

Regional Programme for Pre-disaster Natural Hazard Loss Estimation

PROCEEDINGS

Regional Consultative Meeting on Development of Pre-disaster Loss Estimation Strategy



Venue: Windsor Suites Hotel, Bangkok, Thailand
Date: 14-15 December, 2009

organized by
Asian Disaster Preparedness Center (ADPC)

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REGIONAL CONSULTATIVE MEETING ON DEVELOPMENT OF PRE-DISASTER LOSS ESTIMATION STRATEGY

Background of the Project

ADPC with the financial assistance from the Royal Norwegian Ministry of Foreign Affairs is implementing a regional program for Pre-disaster Natural Hazard Loss Estimation in Bangladesh, China, Nepal, Philippines, Sri Lanka and Vietnam. In retrospect, more than 7,000 major disasters have been recorded in the world since 1970, causing at least \$2 trillion in damage, killing at least 2.5 million people, and adversely affecting societies. These alarming statistics alone can make natural disasters one of the major urgent and high priority tasks to tackle to sustain the development efforts of most of the developing countries. One of the problems observed in this connection is the lack of knowledge about the economic impact due to potential scenarios of natural disasters. Hence the most important factor in this regard is to assess the damages and losses with regard to natural hazards proactively and plan the Development Initiatives in such a way that the vulnerability is reduced or illuminated. One of the urgent needs of the day is developing a standardized methodology and also to make arrangements for advocacy and sensitizing the policymakers for mainstreaming disaster risk reduction in development initiatives.

The outcome of this Meeting is expected precisely to provide useful inputs to develop a regional training course on Pre-disaster Natural Hazard Loss Estimation which would allow decision makers of respective countries to prioritize risk mitigation investments and measures to strengthen the emergency preparedness and response mechanisms to natural disasters.

Objectives of the Regional Consultative Meeting

The aim of this Meeting is to organize an interactive discussion forum among disaster management professionals, specialists in National planning departments/ministries, sector based development planning specialists etc. from a few candidate countries which are getting frequently affected from natural disaster events such as Bangladesh, China, Nepal, Philippines, Sri Lanka and Vietnam. This meeting is aimed at identifying the national needs & challenges, expectations and also to initiate building the ownership on the final product of this project i.e. 'Regional Course on Pre-disaster Natural Hazard Loss Estimation'. Specifically, the Meeting should:

- ☐ Identify main national level key stakeholders involved in conducting damage and loss estimation with regard to natural hazard for fixing the priorities at national level.
- ☐ Obtain ideas on the available methodologies for estimating disaster losses, review them intensively to understand areas of improvement.
- ☐ Identify an appropriate methodology suitable for estimating pre-disaster losses, which would be used as a standard methodology to address the following.
 - Development of baseline database for dynamic estimation of direct and indirect losses on a sector-by-sector basis (i.e. in line with National Accounting System)

- Analysis of macro- as well as micro-economic potential impacts of direct and indirect losses due to natural disasters
- ☐ Identify the main Factors relating disaster losses that create negative impact on development interventions
- ☐ Identify the subject area to be covered in the Regional Training

The Meeting has been structured into four sessions. In the inaugural session, the participants are expected to conduct a presentation on the existing scenarios of the respective country regarding damage and loss assessment. In this regard, a 'Questionnaire Form' has been provided with the invitation letter as a generic guideline for presentation preparation. In the Plenary Session, the available methodologies with regard to pre-disaster loss estimation have been presented. In the Group Discussion Session, an interactive discussion has been facilitated to obtain overall comments and suggestions from the participants towards finalizing an appropriate method for conducting pre-disaster loss estimation in the selected countries. Finally, the participants are expected to prepare a roadmap that would lead to create national ownership of sustaining pre-disaster loss estimation process in the long run. That is, participants of this Meeting are considered as the primal resource personnel who would lead to formulate the 'Regional Course on Pre-disaster Natural Hazard Loss Estimation'.

The detailed proceedings of this Regional Consultative Meeting are given accordingly.

Inaugural Session

Dr. Bhichit Rattakul, Executive Director, Asian Disaster Preparedness Center (ADPC) graced the opening session as the Chief Guest to initiate this Regional Consultative Meeting. Dr. Govind Prasad Kusum, the honorable Secretary, Ministry of Home Affairs, Government of Nepal paid his kind presence as the Guest of Honor in this Meeting. Mr. N.M.S.I. Arambepola, Director of ADPC welcomed all participants for joining this important meeting. Mr. Md. Habibur Rahman, project Manager, ADPC facilitated this meeting as the master of ceremony. At first, he presented the objectives of the workshop and also described the expected outcomes of the meeting.



Dr. Rattakul addressed the Opening speech. He stated that ADPC with the generous

Dr. Bhichit Rattakul, Executive Director, Asian Disaster Preparedness Center (ADPC) made his Opening Speech in the Inaugural Session of Regional Consultative Meeting;

financial assistance from the Royal Norwegian Ministry of Foreign Affairs is privileged to implement a regional program for Pre-disaster Natural Hazard Loss Estimation in Bangladesh, China, Nepal, Philippines, Sri Lanka and Vietnam.

Dr. Rattakul stressed that one of the problems observed in addressing Disaster Risk Reduction (DRR) is the lack of knowledge about the economic impact due to natural catastrophes. In this regard, a detailed knowledge on the aspect of economic impact will help the countries in designing structural measures and using risk transfer mechanisms as it may be appropriate in addressing the needs in advance. Therefore, the most important factor is to estimate the damages and losses proactively and plan the Development Programs in such a way that the vulnerability is reduced or illuminated. However, such practice is rarely followed by most countries due to unavailability of standard methodology to assess the impact. Hence, one of the urgent needs of the day is developing a standardized methodology and also to make arrangements for advocacy and sensitizing the policymakers for mainstreaming disaster risk reduction in development initiatives. Last but not least, Dr. Rattakul stated that this process would explore a common understanding and determination to implement an astute approach to determine the economic impacts of natural disasters.

Country Presentation Session

Presentations of country experiences on assessment of risk scenarios, availability of database and economic model incorporating disaster risk reduction in the context of each country perspective have been conducted by the country representatives. The presentations are structured based on the information provided under 'country questionnaire form' as referred in Annex 3.

On behalf of Bangladesh, Mr. Md. Farhad Uddin, Director General, Disaster Management Bureau (DMB) made a presentation by emphasizing on the following subject matters.

- ☐ Country Profile
- ☐ Major Hazards & Disasters in Bangladesh
- ☐ Glimpses of Cyclone 'Sidr' and 'Aila'
- ☐ Economic Losses due to Floods and Cyclones
- ☐ Government Strategy in Disaster Management
- ☐ Key Area relating to pre-disaster assessment & DRR
- ☐ Institution Engaged in DNA
- ☐ Initiatives Incorporate Risk Reduction Concepts
- ☐ Multi-hazard Mapping and Assessment
- ☐ D-Form
- ☐ Annual Budget for DRR and Financial Instruments
- ☐ Long-term Risk Reduction Challenges

As the representative of China, Dr. Liao Yongfeng, Department of Disaster Assessment and Emergency Response, National Disaster Reduction Center of China (NDRCC) made a very comprehensive presentation on disaster assessment and emergency relief in China. The main findings of the presentations are given below:

☐ At present, there is no mandated agency to conduct pre-disaster damage and loss estimation due to natural hazard in China.

☐ There are more than 30 sectors concerned with hazard management in central government, some of which have established special institutions to develop pre-disaster damage and loss assessment of natural hazard.

☐ NDRCC, sponsored by the office of the National Committee for Disaster Reduction, is responsible for collecting, processing information from special sectors and assess disaster damage and loss.

☐ In the national 11th-five-year disaster reduction plan, the office of NCDR brought forth to carry out disaster risk investigation all over the country.

☐ NDRCC builds the ground application system to satellites for disaster reduction which receives and processes the satellite image, monitor and assess disaster situation all over the country every day.

☐ NDRCC are planning to build an integrative disaster information management platform storing disaster situation, all kinds of natural hazard information from the other special sectors, and social and economical baseline information.



Dr. Liao Yongfeng, Department of Disaster Assessment and Emergency Response, National Disaster Reduction Center of China (NDRCC), China made a country level presentation;

Dr. Govind Prasad Kusum, the honorable Secretary, Ministry of Home Affairs, Government of Nepal made a presentation on Damage and Loss Assessment in Nepal Perspective, of which the main rudimental issues are given below.



Dr. Govind Prasad Kusum, Secretary, Ministry of Home Affairs of Nepal made a country level presentation;

☐ To cope with the threats of the multi-hazards, a few government agencies (e.g. Ministry of Home Affairs, Ministry of Local Department, Department of Water Induced Disaster Prevention etc.) in Nepal are initiating some activities on pre-disaster stage.

☐ The Ministry of Home Affairs is the national focal agency for multi-sectoral coordination and collaboration for effective response (evacuation, search, rescue & relief).

☐ Central Natural Disaster Relief

Committee (CNDRC) is the apex body which is chaired by the Home Minister comprised of with the representation of Health Minister & Minister of Physical Planning & Construction.

- ☐ The major financial instruments utilized for reducing the impact of disaster:
 - Central Disaster Relief Fund – for response;
 - Prime minister's relief fund – for mitigation activities;
 - Some percentage of annual budget is allocated for such activities to some sectoral ministries;

Ms. Rowena D. Mantaring, Chief Economic Development Specialist, Regional Development Coordination Staff, National Economic and Development Authority (NEDA) of Philippines conducted a presentation by focusing on the following points.

- ☐ NDCC is mandated to coordinate policy and efforts on disaster risk management including collection of data on damages.
- ☐ Financial instruments e.g. Catastrophe Insurance and Crop Insurance are utilized as a measure to reduce impact of disasters.
- ☐ NEDA assesses the effects of disasters on the economy by using Input-Output Table.
- ☐ With regard to pre-disaster loss estimation, 2008 Guidelines on Mainstreaming DRR in Sub-national Development Land Use/Physical Planning in the Philippines-
 - provides methodologies for risk estimation and valuation in terms of fatalities and cost of property damages
 - involves hazard characterization and frequency analysis, consequence analysis, risk estimation, and risk valuation



Ms. Rowena D. Mantaring, Chief Economic Development Specialist, Regional Development Coordination Staff, National Economic and Development Authority (NEDA) of Philippines made a country level presentation;

Mr. Basil Fernando, Director General, National Building Research Organization of Sri Lanka made the Country level presentation by highlighting the following findings.

- ☐ Pre-disaster activities are assigned to Disaster Management Centre which comes under the purview of Disaster Management & Human Rights.
- ☐ Basically Grama Niladhari (Village Headman) assesses the damages in his village and submits to Divisional Secretary (DS). Under the DS there are 30 to 40 villages. Please see reporting format NDRSC – 1 and 2.
- ☐ With regard to DRR, Rs. 1,500,000,000/= (US \$ 14 million) has been allocated from the National Budget annually.
- ☐ In general, two agencies including Disaster Management Centre and National Disaster Relief Centre maintain disaster related database.

At the end of the Country presentation session, an inter-active group discussion was facilitated for identifying crucial factors in estimating Pre-disaster Natural Hazard Losses, obtaining ideas on the available methodologies for estimating disaster losses and identifying the main factors relating disaster losses that create negative impact on development intervention.

Methodology Presentation Session

Dr. Amit Kumar, Senior Project Manager, ADPC made a presentation on “Multi-hazard Scenario Development: Concepts and Applications”. Afterwards, a presentation on “Identification of Appropriate Methodology based on Prevailing experiences in Conducting Pre-disaster Loss Estimation” has been conducted by Mr. Md. Habibur Rahman, Project Manager, ADPC. In these presentations, the following issues have been emphasized intensively.

- ▣ Objectives & Rationale of formulating pre-disaster loss estimation strategy
- ▣ Existing Methods and Tools
- ▣ Methodology Adopted for the Project
- ▣ Policy Options: Loss Sharing & Risk Financing
- ▣ Categorization of Potential Impacts
- ▣ Proposed Loss Estimation Modeling Structure



Dr. Amit Kumar, Senior Project Manager, ADPC made a presentation on “Multi-hazard Scenario Development: Concepts and Applications”;

Through an inter-active group discussion, the available methodologies including Input-Output (I-O), Computable General Equilibrium (CGE), Social Accounting Matrix (SAM), Growth Model, Catastrophe Simulation Model, and Econometric Model have been analyzed and reviewed. Finally, it is agreed that a blending of three methodologies including ECLAC, CatSim and Econometric Model would be utilized in developing pre-disaster natural hazard loss estimation methodology. In this regard, *it is indispensable to study the country level Macroeconomic Models* which are in general available with the Central Bank as well as Asian Development Bank (ADB) of each Country.

Course Curriculum Preparation Session

In this first session of Day 2 (i.e. 15 Dec 2009), participants worked on developing the initial Course Curriculum of Pre-disaster Loss Estimation that are attached with this report in Annex 4. They have also identified the tentative objectives of the Training Course that are pointed out below.

- ☐ To devise a methodology of estimating potential losses with regard to natural disasters
- ☐ To customize the methodology for pre-disaster DLA at national and local level
- ☐ To enhance the modeling by integration the DRR Components
- ☐ To strengthen the capacity for using risk assessments and loss assessment for better national development planning
- ☐ To link the loss assessment methods in development activities that ensure risk mitigation
- ☐ To bring the technical domain into the practice

Participants are also requested to come up with a potential list of Training Participants through group discussion. It is agreed that mid-level Managers as well as Senior Technical Staff in Public Sector especially-

- ☐ Disaster Management Agencies – Risk Assessments
- ☐ Sector Specialists (Agriculture, Industries, Service etc.)
- ☐ Central Macro and Microeconomic Planning Agencies



Mr. Md. Habibur Rahman, Project Manager, ADPC made a presentation on the proposed Methodology of Pre-disaster Loss Estimation Strategy;

along with the Private Sectors who are engaged in DRR should be included in the scope of the Training Course. Specifically,

- ☐ Bangladesh: Ministry of Food and Disaster Management, Ministry of Planning (Planning Commission)
- ☐ Sri Lanka: Ministry of Planning, Ministry of Rehabilitation and Disaster Relief, Ministry of Disaster Management and Human Rights
- ☐ Nepal: Ministry of Home Affairs, National Planning Commission (Independent/ The Chairman is the Prime Minister)
- ☐ Philippines: NEDA (Regional Development Coordination Staff & National Planning and Policy Staff)
- ☐ China: NDRCC

Besides, Asian Development Bank, the World Bank and UNDP should take part in this Loss Estimation Training Course.

It is also observed that the success of obtaining the right participants in the Training Course mostly depends on the sensitization of high level policymakers at the country level. Therefore, a recommendation has been made to organize a Regional Sensitization Seminar for the policymakers.

Terms of References for the Steering Committee

All participants identified the following terms of references for the proposed steering committee of the Project.

- ☐ To Review the documents (e.g. Country Specific Model Outputs, Training Course Materials etc.)
- ☐ To act as a Country Focal Point in advocating the Pre-disaster Loss Estimation Model and Training Course at national level
- ☐ To advise/ facilitate the Training Course and provide resource inputs for updating the Course materials
- ☐ To accelerate country level efforts in institutionalizing the Pre-disaster Loss Estimation Initiative within the existing Administrative System

Concluding Remarks

In the concluding remarks, Mr. Arambepola reaffirmed that this Project would be one of the primal efforts in linking sustainable economic development and disaster resilience initiatives in order to achieve a paradigm shift from reactive response to a proactive risk reduction culture. As agreed by all of the participants, this Project would endeavor to construct a macroeconomic model that would predict about the potential impact of natural disasters in the Gross Domestic Output of an economy. Finally, as planned, this initiative would be further extended to deliver a comprehensive training package targeted for building the capacity of key specialists in National planning departments/ ministries, sector based development planning specialists etc. from selected priority countries and deliver the training at regional level. He pondered that the outcome of this Regional Consultative Meeting would precisely provide useful inputs to develop the regional training course on Pre-disaster Natural Hazard Loss Estimation which will allow decision makers of respective countries to prioritize risk mitigation investments and measures to strengthen the emergency preparedness and response mechanisms to natural disasters. He concluded that the meeting was very successful in achieving its following expected outcomes.

- ☐ main national level key stakeholders involved in conducting damage and loss estimation with regard to natural hazard for fixing the priorities at national level have been well identified;
- ☐ the available methodologies for estimating disaster losses have been intensively reviewed;
- ☐ an appropriate methodology suitable for estimating pre-disaster losses has been customized;

Finally, as suggested by all of the participants, a Steering Committee would be formulated by ensuring the participation of country level experts who would act as the technical advisory group to review and finalize all course materials related to pre-disaster loss estimation. Besides, a Technical Workshop would be organized in reviewing as well as validating this innovative approach of pre-disaster natural hazard loss estimation strategy.

ANNEX 1
(List of Participants)

**REGIONAL CONSULTATIVE MEETING ON
DEVELOPMENT OF PRE-DISASTER LOSS ESTIMATION STRATEGY**

Venue: Windsor Suites Hotel, Bangkok, Thailand

Date: 14-15 December, 2009

LIST OF PARTICIPANTS



Mr. S.M. Nasim Uddin
Joint Chief
General Economics Division
Planning Commission, Ministry of Planning
Block# 14, Room# 24, Ser-e-Bangla-Nagar
Dhaka 1207, Bangladesh
Mobile: 880171 1593049
Telephone: 8802 8116751
e-mail: nasimuddin@rocketmail.com
Fax: 8802 9100 634; 8802 9100 641



Mr. Md. Farhad Uddin
Director General
Disaster Management Bureau
Disaster Management & Relief Bhaban
4th Floor, 92-93 Mohakhali C/A
Dhaka- 1212, Bangladesh
Mobile: 880 171 346 1025
Telephone: 8802 8858755; 8802 8857795
Fax: 880-2-8851615
e-mail: dmb@btcl.net.bd



Mr. Liao Yongfeng
Department of Disaster Assessment and Emergency Response
National Disaster Reduction Center of China (NDRCC)
Room 1307, Zhong Min Plaza, No.7 Baijuang Road, Xuanwu District, Beijing,
China 100053
Mobile:
Telephone: 8610 83551213
e-mail: liaoyongfeng@ndrcc.gov.cn
Fax: 8610 8351213

LIST OF PARTICIPANTS



Dr. Govind Prasad Kusum
Secretary
Ministry of Home Affairs
Government of Nepal
Mobile:
Telephone: 977-1-4211249
e-mail: govind_kusum@yahoo.com
Fax: 977 14211 246



Ms. Rowena D. Mantaring
Chief Economic Development Specialist
Regional Development Coordination Staff
National Economic and Development Authority (NEDA)
Pasig Building, 12 Saint Josemaria Escriva Drive, Ortigas Center
Pasig City 1605, Philippines
Mobile: 0915 9809724
Telephone: 632 6313743
e-mail: rdmantaring@neda.gov.ph
Fax: 632 6313743; 632 6313708



Mr. Emmanuel Torrente
National consultant on damage and needs assessment
Food and agriculture organization, manila, United nations, Block 6 lot 15,
sugartowne, batasan hills, quezon city 1126
Mobile: +639193954991
Telephone:
e-mail: emmanueltorrente@yahoo.com
Fax:



Mr. Kanakarathna Mudiyanseelage Mahinda Siriwardana
Additional Director
Economic Research Department
Central Bank of Sri Lanka 30, Janadhipathi Mawatha Colombo 01 Sri Lanka
Mobile: 0724701013
Telephone: 94-11-2477196
e-mail: kmmsiri@gmail.com and msiri@cbs.lk
Fax: 94-11-2477712

LIST OF PARTICIPANTS



Mr. Basil Fernando
Director General
National Building Research Organization
99/1, Jawatta Road, Colombo 5, Sri Lanka
Mobile:
Telephone: 9411 250 5149
e-mail: dgnbro@sltnet.lk
Fax: 94-112-502611



Mr. Bienvenido R. Rola
Social Policy
Institute of Strategic Planning and Policy Studies
University of the Philippines Los Banos College of Public Affairs College,
Laguna, Philippines
Mobile:
Telephone: 66 (0)2 288 1466
Fax: +66 2 288 1085
e-mail: xuan@un.org
escap-idd@un.org



Ms. Yejin Ha
Information and Communication Technology and Disaster Risk Reduction
Division (IDD)
United Nations Economic Commission for Asia and the Pacific (UNESCAP)
8th Floor, United Nations Building
Rajdamnern Nok Avenue
Bangkok 10200 Thailand
Mobile:
Telephone: 66 (0)2 288 1466
Fax: +66 2 288 1085
e-mail:



Mr. N.M.S.I. Arambepola
Director
Urban Disaster Risk Management (UDRM)
Ext. 500
Email: arambepola@adpc.net



Dr. Amit Kumar
Senior Project Manager
UDRM
Ext.
Email: amit@adpc.net

LIST OF PARTICIPANTS



Mr. Arghya Sinha Roy
Program Manager
DMS
Ext.
Email: arghya@adpc.net



Ms. Nirmala Fernando
Project Manager
UDRM
Ext. 506
Email: nirmala@adpc.net



Mr. Habibur Rahman MD.
Project Manager
UDRM
Ext.: 510
Email: habib@adpc.net



Ms. Suree Sungcharoen
Senior Program Administrative Coordinator
UDRM
Ext. 509
Email: suree@adpc.net



Ms. Katevilai Nil-on
Program Administrative Coordinator
UDRM
Ext. 510
Email: katevilai@adpc.net

ANNEX 2
(Programme Schedule)

**Regional Consultative Meeting on
DEVELOPMENT OF PRE-DISASTER NATURAL HAZARD LOSS ESTIMATION STRATEGY**

PROGRAMME SCHEDULE

Day 1 : 14 December 2009	
8.30 - 9.00	Registration of participants
9.00 - 10.15	Inaugural session <ul style="list-style-type: none"> • Welcome Speech by Mr. N.M.S.I. Arambepola – ADPC • Project Overview: Background & Objectives by Mr. Md. Habibur Rahman – ADPC • Opening Speech by Dr. Bhichit Rattakul, Executive Director, ADPC • Brief Introduction of Participants
<i>10.15 - 10.45</i>	<i>Coffee/tea break</i>
10.45-12.30	Presentations of Country experiences on Assessment of Risk Scenarios, Availability of Database, Economic Model incorporating Disaster Risk Reduction - (15 minutes for each Participants) <i>[The presentations will be based on the information provided under 'Country Questionnaire Form']</i>
<i>12.30 - 13.30</i>	<i>Lunch</i>
13.30 - 14.30	Group Discussion on factors considered in estimating Pre-disaster Natural Hazard Losses
14.30-15.15	Multi-hazard Scenario Development: Concepts and Applications
<i>15.15 - 15.30</i>	<i>Coffee/tea break</i>
15.30-16.15	Identification of Appropriate Methodology based on present experiences Conducting Pre-disaster Loss Estimation in Bangladesh, China, Nepal, Philippines, Sri Lanka & Viet Nam
16.15-17.00	Inter-active Group Discussion for identifying gaps, and areas for improving the prevailing methodology
Day 2 : 15 December 2009	
9.00 - 10.00	Presentation on the Proposed Course Curriculum on Pre-disaster Natural Hazard Loss Estimation Strategy
10.00 - 10.45	Inter-active Group Discussion on Course Curriculum
<i>10.45 - 11.00</i>	<i>Coffee/tea break</i>
11.00 - 12.00	Presentation on the finding of Inter-active Group Discussion on Course Curriculum
<i>12.00 - 13.00</i>	<i>Lunch</i>
13.00 - 15.00	Identification of Terms of References for the Steering Committee
<i>15.00 - 15.15</i>	<i>Coffee/tea break</i>
15.15 - 16.30	Preparation of Action Plan for Course Development and delivery
16.30 - 17.00	Concluding Remarks

ANNEX 3
(Country Questionnaire Form)

**Regional Consultative Meeting on
Development of Pre-disaster Natural Hazard Loss Estimation Strategy**
Venue: Windsor Suites Hotel, Bangkok, Thailand; Date: 14-15 December, 2009

INFORMATION ON DAMAGE AND LOSS ASSESSMENT

[Note: Please fill-up this Questionnaire Form and kindly send it back to Mr. Md. Habibur Rhaman, Project Manager, ADPC by e-mail habib@adpc.net. This form should not be exceeded more than four (4) pages. Participants are expected to briefly present this information on the first day of the Meeting and a ten (10) minutes Power Point Presentation would be highly appreciated.]

- 1. Is there any mandated agency which is mandated to conduct Pre-disaster damage and loss Estimation due to natural hazard in your country?**
- 2. Is there any national level effort for multi-sectoral coordination and collaboration in conducting post-disaster damage and loss assessment? If yes, please explain.**
- 3. What are the sectors considered in development planning of the national economy?**
- 4. Are there sectoral plans or initiatives that incorporate risk reduction concepts into each respective sectors (such as agriculture, manufacturing, commerce, tourism, infrastructures, services etc.)?**
- 5. Has your country carried out multi-hazard assessment/ risk assessment?**
Please explain- at what level the assessment has been done (e.g. national, provincial, district, village)
- 6. Do you have an annual budget for disaster risk reduction? If yes, how does the government allocate budget?**
Please mention about the percentage of total allocated budget in Disaster Risk Reduction
- 7. Are financial instruments (e.g. reserve fund, insurance, credit, Cat-bond etc.) utilized in your country as a measure to reduce the impact of disasters?**
- 8. Are there any training programmes available for the responsible staff to conduct pre-disaster or post-disaster damage and loss assessment?**
- 9. Please describe the existing methods to assess Damage & Loss due to natural disasters.**
- 10. Please list down the names of institutions involved in Loss estimation (both Pre- and Post-disaster).**
- 11. Which agency maintains disaster related database in your country?**
- 12. Additional information / comments you may wish to provide with regard to damage and loss estimation.**

ANNEX 4
(Proposed Course Curriculum)

REGIONAL TRAINING COURSE ON PRE-DISASTER NATURAL HAZARD LOSS ESTIMATION

COURSE CURRICULUM

MODULE 1: INTRODUCTION TO DISASTER RISK REDUCTION	
M1.S1:	• Basic Definitions: Disasters, Hazard, Vulnerability, Risk & Capacity
M1.S2:	• Disaster Risk Reduction Concepts
M1.S3:	• Methods and Tools of Disaster Risk Assessment
M1.S4:	• Pros and Cons of Government Interventions in Disaster Risk Management
MODULE 2: INTRODUCTION TO ECONOMICS OF NATURAL DISASTERS	
M2.S1:	• Basic Concepts of Macroeconomics
M2.S2:	• Potential Impacts of Disasters on Economic Development
M2.S3:	• Behavior of Market Economy with regard to Natural Disasters
M2.S4:	• Role of Economists in the Government in DRM
MODULE 3: QUANTIFICATION OF DISASTER RISK ASSESSMENT	
M3.S1:	• Disaster Risk Assessment Models & Process
M3.S2:	• Introduction to Hazard Risk Assessment
M3.S3:	• Introduction to Vulnerability & Capacity Assessment
M3.S4:	• Development of Scenarios based on Disaster Risk Assessment
M3.S5:	• Methods for Quantification of Disaster Risks
MODULE 4: INTRODUCTION TO DAMAGE AND LOSS ESTIMATION	
M4.S1:	• Link from Disaster Risk to Estimation of Economic Impact
M4.S2:	• Basic Concepts of National Income Accounts and
M4.S3:	• Damage & Loss Estimation: Production Sectors (Agriculture, Manufacturing, Commerce, and Tourism)
M4.S4:	• Damage & Loss Estimation: Infrastructure Sectors
M4.S5:	• Damage & Loss Estimation: Social Sectors
M4.S6:	• Damage & Loss Estimation: Cross-cutting Sectors
M4.S7:	• Methodology for Data Collection
MODULE 5: INTEGRATION OF DRR INTO ECONOMIC MODELING	
M5.S1:	• Tools and Methods of Economic Modeling
M5.S2:	• Macroeconomic Modeling: Damage and Loss Estimation
M5.S3:	• Introduction to Catastrophe Models (e.g. CatSim, Other Simulation Models, SAM, I-O Models, GTAP etc.)
M5.S4:	• Integration of DRR into Econometric Model
MODULE 6: ECONOMIC POLICY-MAKING FOR DRR	
M6.S1:	• Policy Options
M6.S2:	• Policy Optimization