-term:

- **Short-term projects.** Short-term projects are crucial immediately after disaster with a view to resume economic activities in the areas affected. To achieve this, the following short-term initiatives/projects can be introduced:
  - Urgent repairs or reconstruction of damaged structures.
  - Procurement of vital equipment and machinery.
- **Medium-term projects/programs.** Medium-term programs and projects can include:
  - Relocation of damaged structures or RWSS sub-systems to safer location
  - Replacement of materials, machinery and equipment
  - Development of hazard resilient design specifications for construction of future new RWSS-related structures.
- Longer-term projects/programs
  - Retrofitting of structures and facilities of the RWSS systems.

The identified needs should have a rough schedule of implementation outlining at the very least the activities, timing and budget required for all the programs and projects. The following techniques can be considered:

- Identify the specific projects according to their relative urgency or priority in relation to recovery.
- Plot the timeline of activities of all the projects, with the urgent ones on top, in a Gantt chart with the corresponding funding requirement. This will assist the MPI in programming the necessary funds over a certain time period, like on a quarterly or annual basis.
- Identify and include in the list of projects that need further feasibility studies which may be funded by foreign grants.
- To the extent possible, a logical framework (log frame) should be created for each of the project proposed for inclusion in the recovery plan. Log frames are normally enough for foreign donors to consider project proposals.

#### Step 5. Inputs for Macro-economic impact analysis

The damages and losses to the sector can affect the macroeconomy. To the extent possible that the MOH can, the following macroeconomic impacts can be estimated.

- **Macroeconomic Impacts are:** The changes or alterations caused by disasters to the expected performance of the economy such as:
  - a. **Gross Domestic Product (GDP).** The loss of income can reduce the GDP.

- b. **Balance of Payment.** The government may incur additional imports if the recovery and reconstruction needs of the damaged RWSS will need imported materials.
- c. **Fiscal Balance:** The impact on the fiscal balance for the water sector may be twofold: on the current and the capital accounts of the budget. In the first case, the unexpected expenditures to finance the temporary water supply program combined with possible lower tax revenues due to lower revenues. In the second case, the balance may be affected by the need to acquire fresh loans to partially finance reconstruction, which will increase expenditure.
- For the macro-economic analysis, the following are important:
  - Items needed for reconstruction that are not produced locally in Lao PDR and have to imported should be estimated and expressed in percentage of total reconstruction needs. This figure would be used for the analysis of the impact on the balance of payments.
  - The estimated share of the central government in the costs of the temporary water supply scheme, demolition and removal of rubble will have an impact on the fiscal budget.

## Step 6. Write the assessment report

- The following format may be considered for writing the assessment chapter of the sector:
  - Brief background on the RWSS sector in Lao PDR
  - Overview of impacts of the disaster on the RWSS sector
  - Damage and Loss quantification
  - Damage and Loss by province (or district)
  - Proposed strategies for recovery and reconstruction of the RWSS sector
  - Needs estimation for recovery and reconstruction of the RWSS sector
- The report of the RWSS sector should be written by the MOH in close partnership with development partners involved in the same sector and once completed should be submitted to MPI for inclusion in the final report.

## Section 3

### *Terms of reference of assessment team*

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#### 3.1 Formation of pre-identified assessment teams within DHUP

- Pre-identified team should be formed with officials from MOH. These officials would need to have a good understanding on the performance of the RWSS sector, construction of facilities and should have also undergone prior training on the damage, loss and needs assessment.

#### 3.2 Composition of the assessment team

- At the central level the assessment team should comprise of the following:
  - Department of Hygiene and Disease Prevention, MOH
  - Water and Sanitation Center, MOH
  - Department of construction of the MOH
  - Development Partners involved in the rural water supply sector
- At the field level the assessment team should comprise of the following:
  - Provincial Department of the MOH
  - District Office of the MOH
- Specific expertise required within the team would include the following:
  - Civil Engineers
  - Sanitation Engineers,
  - Hydrologist/water resources expert

### 3.3 Task of assessment team

- Gathering of the pre-identified team from the MOH after the disaster event based on the order received from MPI
- Consultation with development partners involved in the RWSS sector who will join the assessment team
- Undertaking quick orientation on the assessment methodology for the assessment team
- Working closely with relevant sections of the MOH at national level and provincial/district and responsible for compiling baseline information.
- Undertaking field visits in disaster affected areas and working closely with District and Provincial MOH Offices and collecting information on damage and losses
- Based on information collected, undertaking damage and loss assessment for the sector, simultaneously in close consultation with relevant agencies such as National Disaster Management Office and development partners, formulate the recovery and reconstruction strategy for the RWSS sector
- Estimating the recovery and reconstruction needs based on the strategy and damage and loss assessment results
- Writing the assessment report for the RWSS sector
- Presentation of the findings of the assessment report to the decision makers within the MOH and other development partners for broader consultation.
- Finalization of the report based on the inputs received from broader consultation and submission to MPI

### 3.4 Assessment timeline

- Ideally, the post-disaster damage, loss and needs assessment takes from 2 to 5 weeks.
- The assessment is usually started once the rapid impact and needs assessment for emergency and relief support is completed and the relief and response phase of the disasters is over or well underway.
- In the first week the overall planning of the assessment would take place and would include the following issues:
  - Baseline data collection
  - Agree on ToR
  - Team composition selection
  - Orientation Training on damage, loss and needs assessment
  - Discussion on formulating recovery and reconstruction strategy for the sector
- Second and third week is the assessment stage and would include the following
  - Field survey
  - Calculation of Damage and losses for the sector
- Fourth week of the assessment is the analysis stage and would include the following
  - Finalizing recovery and reconstruction strategy for the sector
  - Estimating recovery and reconstruction needs for the sector
  - Report drafting
  - Consultation within sector to seek inputs on the report
  - Submission of sector report to MPI
  - Finalisation of report by MPI
- Fifth week of the assessment is launch and dissemination of the report

## ***Guidance Note 14: Damage, loss and needs assessment for the Post and Telecommunication Sector in Lao PDR***

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- Section 1: Methodology for damage, loss and needs assessment in the post and telecommunication sector in Lao PDR
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  - Step 1: Analysis of pre-disaster situation of the post and telegraph sector
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### ***Introduction to this Guidance Note***

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- This Guidance Note is a part of the Handbook on Post-disaster recovery and reconstruction planning of Lao PDR, which consists of fifteen Guidance Notes, for various sectors, on damage loss and needs assessment.
- This Guidance Note is to be used for assessing impacts of a disaster event in the post and telecommunication (P&T) sector. Included in this sector are private and public post and telecom companies and firms that provide telecommunication services like telephone, internet and other similar services. The P&T assets would include the physical structures (buildings, relay stations, etc.) as well as the equipment (servers, transmitters, etc.) and furniture inside the structures.
- The Guidance Note is to be used by the team assigned from the National Authority of Posts and Telecommunications (NAPT), Prime Minister's Office of the Government of Lao PDR and working in close coordination with its provincial and district offices as well as the Ministry of Planning and Investment and the National Disaster Management Office (NDMO) of Lao PDR.



## Section 1

### *Methodology for damage, loss and needs assessment of Post and Telecommunication sector in Lao PDR.*

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- This methodology for undertaking post-disaster damage, loss and needs assessment is originally derived from the Methodology for estimating the socio-economic and environmental effects of disasters, developed by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) as enhanced further by the World Bank.
- The methodology for estimating recovery and reconstruction needs (described in step 3 under section 2 of this Guidance Note) is derived from the Guidance Note of the World Bank and The Global Facility for Disaster Reduction and Recovery entitled: Estimation of Post-Disaster Needs for Recovery and Reconstruction.
- The ECLAC methodology uses two terminologies; namely Damage and Losses as explained below:

- **Damages.** In the P&T sector, damages are the cost of reconstruction of totally or partially destroyed physical assets and infrastructure – structures, equipment, machineries, computers, office furniture etc.

The values of damages are the cost of:

- repair for the partially damaged assets and;
- replacement of totally destroyed ones.

Damage may occur at the time of, or shortly after the disaster and is to be measured in physical terms for which monetary value is subsequently estimated.

- **Losses.** Losses are the changes in economic flows during the period of reconstruction following the disaster and are expressed in monetary values at current prices. In the sector, losses can result from:
  - Lower revenues or foregone income of post and telecommunications firms due to reduced capacity after destruction of assets and/or lower demand from subscribers/clients.
  - Possible higher cost of operation that may arise after the disaster, such as in payment of higher rates of electricity from alternative sources, or acquiring goods and services from alternative sources, or renting temporary premises while repairing or rebuilding the original premises
  - Other unexpected expenditure such as demolition and removal of debris, retrieval of important records and other rehabilitation works for the site after destruction.

Losses can continue during the entire period of reconstruction and recovery. It is expressed in monetary values at current prices.

## Section 2

### *Steps in undertaking damage, loss and needs assessment*

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#### Step 1. Analysis of pre-disaster situation

##### Step1.1: Understand what is meant by baseline data

- The first step of undertaking the assessment is collecting information on pre-disaster situation of the post and telegraph sector in order to ascertain the baseline for the assessment. The following table shows the type of baseline information to be collected and their typical sources:

**Table 1: Type and Sources for baseline information for Post and Telecommunication**

| Type of Information/Data  | Available at               |                             |                           |               | Name of source document |
|---|----------------------------|-----------------------------|---------------------------|---------------|-------------------------|
|   | Ministry/ Bureau/ Division | Provincial Office/ Division | District Office/ Division | Other Sources |                         |
| Number and types of public and private post and telecommunication firms/companies                         |                            |                             |                           |               |                         |
| Average income per year of various types of public and private post and telecommunication firms/companies |                            |                             |                           |               |                         |

**Step1.2: Collect baseline data for each of the disaster-affected district**

- Before field assessment begins, the baseline data should be collected and summarized for each of the disaster-affected district by using the following tables (Table 2)

**Table 2: Baseline information on P&T Firms/Companies**

| Types of P&T Firms/Companies | Total number of firms by ownership |         | Number of Employees |        | Present Number of Subscribers | Average Income for the Last 3 Year |
|------------------------------|------------------------------------|---------|---------------------|--------|-------------------------------|------------------------------------|
|                              | Public                             | Private | Male                | Female | (Number)                      | (Kip)                              |
| Telephone                    |                                    |         |                     |        |                               |                                    |
| Land line                    |                                    |         |                     |        |                               |                                    |
| Mobile phones                |                                    |         |                     |        |                               |                                    |
| Others                       |                                    |         |                     |        |                               |                                    |
| Internet service             |                                    |         |                     |        |                               |                                    |
| Others (Specify)             |                                    |         |                     |        |                               |                                    |

**Step 2. Estimating Damages and Losses**

- After a disaster event, a survey should be undertaken by the assessment team for the firms impacted by the disaster. It is recommended for the assessment team to visit the P&T firms' officers and technical personnel since there are certain information (like scale of operation, types of equipment, etc.) that may only be known to their experts and engineers. However, if the firms are inaccessible during the assessment, and considering that there are not too many P&T firms in Lao PDR, a survey questionnaire can instead be sent to these firms to assess the impacts of the disaster. The following questionnaire can be used.

**Step 2.1. Gather Information on Damages and the Estimated Losses**

- Using the baseline data, the assessment specialist can coordinate with the affected firms to collect information on their damages and estimated losses. The following survey form can be used.

**Form 1. Survey of damages and losses of individual P&T Firms**

| Questionnaire Identification Number: |                 | Date:    |
|--------------------------------------|-----------------|----------|
| Question Number                      | Questions       | Response |
| 1                                    | Name of Company |          |
|                                      | Address         |          |

|                            |   |                                     |          |
|----------------------------|---|-------------------------------------|----------|
| 2                          | Number/Road/Village   |                                     |          |
| 3                          | District  |                                     |          |
| 4                          | Province  |                                     |          |
| 5                          | Contact Number  |                                     |          |
| 6                          | Type of Minerals Mined  | Response Options and/or Description | Response |
|                            |   | Land line telephones                | 1        |
|                            |   | Mobile phones                       | 2        |
|                            |   | Other phones                        | 3        |
|                            |   | Internet service                    | 4        |
|                            |   | Others (specify))                   | 12       |
| 7                          | What do you process or produce?   | Goods                               | 1        |
|                            |   | Service                             | 2        |
| 8                          | Ownership   | Private                             | 1        |
|                            |   | Public                              | 2        |
| <b>Business Operations</b> |   |                                     |          |
| Question Number            | Questions   | Response Options and/or Description | Response |
| 1                          | Has the business been affected by the disaster?                         | Yes                                 | 1        |
|                            |   | No If no, go to Q3                  | 2        |
| 2                          | If yes, in what way has the business been affected? [multiple response] | Damage to premises                  | 1        |
|                            |   | Damage to equipment/machinery       | 2        |
|                            |   | Damage to finished product          | 3        |
|                            |   | Shortage of labor                   | 4        |
|                            |   | Shortage/lack of electricity        | 5        |
|                            |   | Shortage/lack of water              | 6        |
|                            |   | Shortage/lack of raw materials      | 7        |
|                            |   | Productivity decline                | 8        |
|                            |   | Stoppage of operations              | 9        |
|                            |   | Demand decline for services         | 10       |
|                            |   | Other (specify)                     | 11       |
| 3                          | Had the business stopped due (indicate name of disaster)                | Yes                                 | 1        |
|                            |   | No If no, go to Q9                  | 2        |
| 4                          | Is the business currently in operation?                                 | Yes                                 | 1        |
|                            |   | No If no, go to Q6                  | 2        |
| 5                          | If yes, after what time period the business were in operation again?    | Within a week                       | 1        |
|                            |   | Within two weeks                    | 2        |
|                            |   | Within a month                      | 3        |
|                            |   | Within two months                   | 4        |
|                            |   | I don't know                        | 5        |

|                                      |   |  |   |
|--------------------------------------|---|--|---|
| 6                                    | If no, when do you anticipate being able to start operation again?  | Within a week  | 1 |
|                                      |   | Within two weeks   | 2 |
|                                      |   | Within a month   | 3 |
|                                      |   | Within three months  | 4 |
|                                      |   | I don't know   | 5 |
| 7                                    | How much is your estimated income loss due to the stoppage for the current year?                                      | (Value in local currency)                                  |   |
| 8                                    | How much is your estimated income loss due to the stoppage for next year?   | (Value in local currency)                                  |   |
| 9                                    | How much is your estimated increase in production cost for the current year?  | (Value in local currency)                                  |   |
| 10                                   | How much is your estimated increase in production cost for next year?   | (Value in local currency)                                  |   |
| 11                                   | How much is your estimated increase in production cost for the year after next?                                       | (Value in local currency)                                  |   |
| 12                                   | How much did you spend for cleaning up and other unexpected expenses?   | (Value in local currency)                                  |   |
| <b>Number of employees</b>           |   |  |   |
| 13                                   | Total number of employees pre-disaster  | Number of employees before the disaster                    |   |
| 14                                   | Total number of employees in the business now   | Number of employees now                                    |   |
| 15                                   | If different from now, how many of your employees were killed?  | Number of employees killed by the disaster                 |   |
| 16                                   | If different from now, how many of your employees were injured due to disaster and are not attending the job anymore? | Number of employees injured due to the disaster            |   |
| 17                                   | If different from now, how many of your employees left because they need to attend their home due to this disaster?   | Number of employees who left due to disaster               |   |
| 18                                   | If different from now, how many of your employees were laid off because the business is reduced due to the disaster?  | Number of employees that were laid off due to the disaster |   |
| <b>Business output/revenue level</b> |   |  |   |
| 19                                   | What was the average output/revenue per month in pre-disaster time?   | Value (in local currency)                                  |   |
| 20                                   | What is the average out-put/revenue per month now?  | Value (in local currency)                                  |   |

|   |  |  |   |
|---|--|--|---|
| 21  | If different, how much has it been reduced in percentage (base value is pre-disaster time)   | In percentage  |   |
| 22  | When do you anticipate output/revenue back to its pre-disaster level?  | Within a week  | 1 |
|   |  | Within two weeks   | 2 |
|   |  | Within a month   | 3 |
|   |  | Within three months  | 4 |
|   |  | I don't know   | 5 |
| 23  | Aside from the losses due to work stoppage, how much do you think will be your estimated total income loss for the current year before you reach your pre-disaster income level?   | For the disaster year<br>(Value in local currency)         |   |
| 24  | If income losses will go beyond the current year, how much do you think will be your estimated total income loss for next year before you reach your pre-disaster income level?    | For Year 1 After the Disaster<br>(Value in local currency) |   |
| 25  | If income losses will go beyond next year, how much do you think will be your estimated total income loss for the year after next before you reach your pre-disaster income level? | For Year 2 After the Disaster<br>(Value in local currency) |   |
| <b>Damage of building structure, asset and stock</b>        |  |  |   |
| 26  | Was the building structure damaged by the disaster?  | Yes  | 1 |
|   |  | No      If no, go to Q28                                   | 2 |
| 27  | If yes, how much money it would take to repair/restore the damaged building structure?   | Value in local currency                                    |   |
| 28  | Were other assets damaged by the disaster?   | Yes  | 1 |
|   |  | No      If no, go to Q30                                   | 2 |
| 29  | If yes, what was the value of other assets that were damaged by the disaster?  | Value in local currency                                    |   |
| 30  | Was the raw materials stock damaged by the disaster?   | Yes  | 1 |
|   |  | No      If no, go to Q32                                   | 2 |
| 31  | If yes, what was the value of the raw materials stock that has been damaged by the disaster?   | Value in local currency                                    |   |
| <b>Impact on supply chain, market and financial support</b> |  |  |   |
| 32  | How have your customers been affected?<br><br>[multiple response]  | No problem with customers                                  | 1 |
|   |  | Services have been delayed                                 | 2 |
|   |  | Services cannot be made                                    | 3 |
|   |  | <i>Bookings cancelled</i>                                  | 4 |

|   |  |  |   |
|---|--|--|---|
|   |  | Other (specify)                        | 5   |
| 33  | What sort of difficulties are you experiencing getting your goods/services to the market?<br>[multiple response]                               | No problems                            | 1   |
|   |  | Lack and increased cost of transport   | 2   |
|   |  | Lower demand for our services          | 3   |
|   |  | Lack /insufficiency of working capital | 4   |
|   |  | Other (specify)                        | 5   |
| 34  | How have your suppliers been affected?<br>[multiple response]  | Suppliers not affected                 | 1   |
|   |  | Raw materials scarce/not available     | 2   |
|   |  | Higher price for raw materials         | 3   |
|   |  | Other (specify)                        | 4   |
| 35  | How has your access to finance been affected?<br>[multiple response]   | No problems                            | 1   |
|   |  | Difficulty in paying outstanding loans | 2   |
|   |  | Need to renegotiate existing loans     | 3   |
|   |  | Need soft term fresh loans             | 4   |
|   |  | Other (specify)                        | 5   |
| 36  | Have you or the bank lost records?   | Yes                                    | 1   |
|   |  | No                                     | 2   |
| 37  | Is your business insured for disaster (in terms of assets and losses?)   | Yes                                    | 1   |
|   |  | No                                     | 2   |
| <b>Respondent's suggestion on how government can help to restore the business</b> |  |  |   |
| 38  | What are the most important steps that the government can take to help your business to get back on its feet again? Give maximum 3 suggestions | 1.<br>2.<br>3.                         | This is an open-ended question that will be coded later |

Notes in using Form 1:

- The assessment team can use the form in surveying the damages and losses to the firms that were identified before the disaster occurred. The damages and losses are incorporated in the form from which they can be estimated.
- The numbers after the response options are codes that can be encircled as a response and used for processing the survey results.
- Question number 38 is for the opinions of the businessmen affected.
- In estimating certain losses, the assessment team and the respondents must take into consideration the effects of the damages of other sectors such as power, water supply and transportation sectors.

#### Step 2.2. Summarize the Information on Damages in a district

- The information gathered from sample firms can be consolidated in a single table according to the type of output or service they produce or provide. Applying the assessed damage to the actual number of firms affected by the disaster will give an estimate of the total damages to the sector.

**Table 3. Damages of P&T Firms in a district**

Name of District:

| Firms                     | Number of Firms Affected |        | Damages (Kips) |        |        | Total Damages (Kips) |
|---------------------------|--------------------------|--------|----------------|--------|--------|----------------------|
|                           | Private                  | Public | Structures     | Assets | Others | F                    |
|                           | A                        | B      | C              | D      | E      |                      |
| Telephone                 |                          |        |                |        |        |                      |
| Land line                 |                          |        |                |        |        |                      |
| Mobile phones             |                          |        |                |        |        |                      |
| Others                    |                          |        |                |        |        |                      |
| Internet service          |                          |        |                |        |        |                      |
| Delivery/ Courier service |                          |        |                |        |        |                      |
| Others (Specify)          |                          |        |                |        |        |                      |
| TOTAL                     |                          |        |                |        |        |                      |

In filling in Table 3, the following should be noted:

- The information on damages in the above table is the consolidation of the information provided by the firms through the questionnaire.
- In column 2, the number of firms is the actual number of firms affected by the disaster in the area segregated by ownership.
- Column 3 contains the aggregate damages of all the surveyed firms under various classifications – structure, equipment, others.
- “Others” under the damages column can include stocks, raw materials, and other inputs to production.
- The “Total Damages” in Column F = Column C + Column D + Column E.
- It is important to remember that damages included in the above table are valued as the cost of repair or replacement at pre-disaster prices.
- If some of the assets are covered by insurance, the amount of coverage should be deducted from the amount of damages.

### Step 2.3. Estimate the Losses in a district

- There are damages - like the collapse of structures, destruction of equipment, loss of access to markets, etc. – which can cause temporary work stoppages or reduction of production or sales resulting to income losses to the firms. Based on the survey conducted, the losses of the firms can be consolidated or summarized to come up with an aggregate value of losses.

#### Step 2.3.1 Losses incurred within the year the disaster occurred

- Based on the survey conducted, the losses of firms can be consolidated or summarized to come up with an aggregate value of losses for the year the disaster occurred as shown in Table 4.

**Table 4. Losses Incurred by Firms, in Kips**

Name of District:

| Firms            | Revenue Losses (Kips) |                         | Total Revenue Losses (Kips) | Others (Kips)          |                       |             | Total Losses (Kips) |
|------------------|-----------------------|-------------------------|-----------------------------|------------------------|-----------------------|-------------|---------------------|
|                  | Due to work stoppage  | Due to income reduction |                             | Higher Production Cost | Cleaning Up of Debris | Other Costs |                     |
|                  | A                     | B                       |                             | C                      | D                     | E           |                     |
| Telephones       |                       |                         |                             |                        |                       |             |                     |
| Land line        |                       |                         |                             |                        |                       |             |                     |
| Private          |                       |                         |                             |                        |                       |             |                     |
| Public           |                       |                         |                             |                        |                       |             |                     |
| Mobile phones    |                       |                         |                             |                        |                       |             |                     |
| Private          |                       |                         |                             |                        |                       |             |                     |
| Public           |                       |                         |                             |                        |                       |             |                     |
| Others           |                       |                         |                             |                        |                       |             |                     |
| Private          |                       |                         |                             |                        |                       |             |                     |
| Public           |                       |                         |                             |                        |                       |             |                     |
| Internet service |                       |                         |                             |                        |                       |             |                     |
| Private          |                       |                         |                             |                        |                       |             |                     |
| Public           |                       |                         |                             |                        |                       |             |                     |
| Others           |                       |                         |                             |                        |                       |             |                     |
| Private          |                       |                         |                             |                        |                       |             |                     |
| Public           |                       |                         |                             |                        |                       |             |                     |
| TOTAL            |                       |                         |                             |                        |                       |             |                     |

In filling in Table 4, the following should be noted:

- The information in the above Table 4 is the consolidation of the information provided by the firms through the survey. The values are aggregate of all firms or companies with similar services.
- Losses should be segregated as private and public. If the firms affected are all private firms, the data should be in the 'private' rows.
- The "Total Revenue Losses" in Column C is the sum of income losses due to work stoppage and reduction of income of the firms for the year that the disaster occurred. In formula, this is  $\text{Column C} = \text{Column A} + \text{Column B}$ .
- Higher production cost will occur when certain types of processes in the sector will require added costs. This may be due to higher cost of power, water, labor, etc. The added amount required to obtain the same output will be the value of added (higher) production cost.
- The total losses will be:  $\text{Column G} = \text{Column C} + \text{Column D} + \text{Column E} + \text{Column F}$

#### **Step 2.3.2 Losses incurred beyond the year the disaster occurred**

- Based on the survey conducted, the losses of firms can be consolidated or summarized to come up with an aggregate value of losses for the years beyond the disaster occurred as shown in Table 5.



**Table 5. Estimated Losses Beyond the Disaster Year**

Name of District:

| Firms                            | Year 1 Losses  |                        |             |              | Year 2 Losses  |                        |             |              |
|----------------------------------|----------------|------------------------|-------------|--------------|----------------|------------------------|-------------|--------------|
|                                  | Revenue Losses | Higher Production Cost | Other Costs | Total Losses | Revenue Losses | Higher Production Cost | Other Costs | Total Losses |
|                                  | A              | B                      | C           |              | D              | E                      | F           | G            |
| <b>Telephone</b>                 |                |                        |             |              |                |                        |             |              |
| Land line                        |                |                        |             |              |                |                        |             |              |
| Mobile phones                    |                |                        |             |              |                |                        |             |              |
| Others                           |                |                        |             |              |                |                        |             |              |
| <b>Internet service</b>          |                |                        |             |              |                |                        |             |              |
| <b>Delivery/ Courier service</b> |                |                        |             |              |                |                        |             |              |
| <b>Others (Specify)</b>          |                |                        |             |              |                |                        |             |              |
| <b>TOTAL</b>                     |                |                        |             |              |                |                        |             |              |

In filling in Table 5, the following should be noted:

- The estimation of losses is the same as calculating the losses for the year that the disaster occurred as shown in the previous table.
- The assessment team must be able to predict future impacts on revenues of the firms. This can be done by analyzing previous post-disaster statistical data and consulting with business owners on their previous post-disaster experiences.

**Step 2.4. Summarize Damages and Losses of P&T Firms in the District**

Based on the information gathered, a summary can show the magnitude and scope of damages and losses. In summarizing damages and losses, the following are assumed:

- Damages are incurred during the year that the disaster occurred while losses can extend way beyond the disaster year.
- The assessment team, in consultation with the owner of the firms, can estimate the losses across the years until the firms reach their pre-disaster operating and income levels.

**Table 6. Summary of Damages and Losses to P&T Firms in the District**

Name of District:

| P&T Firms        | Disaster Year |        |         |        | Year 1  |        | Year 2  |        | Total Effects<br><br>(Kips) |
|------------------|---------------|--------|---------|--------|---------|--------|---------|--------|-----------------------------|
|                  | Damages       |        | Losses  |        | Losses  |        | Losses  |        |                             |
|                  | Private       | Public | Private | Public | Private | Public | Private | Public |                             |
| Telephone        |               |        |         |        |         |        |         |        |                             |
| Land line        |               |        |         |        |         |        |         |        |                             |
| Mobile phones    |               |        |         |        |         |        |         |        |                             |
| Others           |               |        |         |        |         |        |         |        |                             |
| Internet service |               |        |         |        |         |        |         |        |                             |
| Others (specify) |               |        |         |        |         |        |         |        |                             |
| TOTAL            |               |        |         |        |         |        |         |        |                             |

In filling in Table 6, the following should be noted:

- The information required in the above table are those that are contained in the tables of damages and losses.
- The segregation of public and private damages and losses can assist in strategizing for reconstruction and recovery.

#### Step 2.5. Summarize Damages and Losses of P&T Firms in the Province

Based on the summary for the districts affected, a similar summary can show the magnitude and scope of damages and losses province-wide, as shown in the following table.

**Table 7. Summary of Damages and Losses to P&T Firms in the Province**

Name of Province:

| Names of District | Within the Disaster Year |        |         |        | Losses Beyond the Disaster Year |        |         |        | Total Effects<br>(Kips) |
|-------------------|--------------------------|--------|---------|--------|---------------------------------|--------|---------|--------|-------------------------|
|                   | Damages                  |        | Losses  |        | Year 1                          |        | Year 2  |        |                         |
|                   | Private                  | Public | Private | Public | Private                         | Public | Private | Public |                         |
| District 1        |                          |        |         |        |                                 |        |         |        |                         |
| District 2        |                          |        |         |        |                                 |        |         |        |                         |
| District 3        |                          |        |         |        |                                 |        |         |        |                         |
| District 4        |                          |        |         |        |                                 |        |         |        |                         |
| District 5        |                          |        |         |        |                                 |        |         |        |                         |
| TOTAL             |                          |        |         |        |                                 |        |         |        |                         |

#### Step 2.6. Summarize Damages and Losses of P&T Firms Nationwide

- Once the summary table for each affected provinces have been filled out, the table below should be used by the central level assessment team for summarizing information at the national level. This is to be filled out after the field assessment is over.

**Table 8. Summary of Damages and Losses of P&T Firms at national level**

| Names of Provinces | Within the Disaster Year |        |         |        | Losses Beyond the Disaster Year |        |         |        | Total Effects<br>(Kips) |
|--------------------|--------------------------|--------|---------|--------|---------------------------------|--------|---------|--------|-------------------------|
|                    | Damages                  |        | Losses  |        | Year 1                          |        | Year 2  |        |                         |
|                    | Private                  | Public | Private | Public | Private                         | Public | Private | Public |                         |
| Province 1         |                          |        |         |        |                                 |        |         |        |                         |
| Province 2         |                          |        |         |        |                                 |        |         |        |                         |
| Province 3         |                          |        |         |        |                                 |        |         |        |                         |
| Province 4         |                          |        |         |        |                                 |        |         |        |                         |
| Province 5         |                          |        |         |        |                                 |        |         |        |                         |
| TOTAL              |                          |        |         |        |                                 |        |         |        |                         |

### Step 3. Estimate recovery and reconstruction needs for the P&T sector

#### Step 3.1 Set the recovery and reconstruction strategy for the P&T sector

- While the damage and loss assessment is being undertaken, the NAPT in consultation with their counterparts in affected provinces, the Ministry of Planning and Investment, the National Disaster Management Office, and in partnership with development partners involved in the sector in Lao PDR, should develop the strategy to be followed for recovery and reconstruction. Some of the broad content of the strategy could include the following:
  - Identifying sector-specific factors which will contribute to 'build back better' of the P&T sector.

- Possible incentives to private P&T firms for reconstruction of damaged facilities and stock with higher standards of resilience.
- Enhancing and strengthening medium to long-term disaster risk reduction related issues in the sector such as integrating hazard resilience standards in design and construction of all new buildings, retrofitting of existing facilities situated in high risk areas, improving of safety and other disaster risk reduction measures including the training of personnel on disaster preparedness measures, etc.
- Policy guidelines and strategies in financing the recovery and reconstruction activities in the sector covering both the public and private.

### 3.2 Estimating recovery and reconstruction needs

- The quantification of damage and losses will enable the estimation of financial requirements to achieve full recovery of the sector and to reconstruct the facilities that were destroyed or damaged.
- The value of losses is used to estimate the amount required to achieve recovery of the sector while the value of damage is used to estimate the financial requirements for replacement or reconstruction of the affected assets in the sector.
- This estimation of financial needs for recovery and reconstruction should be broken down by districts and provinces

In the P&T sector, quick recovery efforts must be undertaken especially if a great number of people and related businesses depend on it for their economic activities. Recovery activities should include those that will enable firms to resume their normal operations. To assist the sector, the NAPT can identify policy measures that will enable them to recover without necessarily having the government spending for the costs required. There are certain options that can be implemented through policy measures to expedite recovery and reconstruction of the P&T sector. Among them are:

Income tax breaks for private firms such as:

- Temporary reduction or freeze or deferment in the collection of tax;
- Temporary freeze on basic service charges in the utilization of certain services over the time of the recovery phase;
- Non-collection of property taxes for the duration of the recovery period;
- Exemption from registration fees for replacements of the destroyed equipment and machinery over a certain period of time.

Subsidizing construction materials and equipment to be imported by P&T firms during the recovery and reconstruction phase through an exemption from paying customs duties and other levies.

The NAPT, together with the MPI and MOF, should be able to analyze the best possible option/s or the combination of policies in financing the recovery phase, especially those that require subsidies and tax exemptions.

#### *Step 3.2.1. Estimating recovery needs*

Some of the possible recovery-related activities in the P&T sector can include:

- Credit Schemes. The expansion of soft-term credit to facilitate re-capitalization of P&T firms can complement tax breaks. Such schemes can be implemented through either the national development bank/s and/or the private banking system. If the Government cannot provide such financing directly, it can provide a guarantee for credits granted by private banks.
- Equity. In some special cases, the government may opt to provide equity in private firms instead of subsidy or credit or tax exemptions.
- Direct subsidy. If needed, and in accordance the recovery and reconstruction financing strategy, the government may extend other forms of direct subsidy to enable the private firms to recover immediately.

Again, the NAPT, together with MPI and MOF, should be able to analyze the best possible option/s or the combination of policies in financing the recovery phase.

The following table can show the recovery needs of the sector.

**Table 9. Summary of Recovery Needs**

| Establishments          | Type and Amount of Assistance Needed (Kips) |             |         |        |             |        | Total Amount Needed (Kips) |        |
|-------------------------|---|-------------|---------|--------|-------------|--------|----------------------------|--------|
|                         | Credit                                      | Cash Equity | Others  | Credit | Cash Equity | Others |                            |        |
|                         | Private                                     | Public      | Private | Public | Private     | Public | Private                    | Public |
| <b>Telephone</b>        |   |             |         |        |             |        |                            |        |
| Land line               |   |             |         |        |             |        |                            |        |
| Mobile phones           |   |             |         |        |             |        |                            |        |
| Others                  |   |             |         |        |             |        |                            |        |
| <b>Internet service</b> |   |             |         |        |             |        |                            |        |
| Others                  |   |             |         |        |             |        |                            |        |
| TOTAL                   |   |             |         |        |             |        |                            |        |

In filling in Table 9, the following should be noted:

- Column 2 enumerates the possible assistance that the sector may need. Since most of the businesses are private in nature by ownership, the government may extend more of credit than outright cash grant or equity. Public enterprises may need cash equity.
- Credit can be extended through existing government conduits.

### *Step 3.2.2. Estimation of Reconstruction Needs*

- Based on the Guidance Note developed by the World Bank and the Global Facility for Disaster Reduction and Recovery entitled: Estimation of post-disaster needs for recovery and reconstruction, the following methodology can be adopted for estimating the recovery needs:

- To estimate the value of reconstruction needs of the sector, the following formula for the reconstruction of industrial structural facilities can be used:

$$\text{Industrial Reconstruction Needs} = I_r * \text{Damage to Industrial Facilities}$$

where  $I_r$  is a coefficient for disaster resilience reconstruction whose value may range from 1.10 to 1.40, depending on the degree of disaster resistance that may be desired and on the definitions of the reconstruction strategy. Engineers, with special expertise and relevant experience in the mining industry that has been affected by the disaster may be able to define the value of the coefficient to be adopted.

- For equipment and machinery, the following formula can be used:

$$\text{Equipment Replacement Needs} = I_e * \text{Damage to Industrial Equipment and Machinery}$$

where  $I_e$  is a coefficient of technological innovation with a value ranging from 0.90 to 1.40, depending on the efficiency in technological production that is desired in the reconstruction strategy. Again, an engineer with experience in the mining industry would be able to define the value of coefficients to be adopted.

The possible reconstruction-related activities in the P&T sector could include the following. It is to be noted that since the mining firms are mostly private in nature, financing their needs can come through soft-term credit schemes for reconstruction and repair of their damaged assets. Such schemes can be accompanied by technical assistance for improved disaster resilient standards of construction.

- Replacement or reconstruction of affected structures
- Procurement of equipment and machinery
- Technical assistance for improved standards of construction

The NAPT can use the table below to put forward their recommendation to MPI for activities related to reconstruction needs.

**Table 10. Reconstruction Needs of the P&T Sector**

| Possible Assistance to P&T Firms                     | Reconstruction Needs (Kips) |        | Foreign Cost Component (US\$) | Main Ministry Responsible |
|--|-----------------------------|--------|-------------------------------|---------------------------|
|  | Grant                       | Credit |                               |                           |
| Replacement or reconstruction of affected structures |                             |        |                               |                           |
| Procurement of equipment and machinery               |                             |        |                               |                           |
| Technical assistance                                 |                             |        |                               |                           |
| Others   |                             |        |                               |                           |
| Total  |                             |        |                               |                           |

In filling in Table 10, the following should be noted:

- Column 1 should enumerate the list of reconstruction activities/projects required by the various firms in the sector.
- The reconstruction needs under the 'credit' column normally refer to the assistance that will be extended to damaged firms owned by the private sector and is expected to be repaid over time. If the government will extend assistance to the private sector without repayment required, the amount of assistance should be under the 'grant' column. Government-owned facilities are assumed to be financed by the government without repayment from the said facilities. As such the amount should be under the 'grant' column, otherwise in the credit column.
- The foreign cost component is the amount of foreign currency in US Dollars that may be required if there are imported equipment or materials needed. This information is important for MPI in determining potential balance of payment impacts.
- The last column is for the main ministry responsible for the implementation.

#### Step 4. Developing short, medium and long-term projects and designing implementation plan

Recovery and Reconstruction needs identified above would need to be broken down in short, medium and long-term needs. Following are some examples of projects in the P&T sector, which can be undertaken as short, medium and long-term:

- **Short-term projects.** Short-term projects are crucial immediately after disaster with a view to resume economic activities in the areas affected. To achieve this, the following short-term initiatives/projects can be introduced:
  - Tax incentive schemes to the affected firms and businesses.
  - Credit assistance to the firms through government or private banks.
- **Medium-term projects/programs.** Medium-term programs and projects can include:
  - Assistance in training on relevant disaster risk reduction like preparedness, structural mitigation (mine tunnel retrofitting), search and rescue in mines, etc.
- **Longer-term projects/programs**
  - Technical assistance in the relocation of existing facilities and the construction of new structures with better standards so that they can stand against future disaster.

The identified needs should have a rough schedule of implementation outlining at the very least the activities, timing and budget required for all the programs and projects. The following techniques can be considered:

- Identify the specific projects according to their relative urgency or priority in relation to recovery.

- Plot the timeline of activities of all the projects, with the urgent ones on top, in a Gantt chart with the corresponding funding requirement. This will assist the MPI in programming the necessary funds over a certain time period, like on a quarterly or annual basis.
- Identify and include in the list of projects that need further feasibility studies that may be funded by foreign grants.
- To the extent possible, a logical framework (log frame) should be created for each of the project proposed for inclusion in the recovery plan. Log frames are normally enough for foreign donors to consider project proposals.

## Step 5. Inputs for macro-economic and household impact analysis

The damages and losses to the P&T sector can affect the macro economy. To the extent possible that the MEM can, it should collect the following information, which will be used by MPI for undertaking the macro-economic impact analysis

- **Gross Domestic Product (GDP):** The loss of the contribution of P&T sector may decrease the national income.
- **Fiscal Balance:** The fiscal balance should be analyzed from the point of view of the assistance that the government will be extended to the sector. First, tax incentives will lower the revenues of the government. Second, if and when the government decides to spend directly for the recovery of the sector, the government may resort to more borrowings/fresh loans which can result into higher budget deficit.
- **Balance of Payment:** The items and amount needed for the recovery and reconstruction of the sector that are not produced locally in Lao PDR and have to be imported from other countries will increase the balance of trade deficit. To analyze the impact on the balance of payment, this amount should be estimated and expressed in percentage of total recovery and reconstruction needs.
- **Prices or Inflation:** Prices of construction materials could go up if the destruction of the sector is massive and will require extensive procurement of building materials.
- **Employment:** There can be a big reduction in employment if the extent of destruction will cause stoppage of operations of the firms. Employment losses will contribute to the increase in poverty level.
- To the extent possible, the assessment team must also provide an analysis of impacts on personal or household situation which can include the effects of the families of those who might lose their jobs from the sector. The MPI can use such analysis in the assessment of the overall disaster impacts.

## Step 6. Write the assessment report

- The following format may be considered for writing the assessment chapter of the mining sector:
  - Brief background on the P&T sector in Lao PDR
  - Overview of impacts of the disaster on the P&T sector
  - Damage and Loss quantification
    - Damage and Loss by province (or district)
  - Proposed strategies for recovery and reconstruction of the P&T sector
  - Needs estimation for recovery and reconstruction of the P&T sector
- The report of the P&T sector should be written by NAPT in close partnership with development partners involved in the same sector and once completed should be submitted to MPI for inclusion in the final report.

## Section 3

### *Terms of reference of assessment team*

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#### 3.1 Formation of pre-identified assessment teams within the NAPT

- Pre-identified team should be formed with officials from NAPT. These officials would need to have a good understanding on the performance of the P&T sector, construction of facilities and should have also undergone prior training on the damage, loss and needs assessment.

#### 3.2 Composition of the assessment team

- At the central level the assessment team should comprise of the following:
  - a. Officials from Department of Planning of NAPT
  - b. Officials from Department of NAPT
  - c. Development Partners involved in the P&T sector
  - d. A representative from the mining sector, as may be deemed necessary by the NAPT
- At the field level the assessment team should comprise of the following:
  - a. Provincial Department of the NAPT
  - b. District Office of the NAPT
- Specific expertise required within the team would include the following:
  - a. Electronics Engineers/Civil Engineer/Structural Engineers
  - b. Electrical Engineers and other P&T sector specialist

#### 3.3 Task of assessment team

- Gathering of the pre-identified team from NAPT after the disaster event based on the order received from MPI
- Consultation with development partners involved in the P&T sector who will join the assessment team
- Undertaking quick orientation on the assessment methodology for the assessment team
- Working closely with relevant departments of the NAPT at national level and provincial/district and responsible for compiling baseline information.
- Undertaking field visits in disaster affected areas and working closely with District and Provincial NAPT Offices and collecting information on damage and losses
- Based on information collected, undertaking damage and loss assessment for the sector, simultaneously in close consultation with relevant agencies such as National Disaster Management Office and development partners, formulate the recovery and reconstruction strategy for the P&T sector
- Estimating the recovery and reconstruction needs based on the strategy and damage and loss assessment results
- Writing the assessment report for the P&T sector
- Presentation of the findings of the assessment report to the decision makers within the NAPT and other development partners for broader consultation.
- Finalization of the report based on the inputs received from broader consultation and submission to MPI

#### 3.4 Assessment timeline

- Ideally, the post-disaster damage, loss and needs assessment takes from 2 to 5 weeks.
- The assessment is usually started once the rapid impact and needs assessment for emergency and relief support is completed and the relief and response phase of the disasters is over or well underway.
- In the first week the overall planning of the assessment would take place and would include the following issues:
  - Baseline data collection

- Agree on ToR
- Team composition selection
- Orientation Training on damage, loss and needs assessment
- Discussion on formulating recovery and reconstruction strategy for the sector
- Second and third week is the assessment stage and would include the following
  - Field survey
  - Calculation of Damage and losses for the sector
- Fourth week of the assessment is the analysis stage and would include the following
  - Finalizing recovery and reconstruction strategy for the sector
  - Estimating recovery and reconstruction needs for the sector
  - Report drafting
  - Consultation within sector to seek inputs on the report
  - Submission of sector report to MPI
  - Finalisation of report by MPI
- Fifth week of the assessment is launch and dissemination of the report



## ***Guidance Notes 15: Macroeconomic Effects of Disasters***

### ***Table of Contents***

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- **Section 1: Proposed methodology for macroeconomic effects of disaster**
  - Section 1.1: Damages and losses concepts
  - Section 1.2: Importance of undertaking post-disaster assessment of the macroeconomy in Lao PDR
- **Section 2: Steps in undertaking post-disaster needs assessment**
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- **Annex**
  - Sample Exercises
  - Tables/templates

### ***Introduction to this Guidance Notes***

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- This Guidance Note is a part of the Handbook on damage, loss and needs assessment of Government of Lao PDR, which consist of fifteen Guidance Notes for various sectors
- This Guidance Note is to be used by the team assigned from the Ministry of Planning and Investment (MPI) of the Lao PDR to undertake the assessment of the macroeconomic impact after a disaster and the preparation of the disaster recovery plan.

### ***Section 1***

#### ***Methodology for post-disaster macroeconomic assessment and preparation of the Disaster Recovery Plan (DRP) of Lao PDR.***

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- This methodology for undertaking post-disaster damage, loss and needs assessment is originally derived from the methodology for estimating the socio-economic and environmental effects of disasters, developed by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) as further enhanced by the World Bank.
- Generally, the methodology to assess the macroeconomic impacts of disasters and the eventual preparation of the DRRP will involve the Ministry of Investment and Planning (MPI) in:
  1. the gathering of pre-disaster baseline macroeconomic information;
  2. the creation of an assessment team that will coordinate with the other ministries in generating the required information after a disaster;
  3. the assessment of the overall macroeconomic impacts like those on the gross domestic product (GDP), balance of payments, government finance, inflation, employment, among others;
  4. the analysis of disaster impacts on individual household levels;
  5. the analysis and prioritization of programs and projects across sectors to address the post-disaster needs of the national economy; and
  6. the preparation of the recovery and reconstruction plan with the appropriate policy recommendations and programs and projects that will enable the economy to recover.
- To perform such functions, the MPI - specifically through its departments of planning and macroeconomic analysis - should engage the cooperation of the other ministries in submitting their respective post-disaster damage, loss and needs assessments.

- The basic definitions, concepts and steps in performing the assessment are explained in details in the following sections.

## Section 1.1. Concept of Damages and losses

- **Damages** are the costs of the destruction caused by the disaster valued as the cost of:
  - Repair or reconstruction of partially destroyed physical assets.
  - Replacement of totally destroyed physical assets.
    - a. Physical assets will include structures (like houses, buildings, etc.), equipment, machinery, furniture, among others.
    - b. Destruction may occur at the time of, or shortly after, the disaster.
    - c. Damages are measured in physical terms for which a monetary value of replacement or repair is subsequently estimated.
- **Losses** are the negative changes in economic flows during the period of recovery and reconstruction after the disaster. Included are:
  - Foregone or lost incomes from production, businesses, etc.
  - Higher production cost.
  - Cleaning up of rubles or debris or demolition cost.
  - Other unexpected expenses like temporary housing, rent of school buildings, control of diseases, etc.

Losses are incurred in the various sectors and sub-sectors of the economy like agriculture, manufacturing, tourism, services, etc. for both the government and private sectors and are expressed in monetary values at current prices.

- **Macroeconomic Impacts** are the changes or alterations caused by disasters to the expected performance of the economy such as:
  1. Gross Domestic Product (GDP) – losses in all sectors will reduce the output of the economy.
  2. Balance of Payment – foreign currency income may be reduced if the main exports are adversely affected while imports may increase if the recovery and reconstruction activities will need foreign equipment, materials, etc.
  3. Fiscal Balance –tax revenues may shrink and expenditures may increase and the government may resort to more borrowings to finance recovery and reconstruction after a disaster which can result into higher budget deficit.
  4. Inflation – prices of prime commodities may go up if the destruction in the productive sectors is massive to cause a reduction in supply.
  5. Employment – there can be a big reduction in employment which can result in increased poverty incidence if many firms will cease operations permanently.

## Section 1.2. Importance of Undertaking Post-disaster Macroeconomic Assessment

Macroeconomic analysis of disaster impacts will enable the Government of Lao PDR to, among others:

1. Quantitatively assess the impacts of damages and losses in all sectors and their potential short- and long-term economic and social effects, such as those on GDP, fiscal balance, balance of payments, income reduction, food supply, employment, impact on women, etc.
2. Prepare a recovery and reconstruction plan to counter the impacts of the damages and losses and avert further losses to the economy.

Based on the damage and loss assessment, the overall impact on the economy and the population - especially the most vulnerable - can be evaluated to identify urgent needs for inclusion in the planning, budgeting and financing of recovery and reconstruction programs and projects. All possible options and measures to mitigate any further adverse impacts to the people can be fully analyzed and evaluated by the MPI prior to inclusion in the recovery and reconstruction plan.

## Section 2

### Steps in Undertaking Post-Disaster Damage, Loss and Needs Assessment

For the MPI, a baseline macroeconomic data and the reliable assessments of the sectors are important to come up with an equally reliable macroeconomic analysis of disaster impacts. The following components are essential:

- The pre-disaster baseline information or data on the past and projected macroeconomic performance;
- The damage and loss estimates of the sectors; and
- The identified needs based on the damages and losses

#### Step 1. Create a Pre-disaster Baseline Data

For the macroeconomic analysis of disaster impacts, the assessment will be based on the projections on disaster performance made just prior to the disaster. As such, vital information must be available beforehand to serve as the basis of the post-disaster assessment. The MPI - through its various departments like the departments of statistics; macroeconomic analysis and the National Economic Research Institute (NERI) - must ensure that the following information in the tables are readily available prior to a disaster and can be accessed immediately for post-disaster damage and loss assessment purposes.

##### **Baseline Information No.1. Economic growth projections**

The National Socio-economic Development Plan (NSED) has the projections for the main sectors – agriculture, industry and services – and their contributions to the economic growth. Knowing beforehand these projections will:

- Provide knowledge of what sectors are the engines of economic growth; and
- Quickly estimate the potential macroeconomic impacts once the disaster damages and losses are known.

The information in the following table should be accessible from the MPI.

**Table 1. Pre-disaster National Socio-economic Indicators and Their Projections in Current Prices**

| Indicators         | Values for the Past Year |                             | Projection for the Present Year |                         | Projections for the Next Years |                      |                      |
|--------------------|--------------------------|-----------------------------|---------------------------------|-------------------------|--------------------------------|----------------------|----------------------|
|                    | Current Price (Kips)     | % change over the past year | Current Price (Kips)            | % change over last year | Year 1                         | Year 2               | Year 3               |
|                    | Current Price (Kips)     | % change over the past year | Current Price (Kips)            | % change over last year | Current Price (Kips)           | Current Price (Kips) | Current Price (Kips) |
| GDP                |                          |                             |                                 |                         |                                |                      |                      |
| Budget             |                          |                             |                                 |                         |                                |                      |                      |
| Budget deficit     |                          |                             |                                 |                         |                                |                      |                      |
| Balance of payment |                          |                             |                                 |                         |                                |                      |                      |
| Tax revenues       |                          |                             |                                 |                         |                                |                      |                      |
| VAT                |                          |                             |                                 |                         |                                |                      |                      |
| Income Taxes       |                          |                             |                                 |                         |                                |                      |                      |
| Duties             |                          |                             |                                 |                         |                                |                      |                      |
| Others             |                          |                             |                                 |                         |                                |                      |                      |

| Other Indicators | (%) | (%) | (%) | (%) | (%) |
|------------------|-----|-----|-----|-----|-----|
| Employment       |     |     |     |     |     |
| Inflation        |     |     |     |     |     |

Notes in filling out Table 1.

- Table 1 is for the national economic indicators. The economic indicators should be available at the departments of planning of the MPI, the tax department of the Ministry of Finance (MOF) and NERI.
- Tax revenues are broken down as value-added tax (VAT) if applicable, income taxes of firms and individuals, duties from imports and other applicable taxes like real estate fees, fees for permits to operate businesses, vehicles, etc.

**Table 2. Pre-disaster Sectoral and Sub-Sectoral Employment and Output Projections in Value-Added Current Prices (Kips)**

| Sectors/Sub-sectors       | Total Number of People Employed | Value-Added Ratio | Values for the Past Year (Kips) |             | Projection for the Present Year (Kips) |             | Projections for the Next Years (Kips) (In Value-Added) |        |        |
|---------------------------|---------------------------------|-------------------|---------------------------------|-------------|--|-------------|--|--------|--------|
|                           |                                 |                   | Gross Income                    | Value-Added | Gross Income                           | Value-Added | Year 1   | Year 2 | Year 3 |
| Crops                     |                                 |                   |                                 |             |  |             |  |        |        |
| Livestock                 |                                 |                   |                                 |             |  |             |  |        |        |
| Fisheries                 |                                 |                   |                                 |             |  |             |  |        |        |
| Forestry                  |                                 |                   |                                 |             |  |             |  |        |        |
| Manufacturing             |                                 |                   |                                 |             |  |             |  |        |        |
| Mining                    |                                 |                   |                                 |             |  |             |  |        |        |
| Power                     |                                 |                   |                                 |             |  |             |  |        |        |
| Water supply              |                                 |                   |                                 |             |  |             |  |        |        |
| Trade                     |                                 |                   |                                 |             |  |             |  |        |        |
| Private Services          |                                 |                   |                                 |             |  |             |  |        |        |
| Other Government Services |                                 |                   |                                 |             |  |             |  |        |        |
| Tourism                   |                                 |                   |                                 |             |  |             |  |        |        |
| Transportation            |                                 |                   |                                 |             |  |             |  |        |        |
| Telecommuni-cation        |                                 |                   |                                 |             |  |             |  |        |        |
| Health                    |                                 |                   |                                 |             |  |             |  |        |        |
| Education                 |                                 |                   |                                 |             |  |             |  |        |        |

Notes in filling out Table 2.

- The sectors/sub-sectors mentioned in Table 2 are among the ones that are included in the assessments to be undertaken by the various ministries. "Other government services" refers to the other services that MPI may consider. "Private services" are services provided by the private sector like those in banks, insurance and other non-banking activities like finance, stock exchanges as well as other private businesses. In the final assessment, they will be consolidated in the major sectors of the national system of accounts of Lao PDR.
- The value-added ratio or coefficient of the sector/sub-sectors is the factor that estimates the value-added (VA) of the sectors/sub-sectors. This is available at the MPI. (The VA ratio or coefficient may have the same values for some of the sectors/sub-sectors.).

- The value-added figures are derived from multiplying the gross output/income by the value-added ratio or coefficient. The value-added values are important because they are the ones used in calculating the GDP.
- The projected pre-disaster estimates for the succeeding years are in value-added.
- The assessment of losses on cultural sites will be integrated in Tourism.

**Baseline Information No. 2. Expenditures by Types of Services**

To have a reliable basis in estimating the overall potential impacts of disasters, a baseline information should also include the annual major expenditures of the government. This will provide a basis for budgeting and programming of expenditures in the future, including the amount that the government may borrow to finance such expenditures.

**Table 3. Government Allocated Expenditures by Ministries and Other Expenditures for the Present and the Following Year.**

| Allocation By Ministries and Other Expenditures | Amount for the Present Year |                                 | Amount for Next Year |                                |
|---|-----------------------------|---------------------------------|----------------------|--------------------------------|
|   | Kips                        | % change from the previous year | Kips                 | % change from the present year |
| Ministry of Education                           |                             |                                 |                      |                                |
| Ministry of Health                              |                             |                                 |                      |                                |
| Ministry of Labor and Social Welfare            |                             |                                 |                      |                                |
| Ministry of Public Works and Transportation     |                             |                                 |                      |                                |
| Ministry of Agriculture and Forestry            |                             |                                 |                      |                                |
| Post and Telecommunication Authority            |                             |                                 |                      |                                |
| Ministry of Energy and Mining                   |                             |                                 |                      |                                |
| Lao National Tourism Authority                  |                             |                                 |                      |                                |
| Ministry of Industry and Commerce               |                             |                                 |                      |                                |
| Ministry of Defense                             |                             |                                 |                      |                                |
| Net Lending                                     |                             |                                 |                      |                                |
| Loan Repayments                                 |                             |                                 |                      |                                |
| Others (Specify)                                |                             |                                 |                      |                                |

Notes for filling in Table 3.

- Table 3 can be expanded to include the projected Government expenditures as indicated in the development plan.
- Column 1 is for the various ministries of the Lao Government and other expenditures like net lending, loan repayments and others.
- “Net Lending” are the expenditures of the government that are extended as loans to state-owned enterprises (SOEs) and other entities.
- “Loan Repayment” is the amount that goes to repayment of principal and interests from foreign and local loans.
- “Others” can include other main expenditures of the government.
- The above data is available at the departments of planning of the MPI; NERI, MOF; and the line ministries.

The above information is important because it will provide an estimate of:

- The potential reduction in programmed public expenditures to accommodate new projects related to disaster reconstruction and recovery. This will happen if the government decides to shift expenditures from the original pre-disaster projects to new disaster recovery projects.
- The above baseline information will be helpful in the recovery planning and budgeting activities of the MPI and MOF.

## Step 2. Require the Line Ministries and Other Government Agencies to Submit Their Respective Post-disaster Assessments

The MPI, in order to assess the impact of the disaster and prepare the DRRP, must have the inputs from the line ministries who have conducted their post-disaster damage, loss and needs assessment (PDNA). The conduct of the PDNA will be carried out by the concerned ministries upon the order of the Office of the Prime Minister after a disaster. The authority from the Office of the Prime Minister should have followed the standard operating procedure (SOP) in undertaking the PDNA which was approved by the Government.

## Step 3. Consolidate the Production Losses of the Sectors for the Year That the Disaster Occurred

Based on the submitted assessment reports of the line ministries, the MPI can calculate the reduction in projected outputs in each sector/sub-sector by tabulating their pre- and post-disaster estimates. Table 4 below shows the consolidated value-added losses in the sectors/sub-sectors in current and constant prices.

**Table 4. Pre-Disaster Estimates and Post-disaster Estimated Value-Added Production Losses**

| Sub-Sectors               | Value-Added in Production Within the Year the Disaster Occurred |                       |   |                   |   |  |  |
|---------------------------|---|-----------------------|---|-------------------|---|--|--|
|                           | Pre-Disaster Value-Added Estimates                              |                       | Post-Disaster Value-Added Estimates             |                   |   |  |  |
|                           | Current Price (Kips)  | Constant Price (Kips) | Estimated Income Losses in Current Price (Kips) | Value-Added Ratio | Estimated Losses in Value-Added in Current Price (Kips) | Revised Value-Added Estimate in Current Price (Kips) | Revised Value-Added Estimate in Constant Prices (Kips) |
| A                         | B   | C                     | D   | E                 | F   | G  | H  |
| Crops                     |   |                       |   |                   |   |  |  |
| Livestock                 |   |                       |   |                   |   |  |  |
| Fisheries                 |   |                       |   |                   |   |  |  |
| Forestry                  |   |                       |   |                   |   |  |  |
| Manufacturing             |   |                       |   |                   |   |  |  |
| Mining                    |   |                       |   |                   |   |  |  |
| Power                     |   |                       |   |                   |   |  |  |
| Tourism                   |   |                       |   |                   |   |  |  |
| Water supply              |   |                       |   |                   |   |  |  |
| Transportation            |   |                       |   |                   |   |  |  |
| Telecommuni-cation        |   |                       |   |                   |   |  |  |
| Trade                     |   |                       |   |                   |   |  |  |
| Private Services          |   |                       |   |                   |   |  |  |
| Other Government Services |   |                       |   |                   |   |  |  |
| Health                    |   |                       |   |                   |   |  |  |
| Education                 |   |                       |   |                   |   |  |  |

|       |  |  |  |      |  |  |  |
|-------|--|--|--|------|--|--|--|
| TOTAL |  |  |  | N.A. |  |  |  |
|-------|--|--|--|------|--|--|--|

Notes in filling in Table 4.

- Column A is for the sectors/sub-sectors that were assessed after the disaster.
- Column B is for the pre-disaster estimated value-added in current price of the sectors/sub-sectors for the year that the disaster occurred which can be found in Table 2.
- Column C is for the pre-disaster estimated value-added in constant price of the sectors/sub-sectors for the year that the disaster occurred. This is calculated by multiplying the current price value by the price deflator (base year 2002) as determined by the MPI.
- Column D is for the income losses in current price as quantified by the assessment teams of each sector/sub-sector.
- Column E is for the value-added ratio or coefficient of the sector/sub-sector which can be found in Table 2.
- Column F is for the value-added losses in current price for the sectors/sub-sectors. This is the product of:
  - Losses (Column D) x Value-Added Coefficient (Column E) = Column F.
- Column G is for the post-disaster revised estimated value-added of the sectors/sub-sectors in current price. This is the difference between:
  - Column G = Column B (Pre-disaster estimated Value-added) – Column F (Post-Disaster Value-added Losses)
- Column H is the post-disaster revised estimated value-added of the sectors/sub-sectors in constant price. This is calculated by multiplying Column G by the price deflator.

#### Step 4. Consolidate the Losses Due to Higher Production Costs and Other Losses, in Current Prices for the Year the Disaster Occurred

Higher production costs and other losses in some sectors will impact in some selected sectors like trade and services. To account for this, higher production costs and other losses (aside from production losses) should be accounted for.

**Table 5. Higher Production Costs and Other Losses in Gross and Value-Added Terms**

| Sub-sectors       | Losses in Current Prices (Kips) |                     |        |                   |                        |                     |        |
|-------------------|---------------------------------|---------------------|--------|-------------------|------------------------|---------------------|--------|
|                   | Gross Value                     |                     |        | Value-Added Ratio | in Value-Added Terms   |                     |        |
|                   | Higher Production Cost          | Cost of Cleaning Up | Others |                   | Higher Production Cost | Cost of Cleaning Up | Others |
| A                 | B                               | C                   | D      | E                 | F                      | G                   | H      |
| Crops             |                                 |                     |        |                   |                        |                     |        |
| Livestock         |                                 |                     |        |                   |                        |                     |        |
| Fisheries         |                                 |                     |        |                   |                        |                     |        |
| Forestry          |                                 |                     |        |                   |                        |                     |        |
| Manufacturing     |                                 |                     |        |                   |                        |                     |        |
| Mining            |                                 |                     |        |                   |                        |                     |        |
| Power             |                                 |                     |        |                   |                        |                     |        |
| Tourism           |                                 |                     |        |                   |                        |                     |        |
| Water supply      |                                 |                     |        |                   |                        |                     |        |
| Transportation    |                                 |                     |        |                   |                        |                     |        |
| Telecommunication |                                 |                     |        |                   |                        |                     |        |
| Trade             |                                 |                     |        |                   |                        |                     |        |

|                           |  |  |  |  |  |  |  |
|---------------------------|--|--|--|--|--|--|--|
| Private Services          |  |  |  |  |  |  |  |
| Other Government Services |  |  |  |  |  |  |  |
| Health                    |  |  |  |  |  |  |  |
| Education                 |  |  |  |  |  |  |  |
| <b>TOTAL</b>              |  |  |  |  |  |  |  |

Notes in filling out Table 5.

- In Column B, the gross value of the losses due to higher production costs, cleaning and others are the values reported in the assessment of the sectors.
- The value-added losses in current prices due to higher production costs, cleaning up of debris and others (Columns F, G and H) are derived from multiplying Columns B, C and D by their respective value-added ratio/s which is contained in Column E.
- The value-added losses due to higher production costs, cleaning up of debris and others can be converted in constant prices by multiplying the value-added values in Columns F, G and H by the price deflator as determined by the MPI.

### Step 5. Analyze the Production Losses, Losses Due to Higher Production Costs and Other Losses, In Current and Constant Prices for the Year the Disaster Occurred

Losses due to higher production costs and other losses of the various sectors will generally be a gain to other sectors/sub-sectors, particularly those engaged in trading (like materials and goods supply) and services (like construction and repairs) and rentals. For example, farmers who have to re-plant after a disaster totally destroyed their crops, may have a higher production cost for the same quantity of harvest within the year. In re-planting, traders of seeds, pesticides, fertilizers, etc. will have added income from the new purchases of the farmers. As such, the loss of the farmers will be the gain of the traders. The cost of cleaning up the debris or rubbles from the disaster will likewise require labor which is a gain to the services sector.

To reflect the gains of some of the sectors/sub-sectors from the losses of the others, the following table can be used.

**Table 6. Post-disaster Estimated Income Losses and Gains From the Losses of the Other Sectors**

| Sector/ Sub-sector | Value-Added in Current Price (Kips)   |                        |                     |              |                          |                                      | Constant Price (Kips)                |
|--------------------|---------------------------------------|------------------------|---------------------|--------------|--------------------------|--------------------------------------|--------------------------------------|
|                    | Post-disaster Estimated Income Losses | Higher Production Cost | Cost of Cleaning Up | Other Losses | Gains From Other Sectors | Total Post-disaster Estimated Losses | Total Post-disaster Estimated Losses |
| A                  | B                                     | C                      | D                   | E            | F                        | G                                    | H                                    |
| Crops              |                                       |                        |                     |              |                          |                                      |                                      |
| Livestock          |                                       |                        |                     |              |                          |                                      |                                      |
| Fisheries          |                                       |                        |                     |              |                          |                                      |                                      |
| Forestry           |                                       |                        |                     |              |                          |                                      |                                      |
| Manufacturing      |                                       |                        |                     |              |                          |                                      |                                      |
| Mining             |                                       |                        |                     |              |                          |                                      |                                      |
| Power              |                                       |                        |                     |              |                          |                                      |                                      |
| Tourism            |                                       |                        |                     |              |                          |                                      |                                      |
| Water supply       |                                       |                        |                     |              |                          |                                      |                                      |



|                           |  |  |  |  |  |  |  |
|---------------------------|--|--|--|--|--|--|--|
| Transportation            |  |  |  |  |  |  |  |
| Telecommuni-cation        |  |  |  |  |  |  |  |
| Trade                     |  |  |  |  |  |  |  |
| Private Services          |  |  |  |  |  |  |  |
| Other Government Services |  |  |  |  |  |  |  |
| Health                    |  |  |  |  |  |  |  |
| Education                 |  |  |  |  |  |  |  |
| TOTAL                     |  |  |  |  |  |  |  |

Notes in filling out Table 6.

- Column B, the “Post-disaster Estimated Income Losses” refers to the production/income losses of the sector or sub-sector and should be a negative impact to the said sector or sub-sector.
- Column C, D and E, the “the higher production costs, cleaning up activities and others” refer to the losses of the sector or sub-sector which will also be the value of gains of certain sectors.
- For example, trade and services can be expected to gain from the higher production costs of the agriculture sector while the construction and/or transport sub-sectors can gain from higher demand for their services in cleaning up the debris.
- Higher production costs of the other sectors or sub-sectors can be added to the trade and private or government services sectors since the higher production costs involve both inputs bought from the traders and labor for services.
- The assessment team of MPI should refer to their input-output tables to determine as to what sector or sub-sector the losses (in Columns C, D and E) will accrue as a positive impact or gain in Column F. In general, such losses will be a plus or gains to the trade and services sectors.
- Column G, the “Total Post-disaster Estimated Losses” will be the value of the post-disaster estimated losses less the gains, if any, of the sector or sub-sector. In formula:  
Column G = Columns (B + C + D + E) – Column F
- Column H is the value in constant prices which derived from multiplying Column G with the price deflator determined by the MPI.
- The total of the “Total Post-disaster Estimated Losses” in Column G are to be subtracted from the GDP estimates for the year that the disaster occurred in current prices while the value in Column H will be the estimated losses in constant prices.

## Step 6. Estimate the Impacts of the Disaster on Gross Domestic Product (GDP) and Other Indicators

For the year the disaster occurred

Based on the assessment on the reduction in output/income and potential gains of the sectors/sub-sectors, the MPI can calculate the effects on GDP and other macroeconomic impacts. For GDP, the MPI can come up with the revised estimates as shown in the following table.

**Table 7. Impact on Gross Domestic Product for the Year That The Disaster Occurred**

| Indicato | GDP Projection for the Present Year<br>(Pre-disaster) |                            | Total Disaster Losses in Value-Added |                            | Revised GDP Projection for the Year<br>(Post-disaster) |                            |
|----------|---|----------------------------|--------------------------------------|----------------------------|--|----------------------------|
|          | (Current Prices,<br>Kips)                             | (Constant Prices,<br>Kips) | (Current Prices,<br>Kips)            | (Constant Prices,<br>Kips) | (Current Prices,<br>Kips)                              | (Constant Prices,<br>Kips) |
| A        | B   | C                          | D                                    | E                          | F  | G                          |
| GDP      |   |                            |                                      |                            |  |                            |

Notes in filling out Table 7.

- Columns B and C are for the values of the pre-disaster GDP estimate in current and constant prices.

- Columns D and E are the values of the total losses (in value-added terms) from the disaster in current and constant prices from Table 6.
- Columns F and G are for the new GDP estimate in current and constant prices for the year that the disaster occurred. It is derived from subtracting the total value-added losses from the pre-disaster GDP estimate. In formula:
  - Column F = Column B – Column D
  - Column G = Column C – Column E

Based on the estimated effects of a disaster, the impacts to the other indicators of the economy can be projected for the year. The following table can summarize the impacts.

**Table 8. Macroeconomic Impacts, in Current Prices**

| Indicators         | Projection for the Present Year<br>(Pre-disaster) | Revised Projection for the Present Year<br>(Post-disaster) |
|--------------------|---|--|
|                    | Kips  | Kips   |
| Tax revenues       |   |  |
| VAT                |   |  |
| Income Taxes       |   |  |
| Duties             |   |  |
| Others             |   |  |
| Budget             |   |  |
| Budget deficit     |   |  |
| Balance of payment |   |  |
| Other Indicators   | (%)   | (%)  |
| Unemployment       |   |  |
| Inflation          |   |  |

Notes in filling out Table 8.

#### On taxes

- Tax revenues are expected to decrease because of the production and income losses of the productive sectors. The MPI and the MOF can calculate the reduction in taxes using historical data correlation between taxes and the gross value-added of the sectors and/or sub-sectors. On a simpler level, the reduction in income taxes can be estimated by the MPI and/or the MOF based on the estimated reduction in income of businesses. On the contrary, if the private sector can initiate their own reconstruction activities and foreign donors will procure their supplies in the domestic market, consumption will increase raising the collection of value-added taxes (VAT).

#### On budget and budget deficit

- If the government decides to maintain or increase the budget after the disaster despite lower expected tax revenues, the budget deficit will rise. The government will incur debts to maintain the same level or increase in the budget under a lower tax revenue scenario. This will increase the budget deficit for the year.

#### On balance of payments

- The balance of payment can be estimated by consolidating the expected reduction of exports due to the disaster and whatever expected increase in imports that will be needed, such as food supply, medicines, construction materials and other equipment and machinery. The MPI must be able to estimate this based on the submitted reports of the various sectors and/or sub-sectors.
- However, the MPI should also account as plus the foreign currency coming in from foreign donors and remittance or donations from Lao citizens outside the country to their relatives in Lao PDR.

The inflow of foreign currency from foreign donors and Lao citizens abroad may offset a portion of export earnings.

### On unemployment

- Employment or unemployment effects can be estimated by the MPI through the amount of post-disaster losses of the various sectors or sub-sectors for the year that the disaster occurred. The ratio of post-disaster output or production losses over the pre-disaster expected gross output or production of the sector or sub-sector for the year multiplied by the number of persons employed will provide the value of the reduction of employment for the year.
- To estimate the number of people whose employment are affected by the disaster in a certain area, the following information from each sector is needed:
  - Pre-disaster estimated gross output or production.
  - Post-disaster estimated losses.
  - Number of workers.
  - Average wages.
- The following steps can be followed in estimating employment losses in a certain sector.
  1. Based on the reports of the various ministries on the sectors, calculate the ratio of the estimated post-disaster production or output losses for each sector over the pre-disaster estimated gross output or production of the same sector.
  2. Multiply the ratio of the post-disaster losses and pre-disaster estimated gross output mentioned earlier by the number of employed persons to estimate the reduction of employment-years in each sector.
  3. Multiply the number of work-months lost by the value of average wage to give the estimated value of income decline in each sector for each affected geographical area for the year.
- The following table shows in detail the method in estimating the employment losses for a sector as described above.

**Table 9. Estimated Value of Employment Losses for a Sector**

| Value Needed                                | Disaster Year | Year 1 | Year 2 | Year 3 | Total |
|---|---------------|--------|--------|--------|-------|
| <i>Pre-disaster estimated gross output</i>  |               |        |        |        |       |
| <i>Post-disaster production losses</i>      |               |        |        |        |       |
| <i>Ratio of production lost</i>             |               |        |        |        |       |
| <i>Number of workers</i>                    |               |        |        |        |       |
| <i>Number of worker-years lost</i>          |               |        |        |        |       |
| <i>Average annual wage income</i>           |               |        |        |        |       |
| <i>Imputed and self-employed wages lost</i> |               |        |        |        |       |

Notes in filling out Table 9.

- The “pre-disaster estimated gross output” will be from the baseline information of the concerned sector which should be available from the MPI or the concerned ministry.
- The “post-disaster production losses” will be derived from the report of the ministry covering the concerned sector.
- The “ratio of production lost” is the ratio between the “post-disaster production losses” over the “pre-disaster estimated gross output” which is the value in Row 2 divided by the value in Row 1.
- The “number of worker-years lost” is the value derived for multiplying the “ratio of production lost” by the “number of workers” which is row 3 x row 4. The “imputed and self-employed wages lost” is the product of the “number of work-years lost” multiplied by the “average annual wage income” which is Row 5 x Row 6.
- The “number of workers” and “average annual wage income” should be available from the national statistical records.

After calculating the employment losses in all the sectors using the method above, they can be summarized in a single table like the one below.

**Table 10. Employment losses by sector/ sub-sector**

| Sector/ Sub-sector        | Imputed and self-employed wages lost |        |        |        | Total |
|---------------------------|--------------------------------------|--------|--------|--------|-------|
|                           | Disaster Year                        | Year 1 | Year 2 | Year 3 |       |
| Crops                     |                                      |        |        |        |       |
| Livestock                 |                                      |        |        |        |       |
| Fisheries                 |                                      |        |        |        |       |
| Forestry                  |                                      |        |        |        |       |
| Manufacturing             |                                      |        |        |        |       |
| Mining                    |                                      |        |        |        |       |
| Power                     |                                      |        |        |        |       |
| Water supply              |                                      |        |        |        |       |
| Trade                     |                                      |        |        |        |       |
| Private Services          |                                      |        |        |        |       |
| Tourism                   |                                      |        |        |        |       |
| Transportation            |                                      |        |        |        |       |
| Telecommunication         |                                      |        |        |        |       |
| Other Government Services |                                      |        |        |        |       |
| Health                    |                                      |        |        |        |       |
| Education                 |                                      |        |        |        |       |

Notes on Table 10.

- The effect on employment can further be classified according to the gender of the workers by breaking it down in percentage of male and female workers in each sector or sub-sector.
- Year 1, Year 2 and Year 3 employment effects may not be readily estimated if the recovery and reconstruction plans of the government and the private sector are not fully known.
- The sub-sectors in the above table can be consolidated to form the basic classification in the national system of accounts – agriculture, manufacturing, trade and services.

#### On inflation

- The MPI can project the effects on inflation by estimating the effects of the disaster on supply of basic goods and commodities which are included in the basket of goods monitored for inflationary effects like food, beverages, fuel, etc. The MIC and the MAF must be able to provide MPI their inputs in estimating the effects on inflation. The pre- and post-disaster estimated supply of this basket of goods and their corresponding prices can be tabulated to estimate the probable price increase. This can be further validated by a survey of the prices of commodities within and outside the disaster area/s. However, to reflect a realistic price projection, the MPI must consider the post-disaster added cost of production and distribution of the commodities in the basket of goods. Finally, the MPI must consider the price elasticity of the commodities using their existing economic models to firm up the estimated effects on post-disaster prices.

#### For the years after the disaster occurred

For the years after the disaster, the GDP can be estimated by consolidating the losses and gains of the various sectors for the years after the disaster occurred. The procedures in Step 5 should be followed using the estimates in production losses, costs of cleaning up and others and the gains of the concerned sectors for the years after the disaster. The following table will show the estimates.

**Table 11. Impact on Sectoral Incomes for the Years After The Disaster Occurred, in Value-Added Constant Prices**

| Sub-sectors               | Projected Production for the Years If No Disaster Occurred<br>(In value-added Kips) |        |        | Estimated Production Losses Due to the Disaster<br>(In value-added Kips) |        |        | Revised Projections for the Next Years After The Disaster<br>(In Value-Added Kips) |        |        |
|---------------------------|---|--------|--------|--|--------|--------|--|--------|--------|
|                           | Year 1  | Year 2 | Year 3 | Year 1   | Year 2 | Year 3 | Year 1   | Year 2 | Year 3 |
| A                         | B   | C      | D      | E  | F      | G      | H  | I      | J      |
| Crops                     |   |        |        |  |        |        |  |        |        |
| Livestock                 |   |        |        |  |        |        |  |        |        |
| Fisheries                 |   |        |        |  |        |        |  |        |        |
| Forestry                  |   |        |        |  |        |        |  |        |        |
| Manufacturing             |   |        |        |  |        |        |  |        |        |
| Mining                    |   |        |        |  |        |        |  |        |        |
| Power                     |   |        |        |  |        |        |  |        |        |
| Water supply              |   |        |        |  |        |        |  |        |        |
| Trade                     |   |        |        |  |        |        |  |        |        |
| Private Services          |   |        |        |  |        |        |  |        |        |
| Tourism                   |   |        |        |  |        |        |  |        |        |
| Transportation            |   |        |        |  |        |        |  |        |        |
| Telecommunication         |   |        |        |  |        |        |  |        |        |
| Other Government Services |   |        |        |  |        |        |  |        |        |
| Health                    |   |        |        |  |        |        |  |        |        |
| Education                 |   |        |        |  |        |        |  |        |        |
| TOTAL                     |   |        |        |  |        |        |  |        |        |

Notes in filling out Table 11.

- Columns B, C and D are from the baseline information.
- The calculation for Table 11 follows the same procedure as in Step No.5.
- The estimated losses over the years (Columns E, F and G) will be based on the sectoral reports of losses beyond the disaster year. To transform the losses into value-added terms, each of the estimated sectoral losses should be multiplied by their respective value-added ratio or coefficient.
- To transform the value-added figures from current price to constant price, the current price value-added should be multiplied by the price deflator which should be available at the MPI.
- The “Revised Projections for the Next Years After The Disaster in Value-Added Kips” (Columns H, I and J) will be the difference between the estimate of the year if no disaster occurred minus the losses for the same corresponding year after the disaster.
  - Column H = Column B – Column E;
  - Column I = Column C – Column F;
  - Column J = Column D – Column G.

Using the sectoral losses above, the impact on GDP can be estimated below.

**Table 12. Impact on Gross Domestic Product for the Years After The Disaster Occurred**

| Indicator | GDP Projection Without Disaster<br>(Constant Prices, Kips) |        |        | Disaster Losses<br>(Value-Added Constant Prices,<br>Kips) |        |        | Revised GDP Projection After the<br>Disaster Year<br>(Constant Prices, Kips) |        |        |
|-----------|--|--------|--------|---|--------|--------|--|--------|--------|
|           | Year 1   | Year 2 | Year 3 | Year 1  | Year 2 | Year 3 | Year 1   | Year 2 | Year 3 |
| A         | B  | C      | D      | E   | F      | G      | H  | I      | J      |
| GDP       |  |        |        |   |        |        |  |        |        |

Notes in filling out Table 12.

- Columns B, C and D are the GDP projections if there was no disaster, which are from the baseline information.
- The estimated losses over the years (Columns E, F and G) will be the consolidated losses of the sectors beyond the disaster year as shown in Table 11.
- The GDP Projections for the Next Years After The Disaster in Value-Added Kips (Columns H, I and J) will be the difference between the estimate of the year if no disaster occurred minus the losses for the same corresponding year after the disaster.  
 Column H = Column B – Column E;  
 Column I = Column C – Column F;  
 Column J = Column D – Column G.

For the other projected impacts to the economy, a similar analysis can be done and the following table can be used to consolidate the results.

**Table 13. Macroeconomic Impacts for the Years After the Disaster Occurred**

| Indicators         | Without Disaster Projection |        |        | After Disaster Projection |        |        |
|--------------------|-----------------------------|--------|--------|---------------------------|--------|--------|
|                    | Year 1                      | Year 2 | Year 3 | Year 1                    | Year 2 | Year 3 |
|                    | Kips                        | Kips   | Kips   | Kips                      | Kips   | Kips   |
| Tax revenues       |                             |        |        |                           |        |        |
| VAT                |                             |        |        |                           |        |        |
| Income Taxes       |                             |        |        |                           |        |        |
| Duties             |                             |        |        |                           |        |        |
| Others             |                             |        |        |                           |        |        |
| Budget             |                             |        |        |                           |        |        |
| Budget deficit     |                             |        |        |                           |        |        |
| Balance of payment |                             |        |        |                           |        |        |
| Other Indicators   | (%)                         | (%)    | (%)    | (%)                       | (%)    | (%)    |
| Unemployment       |                             |        |        |                           |        |        |
| Inflation          |                             |        |        |                           |        |        |

Notes in filling out Table 13.

- Tax revenues are expected to decrease because of the losses of the productive sectors.
- If the government decides to maintain or increase the budget after the disaster despite lower tax revenues, the budget deficit will rise. The government will incur debts to maintain the same level or increase the budget under a lower tax revenue scenario.
- The balance of payment can be estimated by consolidating the reduction of exports due to the disaster and the expected imports that will be needed such as food supply, medicines, construction materials and other equipment and machinery. If substantial foreign currency inflows are expected from foreign nationals and donors, such amount should be a plus factor to the BOP.

### If the Government Provides Massive Recovery and Reconstruction Activities

If the government decides to implement massive recovery and reconstruction activities, the macroeconomic impacts may be different. This assumes that the government will put in additional investment needed for recovery and reconstruction to expedite the return to normalcy. It is assumed, among others, that the following will be achieved faster over a period of time:

- Farmers will be able to replant.
- Factories will be able to resume operations.
- Transport facilities will open.
- Businesses will normalize.

Under this scenario, the macroeconomic impacts of recovery and reconstruction will depend mostly on the amount, coverage, scope and implementation schedules of the activities that the government will pursue. For instance, the contribution to the GDP and employment of the reconstruction of infrastructure may have repercussions on the budget deficit and the BOP, among others.

To account for the macroeconomic impacts of massive recovery and reconstruction, the MPI in collaboration with the line ministries, can estimate the contributions to the sectors or sub-sectors of such recovery and reconstruction activities and the resulting GDP over the years. The following table can be used.

**Table 14. Impact on Sectoral Incomes and GDP Due to Massive Recovery and Reconstruction Activities, in Value-Added Constant Prices**

| Sub-sectors               | In Value-Added Constant Prices (Kips) |     |              |     |              |     |              |     |
|---------------------------|---------------------------------------|-----|--------------|-----|--------------|-----|--------------|-----|
|                           | Disaster Year                         |     | Year 1       |     | Year 2       |     | Year 3       |     |
|                           | Gross Output                          | GDP | Gross Output | GDP | Gross Output | GDP | Gross Output | GDP |
| A                         | B                                     | C   | D            | E   | F            | G   | H            | I   |
| Crops                     |                                       |     |              |     |              |     |              |     |
| Livestock                 |                                       |     |              |     |              |     |              |     |
| Fisheries                 |                                       |     |              |     |              |     |              |     |
| Forestry                  |                                       |     |              |     |              |     |              |     |
| Manufacturing             |                                       |     |              |     |              |     |              |     |
| Mining                    |                                       |     |              |     |              |     |              |     |
| Power                     |                                       |     |              |     |              |     |              |     |
| Water supply              |                                       |     |              |     |              |     |              |     |
| Trade                     |                                       |     |              |     |              |     |              |     |
| Private Services          |                                       |     |              |     |              |     |              |     |
| Tourism                   |                                       |     |              |     |              |     |              |     |
| Transportation            |                                       |     |              |     |              |     |              |     |
| Telecommunication         |                                       |     |              |     |              |     |              |     |
| Other Government Services |                                       |     |              |     |              |     |              |     |
| Health                    |                                       |     |              |     |              |     |              |     |
| Education                 |                                       |     |              |     |              |     |              |     |
| TOTAL                     |                                       |     |              |     |              |     |              |     |

Notes in filling out Table 14.

- The calculation of the GDP based on the estimated gross output due to the massive recovery and reconstruction activities will follow the previous methods.

Consequently, the other macroeconomic indicators can be estimated with the implementation of massive recovery and reconstruction activities. Table 15 summarizes the impacts.

**Table 15. Macroeconomic Impacts**

| Indicators         | With Massive Recovery and Reconstruction |        |        |        |
|--------------------|--|--------|--------|--------|
|                    | Disaster Year                            | Year 1 | Year 2 | Year 3 |
|                    | Kips                                     | Kips   | Kips   | Kips   |
| Tax revenues       |  |        |        |        |
| VAT                |  |        |        |        |
| Income Taxes       |  |        |        |        |
| Duties             |  |        |        |        |
| Others             |  |        |        |        |
| Budget             |  |        |        |        |
| Budget deficit     |  |        |        |        |
| Balance of payment |  |        |        |        |
| Other Indicators   | (%)                                      | (%)    | (%)    | (%)    |
| Unemployment       |  |        |        |        |
| Inflation          |  |        |        |        |

Notes in filling out Table 15.

- The MPI must estimate the inter-related effects on the macroeconomic indicators of massive recovery and reconstruction activities. For instance, there may be higher GDP but budget deficit may rise and the BOP will be unfavorable to the country.

## Step 7. Analyze and evaluate the needs of all the sectors.

Based on the submitted recovery and reconstruction needs of the various ministries and offices, the MPI must be able to narrow down the priorities to fit into the available resources. The analysis of the MPI should focus beyond the micro analysis of the ministries for their sectors. MPI can consider the following:

- *The number of people affected and the socio-economic impact on families.* The socio-economic impact of disasters on people, especially those living below poverty line and those who are more vulnerable (women, children, elderly, etc), should be given a prime consideration. For instance, in Lao PDR, about 80% of the people depend on the agriculture sector as their source of income and these people are among the poorest. Delays in assisting these people will exacerbate their socio-economic conditions. Prolonged loss of income may also result in deteriorating health conditions and the children getting out of school to help their families earn a living, among others. If the marginalized and vulnerable groups are not prioritized for recovery, there is a possibility that more expenses will be incurred by the government in terms of welfare support in the future. The impact on women can be highlighted in consideration of their vulnerabilities.

After calculating the employment effects in each sector or sub-sector, the impact on poverty can be estimated. Based on the existing poverty line or minimum required income per year for each family in the disaster area, the MPI can calculate if the workers who lost their jobs will fall to the existing number of families living below the poverty line. Moreover, analysis of the composition of families of displaced workers (number and age of children, gender, etc.) can reveal the number of persons who may be adversely affected by the disaster.



- *Contribution to the Economy.* Disasters may cause losses to outputs that are very important to the macroeconomy. For instance, without assistance, a planting season may be missed by the farmers which will result in the scarcity of basic food supply like rice and corn that can cause inflation not only in the disaster-affected areas but also in other districts or even nationwide. Moreover, if damaged agricultural products along with electricity, minerals, livestock, tea, etc. are for export, the much needed foreign exchange for the country may be severely reduced. On the other hand, the outputs of manufacturing companies and other related services that are major contributors to the annual gross domestic product (GDP) can be drastically reduced if recovery activities will be delayed. Some of the questions that should be addressed are:
  1. What are the damaged structures or facilities (usually power and water supply) that are components of production in most sectors? How much is the overall potential loss per day if these facilities are not restored?
  2. How much is the potential loss in revenues from closure of government vital facilities like airports, ports, customs, etc.
  3. How much export earnings will be lost if recovery is delayed by, say 6 months or 1 year?
  4. What are the priorities that will avert a sharp decline in GDP within the year?
  5. What are the programs and projects that will fast track the recovery of the country in the medium-term?
  6. How much is the potential tax revenue losses if the productive sectors are not rehabilitated?
- *Insurance.* The MPI must be able to identify which among the affected firms in the sectors are covered by insurance. There are some industries whose assets are insured. Knowing the extent of insurance coverage will enable the MPI to allocate resources accordingly.
- *Potential threats or hazards created by the disaster.* There may be some hazards that may have been created by the past disasters like an increased risk from landslides to a hydroelectric power plants or a potential flooding of rice and corn lands brought about by destroyed irrigation systems or dikes. The MPI must be able to evaluate the mitigation costs versus the cost of reconstruction should disasters occur.
- *International Commitments.* The Lao PDR has commitments to international organizations like the United Nations (UN), development partners like the WB, ADB as well as bilateral partners and other creditors. Recovery planning must consider these commitments. The questions that may be addressed are:
  1. What will be the effect on the targets in the millennium development goals (MDGs) of the country, especially poverty alleviation goals?
  2. What will be the debt to GDP ratio if all the priorities are funded? (The Lao PDR may have some commitments with foreign development partners on budget deficit targets).

## Step 8. Identify recovery and reconstruction needs.

The quantified damages and losses in the assessments submitted by the various sectors will enable the MPI to estimate the financial requirements to achieve the recovery of the economy. The value of losses can provide a picture of the amount required for recovery while the value of damages is useful in estimating the financial requirements for reconstruction.

### Step 8.1 Set the recovery and reconstruction strategy

Based on its analysis and evaluation of all the assessments submitted by the line ministries, the MPI in consultation with the Ministry of Finance, the National Disaster Management Office and other concerned agencies and in partnership with development partners involved in Lao PDR can adopt a general set of strategy or guidelines for recovery and reconstruction. Some of the broad contents of the strategies can include, among others, the following:

1. Identifying sector-specific factors which will contribute to 'building back better'. Possibilities of relocation of assets and facilities situated in high risk areas. Possible incentives to the private sector for the repair and reconstruction of their damaged facilities and stock with higher standards of resilience.

Enhancing and strengthening medium to long-term disaster risk reduction related issues such as integrating hazard resilience standards in design and construction of all new buildings, retrofitting of existing facilities situated in high risk areas, improving of disaster risk reduction measures in airports and ports, training of personnel on disaster preparedness measures etc.

Policy guidelines and strategies in financing the recovery and reconstruction activities covering both the public and private.

Budgetary allocations by Ministry and/or sector and their limits, if applicable.

#### Step 8.2. Estimate the recovery needs

Recovery activities are generally short-term interventions designed to mitigate and shorten the adverse impacts of the disaster on the personal or household level and the economy in general. Among the activities that are normally included in the recovery phase are:

- A. Continuation of feeding programs, shelter provision and income support.
- B. Urgent restoration of power and water supply as well as medical facilities and transport services.
- C. Normalization of food supply and education.
- D. Support to the restoration of economic activities in agriculture and businesses.

The projects for inclusion in the recovery needs should have been initially identified by the various assessment teams. The following table should summarize the needed amount of the priorities for recovery by sector or sub-sector. The individual programs and projects should be placed under the sector heading.

**Table 16. Summary of Needs for Recovery**

| Sub-sectors       | Ministry Responsible | Total Amount |      | Foreign Cost Component (US \$) | Implementation Period (Month/Year to Month/Year) |
|-------------------|----------------------|--------------|------|--------------------------------|--|
|                   |                      | (Kips)       | US\$ |                                |  |
| Education         |                      |              |      |                                |  |
| Health            |                      |              |      |                                |  |
| Welfare           |                      |              |      |                                |  |
| Roads and bridges |                      |              |      |                                |  |
| Airports          |                      |              |      |                                |  |
| Ports             |                      |              |      |                                |  |
| Telecommunication |                      |              |      |                                |  |
| Power             |                      |              |      |                                |  |
| Water supply      |                      |              |      |                                |  |
| Agriculture       |                      |              |      |                                |  |
| Tourism           |                      |              |      |                                |  |
| Industry          |                      |              |      |                                |  |
| Mining            |                      |              |      |                                |  |
| Others            |                      |              |      |                                |  |

Notes in filling in Table 16.

- The needs for recovery are those that intended to let the sectors and sub-sectors resume their activities and regain their normal pre-disaster productivity. These activities are normally short- to medium-term in duration. The list of projects included in the above table should have been originally identified by the reports of the assessment teams.
- The individual programs and projects should be placed under the sector heading like restoration of schools under education, repairs of hospitals under health, etc.

### Step 8.3. Estimate the Reconstruction Needs

Reconstruction projects usually take longer time period and are intended to sustain the recovery projects and/or mitigate future disasters. These projects must come from the priorities of the various ministries. Some reconstruction projects will include:

1. Relocation of buildings and other facilities (roads, bridges, airports, ports, etc.)
2. Housing resettlements
3. Improving early warning system
4. Other preparedness and mitigation projects

The following table can summarize the projects and needed amount for reconstruction. The individual programs and projects should be placed under the sector heading.

**Table 17. Summary of Needs for Reconstruction**

| Sub-sectors       | Ministry Responsible | Total Amount |      | Foreign Cost Component (US \$) | Implementation Period (Month/Year to Month/Year) |
|-------------------|----------------------|--------------|------|--------------------------------|--|
|                   |                      | (Kips)       | US\$ |                                |  |
| Education         |                      |              |      |                                |  |
| Health            |                      |              |      |                                |  |
| Welfare           |                      |              |      |                                |  |
| Roads and bridges |                      |              |      |                                |  |
| Airports          |                      |              |      |                                |  |
| Ports             |                      |              |      |                                |  |
| Telecommunication |                      |              |      |                                |  |
| Power             |                      |              |      |                                |  |
| Water supply      |                      |              |      |                                |  |
| Agriculture       |                      |              |      |                                |  |
| Tourism           |                      |              |      |                                |  |
| Industry          |                      |              |      |                                |  |
| Mining            |                      |              |      |                                |  |
| Others            |                      |              |      |                                |  |
| Total             |                      |              |      |                                |  |

Notes for Table 16 and 17.

- The “Total Amount in Kips and US\$” is the total amount needed by the sector in Kips and the equivalent in US dollar.
- The “Foreign Cost Component in US\$” is the part of the total cost which will need foreign currency like those for steel, cement, imported equipment and machineries, etc. If this information is not yet available, the MPI must be aware that there may be foreign costs associated with the recovery and reconstruction.
- The implementation period is the approximate implementation date from start to finish.
- The column on “Ministry” is for the ministry responsible for the projects’ implementation.
- Similar to the recovery needs, the individual programs and projects should be placed under the sector heading.

It is important for the MPI to discuss with the other ministries concerned the list of programs and projects that have been identified. The consultation and approval of the programs and projects for recovery and reconstruction should be made at the highest level of the government.

## Step 9. Develop short, medium and long-term projects and designing implementation plan

Based on the identified programs and projects for recovery and reconstruction, a rough schedule of implementation can be developed to show the additional financial needs of the recovery and reconstruction program. Programs and projects can be classified as short, medium and longer term needs of the community and the economy.

- **Short-term projects.** Short-term projects are normally those that are very crucial intended to cushion the impact on family incomes and restore the economic activities in the affected areas as soon as possible.
- **Medium-term projects/programs.** These types of projects are normally in support of sustained recovery of the sector with durations of generally 3 to 5 years. Projects can include new constructions, relocation and disaster mitigation, among others.
- **Longer-term projects/programs.** The projects that are included in the long-term category are generally those that need further research, studies and/or engineering designs before real construction begins. It is not uncommon to have long-term projects that will take 5 to 10 years to be completed.

## Step 10. Analyze Financing Options

Once the priorities are set and approved at the highest level, the MPI can look at possible sources of financing for recovery and reconstruction. The following can be considered:

- *Internal financing.* The MPI can examine the possibility of generating funds internally to fund the programs and projects. This can be done through re-allocation of the existing budget or raising new taxes or floating of government bonds. The following issues should be considered:
  - What are the possible impacts if new taxes are imposed? Is it acceptable to the people at present?
  - What will be the effect of domestic borrowing on the short-term financial liability of the government?
- *Foreign financing.* If domestic financing is not enough, foreign funds can be considered. The following issues should be addressed, among others:
  - Which donor has the better terms for the financing?
  - What is the effect on long-term financial liability of the government?
  - Are there existing loans that can be shifted or diverted to recovery projects?
- *Private sector financing.* Private business can possibly be involved in financing the recovery phase through special arrangements like build-operate-transfer schemes, etc. The MPI must, however, analyze the feasibility and profitability of government financing versus private financing. On the other hand, the MPI must bear in mind the firms in the sectors or sub-sectors are covered by insurance which can finance their own recovery and reconstruction efforts.
- *Policy Measures.* There are some policy measures which can assist in disaster recovery without needing for new funds. Policy responses may be preferable since they do not usually need new budgetary outlays - unlike new projects - although they may result into foregone future revenues. As such, these measures may be adopted on a temporary or time-bounded basis. Among those that may be considered are the following, or a combination thereof:
  - Temporary reduction of taxes on specific vital inputs to production like fertilizers and seeds; equipment and machineries; etc.
  - Moratorium on payment of debts owed from government sources, especially those from the poorest sector like farmers and microentrepreneurs who are usually not credit worthy to private sources of credit.
  - Redirecting existing credit facilities to focus on specific groups such as farmers, micro- and small enterprises.
  - Temporary suspension of government fees that are required to reconstruct damaged structures.

## Step 11. Submit for approval the final list of programs and projects with financing strategy

The list of programs and projects with the financing options finalized by MPI should be submitted and discussed at the highest level of government for approval. There must be a venue where line ministries can discuss the programs and projects included in the list.

Since project implementation usually covers several years, the MPI and the MOF must be able to estimate the adjustments to the government expenditures over the longer term. The final list of programs and projects for recovery and reconstruction should be accompanied by the new estimates of the government expenditures that reflect the additional expenses required beyond the year when the disaster occurred.

The table below will give decision-makers information on the allocation of resources with the recovery and reconstruction activities.

**Table 18. Post-disaster Estimates of Government Budget/Expenditures**

| Allocation By Ministries and Other Expenditures | Amount for the Present Year (Pre-disaster) |                                 | Revised Amount for the Present Year (Post-disaster) |   | Budget Estimates in Coming Years (Kips) |        |        |        |
|---|--|---------------------------------|---|---|---|--------|--------|--------|
|   | Kips                                       | % change from the previous year | Kips  | % change from the pre-disaster estimate | Year 1                                  | Year 2 | Year 3 | Year 4 |
| Ministry of Education                           |  |                                 |   |   |   |        |        |        |
| Ministry of Health                              |  |                                 |   |   |   |        |        |        |
| Ministry of Labor and Social Welfare            |  |                                 |   |   |   |        |        |        |
| Ministry of Public Works and Transportation     |  |                                 |   |   |   |        |        |        |
| Ministry of Agriculture and Forestry            |  |                                 |   |   |   |        |        |        |
| Post and Telecommunication Authority            |  |                                 |   |   |   |        |        |        |
| Ministry of Energy and Mining                   |  |                                 |   |   |   |        |        |        |
| Lao National Tourism Authority                  |  |                                 |   |   |   |        |        |        |
| Ministry of Industry and Commerce               |  |                                 |   |   |   |        |        |        |
| Ministry of Defense                             |  |                                 |   |   |   |        |        |        |
| Net Lending                                     |  |                                 |   |   |   |        |        |        |
| Loan Repayments                                 |  |                                 |   |   |   |        |        |        |
| Others (Specify)                                |  |                                 |   |   |   |        |        |        |
| TOTAL   |  | N.A.                            |   | N.A.                                    |   |        |        |        |

Notes in filling in Table No. 18.

- Column 1 contains the list of the Ministries and other expenditures under the national budget.
- Column 2 is for the pre-disaster programmed amount of budget or expenditures for the various ministries and other types of expenditures (net lending and loan repayments, etc.). Information required can be found with the MOF as contained in the annual budget of the government.
- Column 3 contains the new estimate of expenditures after the disaster.

- Columns 4 (Year 1 to Year 4) should contain the estimated expenditures after the disaster year including the total amount of needed for the recovery and reconstruction from year 1 to year 4. If the implementation period is more than 4 years, columns should be added to accommodate all the years of implementation.

## Step 12. Drafting the Post-Disaster Recovery and Reconstruction Plan

Once approved, the list of programs and projects can be drafted into a full-blown post-disaster recovery and reconstruction plan using all the information identified in this guidance notes.

Section III of this handbook provides guidance on drafting the recovery and reconstruction plan.

## Section 3

### *Terms of Reference of the Assessment Team*

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To facilitate the macroeconomic assessment in the PDNA and formulate a recovery plan, the MPI must have trained personnel who will compose the assessment team to be deployed after a disaster of massive proportions. The following steps can be followed:

#### 4.1 Formation of pre-identified assessment teams within MPI

- Since undertaking post-disaster needs assessment requires mobilizing an assessment team immediately after a disaster event, it is suggested that MPI should form a pre-identified assessment team.
- Members of this team must have undergone training in PDNA to be knowledgeable of the methodology of the PDNA.
- This pre-identified team would also be responsible for building the capacity of other officials of the MPI at national and sub-national levels in undertaking post-disaster assessment. The MPI should create a cadre of sectoral experts within the country for undertaking macroeconomic post-disaster needs assessment.

#### 4.2 Composition of the assessment team

- The MPI can form an inter-disciplinary team to undertake the assessment. Members must be macroeconomists and statisticians who are familiar with the technical details of sectors and their contribution to the national economy; finance specialists from the MOF who are well-versed with government expenditures; and social development or poverty specialists who can analyze the impacts of income reduction on the welfare of individual families especially those that are marginalized and vulnerable.
- It is proposed that a six member inter-disciplinary team coming from the MPI and the MOF be formed for undertaking the assessment. The proposed five member team should comprise of officials drawn from the following departments of MPI:
  - Department of Planning
  - Department of Macroeconomic Analysis
  - Department of Social Development/ Poverty Alleviation
  - Department of Statistics
  - The National Economic Research Institute
  - The Tax Department of the MOF
- Specific expertise required within the team would include the following:
  - Macroeconomists
  - Statisticians
  - Poverty analysts
  - Tax experts
  - Economic forecasters
  - Sectoral economists
- It is recommended that there should be alternate members in the pre-identified assessment team to ensure the availability of qualified manpower to undertake the assessment when needed.

### 4.3 Tasks of the Post-disaster Assessment Team

- The pre-identified team should be activated after a massive disaster event upon the order of the Minister of the MPI.
- Working closely with relevant departments of MPI and other relevant ministries like the MOF, the team members will be responsible for compiling baseline information required for undertaking the post-disaster needs assessment
- Undertake field visits in disaster-affected areas and work closely with Provincial Planning Officers to collect relevant information on damage and losses.
- Coordinate with various ministries in the submission of their individual assessment reports.
- Analyze the assessment reports of the various ministries.
- Write the macroeconomic assessment report containing:
  - The estimated post-disaster performance of the GDP, BOP, fiscal balance, revenue collection, employment, etc.
  - The analysis on the socioeconomic effects on persons and families, especially those who are poor and marginalized including the possible impacts on health, nutrition, education, among others.
  - The list of priority projects for recovery and their corresponding cost estimates.
- Present the findings of the assessment report to the Minister of the MPI and other decision makers for approval.
- Finalize the macroeconomic report cum disaster recovery plan (DRRP) based on the inputs received from the consultations and submit to the Office of the Prime Minister through the Minister of the MPI.
- Consult and discuss with foreign development partners on the possible financing the requirements of the DRP.

### 4.4 Time duration of undertaking assessment

1. Typically the post-disaster needs assessment takes from 2 to 5 weeks.
2. The assessment is usually started once the emergency needs assessment is completed and the relief and response phase of the disasters is over.
3. Before the assessment teams visits the field, it should spend at least one week time to compile the baseline information/data required for the assessment.
4. The field visit would typically last for one week, depending on the scale of the disaster event.
5. Once the field visit is over, another week would be required by the team to coordinate with other ministries in estimating the impacts on certain sectors/sub-sectors.
6. Since the macroeconomic team will wait for the final assessment reports of the various ministries as inputs, another week should be allocated for the drafting of the macroeconomic assessment with the proposed DRP.
7. The draft report should be presented for discussion at the highest level of government.
8. After discussions, another week may be required to finalize the report to incorporate the inputs received from the consultations.

## Session III: Post-Disaster Recovery and Reconstruction Plan





## ***A. Introduction to this Guidance Note:***

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- This Guidance Note is a part of the Handbook on 'Post-Disaster Recovery and Reconstruction Planning' in Lao PDR.
- In this Guidance Note, **recovery** is defined as; restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factor (*Source: UNISDR, 2009*).
- This Guidance Note is to be used for developing the Recovery and Reconstruction Plan. Immediately after a country has been affected by a disaster event, humanitarian needs will be the primary focus, followed by early recovery. Once early recovery is underway, the focus would need to be gradually shifted towards meeting the medium to long-term needs for recovery and reconstruction. At this stage, the recovery and reconstruction plan will be developed, as a response to this progression towards meeting medium and long-term needs of safe and sustainable lives and livelihoods.

## ***B. Purpose of Recovery and Reconstruction Plan:***

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The purpose of developing a Recovery and Reconstruction Plan is as follows:

- To provide a framework for Government of Lao PDR for smooth transition from emergency relief and early recovery, towards medium and longer-term recovery and reconstruction.
- To propose recovery and reconstruction strategy of the Government of Lao PDR after a disaster event, and present strategies, outcomes and activities for each of the key affected sector.
- To propose the implementation modality for coordinating and monitoring recovery and reconstruction.
- To provide a framework with sufficient information and description of status and needs (based on damage, loss and needs assessment), to allow the government and development partners to support the rehabilitation of the damaged infrastructure as well as the medium and longer-term recovery needs for those suffered by the disaster event.

## ***C. Timing for developing Recovery and Reconstruction Plan:***

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- The recovery and reconstruction plan will be developed after the damage, loss and needs assessment has been conducted and the assessment report approved by the National Disaster Management Committee (NDMC). The figure identified in the approved damage loss and needs assessment report will be the basis for development of the recovery and reconstruction plan by the government.
- The plan should be finalized within 2-3 weeks of the approval of damage, loss and needs assessment report.

## ***D. Guidance on developing Recovery and Reconstruction Plan***

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Once the damage, loss and needs assessment report has been approved by the NDMC the process of development of the recovery and reconstruction plan will be initiated and will broadly comprise of the following steps:

### **Step 1: Undertake strategic planning for recovery and reconstruction**

- As a first step to guide recovery and reconstruction process, the strategic direction is to be set. This will comprise of articulating the Vision, Objectives, Strategies and Guiding Principles for the

particular recovery and reconstruction. Formulation of the strategic direction shall be guided by the following:

- Results of the recovery and reconstruction needs identified by the damage, loss and needs assessment report
  - Consultation through a participatory process with different section of affected population such as women, men, elderly, children, ethnic minorities etc. as well as with agencies involved in supporting early recovery, to understand the medium and longer-term needs
  - Joint consultations between different ministries and with development partners to discuss the needs, timeframe and type of support required for recovery and reconstruction.
  - Approval of the Vision, Objectives, Strategies and Guiding Principles by the NDMC Chair.
- **Setting the Vision:**
    - The purpose of setting the Vision is to serve as a beacon for decision makers and provide some broad framework within which decisions will be undertaken. It will provide motivation and aspiration for the country and the affected population to achieve its objectives during recovery and reconstruction. It will also provide a sense of timeline for example completing the recovery and reconstruction within 3 years or 5 years etc.
    - The Vision statement should be clear but broad in its view of the positive consequences for the affected population if the plan is properly implemented. It should provide an overall framework within which the objectives can fit. The Vision should be aligned with the long-term development vision of the country.
    - The typical obstacles faced during recovery and reconstruction that as a result hinders the achievement of the larger goal should be kept in mind while formulating the Vision statement. One key example of such obstacle is the decisions taken in the heat of the emergency period immediately following a disaster, which may often compromise significant opportunities to rebuild 'better' or 'safer'. Thus the Vision statement should pay attention towards longer-term risk reduction.
- **Setting the Timeframe of Recovery and Reconstruction Plan:**
    - Depending on the scale of the disaster and the needs, the time frame of the Recovery and Reconstruction Plan can range from 3 to 5 years or more.
    - The plan is only a starting point, which will offer the indicative framework for prioritizing and programming interventions and allocating resources and assigning the responsibilities to the relevant stakeholders. However, with effective monitoring, the plan will need to be updated.
- **Defining the Objectives of recovery and reconstruction:**
    - The objectives should be based on the analysis of the situation and the Vision adopted for recovery and reconstruction and should be aligned with the socio-economic development objectives of the country. Depending on the sectors that are most affected by the disaster and the needs identified for socio-economic as well as human recovery the objectives could include:
      - Rebuilding the lives of the affected communities to higher standards of resilience
      - Economic recovery through restoring resilient livelihoods of communities, reviving key economic sectors and maintaining macro-economic stability
      - Rebuilding safer public services and infrastructure
      - Protecting the services provided by the environment (for example, degraded forest restoration) for sustainable development
- **Formulating Strategies for recovery and reconstruction:**
    - Strategies can be formulated at two levels; i) overarching strategy for recovery and reconstruction and ii) sector specific strategies for recovery and reconstruction
    - Overarching strategy could include examples such as "Build Back Better" or "Resilient recovery through structural and non-structural measures" etc.
    - Sector specific strategies depending on the findings listed in the Damage, Loss and Needs Assessment Report, the most affected sector will identify the priorities for recovery and reconstruction of the damaged infrastructure and livelihood in the short, medium and long term. . The sector specific Guidance Notes (Section II C) on damage, loss and needs assessment provides examples of sector specific strategies. For instance, strategies for economic recovery can be building a disaster-resilient economy not only in a structural and locational sense, but also in terms of the kinds of businesses that are more likely to recover

quickly from disasters. Risk reduction should be an integral component of all sector strategies. The sector specific strategies should also take into consideration existing sector strategies.

Box 3.1 below shows example of education sector strategies developed after Cyclone Nargis in Myanmar

### **Box 3.1**

#### **Example of Education Sector strategies for Cyclone Nargis Recovery and Reconstruction**

The core objectives of the proposed program are to ensure: (i) restoration of the primary school system, enrolments and to improve retention rates through reconstruction of schools, improving quality of the learning environment (as a mechanism to ultimately improve learning outcomes) and reducing the costs of school for vulnerable families; (ii) reconstruction of destroyed and damaged middle and high schools; and (iii) restoration and enhancement of important early childhood, non- formal and vocational education programs.

This will involve: (i) comprehensive township plans; and (ii) design and implementation of ways to reduce school attendance costs (e.g., supply of textbooks and school materials and develop subsidized school attendance for families whose incomes have been severely affected by cyclone). The affordability of schooling needs to be addressed as a matter of urgency if enrolment and retention objectives are to be met.

The implementation strategy could quickly enhance implementation capacity – particularly at the township level and below – including for the large construction programme. Benchmarks will be developed for township level work plans, facility restoration and distribution of school materials and supplies.

These priorities and the proposed interventions are aligned with and support various national plans. Successful implementation will require close collaboration between the Ministry of Education (MoE) and the international community, to ensure that bottlenecks are addressed quickly and effectively. Even so, considerable needs will remain past the initial three-year period.

*Source: Post-Nargis Recovery and Reconstruction Plan, December 2008*

- **Setting Guiding Principles:**

The Following can serve as the guiding principles for the recovery and reconstruction process:

- The entire process of recovery and reconstruction will be led by the Government of Lao PDR
- Recovery and reconstruction related interventions will be implemented at various levels, from local to national, with participation of beneficiaries and by taking into account different needs of men and women.
- Capacity building of technical government staff at various levels to implement and monitor recovery and reconstruction related activities
- Good practices and lessons learned from earlier recovery in Lao PDR or other ASEAN Member countries or countries in region will be factored in the recovery and reconstruction process.

Box 3.2 and 3.3 below shows examples of guiding principles adopted for recovery and reconstruction of recent disasters in the region and a specific example from Indonesia where community-based approach was adopted for rehabilitation and reconstruction.

## Box 3.2

### Example of Recovery and Reconstruction Principles

#### Gujarat Earthquake, 2001

- Include people and representative institutions in decision making processes
- Strengthen civil society institutions such as NGOs and community-based organizations
- Equity and empowerment
- Voices of the weak and poor are always heard
- Beneficiaries and stakeholders to make informed choices regarding their habit
- Encourage the participation of the private sector, NGOs and expert institutions
- Ensure higher levels of transparency and accountability in the program implementation

#### Aceh and Nias Recovery, 2004, Tsunami

- Community oriented and strong community participation and ownership supporting holistic, sustainable development
- Integrate the disaster response with the local community
- Efficiency, transparency and accountability
- Effective monitoring and evaluation

#### Great East Japan Earthquake and Tsunami Recovery, 2011

- Community focused reconstruction, supported by the government through general guidelines and institutional design
- Complete reconstruction and recovery that taps into the regions latent strengths and leads to technology innovation
- Disaster resilient, safe and secure communities
- Re-building disaster affected areas in order to restore the economy

## Box 3.3

### Example of Community-based approach for reconstruction, Indonesia

To help people in Aceh and Nias rebuild their lives after the December 2004 Indian Ocean Tsunami, the Community-based Settlement Rehabilitation and Reconstruction Project-better known as “Rekompak”- was implemented to help 15,000 families completely rebuild or repair their homes through grants and technical assistance. In addition 176 of the most devastated villages were given grants to rebuild basic infrastructure. In the reconstruction effort, the communities were placed in the driver's seat. Groups of 10-15 families were formed to rebuild their own houses. Village teams were also formed to rebuild priority infrastructure. Each village was also required to come up with a settlement development plan. Facilitators trained by the Ministry of Public Works were assigned to help communities prepare and implement their projects. By using this community-driven approach, grant money was spent more wisely and more effectively. Grants from the Multi-Donor Trust Funds for Aceh and Nias/North Sumatra (MDF) were deposited straight into community accounts in installments. The grants required that at least 30 percent of the members of various project teams were women. Enforcing a woman's touch ultimately led to better project selection and greater transparency.

When Yogyakarta and Central Java were hit by the 2006 earthquake, the Rekompak model was applied to rebuild 6,400 houses and village infrastructures under the Urban Poverty Project. Grants from the Java Reconstruction Fund helped build over 15,000 more homes, including infrastructure in 265 villages. The provinces of Yogyakarta and Central Java replicated the community-led approach at a much larger scale, resulting in 280,000 houses in only two years.

Source: <http://web.worldbank.org/external/projects/main?Projectid=P125648&theSitePK=40941&piPK=73230&pagePK=64283627&menuPK=228424>

## Step 2: Developing investment plan for recovery and reconstruction

- Once the broad strategic direction is provided by the decision makers the investment plan for sustainable recovery and reconstruction should be developed. The investment plan shall clearly articulate the financial need for investment in the various sector affected by the disaster. Formulation of the investment plan shall be guided by the following:
  - The recovery and reconstruction needs of each sector as identified by the damage, loss and needs assessment report forms the base for developing the investment plan, and should be in line with the long term investment needs of the sector.
  - Consultation within ministries at different levels, central, provincial and district (in affected area), in translating the sector recovery and reconstruction strategies into implementable investment projects. As far as possible, these projects should be aligned with the public investment projects of the area and should use the templates and formats prescribed by the PCAP Manual
  - Joint consultations between different ministries and with development partners involved in specific sectors, to finalize the investment projects, in order to ensure the different types of needs are being adequately addressed.
  - Summarize the list of investment projects and their requirements in one common table.
  - Approval of the investment plan by the NDMC Chair.
- **Structure of Investment Plan:** The Investment Plan can be structured in different ways. It can follow the same structure as of the damage, loss and needs assessment report and present the sectoral investment requirements in three parts, namely,
  - Productive sectors (Economic recovery and development, broken down by sub-sectors such as agriculture, industry, commerce, mining etc.)
  - Social sectors and (Basic services and social protection, broken down by sub-sectors such as housing, education, health and sanitation etc.)
  - Infrastructure sector (Infrastructure reconstruction, broken down by sub-sectors such as transport, irrigation, urban water supply etc.)

Alternately the structure of the plan can also follow the way sectors are clubbed in the National Socio-Economic Development Plan of Lao PDR.

- Additionally the Investment Plan shall include a separate section articulating the needs of crucial cross cutting issues such as
  - Disaster Risk Management
  - Environment and Natural Resources Management
  - Vulnerable Population
- **Details of each sub-sector in Investment Plan:** For each of the sub-sectors the Investment Plan shall detail the following:
  - Brief on the impact of the disaster on the sector
  - Overview of recovery and reconstruction related needs in the sector (based on the damage, loss assessment report)
  - Description of sector strategy for recovery and reconstruction (see step 1 of this guidance note)
  - Expected outcomes and results to meet the needs
  - Recovery and reconstruction projects with time frame. The projects should be detailed as per templates used for public investment projects
  - Implementation arrangements within the sector
- **Investment Projects:** The type of projects proposed, will depend on the nature of the disaster, impact faced by the sector and the needs identified for recovery and reconstruction. In the recovery and reconstruction plan the projects can be broadly outlined, however, as support to implement the projects becomes available, these project outlines shall be converted into detailed project proposals. In developing these project proposals the same format used for developing public investment projects in Lao PDR can be used. The Box 3.4 below provides anecdotal examples of recovery and reconstruction projects in various sectors:

### Box 3.4

#### Example of type of recovery and reconstruction projects in various sub-sectors

- Income restoration
  - a. Temporary cash- and food-for-work to the most vulnerable under the Ministry of Labor and Welfare. (This should describe the areas to be included, the people prioritized to be involved, the duration of the program, the infrastructure to be repaired, etc.)
  - b. Employment placement services for those who lost their jobs
- Housing
  - Provision of selected housing materials to repair damaged houses
  - Temporary shelter
  - Feeding
  - Credit or loans for housing repair
  - Building of new housing projects for those who lost their homes
- Health services
  - Prevention of diseases
  - Temporary field hospitals/clinics
  - Building reconstruction
  - Equipment replacement
- Education
  - Temporary schools
  - Replacement of educational materials
  - Building reconstruction
  - Water supply
  - Temporary water supply schemes both for rural and urban areas
  - Repair and replacement of damaged equipment
  - Building reconstruction
- Agriculture
  - Grant of seedlings, fertilizers, tools, livestock, fingerlings and other inputs to agricultural production needed by small farmers
  - Urgent repairs of irrigation systems
- Power Supply
  - Temporary power supply schemes
  - Repair and replacement of damaged equipment
  - Building reconstruction
- Transport
  - Temporary detours of land, sea and air travel
  - Repair of vital navigational equipment
  - Construction of new roads, bridges, ports, airports as necessary
- Repair and reconstruction of government buildings and facilities
  - Repair of buildings and landmarks
  - Replacement of equipment
- Assistance to private businesses (The types of businesses should be highlighted like tourism, micro- and small enterprises, etc.)
  - Credit schemes through development banks
  - Tax incentives like temporary reduction in importation duties, export fees, etc.
- Disaster risk reduction or avoidance (preparedness and mitigation)

- Structural mitigation for floods, landslides, etc.
  - Development of new building codes
  - Risk assessments
- Protection of the vulnerable
  - Cash Grants for vulnerable households: Social assistance and insurance
  - Psycho-Social assistance
- **Result framework** for Investment plan shall be developed. These frameworks shall present the broad outcomes sought in each sector over the time frame. The framework shall also outline the outputs needed to achieve the identified outcomes, and timelines for the achievement divided into smaller periods

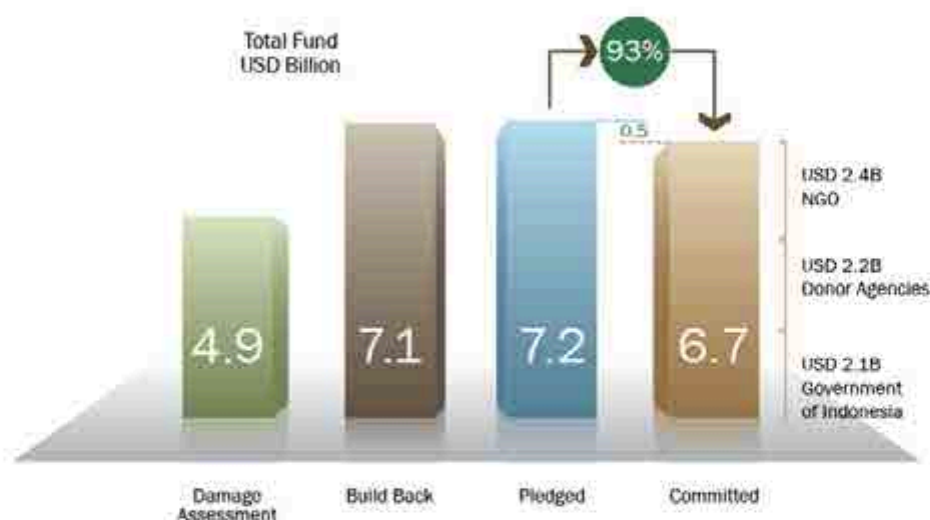
### Step 3: Detailing Financing Plan for recovery and reconstruction

- The key components of this step shall include the following:
  - Resource mobilization and its sources
  - Resource allocation
  - Effective management of financial resources
- **Resource mobilization and its sources:** Though the actual mobilization of resources will take place once the recovery and reconstruction plan is finalized, the plan should provide ideas on the mobilization strategy.
- Depending on the scale of disaster and the volume of financial resources required, following are suggested activities for mobilizing resources:
  - High-level consultation with members of the NDMC on total resources required for recovery and reconstruction and the amount to be provided by the Government of Lao PDR
  - Launch of damage, loss and needs assessment report, which details the amount of financial needs for each of the key sectors, will provide an opportunity to interact with the development partners who may be interested in supporting specific components of recovery and reconstruction.
- Organizing donor conference: Once the recovery and reconstruction plan is finalized, donor conference shall be organized under the leadership of NDMC, to mobilize official international assistance. Outcomes from the donor conference should include pledges to specific sectors for recovery and reconstruction.
- Converting the pledges to commitments remains a challenge in most disasters and requires instilling thrust and confidence within the donors that the money will be used most effectively and a stable financial accountability system is in place. Experience has shown donors are more likely to make commitments to support sector strategies or project proposals that are clearly defined (see step 2 of this Guidance Note). The Box 3.5 below shows the amount and type of finances committed in case of Aceh and Nias recovery after 2004 Tsunami.



### Box 3.5

#### Example: Aceh and Nias Reconstruction needs, pledges and commitment



(Source: Finance, *The Seven Keys to effective aid management*, BRR, 2009)

- The sources of assistance available for recovery and reconstruction will depend on the scale and visibility of the disaster event. However, the typical sources shall include the following:
  - National government: This shall form a very important portion of financial resources not only in terms of amount, but equally important from the view of demonstrating the countries commitment in leading the process of recovery and reconstruction.
  - Bilateral donors and Multilateral Agencies: Bilateral donors shall include the government from partner countries and multi-lateral agencies include UN Agencies and International Financial Institutions (IFI) such as World Bank, Asian Development Bank etc. The resources from development partners can be in form of grants, new loans, re-programming of existing projects or even in some case debt swaps. The resources available can also be earmarked or un-marked.
  - NGOs: Funds mobilized by national and international NGOs can form a large portion of the total recovery and reconstruction fund.
  - Private sector: Private sector shall be encouraged to play a crucial role in mobilizing resources for recovery and reconstruction.
  - Charity: Depending on the scale and visibility of the disaster event charity can sum to a huge amount.
- Resource allocation for recovery and reconstruction:
  - The recovery and reconstruction plan shall provide guidance on effective allocation of resources for recovery and reconstruction. These guidance can include the following:
  - Choosing the right agency to disperse the fund, which can be the Ministry of Finance or any nodal agency, created especially for task of recovery and reconstruction after a large-scale disaster.
  - Different channels can exist for allocating allocating financial resources such as channeling funds through implementing partners or through a common trust fund.
  - Effective channel for disbursement of financial resources is very important; to make sure the committed resources are disbursed quickly in order to meet the actual need. Since these resources are from different sources, there may be a need to create different modalities for channeling resources, such as, funds channeled through government budget by signing a grant or loan agreement and which will follow the government budgetary system and regulations for disbursement, funds which are disbursed outside the treasury but on budget, and lastly funds that are directly transferred to implementing agencies and does not require to pass through the



budgetary process. Each of the modalities has its own advantages and disadvantages in the context of recovery, and should be, as much flexible as possible in order to meet the various needs but at the same should have a clear system by which it can be tracked.

- Pooling resources through multi-donor fund: Large-scale recovery and reconstruction processes can lead to the establishment of other mechanisms for pooling resources together from various sources in form of a multi-donor fund, in order to reduce transaction costs and increase harmonization between program and projects needing funding and the funds actually available. This mechanism also allows assembling funds for programs whose scale exceeds the capacities of a single donor.
- Special funds to meet the speedy response to program needs: In some cases special funds such as Trust funds will need to be created with high degree of flexibility in execution and focusing on speedy response to program needs. Box 3.6 below shows the example from Indonesia where multi-donor fund and trust fund was established for Aceh and Nias Recovery after 2004 Tsunami.

### Box 3.6

#### Example of Multi-donor fund and Trust Fund for Aceh and Nias Recovery

##### Multi donor fund:

The Government of Indonesia and donors formed the Multi-Donor Fund (MDF) to pool donor contributions in place for better coordination. The Fund was co-chaired by BRR as the Government of Indonesia representative, the World Bank as the trustee, and the European Commission as the largest donor. It provided an opportunity to simplify coordination, information flow, administrative and access costs associated with the reconstruction effort. For donors, the MDF created a forum for their voices. The nearly US \$700 million in the MDF which amounted to about 10 percent of the total funds, had a relatively lower degree of constraints and therefore could also be utilized to help bridge gaps between funds and sector needs.

##### Trust fund:

Recovery of Aceh and Nias Trust Fund was created in order to accommodate non-traditional and smaller donors, both public and private. The trust fund included both 'open' funds to be allocated by BRR to the most pressing program needs, and 'closed' funds earmarked by donors for particular projects. BRR had oversight of program and fund allocation, while the Trust Fund was responsible for all aspects of financial management including accounting and fund administration services.

*Source: Finance, The Seven Keys to effective aid management, BRR, 2009*

- Effective management of financial resources:
  - The recovery and reconstruction plan shall outline strategies to be adopted for effective management of financial resources. Strategies and accordingly setting up systems for managing financial resources is required to ensure the donor trust is maintained and at the same time the resources made available is actually reaching the most needed. Such strategies can include the following:
    - System for tracking financial flow: The tracking system should capture not only the aid flow at the macro-economic level (monitor donor activities by economic sectors or administrative unit) but equally important to capture individual projects in order to reduce the risk of multiple financing duplication of efforts, and under-financing of identified needs at the local level. Box 3.7 below briefly describes the tracking systems set up in Myanmar after Cyclone Nargis for tracking financial for recovery and reconstruction.
    - System for reporting on the use of fund and which will provide concrete data that the beneficiaries were benefiting from donor contributions.
    - System for regular review of all programs funded by bilateral and multilateral agencies for consistency with recovery and reconstruction plan and evolving priorities.

### Box 3.7

#### Example of Tracking Progress in Cyclone Nargis

The Coordination Office of ASEAN Humanitarian Task Force established a Delivery Unit. The Unit was headed by a monitoring and evaluation officer and supported by four data analysis. The Delivery Unit had seven main functions:

- Track pledges from donors: Identify funding status, sector allocation, disbursements and delivery channels for each donor;
- Monitor project activities of implementing partners: Monitor implementation progress (outputs/deliverables) of each implementing partner
- Track projects in the field: Monitor progress of projects in the field, provide updates on the status of implementation and identify specific locations for each project
- Develop Recovery Information and Accountability System (RIAS) database; Develop an information database that provided detailed information, from funding status to project delivery
- Issue monthly delivery update to stakeholders
- Synchronize with existing tracking system: Work closely with existing available resource to synchronize and complement information and data;
- Provide analysis for actions; Provide regular or situational updates and analysis on the progress of delivery for high-level decisions and actions.

*Source: A Humanitarian Call, The ASEAN Response to Cyclone Nargis, 2010*

#### Step 4: Deciding on mechanism for Implementation, Monitoring and Evaluation

- The purpose of setting up implementation and monitoring mechanism for recovery and reconstruction would be to make sure more streamlined and cost-effective coordination is in place as quickly as possible, along with a mechanism for oversight, in order to improve efficiencies in delivery.
- The recovery and reconstruction related activities should be implemented within the management structure of the Government of Lao PDR to respond to the disaster, namely under the leadership of the NDMC, which will act as the oversight body.
- The Ministry of Planning and Investment (MPI) shall be responsible for coordination of implementation, monitoring and evaluation of recovery and reconstruction.
- Within MPI an recovery and reconstruction unit will be created for the period of the recovery, and this unit will be responsible for coordinating implementation by different agencies, data collection and analysis, developing periodic progress reports etc. The unit will work closely with the Department of Planning and Investment in the affected provinces for coordination at the field level. With an effective coordination mechanism in place, stakeholders will be able to share information regarding funding-planned, actually available and required, sector-by-sector. In this way critical gaps can be identified in advance, and through consultations, the necessary funding can be sought.
- Regular monitoring will need to be undertaken both from a financial (see step 3) as well as social angle. The monitoring will enable to measure the progress and impact, evaluate the effectiveness of implementation, as well as guide the adjustments needed in the strategy, investment and financial plan.

#### E. Outline of Recovery and Reconstruction Plan

- A tentative outline of Recovery and Reconstruction Plan document is provided below:

## Outline of Recovery and Reconstruction Plan

### Foreword by NDMC Chair:

- This part shall contain a brief description of the activities that led to the drafting of the Plan which are:
  - The description of the disaster that occurred: the type of disaster; the time and date it occurred; among others
  - The areas affected: districts and provinces
  - The response of the government: all the emergency activities and agencies involved
  - The damage, loss and needs assessment conducted

### Acknowledgement

- This part shall enumerate the ministries, agencies, local governments, international and local organizations and persons that helped in drafting the Plan

### Table of Contents

- The name of chapters in the Plan

### Acronyms

- The list of abbreviations used and their meanings, for ease of reference

### Executive Summary

- The concise description of the contents of the Plan, specifically on the description and extent of the effects and impacts of the disaster on:
  - People (women, children, elderly and other vulnerable groups)
  - Infrastructure and livelihoods (damages and losses of the sectors)
  - Economy (macroeconomic effects)
  - Strategies for recovery and reconstruction
  - Needs (by programs and projects by sector)
  - Strategy for recovery and reconstruction
  - Investment plan
  - Financing plan
  - Mechanism for Implementation Monitoring and evaluation
  - Result framework on investment plan

## Chapter I. Overview

- The pre-disaster socio-economic performance of Lao PDR and the economic projections for the year and the succeeding years. These can be gathered from the National Socio-economic Development Plan of Lao PDR.
  - Gross Domestic Product (GDP) - The projected growth of the economy across sectors.
  - Balance of Payment – The expected export earnings vis-à-vis value of imports.
  - Fiscal Balance -The projected budget deficit over the years.
  - Inflation - Prices of various commodities as regularly measured in statistical surveys.
  - Employment – The pre-disaster unemployment rate projections based on the growth of the economy.
  - Poverty Incidence – The present and estimated number of poor families across the country.
  - General description of the extent of the effects of the disaster
    - Areas affected (districts by province)
    - Lives lost per area (districts by province), by sex and age group
    - Types of infrastructure affected (roads, bridges, houses, power, water supply, etc.)
    - Livelihoods affected (farmers, micro-entrepreneurs, etc.)
  - Initial general impacts on the socio-economic conditions of the people in the areas like health and nutrition, education, income, etc. with special mention of women, children and other vulnerable groups like IPs
- The Government's post-disaster emergency response
  - Government assistance extended by area (food, water, medicine, clothing, emergency shelter and other relief assistance)

- Government expenditures
- Assistance from donors (international agencies as well as local and international organizations)
- Initial results of assistance provided
- Other activities done by the government, donors and the affected communities
- The present situation in the disaster-affected areas
  - The conditions of the disaster victims and activities being done by the government and other development partners at present (while the Plan is being drafted).

## Chapter II. Damage and Loss Assessment

Based on the PDNA report, the nationwide effects of each sector are summarized here. It should be noted here that the details of the damages and losses presented in this chapter can be found in the PDNA report.

### Summary of damage and losses and recovery and reconstruction needs

| Sectors         | Damages | Losses | Recovery Needs | Reconstruction Needs |
|-----------------|---------|--------|----------------|----------------------|
| Private Housing |         |        |                |                      |
| Education       |         |        |                |                      |
| Health          |         |        |                |                      |
|                 |         |        |                |                      |
|                 |         |        |                |                      |
|                 |         |        |                |                      |
|                 |         |        |                |                      |
|                 |         |        |                |                      |
|                 |         |        |                |                      |
|                 |         |        |                |                      |
| TOTAL           |         |        |                |                      |

## Chapter III. Recovery and Reconstruction Plan

- Vision, Objectives, Strategies and guiding principles for recovery and reconstruction.
- Investment Plan
- Financing Plan

## Chapter IV. Implementation, monitoring and evaluation.

## Chapter V. Macroeconomic impacts of financing recovery and reconstruction

- This chapter should include the estimated impacts on the macro-economy of the recovery and reconstruction activities. Although the recovery and reconstruction activities can accelerate the recovery of the economy, the financing of the Plan will have economic impacts.
- The following table can show the economic impacts of the Plan.

### Macroeconomic Impacts for the Years After The Disaster Occurred, in Kips

| Indicator | Projections Without the Recovery and Reconstruction Assistance<br>(Constant Prices) |        |        | Revised Projections With the Recovery and Reconstruction Assistance<br>(Constant Prices) |        |        |
|-----------|---|--------|--------|--|--------|--------|
|           | Year 1  | Year 2 | Year 3 | Year 1   | Year 2 | Year 3 |
| 1. GDP    |   |        |        |  |        |        |

|  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|
| 2. Tax revenues  |  |  |  |  |  |  |
| VAT  |  |  |  |  |  |  |
| Income Taxes   |  |  |  |  |  |  |
| Duties   |  |  |  |  |  |  |
| Others   |  |  |  |  |  |  |
| 3. Budget  |  |  |  |  |  |  |
| 4. Budget deficit  |  |  |  |  |  |  |
| 5. Balance of payment  |  |  |  |  |  |  |
| Other Indicators (%)   |  |  |  |  |  |  |
| 1. Unemployment  |  |  |  |  |  |  |
| 2. Inflation   |  |  |  |  |  |  |
| <b>Annexes</b>   |  |  |  |  |  |  |
| <ul style="list-style-type: none"> <li>Result framework for investment plan</li> </ul> |  |  |  |  |  |  |

#### **F. Approval and dissemination of the Recovery and Reconstruction Plan**

- The Recovery and Reconstruction Plan shall be approved by the Chair NDMC and should be made public and widely disseminated.

## ***Key References***

- Handbook for estimating the socio-economic and environmental effects of disasters, ECLAC, 2003
- Guidance note for damage and loss assessment after disasters, The World Bank, GFDRR, August, 2007
- Damage, loss and needs assessment, an Introduction for staff of Asian Development Bank, ADB, 2009