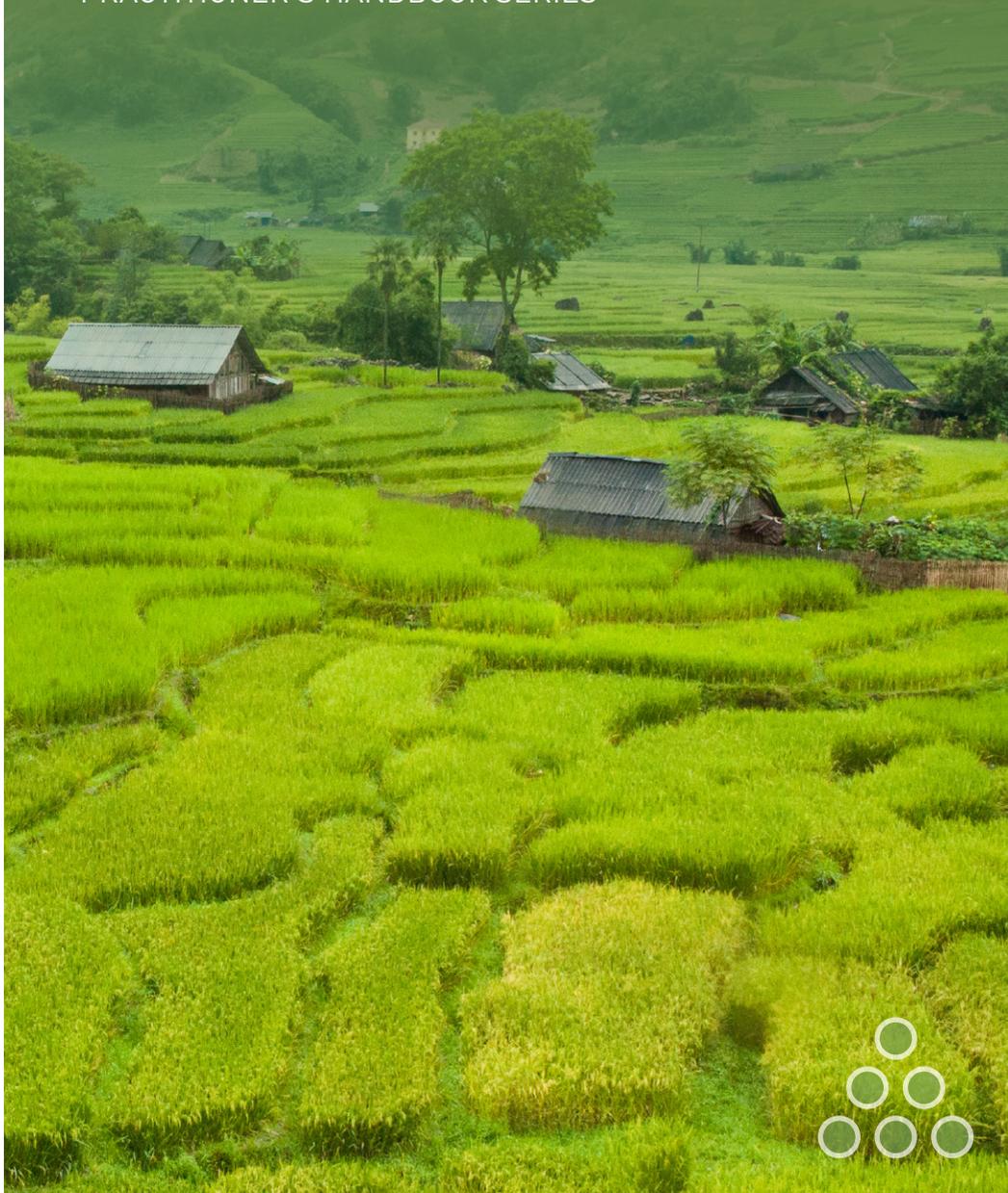


# INTEGRATING DISASTER RISK MANAGEMENT INTO THE **DEVELOPMENT PROCESS**

DISASTER RISK MANAGEMENT  
PRACTITIONER'S HANDBOOK SERIES



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INTEGRATING DISASTER RISK MANAGEMENT  
INTO THE **DEVELOPMENT PROCESS**

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**Integrating Disaster Risk Management into the Development Process** is the result of a collaborative, multistakeholder effort over the course of 2011-2013, drawing upon the knowledge and experience of many organizations and individuals across Asia and the Pacific.

The handbook was developed by the Asian Disaster Preparedness Center (ADPC), with funding from the Asian Development Bank (ADB). Ian Davis, Oxford Brookes University, and Brianna Hunt Ficcadenti, ADPC, edited the handbook, with support from the ADPC writing team: Atiq Kainan Ahmed, Senaka Basnayake, Marino Deocariza, Rowan Fraser, Gabrielle Iglesias, Lucy Pearson, Arghya Sinha Roy and Kondokher Golam Tahwid.

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Christine Apikul provided copyediting and Lowil Fred Espada graphically designed the handbook in addition to sourcing photographs.

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## 1.1 ABOUT THE SERIES

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The **Disaster Risk Management Practitioner's Handbook Series** portrays what the disaster risk management (DRM) practitioner can contribute to a selection of government-led processes in order to strengthen disaster resilience and foster sustainable, inclusive development across Asia and the Pacific.

Governments in the region have recognized that reducing underlying vulnerabilities and exposure to natural hazards is critical to achieving sustainable development. There is an increasing call to integrate the management of disaster risk into all public and private activities. As such, DRM practitioners are increasingly expected to support the integration of DRM within the many stages of development.

Accordingly, the handbooks aim to provide advice to the DRM practitioner on both strategic and practical options for operational implementation of DRM within a selection of development processes and tools. The advice contained in the handbooks draws on the experience and knowledge of a wide range of DRM and development practitioners with experience across Asia and the Pacific.

The series is comprised of three complementary handbooks:



**Integrating Disaster Risk Management into the  
Development Process**

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**Integrating Disaster Risk Management into  
Urban Management**

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**Integrating Disaster Risk Management into  
Climate Change Adaptation**



The handbooks specifically address those DRM practitioners who are government officials and have the role or responsibility to manage or reduce disaster risk. As such, the practitioner may be a member of a national or subnational DRM agency, or an officer within a line ministry or subnational authority who has been charged with the responsibility for DRM within the agency's scope of work.

For DRM practitioners who are familiar with integrating DRM, the handbooks can function as an aide memoire. For practitioners with less experience, the handbooks can act as a guide as to how they can best direct their efforts. For officials engaged in development planning, urban management and climate change adaptation, the handbooks will provide insight into how they can benefit from the contributions of the DRM practitioner.

### **A note on cross-referencing**

Each handbook can be used alone or in combination with the other two. It is hoped that the practitioner will find each handbook to be complete within the scope of the topic. However, in order to facilitate a greater understanding of the topic under discussion, the practitioner is invited to follow-up on the systematic cross-referencing found throughout all three handbooks. The three handbooks will be respectively cross-referenced as

DEVELOPMENT 

URBAN 

CLIMATE 

## 1.2 ABOUT THIS HANDBOOK

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**Integrating Disaster Risk Management into the Development Process** promotes the adoption of a DRM approach to development decision making in order to both protect public investments from the impacts of natural hazards as well as prevent them from exacerbating the existing risk profile of communities and assets.

This handbook specifically addresses those DRM practitioners who sit within:

- the National Disaster Management Agency; or
- a sector agency or local government authority and have the designated responsibility for DRM.

This handbook provides DRM practitioners with advice for intervention in four key development processes: public policymaking, development planning, budgeting and resource allocation, and project management. To that end, the handbook explicitly identifies DRM entry points into the general stages of the aforementioned processes, guiding the practitioner on how to support government authorities to consider and treat disaster risk. The handbook aims to:

- provide the DRM practitioner with the confidence to engage with government officials for risk sensitive development;
- supply the practitioner with sound arguments to be used in advocating for the integration of DRM;
- detail the approaches, strategies, tools and activities for achieving comprehensive integration of DRM into the designated development process; and
- demonstrate the fundamental concept of integration, which involves embedding the stages of the DRM process into the corresponding stages of the target development process.

In **Section 2**, the handbook gives an overview of the DRM practitioner and his or her contribution to safe and sustainable development. This section outlines the relationship between disasters and the development process in Asia and the Pacific, and discusses the information, skills and partners required for the successful integration of DRM. The section concludes with the anticipated outcomes of integration and the expected benefits for development in Asia and the Pacific.

**Section 3** provides the DRM practitioner with detailed strategic and operational advice on how to integrate DRM into the stages of public policymaking (Chapter 3.1), development planning (Chapter 3.2), budgeting and resource allocation (Chapter 3.3), and project management (Chapter 3.4).

Finally, **Section 4** offers the DRM practitioner key messages for the successful integration of DRM into the development process.

## SECTION 2

# THE DRM PRACTITIONER AND THE DEVELOPMENT PROCESS





PEOPLE'S REPUBLIC OF CHINA. In 2008, a magnitude 8.0 earthquake in Sichuan killed over 87,000 people and caused USD 85 billion in damage. Many hospitals and schools, most of which were relatively new, collapsed while fully occupied.

PAKISTAN. Floods from the Indus River in 2010 resulted in almost 2,000 deaths and losses of more than USD 10 billion. A large irrigation system that converted wetlands to farmlands promoted the location of homes and livelihoods in the floodplains, increasing the exposure of the population to the floods.

MYANMAR. The 2008 Cyclone Nargis damaged 50-60% of the schools in the Yangon and Ayeyawardy districts; inadequate maintenance was a major contributing factor. While the Ministry of Education adopted maintenance procedures prior to the cyclone, limited budget allocation for school maintenance restricted regular upkeep of the buildings.

AUSTRALIA. In the booming coal-mining town of Emerald, whole suburbs, which were built on a flood plain thought to rarely flood, were under meters of water after the high intensity 2010-2011 Queensland floods. With beliefs that La Niña patterns could continue to intensify due to climate change, there are now fears that the suburbs will experience heavy flooding regularly.

Development in large part determines how hazards impact people and economies.

*(UNISDR and WMO, 2012)*

Since the 1970s, Asia and the Pacific has seen remarkable development progress in a variety of sectors in many countries, including rapid economic expansion, social transformation, increased access to health and educational services and infrastructure development. In the same period, disasters have resulted in a steady loss of life and a gradual increase in physical losses, correlating to the region's economic growth and infrastructure expansion (ADB, 2013). These losses, and the related setbacks in poverty alleviation and socio-economic progress, are not inevitable; they are often the partial result of development decisions taken without appropriate consideration of the potential impacts of natural hazards.

While disasters have a clear negative impact on development, the relationship is not one sided. The development choices made in many countries in the region have led to increased vulnerability and exposure of communities and assets to natural hazards. According to the World Bank, factors such as urbanization and environmental degradation, in addition to climate change, have increased the severity and rate of disasters by more than 400 per cent since the 1980s (World Bank, 2013).

For development to become more resilient to the impacts of hazards, countries must adopt a disaster risk sensitive approach to development, promoting the selection of resilient development pathways. All development activities, from long-term strategic goal setting to everyday infrastructure maintenance, have the potential to significantly reduce the risk of adverse disaster impacts, provided they include careful consideration and management of the ever-changing disaster risk situation.

THE DISASTER RISK MANAGEMENT  
PRACTITIONER PLAYS AN IMPORTANT  
ROLE IN ACHIEVING SUSTAINABLE  
DEVELOPMENT BY FACILITATING THE  
ASSESSMENT AND TREATMENT OF  
DISASTER RISK WITHIN THE PROCESSES  
THAT GUIDE DEVELOPMENT

## 2.1 THE DRM PRACTITIONER

The DRM practitioner is an individual whose professional function includes contributing to the management of disaster risk within a sector, geographic area or organization. Some practitioners dedicate themselves full time to managing disaster risk, such as a Program Officer based in a country's National Disaster Management Agency, or a DRM officer located in a sector line agency. Other practitioners may be appointed as DRM focal point within a government agency, yet their responsibilities are not limited to DRM. For example, an Engineering Officer within the department for school construction may be the DRM focal point for the education sector in a particular country. Box 1 describes what the DRM practitioner does, with whom, how, and why.

### BOX 1 The DRM practitioner

The DRM practitioner works ...

*for* municipal, subnational or national government agencies

- on*
- reducing disaster risk where possible
  - managing the remaining disaster risk

- with*
- government agencies and departments
  - DRM or climate change adaptation focal points
  - at-risk communities and civil society organizations
  - universities and other research oriented organizations
  - bilateral and multilateral development partners
  - private businesses and the media

- by* using appropriate risk information to affect changes in:
- knowledge and awareness
  - activities and behavior
  - technical capacity
  - political commitment
  - plans and policies
  - programs and budgets
  - institutional arrangements
  - management tools and systems

- to*
- protect communities, assets and livelihoods from the adverse impacts of natural hazards
  - promote disaster preparedness, response and recovery practices
  - achieve long-term sustainable development

Regardless of the extent of technical DRM training they have received, DRM practitioners are uniquely positioned to contribute to the achievement of safe, sustainable and equitable development.

## 2.2 THE DRM PRACTITIONER'S CONTRIBUTION TO DEVELOPMENT

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DRM aims to avoid, reduce or transfer the adverse impacts of natural hazards on people, property and the environment through activities and measures for prevention, mitigation and preparedness. It involves undertaking a logical and sequential process for the judicious design, implementation and evaluation of strategies, policies and measures that aim to:

- understand disaster risk, considering hazards, exposure and vulnerabilities;
- reduce disaster risk through measures that aim to protect lives and assets;
- promote disaster preparedness, response and recovery practices; and thus
- facilitate and advance sustainable development (IPCC, 2012).

The DRM practitioner can contribute to sustainable development by facilitating the integration of DRM into development activities. The DRM practitioner may do so by drawing upon a number of unique characteristics that provide the practitioner with a robust platform for managing disaster risks. The practitioner's contributions include perspective, tools, skills, experience and a DRM approach.

**PERSPECTIVE** | The DRM practitioner thinks about natural hazards and looks at things from a risk perspective. This perspective is concerned with reducing the potential loss of lives and assets and thereby ensuring safe, healthy, and productive communities. Colleagues from other fields will bring different perspectives to the development processes; each makes a contribution towards the achievement of sustainable, inclusive development.

**TOOLS** | The DRM practitioner uses specific tools, some of which are unique to the DRM field, in order to achieve the aim of reducing risk and managing residual risk. Tools the DRM practitioner might use include spatial analysis software, risk assessment methods, and public policies.

**SKILLS** | Use of the tools mentioned above requires a specific skill-set that the DRM practitioner may learn through structured trainings, self-directed study and job experience. These skills can include public outreach and persuasion, technical analysis and planning.

**EXPERIENCE AND KNOWLEDGE** | The practitioner can influence development by drawing upon personal experience and examples from around the region of sound DRM practices as well as the consequences of development actions that ignore disaster risk. For this reason DRM practitioners should be sure to record, document and disseminate their experiences, particularly for use in training and orientation of new practitioners.

**APPROACH** | To manage risk, the practitioner takes a DRM approach to their work, following a continuous process of gathering and analyzing risk information, identifying which risk can be reduced, and how to manage the remaining risk. The integration of DRM involves embedding the stages of this risk management process within the relevant stages of development processes.

The International Organization for Standardization has developed the ISO 31000 *Risk Management: Principles and guidelines on*



*implementation*, an internationally recognized and followed process for comprehensively and systematically managing risk. The process consists of the following five stages:

**1. Communication and consultation.** A continual discussion with communities and public officials carries on throughout the DRM process. Generally, it ensures that all stakeholders both understand and contribute to the conversation regarding disaster risk. Issues include disaster impacts, the need for DRM, identification of risks, agreement on the level of acceptable risk, and the risk management measures required.

**2. Establishing the context.** In this stage, the social, cultural, political and economic environment within which DRM will be implemented is defined. This includes understanding: the responsibilities and capacities of government organizations; the role played by private and civil society organizations (CSOs); and how decisions are made. During this context analysis, the criteria are set for determining acceptable levels of risk, or the amount of risk a particular society is willing to allow.



**3. Risk assessment.** The overall technical, economic and social process of risk identification, risk analysis and risk evaluation is undertaken during the risk assessment stage. It involves technical professionals (social scientists, engineers, economists, urban planners etc.), as well as representatives of affected sectors and communities. Risk assessments identify historical and potential future hazards; study past impacts and the underlying drivers of risk; examine social, economic and environmental vulnerability as well as the exposure of people and assets to the hazards; consider the capacity of the society to deal with potential impacts; analyze the potential frequency and intensity of future consequences; and evaluate whether the existing level of risk meets the criteria for what is acceptable.

Methods for risk assessment can be top-down, quantitative and driven by hard data, or they can be participatory and seek a more qualitative understanding of risk. Ideally they are both. The general components of any risk assessment are detailed in Box 2 on page 16.

Perhaps the most challenging aspect of undertaking a risk assessment is gathering the necessary data. The data required for a quality risk assessment will have to be collected from various sources, such as national DRM offices; government line agencies and statistical offices; meteorological, hydrological or seismological agencies; research institutes and universities; international development partners and local community groups. Acquiring sufficient and appropriate data can be a challenge, as often datasets will be incomplete, outdated or even nonexistent.

Regular updating of any risk assessment presents another challenge. Updating the assessment, and the data it is based on, is necessary as hazards and socio-economic vulnerabilities are changing constantly. The government must recognize that because risk is constantly fluctuating risk management is ongoing and so funds will need to be allocated for updating of risk assessments.



Regardless of the method employed or the coverage of the analysis, risk assessments are usually structured around four major steps:

1. **Establishing baseline data** involves gathering demographic and sector data (such as for the agricultural sector). Data should be understood spatially using Geographic Information Systems, or hand-drawn maps (i.e. data should be geo-referenced).
2. **Hazard mapping** includes gathering data on historic hazard events and projected future changes in frequency and intensity, as well as the nature and extent of any losses due to the hazard and the affected areas.
3. **Vulnerability and capacity assessment** involves evaluating communities, businesses, organizations, sectors, structures and systems to measure their susceptibility to loss or damage.
4. **Estimating potential losses** uses all of the information gathered to determine and rank risk areas. Ideally this includes a risk map showing zones with varying degrees of risk for a particular hazard (or hazards).

The information generated through risk assessments is crucial to ensuring quality DRM. The more accurate the risk information, the more adequately the risk can be addressed and treated.

**4. Risk treatment.** Specific measures to reduce or manage risk are identified and implemented during the risk treatment stage. This is a cyclical process of: deciding on the treatment type (whether to reduce existing risk or manage residual risk); identifying the measure; assessing its suitability through testing tools such as computer modeling, pilot projects, drills and simulations; evaluating the effectiveness of the treatment; and modifying or generating new risk treatment until a consensus is reached on the level of risk acceptable.

Risk treatment measures are determined by the context: nature and scope of risk, capacity of stakeholders to implement measures, likely cost and effectiveness of measures, resources available etc. | see page 104 for examples of specific disaster risk treatment measures; URBAN 🏠 2.2 and CLIMATE 🌪️ 2.2 provide further examples |

**5. Monitoring and review.** The DRM process is undertaken so that continual improvements can be made at all stages. The purposes are: to analyze and learn lessons from hazard events, changes and trends; to detect changes in the context including changes to the risk itself, which can require revision of risk treatments and priorities; ensure that the risk control and treatment measures are effective in both design and operation; and identify emerging risks.

Box 3 summarizes the contributions the DRM practitioner can make to facilitate the integration of DRM into the public development process.

BOX 3 The DRM practitioner's contribution to development	
<b>Perspective</b>	
<ul style="list-style-type: none"> <li>Looks at things through a risk lens</li> </ul>	<ul style="list-style-type: none"> <li>Focuses on reducing disaster risk related to all current and future hazards</li> </ul>
<b>Tools</b>	
<ul style="list-style-type: none"> <li>Risk assessment methods</li> <li>Damage and loss assessments</li> <li>Computer-based modeling</li> </ul>	<ul style="list-style-type: none"> <li>National DRM policies and frameworks</li> <li>International agreements and conventions</li> <li>GIS-based spatial analysis</li> </ul>
<b>Skills</b>	
<ul style="list-style-type: none"> <li>Advocacy</li> <li>Awareness raising</li> <li>Capacity building</li> <li>Risk communication</li> </ul>	<ul style="list-style-type: none"> <li>Negotiation</li> <li>Planning and testing</li> <li>Interpreting technical information</li> <li>Spatial and financial analysis</li> </ul>
<b>Experience and knowledge</b>	
<ul style="list-style-type: none"> <li>DRM theory</li> <li>The practitioner's own</li> </ul>	<ul style="list-style-type: none"> <li>Natural hazards and climate change</li> <li>Sound practice from the region</li> </ul>
<b>Approach</b>	
<ul style="list-style-type: none"> <li>Consultation and communication</li> <li>Establishing the context</li> </ul>	<ul style="list-style-type: none"> <li>Risk assessment</li> <li>Risk treatment</li> <li>Monitor and review</li> </ul>



## 2.3 THE PUBLIC DEVELOPMENT PROCESS

---

Sustainable development has been defined as meeting the needs of the present without impeding the ability of future generations to meet their needs (UN, 1987). The international development agenda emphasize the need for sustainable economic, social and environmental development. Similarly, in recent decades, governments across Asia and the Pacific region have been moving in that direction.

Development takes place within a framework of national and international demands and trends; it is a complex affair. Many actors are involved, including CSOs, local and national government agencies, international aid agencies, national and international private sector organizations and the communities themselves. Public and private agencies often find themselves competing against each other for financial and other resources, as well as power and prestige. Mandates and competencies often overlap and run into conflict.

Managing development within this context is a continually challenging task. Government institutions have a particularly vital role to play in molding, guiding and prioritizing a country's development trajectory via a number of interlinking processes that stem from political will and strategic planning and lead through to tangible implementation, determining objectives, responsibilities and resources along the way. These development processes are meant to guide the investment of public resources in creating new or maintaining existing programs and projects.

The importance of sound management for securing long-term sustainable development is critically important. A great diversity of tools exists for the public management of development. Countries throughout Asia and the Pacific have mobilized a series of such tools to regulate development and guide public investment.

## Common development tools:

- 🍃 **Policies** are a key instrument used by governments to officially address societal problems and steer the development of a country. They are often the result of a political process where public recognition of a problem results in action being taken. Policies can be broad overarching frameworks that set the goals, objectives and guiding principles for public action in an entire sector, like health care policy or a cross-cutting theme such as gender equality. Alternatively, they can be focused on a particular regulatory issue, such as building construction quality.
- 🍃 **Development plans** cover anywhere from 3-5 years for medium-term plans to 30 years for development visions. They set a vision for the development trajectory of the country and seek to regulate the overall progress, prioritizing among sectors and objectives in order to attain equitable and sustainable development. The level of detail and the types of issues addressed in development plans are the prerogative of government. Some plans are short strategic documents, while others are quite comprehensive documents that detail the program and projects to be undertaken.
- 🍃 **Budgets**, typically prepared by governments each year, allocate resources for both capital and recurrent purposes over the forthcoming fiscal year, revising and rolling over medium-term expenditure plans to achieve their goals and objectives. As government resources are finite, budgets distribute resources among the many competing demands.
- 🍃 **Projects** are the mechanism by which government manages capital investments for the tangible implementation of the goals, objectives and priorities laid out in policies and plans. A project may be housed with one government body, or it may involve multi-agency implementation. Each project has specific objectives to meet within a defined time period and budget.

Development processes should work together, be complementary and form a constantly evolving regulatory system. Effective medium-term development planning will require adequate sector policymaking for programmed implementation. Large capital investment projects such as public infrastructure and utility construction require careful budgeting.

National governments are only just beginning to engage the tools outlined above to consider and address disaster risk; widespread integration of DRM has yet to come. The goal is that by integrating DRM into the tools outlined above, development in Asia and the Pacific will become increasingly resilient to disasters.

To support the effective integration of DRM into the development process, the DRM practitioner can draw upon a reservoir of professional knowledge, experience, tools and skills to embed the stages of the risk management process within the stages followed for policymaking, development planning, resource allocation and project management.

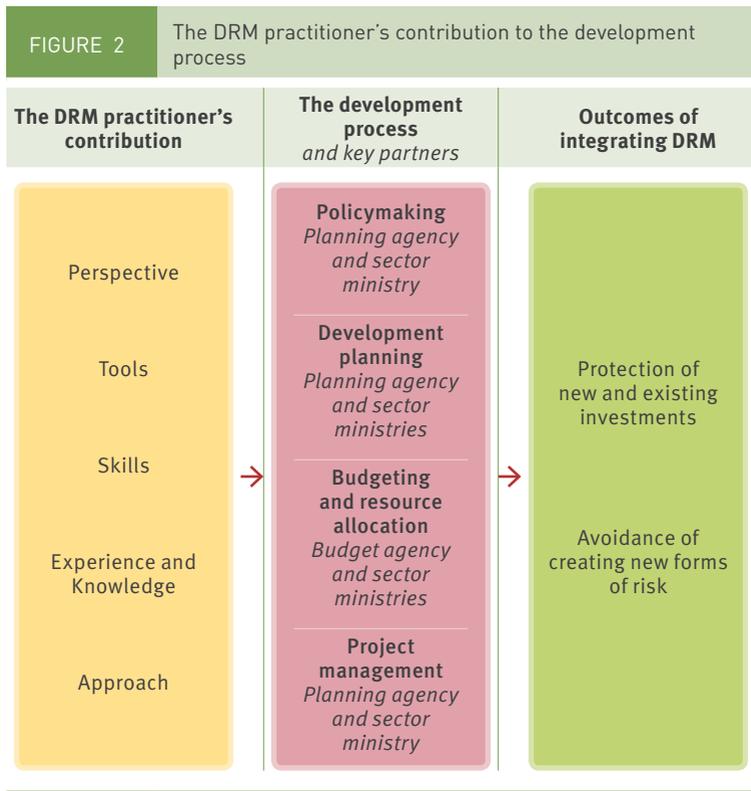
## 2.4 THE OUTCOMES OF INTEGRATING DRM

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The effective integration of DRM into the development process results in risk-sensitive development, which has two fundamental outcomes:

First, DRM integration gradually leads to the protection of all existing and new public assets against the impacts of hazard events. Over time, awareness of potential hazard impacts leads to investments in the protection of existing assets. Similarly, protective features gradually become part of the normal investment in any new asset. The aim, for example, is that all highways and schools can withstand the adverse effects of natural hazards to a reasonable degree.

Second, integrating DRM seeks to avoid the creation of new forms of risk due to an increase in the exposure or vulnerability of populations and assets. This means, for example, that socio-economic policies will not increase the exposure of populations or assets, like an agricultural policy that encourages farming settlements in an inadequately protected flood plain. It also means that all new physical developments, like rail lines and housing developments, are undertaken with consideration not only of the potential hazard impacts on the asset itself, but also of the potential impacts on the surrounding area. As such, these developments do not exacerbate existing risks or create new ones for nearby communities or assets. Figure 2 summarizes the relationship between the practitioner, the development process and the outcomes of integrating DRM.



The DRM practitioner contributes to the achievement of these outcomes by facilitating and enabling the management of disaster risk within the processes that guide public development investments.

While all development activities should aim to achieve these joint outcomes, they will not be attained overnight. Just as the development and DRM processes themselves are iterative, so is the process of integrating the two. The task of the DRM practitioner is great, but not impossible. It will require patience, persistence, enthusiasm and an interest in making the world safer for present and future generations.

#### BOX 4 Words from the field

**Mr. Jotham Napat**, Director of Vanuatu's Meteorological Services and Chairman of the National Advisory Board on Climate Change Adaptation (CCA) and Disaster Risk Reduction, shares his insights on the challenges of integrating:

“Dedication and persistence have been the key to success. We've just kept on going. We've had to be very proactive in order to get this to happen. You need to be strong and pioneering to really make a change. Driving this forward has been hard work.

*One of the key strategies that I've used in this work is presenting only the right type of information when I deal with top level people. For example, if you're trying to convince the finance sector of the importance of DRM, you need to show them financial losses of disasters. If it is the social protection departments, show them social losses. Above all, information that you present has to be fact driven and evidence based. This is so important.*

*I think it's also important for practitioners to realize that they can't do everything. It's just not possible. There are financial implications for agencies when they integrate DRM or CCA into their systems. I often say that DRM and CCA are everybody's business, because they affect every sector. But people are busy, especially officers at top level and so it's very difficult to get them to buy into the process. Sometimes, you set a meeting and they don't show up. You have to just accept that some actors won't engage. That's why I say that you can't do everything, but by focusing on progress and positive change, it's certainly possible to make a big difference.”*





## SECTION 3

# INTEGRATING DRM INTO THE DEVELOPMENT PROCESS





# INTEGRATING DRM INTO PUBLIC POLICYMAKING

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## OVERVIEW

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Establishing a risk sensitive policy environment supports effective integration of DRM into the broader development process. Public policy is a primary instrument used by governments to officially address societal problems and steer the development of a country. While public policy is an intrinsically fluid and broad term that refers to all government decisions about public management, formal public policies are frequently long-term, overarching frameworks that set the goals, objectives and guiding principles for public action. Public policy development is the principal method used by governments to highlight priority issues and direct resources towards them.

A public policy, often formalized as legislation, is developed by government officials and agencies, and typically affects considerable numbers of people (Anderson, 2003). A single public policy can either address an issue related to a specific sector (i.e. health care policy), or it can span several sectors (i.e. natural resource management policy, which affects agriculture, fish and game, environmental management, forestry, mining, etc.). Public policies are not restricted to national levels; depending on the size and level of decentralization in a country, relevant policies may be designed at subnational levels.

Public sector development policies are a prime tool for managing disaster risk. A policy environment that includes active consideration and response to disaster risk is fundamental in

setting the stage for risk resilient socio-economic development. The integration of DRM into the policymaking process facilitates the systematic consideration and adoption of risk resilient policy options or alternatives. When effectively implemented, the risk resilient objectives are translated into sector-specific policy responses, budgets and, ultimately, action.

While the DRM practitioner is not expected to take an active role in the political aspects of policymaking, the practitioner can play a part in:

- supporting the technical aspects of public policymaking in the assessment of risk information and development of risk resilient policy options; and
- providing robust up-to-date information of the impacts of disasters on sector development, the impacts of development policies on disaster risk, and the benefits of incorporating risk reduction into policies in order to inform policy formulation.

## THE GOALS OF THE DRM PRACTITIONER

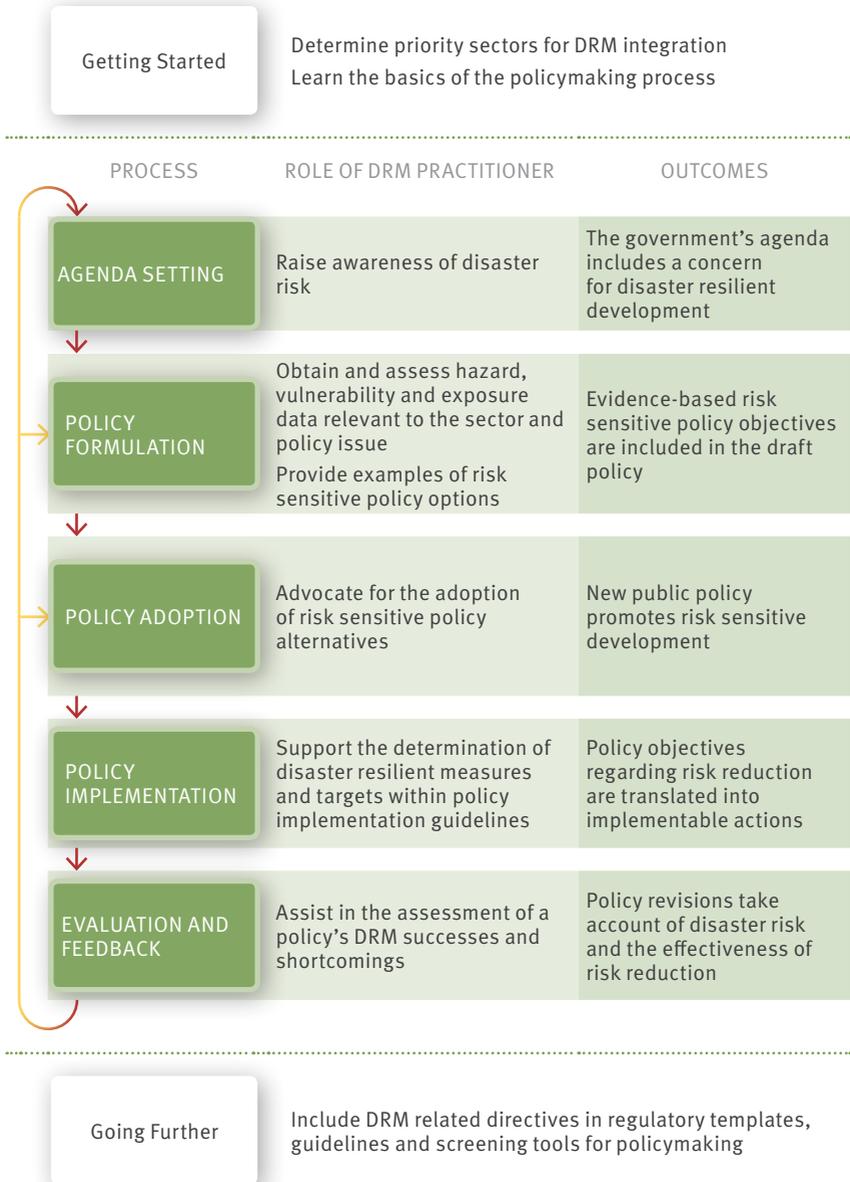
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By engaging in the public policymaking process, the DRM practitioner aims to ensure that:

- goals and targets that will not be potentially thwarted by natural hazard events are adopted in sector policies and responsibilities to ensure implementation are assigned; and
- DRM is institutionalized in the policymaking process via a prescribed inclusion in formal public policymaking regulatory mechanisms.

FIGURE 3

The DRM practitioner's contribution to policymaking



## GETTING STARTED

---

Given limits to time and resources, the DRM practitioner may choose to begin by determining which sectors and policy issues to focus efforts and prioritize for DRM integration. In practice, policymaking is a continual process, with policies periodically coming up for review. The DRM practitioner can pre-identify important areas and then keep abreast of the latest news on planned reviews and determine on a case-by-case basis when to get involved. There may be periods where there are no policies of particular relevance under review, while at other times the practitioner may have to make deliberate choices to engage in the formulation of certain policies over others. Identifying policies up for review should be a continual process.

Those practitioners that are seated within a national disaster management agency can begin by analyzing which sectors are most vulnerable to disaster impacts. The analysis could be in terms of direct financial losses and service interruption caused by the disaster, or the channeling of funds from development activities to disaster response and recovery. Additionally, the analysis may identify those sector activities that most contribute to disaster risk. For example, school construction without seismic resistant design leads to increased vulnerability to earthquake hazard of both the state asset and the current and future communities who use the building.

If possible, a comprehensive risk assessment can be undertaken to identify priority sectors in which to engage. A risk assessment will determine the impact of unsafe development practices on vulnerable communities, and allow the DRM practitioner to suggest possible evidence-based measures for risk reduction. As risk assessments are costly and time-consuming, it is important to focus the assessment. As such, the scale needs to be meaningful to the sector and purpose: if vulnerability to droughts is restricted to

one or two provinces, a national scale assessment (i.e. 1:50.000) will be of limited value. | see Box 2: Risk assessments on page 16 for more information |

Alternatively or in addition, if time and resources allow, the DRM practitioner can facilitate a national dialogue, engaging key stakeholders such as sector agencies, civil society, private sector and, where possible, local populations, to ensure that their viewpoints and concerns are duly noted. The more thorough the dialogue, the more useful it will be. To guide this dialogue, the following questions might be asked (adapted from UNDP and UNEP, 2011):

- How have disasters impacted key development goals of the country? How have current development patterns impacted disaster risks? What may happen in the future?
- Which sectors, population groups and regions are most vulnerable to the potential consequences of climate and disaster risks? What are the underlying reasons for their vulnerability (e.g. poverty, degraded natural resources, poor standards of physical development)?
- What has been done, if anything, to reduce disaster risks? Has it been effective? If not, why?

Box 5 on page 32 describes sector prioritization as undertaken in Nauru.

Once key sectors have been identified, DRM practitioners can familiarize themselves with the basic approach for policy formulation and approval that is followed by different sectors in the country, and identify key actors and potential partners. It is important to identify the basic stages in the public policymaking process, timeframes, responsible parties like working groups or committees (including their composition and function), and any potential allies in sector agencies or the legislature. Additionally, it would be useful to know if there are any opportunities to give briefings to policymakers about DRM issues.

## BOX 5 Prioritizing climate sensitive sectors in Nauru

In order to determine priority sectors to target for integrating climate change concerns, Nauru chose to follow a process led by stakeholders to rank sectors in terms of sensitivity to climate change. A group of key stakeholders collectively identified criteria for prioritization, loosely following the suggestions set forth by the United Nations Framework Convention on Climate Change. A sample of these prioritization criteria utilized included:

- severity of the adverse effects of climate change on the sector;
- cost-effectiveness, feasibility and long-term sustainability of potential interventions; and
- potential to enhance community resilience and adaptive capacity.

The stakeholders scored sectors against each criterion. An average score was then derived and a rank order assigned. This rank established the top five priority sectors for the integration of climate change concerns: water, human health, agriculture, fisheries and marine resources, and coastal zones.

Policymaking bodies typically have a set of procedures that enable systematic and rational policymaking, where advocates from all sides of an issue have an opportunity to present their arguments. The fundamental aspects of the process, including the key players, can be quickly learned through a short meeting with a mid-level officer from the national planning agency, and mid-level officers from other sector agencies who are familiar with policymaking for their institution. The practitioner can seek information (including documentation) to answer the following questions (Adapted from UNDP and UNEP, 2011):

- Who has the overall mandate to coordinate policy design (i.e. national planning agency; national budget and finance agency), and are they normally involved in sector level planning processes and multi-sector policymaking?
- What are the overarching policy priorities that the government is committed to (i.e. poverty reduction; economic growth, etc.)? How can an argument be made that this requires integrating DRM into sectors?

- What are the individual mandates, structures and decision-making processes in key sectors? (Individual sectors may be structured quite differently i.e. have different levels of decentralization)
- What policies exist in key sectors? Are there relevant policy initiatives underway?

## SUPPORTING DRM INFORMATION AND KNOWLEDGE REQUIREMENTS

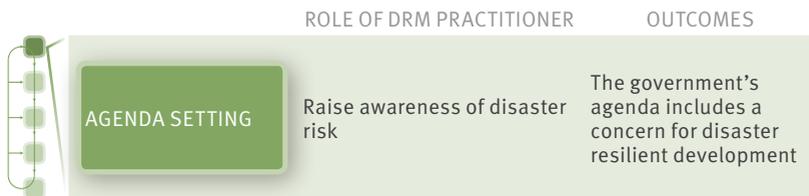
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Policymakers require information regarding national and international commitments to support the formation of disaster resilient public policies:

**International DRM and climate change adaptation (CCA) agreements** provide a mandate and rationale for integrating DRM into sector policy. The actions of governments can be influenced by these international commitments. The DRM practitioner can draw upon global conventions and regional frameworks agreed to by their country, such as the Hyogo Framework for Action (HFA), ASEAN's 2005 Agreement on Disaster Management and Emergency Response or SOPAC's Pacific Disaster Risk Reduction and Disaster Management Framework for Action, 2005-2015. The practitioner can also take advantage of any commitment made for minimum investments in disaster risk reduction to support the argument to incorporate DRM investments in development policy.

**National DRM and CCA legislation and policy** that are already in place to guide DRM and CCA planning and practice typically articulate the national vision and core principles to steer national development in these arenas. A reference to the legislative directives that are specifically relevant to the key sectors identified will bolster the case to integrate DRM.

## THE DRM PRACTITIONER'S CONTRIBUTION TO THE POLICYMAKING PROCESS



*The policymaking process begins with the identification of public problems. Societal conditions convert into problems when the public deems the condition to be unacceptable and considers that the government can remedy the situation. The government decides which issues to formally address, prioritizing from among the many demands for public attention.*

Continuous awareness raising of both the general public and of policymakers is necessary to ensure that the link between development and disasters is identified and included in the public agenda. While it may be difficult for a DRM practitioner to single-handedly influence public opinion, the practitioner can assist in this process by collating disaster risk information and making it readily available for dissemination. Celebrations of a national disaster day, or the UN declared international disaster risk reduction day on the 13th of October every year, as well as anniversaries of major national, local or regional disasters, provide an important venue for public awareness raising. Additionally, the practitioner can share stories about the connections between development and disasters on online forums, blogs and news sites in order to share this information with the general public. Be sure to focus on how development can intensify exposure and vulnerability and how disasters have the potential to offset development gains, emphasizing factors such as climate change and rapid urbanization that may influence changes in disaster risk in the future.

	ROLE OF DRM PRACTITIONER	OUTCOMES
POLICY FORMULATION	Obtain and assess hazard, vulnerability and exposure data relevant to the sector and policy issue Provide examples of risk sensitive policy options	Evidence-based risk sensitive policy objectives are included in the draft policy



*Policy formulation is the process of deciding on the aims and objectives for addressing the broad goals that government has placed on the policy agenda. In this stage, the government creates, identifies or borrows proposed courses of action, often called alternatives or options, for resolving or ameliorating public problems.*

To guide the policy formulation process, a committee of legislators and other public officials is often formed. This committee is responsible for hearing all the relevant testimony and making decisions based on the evidence. It is highly likely that policymakers will request technical testimony from various line agencies. Should the DRM practitioner be called to testify about the disaster risk facing the particular policy issue, it is a prime opportunity for the DRM practitioner to stress the impact of disasters and the importance of DRM.

In this testimony, the DRM practitioner can argue that disaster risk is affecting development in the particular policy area in order to justify investment in DRM. If available, the DRM practitioner could draw upon a sector **risk assessment** of the current and estimated future impacts of natural hazards on the particular sector, or any post disaster assessments of hazard impacts on the sector. This information base will allow the DRM practitioner to suggest possible evidence-based measures for risk reduction.

Where they exist, the DRM practitioner can also draw upon an **economic cost-benefit analysis** of investments in disaster risk reduction. | see Table 3 on page 76 for examples of benefit to cost ratios for projects from around the region | This will demonstrate

the economic implications of disasters on individual sectors. Additionally, it can help define the most realistic and cost-effective risk reduction measures within budgetary possibilities. For example, the Government of Fiji analyzed the economic costs of the 2009 floods on sugar cane production, Fiji's main primary industry, in order to highlight the impact such hazards have on local economies. This analysis served to build an argument for a systematic approach to reducing disaster risk in the country (Lal, 2010).

Depending upon the sector being analyzed and the potential for climate change to affect the sector's risk profile, this may require more sophisticated and complex modeling and analysis. Many international organizations are interested to work with local agencies to perform these kinds of economic analyses, provided the local agency has the resources to provide sufficient data.

Additionally, local pilot **demonstration projects** that test the effectiveness of DRM measures in specific sectors can foster interest and commitment at both the subnational and national levels. DRM practitioner can use their own knowledge and experience on projects in the country, as well as the Internet to research international examples, and catalogue relevant lessons learned to present in testimony. It is not necessary that the demonstration project was a success; well-documented and analyzed "failures" can also be very informative for policy formulation.

Finally, the DRM practitioner can research the kinds of **risk sensitive policy options** used in similar policies in other sectors or geographical locations, in order to provide the committee with examples of policy options that serve to reduce disaster risk. Similarly, the practitioner may choose to review the policy options under considerations and offer views and comments from a disaster risk perspective, including potential entry points for strengthening resilience.

Remember that the mere presentation of facts on the impact of disasters, underlying causalities and expected future trends is not sufficient to convince decision makers to make the policy disaster resilient. Integrating DRM into policy is not just a technical but also a political process. As such, it is not clear-cut, but often subject to conflicting interests and opinions. Policy measures that have the potential to result in local zoning and occupancy or building restrictions may provoke strong opposition. While presenting evidence is crucial, and can help to generate support for integrating DRM, perceptions and opinions are just as, if not even more important. The challenge is to use the evidence in such a way that it engages potential partners, influences opinions and generates political commitment.

In some countries, DRM expertise is not consulted during the initial policy formulation process, but the DRM practitioner is asked to screen the policy for disaster resilience after the policy proposal has already been identified. In many countries, policy proposals are in the form of a concept paper or draft policy that puts forward the main issues the policy is to tackle. These papers provide a good opportunity to reflect the specific risks the sector is subjected to or outline the disaster risks the sector may inadvertently bring about if no preventive measures are taken.

#### BOX 6 Checklist of DRM considerations for policy components

- Which hazards are of particular relevance to the sector?
- Does the proposed policy demonstrate active consideration of relevant disaster risks associated with these hazards?
- Will the proposed policy increase vulnerability to hazards?
- Does the proposed policy include measures to decrease current and expected future vulnerability to hazards?
- Are the institutional responsibilities and resources for managing disaster risk specified in law?
- Which DRM measures relate to a given issue/opportunity and how can they be included in the policy proposal?

Should this be the case, using the information from the sector-specific risk assessments, economic cost-benefit analyses, demonstration projects and examples of risk-resilient policy options described above, the DRM practitioner may choose to examine suggested policy objectives and measures from a DRM perspective. Box 6 provides a checklist of considerations.

	ROLE OF DRM PRACTITIONER	OUTCOMES
	<b>POLICY ADOPTION</b> Advocate for the adoption of risk sensitive policy alternatives	New public policy promotes risk sensitive development

*This stage of the process is about making a discrete choice from among two or more alternatives, most likely involving decisions by policymakers over accepting or rejecting specific provisions in the text before voting on the final form.*

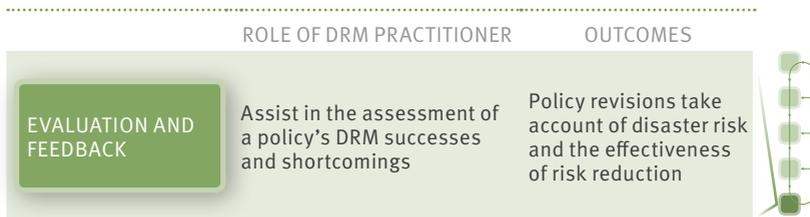
While access to decision-makers may be limited, where possible, the DRM practitioner can continue to advocate for risk sensitive policy alternatives, drawing upon a sound analysis of the links between disasters and the policy issue in question for support. The practitioner may use the findings from the risk assessments and cost-benefit analyses described above to bolster the argument for inclusion.

	ROLE OF DRM PRACTITIONER	OUTCOMES
	<b>POLICY IMPLEMENTATION</b> Support the determination of disaster resilient measures and targets within policy implementation guidelines	Policy objectives regarding risk reduction are translated into implementable actions

*This stage of the process encompasses the actions that government takes to put a law into effect to achieve its goals.*

In order to facilitate common understanding and action among relevant agencies at national and subnational levels, policies are often accompanied by guidelines or procedures that detail how to implement the policy. Usually, the agency tasked with the responsibility of coordinating the policy’s implementation is also responsible for establishing these guidelines. For instance, an education policy may have identified the need to address the safety of school grounds. Implementation of this policy’s measures will critically depend upon the design of specific maintenance guidelines and procedures. They will ensure that school managers understand requirements and can act upon them.

It is crucial that consideration and address of DRM is also included in guidelines and procedures for implementation. The DRM practitioner can request to review these guidelines before they are adopted to ensure proper DRM integration.



*Activities for appraising the achievements, outcomes and consequences of a policy are part of policy evaluation. Some policies have a review schedule that includes mid-term reviews, used by implementing agencies to identify and adjust problems in implementation. Often, policy evaluation takes place when the policy issue resurfaces for revision on the public agenda.*

The DRM practitioner can assist in the review processes by tracking the DRM components of the policy, and reporting on successes as well as setbacks. The practitioner may study reports of disaster events that occurred during policy implementation to help determine whether the policy’s programs were successful

in reducing disaster impacts. Communicate the findings to the body responsible for policy evaluation to help government make the necessary changes in the policy provisions or program implementation, or both.

## GOING FURTHER

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National planning agencies in Asia and the Pacific often adopt various tools in an attempt to facilitate a standardized and transparent policymaking process. These tools present an ideal entry point for the DRM practitioner to ensure that disaster risk is considered and addressed in the process for developing any public policy. By integrating disaster risk considerations into these tools, future policies will be mandated to include them as part and parcel of the process.

**Policy formulation guidelines and templates** detail some combination of the process to be followed and guiding principles for policy formulation as well as the information to be included when presenting a new policy initiative. This may include core concerns, rationale and justification, factors considered, cross-cutting issues, policy measures recommended and an indicative timeline. The DRM practitioner may choose to recommend that the responsible body, likely the national agency for planning, include a requirement to reflect on the disaster risk affecting the policy issue and to consider DRM options when drafting the policy proposal.

**Policy screening tools**, such as the Strategic Environmental Assessment (SEA), are increasingly being used to determine the environmental impacts of a policy. The SEA can be adapted to include consideration of how policy objectives can be affected by disasters and how policies can influence exposure and vulnerability to disasters. (For more guidance, see Benson and Twigg, 2007, Guidance Note 7).

In 2012, Bhutan's Gross National Happiness Commission (GNHC), the national agency responsible for coordinating development, published a revised Protocol for Policy Formulation to guide the approval and adoption of all public policy within the country.

### How is DRM integrated into the policy protocol?

In Bhutan, there are a number of development issues thought to deserve consideration by all sectors. These issues, which are fighting for recognition throughout development decision-making, include topics such as gender equity, environmental sustainability, poverty reduction, climate change and disaster risk reduction.

In an attempt to adequately and equally address these important competing priorities throughout development policy, GNHC introduced a section in the format for the policy protocol report requiring the appropriate consideration of all cross cutting issues. In particular, this section requires that the vulnerability and resilience of communities and ecosystems in terms of climate change, disasters and environmental degradation be addressed in both the policy concept note and the draft policy. The protocol requires that the draft policy be shared with relevant research institutes and other stakeholders in order to ensure the integration of these concerns.

### What is the impact?

Recent experience shows that the formulation of new policies in Bhutan involves the inclusion of a section particularly devoted to disaster management. Additionally, GNHC is sending draft policies to the Department for Disaster Management before they go to the National Assembly so that a DRM practitioner can review the policy and provide recommendations with respects to integrating disaster risk considerations.

While initial results seem to reveal a particular emphasis on disaster response activities more than the ex-ante reduction of disaster risks, this is still a step in the right direction. As the consideration of DRM throughout development policy starts to form part of the status quo, policy formulation that involves the careful consideration of potential hazard impacts is expected to increase.

*Source: Royal Government of Bhutan, 2012*









## INTEGRATING DRM INTO DEVELOPMENT PLANNING

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### OVERVIEW

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Development plans that fully consider and address disaster risk are a crucial element of sustainable development. While public policies strategically guide public management on specific issues, development plans broadly determine what needs to be achieved in a country over a certain time period. These plans provide an overarching strategic framework, where long-term goals for the country are established, and the objectives, strategies and targets to move the country towards those goals are detailed.

Generally, development plans serve to:

- provide guidance for public sector management and for the budgets through which resources are allocated;
- set a foundation on which governments can guide external economic relations and private sector development, and by which aid donors can build their assistance programs; and
- provide indicators by which the government's progress in implementing the identified strategies can be monitored and measured.

Development planning is a continuous cyclical process of analyzing the context and setting objectives, formulating, adopting and implementing the plan, and evaluating the implementation. After evaluation, it is back to analyzing the present context, identifying new objectives, and so on. Depending on the level of inclusion

in the process, identifying objectives and setting the strategies can involve consultations with a whole range of actors from government line agencies to decentralized government bodies, from civil society and the private sector to international partners.

The DRM practitioner has a role to play in development planning by:

- supporting the national planning agency to take account of disaster risk through the provision of information to identify disaster risk and understand how reducing risk enhances development; and
- working with line ministries and subnational governments to incorporate disaster resilience as an integral part of sector development strategies and initiatives.

The role of the practitioner in integrating DRM into development planning is never done. There will always be a need to keep disaster risk on the agenda – and also to ensure that development plans are based on the latest available disaster risk info, including likely long-term trends.

The case study on page 47 examines how DRM integration into development planning has improved over time in the Philippines.

While this chapter focuses on the process for developing medium-term socio-economic development plans, it is important to recognize that other planning tools exist, such as development visions, national physical plans, land use plans and sector specific strategies and action plans. Each one provides specific entry points for the DRM practitioner. A short discussion of the entry points for development visions and physical plans is provided in the coming pages. | See [URBAN](#) 3.2 for a further discussion of land use planning; and [CLIMATE](#) 3.2 for details about integrating DRM into strategies and action planning for climate change adaptation |

In the **Medium-Term Philippines Development Plan (MTPDP)**, the integration of DRM as a cross-cutting issue for development has improved over time, towards a multi-dimensional perspective, which looks at how sectors can reduce the impact of natural hazards and make development safer. DRM integration takes time, reflecting the slow process of raising government awareness and capacity. Only through successive attempts can the most effective pathways for managing disaster risk for sustainable development be uncovered.

### How has DRM integration progressed?

**1994-2004 MTPDP.** The plan looked at the sector impacts of disasters, but there was limited analysis of impacts on the poor.

**2004-2010 MTPDP.** Other than strategies to build resilience in agriculture and among vulnerable populations, the plan primarily focused on DRM in welfare and the economy, as well as in development planning processes, capacity building and institutional legislation.

**2011-2016 MTPDP.** DRM is a cross-cutting theme incorporated throughout development sectors, with specific reference to the effects of climate change. This plan was developed with the support of a number of frameworks, legislations and action plans.



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### What are the impacts of DRM integration into the MTPDP?

Over the three plan periods, there has been a marked shift from disaster and hazard management to risk management, where both structural and non-structural measures are utilized. The quality and efficiency of DRM measures have significantly improved; as have scientific resources, tools, knowledge, and the capacity to effectively implement risk reduction measures. However, a gap still persists between the plan's goals and effective implementation to accomplish those goals.

## GOALS OF THE DRM PRACTITIONER

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By integrating DRM into the development planning process, the practitioner aims to ensure that:

- awareness of the disaster risk affecting the country and particular priority sectors is recognized as a development challenge, potentially threatening the sustained achievement of plan goals and objectives; and
- development plans lay out clear overarching goals, objectives and strategies for enhancing resilience, integrating them as relevant into sector specific strategies, initiatives and programs.

## INTEGRATING DRM INTO LONG-TERM DEVELOPMENT PLANS

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**National Long-term Development Vision or Plan.** Many countries in the region establish national development visions to guide social and economic development over a 10-30 year period. These visions typically outline core principles and establish long-term goals for the country's progression.

During consultations with the national planning agency, the DRM practitioner can promote the acknowledgement of disaster risk as a potential critical constraint for the country's long-term growth. Demonstrate how reductions in disaster risk are cross-cutting in development; DRM efforts contribute towards other objectives, such as poverty reduction and ensuring universal access to education and health care. In addition, mention any relevant DRM and climate change adaptation targets or platforms that the country is committed to. Emphasize that incorporating DRM into the national vision provides a roadmap for long-term safe and sustainable goals and strategies.

**National Physical Plan.** Additionally, some countries formulate complementary national level physical plans, which are meant to establish the vision, principles and strategies for sustainable land and physical resource management, providing a spatial context for development.

As disaster risk is often determined by a community or asset's physical exposure to natural hazards, the DRM practitioner can advocate for risk-sensitive physical planning. Discuss with the responsible national agency about adopting land use options that aim to decrease the exposure of people, assets and livelihoods to the impacts of natural hazards. Bolster the argument by showing recent examples where the location of settlements or critical infrastructure contributed to devastating disaster impacts. An example might be a factory that has been built in a known flood plain and has suffered from flood-related losses after heavy rains.

Be sure to detail the long-term effects of the damages caused by disasters on the economy, such as a decline in the growth of gross domestic product, and link those damages to previous land use decisions. Wherever possible use examples both of regularly occurring hazards and those hazards that are predicted to increase in frequency and intensity due to climate change. Planners will see a greater need to incorporate risk-sensitive land use options if the hazards in question could not be classed as “rare” or “one off”. However, it is also important to stress the potential severe impacts of extreme hazard events.

Stress to planners that new developments should consider the disaster risk inherent in their location. If construction in certain hazard-prone areas must take place, then additional measures to reduce risk should be mandatory, particularly for critical infrastructure. | see URBAN ☼ 3.2 for a more in-depth discussion of risk sensitive land use planning, URBAN ☼ 3.1 about incentives and URBAN ☼ 3.4 regarding ways to reduce the risks to critical infrastructure |

Sri Lanka's National Physical Planning Policy and Plan (NPPP) supports economic growth and environmental protection through the generation and use of extensive disaster risk information for physical planning.

### What information was used?

Experts produced **background papers** to improve understanding on the management of sea level rise, landslides, floods and cyclones.

A large compilation of **thematic maps** were developed from a range of different sources, including Infrastructural, agricultural, hydrological, geological and demographic information. The National Building Research Organization (NBRO) generated 1:50,000 GIS maps that were integrated to create a map of landslide potential.

### What did the plan present?

**Fragile land delineation:** Settlement and infrastructure maps were superimposed onto the Landslide Hazard Zonation Map to identify and categorize human settlements in landslide-prone areas according to vulnerability levels.

**Delineation of fragile coastal zones:** A coastal zone hazard map was created and overlaid with the settlement and infrastructure maps to identify vulnerable areas, and identify prioritized actions to reduce vulnerability.

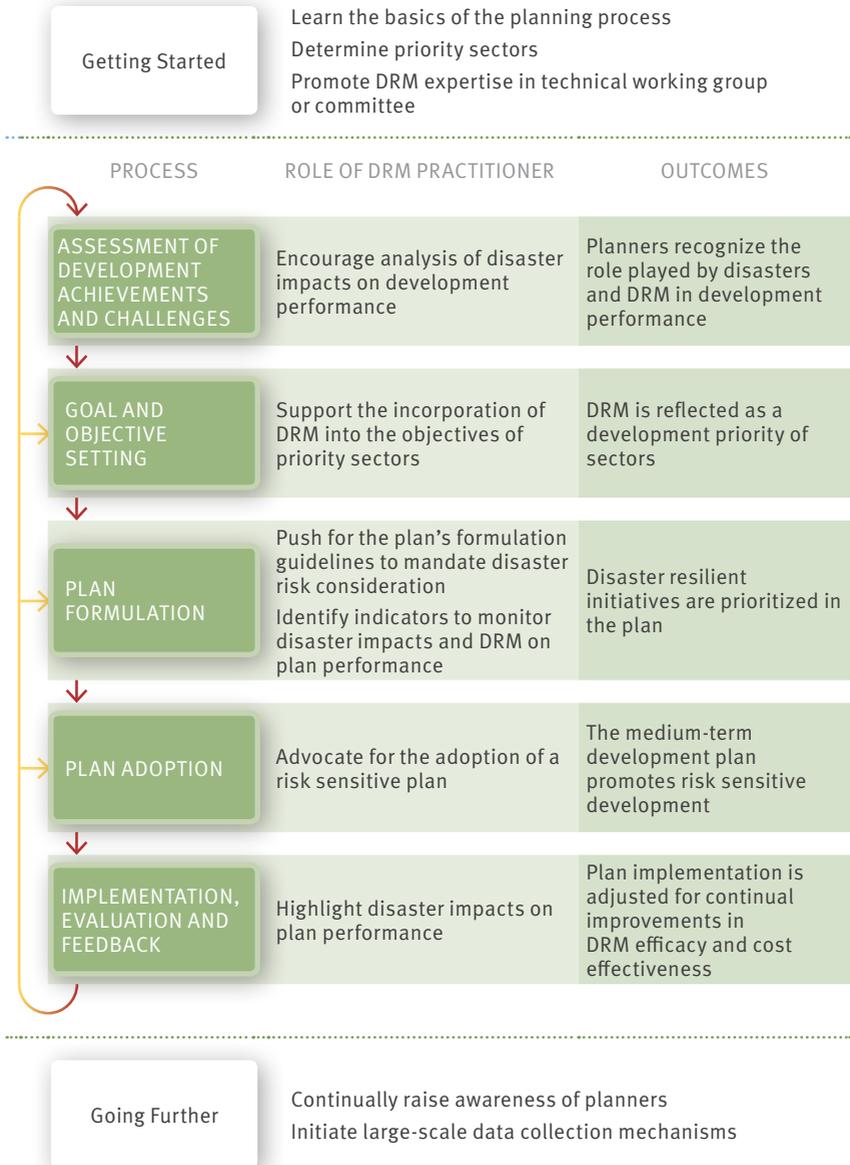
### What were the impacts of integration?

The NPPP has led to the identification and initiation of measures to reduce landslide and coastal risks, as well as the production of guidelines on appropriate land use and safe construction practices.

*For further information on the plan's scope, objectives, formulation and final output, visit the National Physical Planning Department website: <http://www.nppd.gov.lk>; and for plan implementation, see National Physical Planning Department, *Implementation of the National Physical Planning Policy and Plan Sri Lanka 2010-2030: Project Proposals, April 2010*, [http://www.preventionweb.net/files/15417\\_nppp20102030proposals.pdf](http://www.preventionweb.net/files/15417_nppp20102030proposals.pdf) (accessed 17 February 2013).*

FIGURE 4

The DRM practitioner's contribution to development planning



## GETTING STARTED

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The national planning agency usually coordinates the development planning process, and often establishes a set of procedures to enable systematic and rational planning; recently, there is a push in the region towards “people focused” planning (Kingdom of Tonga, 2006; Kingdom of Thailand, 2008; Islamic Republic of Afghanistan, 2012). The fundamental aspects of the planning process, including the key players, can be quickly grasped through a short meeting with a mid-level officer from the national planning agency and mid-level planning officers from sector agencies. Additionally, a planning officer from local government could be contacted to understand the process from the local viewpoint. The practitioner should seek the following information:

- Which body has the overall mandate to coordinate development planning?
- What are the basic stages in the planning process and what is the timeline? Who is consulted (sector agencies, communities, CSOs, development partners, private sector, etc.) and when?
- Are there working groups or committees? What is their composition and function?

As in the policymaking process, the DRM practitioner can begin by determining which sectors to prioritize for DRM integration. Given limits to time and resources, prioritizing sectors will help focus advocacy efforts later on | see pages 30-32 for a more detailed discussion on determining priority sectors |.

Risk assessment and cross-sector dialogue are vital for analyzing the sectors that are most vulnerable to disaster impacts and determining priorities. While assessing available risk information, be sure to analyze the direct financial losses and

service interruption caused by disasters as well as the extent to which funds were channeled away from development activities to disaster response and recovery. Additionally, the analysis should identify those sector activities that most contribute to an increase in exposure and vulnerability of populations and assets to natural hazards. Be sure to begin this analysis well before planning begins to ensure sufficient time.

The practitioner can also plug into the existing mechanisms for dialogues regarding plan formulation. This will allow not only a discussion on disaster risk and solutions from a range of perspectives, but will also expose those leading the plan preparation for the various sectors and themes to some discussion regarding DRM | see page 31 for guidance on facilitating a national dialogue |.

Planning committees or technical working groups that are designated to help draft chapters on particular sectors or themes are often established to support the formulation of the plan. Each group is composed mainly of government sector agencies, with NGOs, civil society, community representatives and members of the private sector sometimes invited.

The DRM practitioner can encourage the national planning agency to include DRM expertise in all relevant technical committees. This role does not need to be undertaken by the DRM practitioner alone, the expertise can come from local universities (e.g. geography or geology departments) or CSOs. The groups that should host a DRM expert are those sectors that have been prioritized in the previous step as the most vulnerable to disasters and where human livelihoods will be most affected by disasters. The DRM expert would consult with others in the committee to help inform the decisions surrounding disaster risk and sustainability.

## SUPPORTING DRM INFORMATION AND KNOWLEDGE REQUIREMENTS

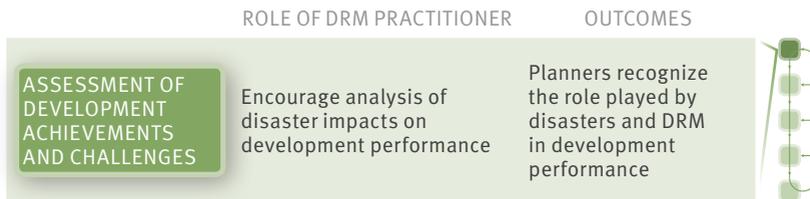
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Governments require certain types of information to aid them in considering and addressing disaster risk throughout development planning, including:

**Relevant commitments to reduce disaster risk.** As the actions of governments are often influenced by international commitments, international agreements and regional frameworks pertinent to DRM or climate change adaptation can provide the rationale for their integration into development planning. | see page 33 for a discussion of relevant commitments that the DRM practitioner can draw upon |

**A quantitative and qualitative risk assessment** identifies areas, communities, assets and sectors that are exposed to various natural hazards, as well as identifies and quantifies vulnerability. This will help the government understand the influence of disaster risk on socio-economic development and provide information to identify strategies to reduce the risk. While DRM practitioners cannot undertake such an assessment on their own, they can support the government by proactively identifying hazard data and analyses, risk assessments and climate change reports, and maintaining them in a centralized, open source location. Damage and loss assessments and evaluations of recovery projects could be collected as well. | see Box 2 on page 16 regarding the components of a disaster risk assessment |

# THE DRM PRACTITIONER'S CONTRIBUTION TO THE DEVELOPMENT PLANNING PROCESS



*The agency responsible for coordinating the formulation of the development plan, often the national planning agency, begins by assessing development in the country, highlighting particular achievements and challenges, and identifying the internal and external factors that are affecting performance. This involves reviewing many aspects of a country's development, including past plan performance, progress towards international development targets, economic performance, poverty reduction, the state of the environment, and public sector governance, among others. This analysis draws on a variety of sources, such as human development reports, household surveys, socio-economic analyses and may even include consultations with the general public.*

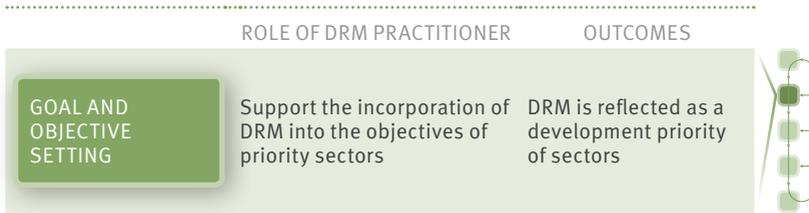
The DRM practitioner can encourage those involved in the assessment and analysis of past achievements and challenges to also consider the impacts of disasters. If relevant, stress how disasters resulted in shortfalls in targets directly or indirectly. Emphasize that both the intense impacts of any large disaster that hit in the duration of the past plan, and the cumulative impacts of small disasters could be considered. It is also important to make the connection between DRM and development targets like poverty reduction by assessing the positive contribution that DRM actions have made to the achievement of development goals under the last plan.

It is important to encourage that the disaster risk analysis be undertaken as part of the sector assessments, so that disaster risk

considerations are built into the aforementioned analysis rather than treated as a separate assessment. The DRM practitioner can help provide relevant background material for undertaking the assessment. Table 1 indicates possible areas on which to focus.

TABLE 1 Disaster Information and Potential Sources	
Information	Potential sources
<p><b>National socio-economic performance</b> in relation to disasters, (i.e. reductions in GDP, missed employment targets). Focus on underlying drivers</p>	<p>MDG reports, HFA Monitor, other regional reports (i.e. The Pacific Plan)</p>
<p><b>Sector performance</b>, for example:</p> <ul style="list-style-type: none"> <li>• Damage to housing</li> <li>• Agricultural productivity in flood and drought affected areas</li> <li>• Reduced tourism revenues after flight cancellations</li> <li>• Production losses in manufacturing sector due to power outages</li> <li>• Livelihood setbacks due to damaged facilities and equipment of small, medium and micro enterprises</li> </ul>	<p>Post-disaster needs assessment</p> <p>Reviews of economic performance</p> <p>Disaster-related reports from national and local disaster coordinating councils, NGOs, development and humanitarian aid agency</p> <p>Business community releases</p>
<p><b>Public infrastructure damage</b> and the implication on public spending, for example:</p> <ul style="list-style-type: none"> <li>• Roads, bridges, water supply, drainage facilities, public school and hospitals</li> </ul>	<p>Reports from appropriate government agencies such as public works and highways</p>

The planning agency may also initiate short-term studies, background papers or focus group discussions among experts on national trends that may have affected previous development, such as changes in migration patterns. If necessary and warranted, the DRM practitioner can push for the inclusion of a study on urbanization, climate change and disaster trends and their impacts.



*Once an analysis of the current situation is complete, goals for the country's development and sector objectives for the coming plan period are set. This is usually done by the national planning agency, in consultation with other government agencies. Sometimes other stakeholders are also consulted.*

In this phase, the DRM practitioner could draw upon international agreements, national frameworks, and post-disaster and risk assessments to guide the responsible agencies in establishing specific DRM goals where set, as well as integrating disaster risk as a cross-cutting issue in other relevant development goals so the plan attaches appropriate importance to DRM.

**Establishing specific goals and objectives for DRM.** The national disaster management office will be a key contributor to setting these goals. The DRM practitioner could ensure that the goals relate to the key disaster risk issues identified in the assessment of development challenges, and to objectives in any national legislation, policies or action plans for DRM or climate change adaptation | see [CLIMATE](#) ❄️ 3.1 and 3.2 regarding climate change adaptation policies and strategies respectively |. For example, frequent flooding may be identified as a development challenge. Protecting communities in flood prone areas could be a goal from which strategies and targets are created.

**Incorporating DRM into sector goals and objectives.** The DRM practitioner may engage with the technical working groups, particularly of priority sectors, to ensure that the planned approach to achieve the goal includes due regard to disaster risk.

TABLE 2

Examples from around the region of the varying levels of DRM consideration in development plans

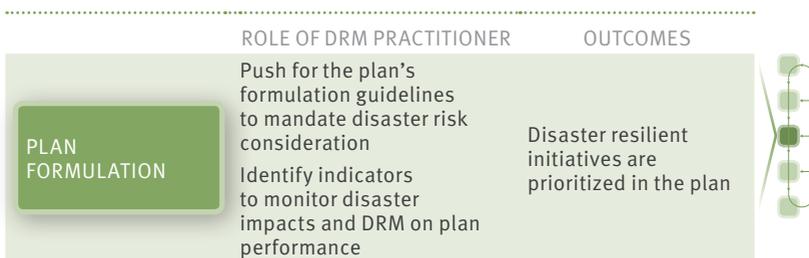
Country	Plan	How is DRM addressed?
India	Eleventh Five Year Plan (2007-2012)	<ul style="list-style-type: none"> <li>• Chapter on DRM</li> <li>• Recognized as a major program within:               <ul style="list-style-type: none"> <li>– Social, sector and spatial development</li> <li>– Innovation and technology</li> <li>– Environment and climate change</li> </ul> </li> </ul>
Lao PDR	The Seventh Five Year National Socio-Economic Development Plan (2011-2015)	<ul style="list-style-type: none"> <li>• Disaster impacts and DRM are evaluated</li> <li>• Identified as a necessity throughout the plan</li> <li>• Subchapter on DRM</li> </ul>
Malaysia	Tenth Malaysia Plan (2011-2015)	<ul style="list-style-type: none"> <li>• Identified as part of water management</li> </ul>
Nepal	Three Year Plan Approach Paper (2010/11-2012/13)	<ul style="list-style-type: none"> <li>• Recognized as state responsibility for social development and infrastructure</li> <li>• Identified in objectives, strategy and working policy</li> <li>• Subchapter on DRM within water management</li> </ul>
Sri Lanka	Sri Lanka Strategy for Sustainable Development	<ul style="list-style-type: none"> <li>• An objective of improving social development</li> </ul>
Thailand	11th National Economic and Social Development Plan (2012-2016)	<ul style="list-style-type: none"> <li>• Included with climate change in chapters on situation and direction of development</li> <li>• An individual development strategy</li> </ul>
Tonga	National Strategic Planning Framework Next 5-10 Years (2010)	<ul style="list-style-type: none"> <li>• Included in community development plans</li> <li>• Included in plans against climate change</li> <li>• Subchapter on DRM</li> </ul>
Vanuatu	Priorities and Action Agenda 2006-2015	<ul style="list-style-type: none"> <li>• Disasters recognized as a development constraint and as a strategic priority</li> <li>• Subchapter on environment and disaster management</li> <li>• Included in infrastructure and utility development</li> </ul>

For example:

- Poverty reduction goals commonly appear in development plans and their achievement is strongly linked to disaster risk. The DRM practitioner can draw upon post-disaster assessments, poverty analyses and risk assessments to stress to planners how:
  - disasters impact human development and reinforce the poverty cycle;
  - risk reduction efforts can help populations escape the poverty trap; and
  - efforts to reduce income poverty and improve basic social conditions can improve disaster resilience.

*For example, refer to SOPAC (2009) for an economic study on the relationship between disasters and poverty in the case of Fiji.*

The DRM practitioner may choose to examine the way other countries have been integrating DRM into their development plans in order to get some ideas. Table 2, on page 58, gives some examples. While clear progress has been made in the countries listed, the DRM practitioners in these countries can still continue to push for more comprehensive and appropriate disaster risk consideration and treatment in the development plans.



*Formulation of the plan involves identifying the strategies, initiatives and responsible parties to achieve the objectives and goals. In this stage, targets and indicators to monitor the plan's*

*effective implementation are identified. Formulation is often a consultative process, where development of the plan at provincial and local levels feeds into national sector level initiatives and vice versa. At the end of the process a final draft of the national socio-economic plan is complete.*

The national development plan is usually a comprehensive, empirically-based results oriented framework, developed by sector, with a description of the strategies, initiatives and projects to be undertaken to achieve the goals and objectives. In many countries in the region, subnational governments (district, provincial or state governments) prepare development plans for their administrative area. These plans vary in detail and sophistication, ranging from simple shopping lists of infrastructure projects to comprehensive socio-economic plans.

The subnational development plans can be formulated together with the national plan, where each plan is based on the needs of its area of jurisdiction. The concerns and ideas adopted at the subnational level influence national level formulation and vice versa. Alternatively, the subnational plans can be formulated once the national plan is complete. In this case, the subnational development plan is created based on the goals and strategies of the national development plan and framed within the specific considerations of the subnational context. It is expected to localize the national plan.

The DRM practitioner can most effectively contribute to plan formulation at two points:

### Before formulation: the planning guidelines

Often, the national planning agency formulates guidelines describing the broad policy framework of the upcoming plan, setting out the goals and objectives and identifying priorities and special considerations by sector and geographical area. These guidelines are often developed about one year prior to

the plan's scheduled implementation. Sectors and subnational governments develop their portions of the plan following these guidelines. Sector agencies may even produce guidelines of their own for decentralized sector development planning.

The DRM practitioner can push for the inclusion of DRM-related principles and priorities in the guidelines so that there is a mandate to consider and address disaster risk throughout priority development sectors. The DRM practitioner can effectively contribute to sector and subnational development planning by ensuring that DRM is integrated into the planning guidelines. Bear in mind that the guidelines should:

- encourage the use of a risk assessment as part of the planning process;
- require that development strategies be based on the results of the risk assessment;
- require the inclusion of specific DRM targets and indicators for monitoring purposes; and
- for subnational plans: encourage inter-district or inter-state considerations for effective DRM owing to the trans-boundary nature of many hazards.

The monitoring and evaluation indicators and their means of verification can be drawn from DRM frameworks utilized internationally such as those found in UNISDR's HFA monitor, or the Making Cities Resilient: Local Government Self-Assessment Tool.

### After formulation: approval criteria

Following formulation, both sector and subnational development plans are submitted to the national planning agency for initial approval. In addition to political considerations, plans are evaluated by the national planning agency using a set of objective social, economic and environmental criteria, often in the form of questions to which a rating of yes/no answer can be delivered.

These are then summed and the sum determines if the plan is approved or not. The DRM practitioner can seek to ensure that DRM is a required criterion for approval. Questions such as the following can be incorporated:

- Does the plan take adequate consideration of sector, district, provincial or state hazards?
- Does the plan include necessary structural, non-structural and environmental measures to reduce the risk of disaster?
- Does the plan encourage disaster resilient sector growth in safe locations using resilient practices?

In general, DRM practitioners can continue to advocate and raise awareness of the link between disasters and development at national and local levels. Advocacy should target national government agencies as well as subnational governments and other stakeholders.

In the case of approving local development plans, the practitioner can encourage the national planning agency to focus attention on protecting local infrastructure and development clusters, protecting key local industries and the impacts of disasters on these industries, as well as identifying and protecting the most vulnerable population groups. Remember that even in countries where subnational development planning guidelines are not prepared, subnational governments can still be encouraged to integrate DRM into their development plans. | see URBAN  for more information about integrating DRM into the management of towns and cities |

	ROLE OF DRM PRACTITIONER	OUTCOMES
PLAN ADOPTION	Advocate for the adoption of a risk sensitive plan	The medium-term development plan promotes risk sensitive development

*Once the draft is finalized, the plan undergoes a final review or national approval process by government and civil society representatives. For implementation to begin, the government must endorse the plan.*

While access to decision-makers may be limited, where possible, the DRM practitioner can raise awareness of the role of disaster risk in development and advocate for the adoption of risk sensitive goals and targets. To do so, the practitioner can draw upon the results of the initial analysis regarding the effects of disasters on the previous plan. The practitioner may use the findings from the risk assessments and cost-benefit analyses described on page 35 to bolster the argument.

	ROLE OF DRM PRACTITIONER	OUTCOMES
IMPLEMENTATION, EVALUATION AND FEEDBACK	Highlight disaster impacts on plan performance	Plan implementation is adjusted for continual improvements in DRM efficacy and cost effectiveness

*Development plans are implemented by the sector agencies through projects that are programmed into annual or multi-annual budgets (see 3.3 and 3.4 for more information about budgeting and project management respectively). The plan will usually have a review schedule, which calls for one or multiple mid-term reviews to assess implementation and effectiveness, and identify the challenges impeding achievement of goals and objectives. The results of this review feedback to influence implementation.*

The DRM practitioner can work with the agency responsible for review to highlight any disaster impacts on performance and to emphasize the importance of DRM. The practitioner could stress that disaster impacts may be direct, such as the destruction of schools in an earthquake, which would impede progress in achieving a goal to provide universal education, for example. Disaster impacts could also be indirect and delayed, such as the reallocation of funds for relief and reconstruction making it financially difficult to build the number of schools required to meet the goal.

## GOING FURTHER

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As development planning is a continual process, disaster risk considerations need to be institutionalized within the process. Ways for the DRM practitioner to facilitate DRM institutionalization include:

**Continuous awareness raising initiatives.** The DRM practitioner can advocate to the national planning agency for the allocation of regular resources for DRM trainings, orientations and capacity development initiatives across all levels of government and sectors.

**Large scale data collection mechanisms.** In order to monitor hazard frequency and intensity, exposure levels, and vulnerabilities on an ongoing basis, an integrated national disaster information management system should be established, where assigned institutions (national, sector, local) regularly collect, update, monitor and maintain nationwide hazard and vulnerability data. In support, the DRM practitioner can argue that disaster risk changes over time, due to changes in climate and through trends such as population growth, urbanization and increases in poverty, and so DRM will need updated information in order to adjust accordingly.

The DRM practitioner can assist the agencies responsible for national data collection, such as the Bureau of Statistics, to explore the feasibility of collecting time series household data that incorporates information on hazard impacts. This will directly help the formulation of poverty reduction strategies that consider disaster risk and provide a comprehensive source of information for risk assessments.



# INTEGRATING DRM INTO BUDGETARY PROCESSES AND RESOURCE ALLOCATIONS

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## OVERVIEW

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Effective integration of DRM into the broader development process does not end with the establishment of disaster resilient development visions, goals, targets and strategies. The execution of public policies and plans requires funding. Governments typically prepare budgets each year, allocating resources for the forthcoming fiscal year.

These budgets are based on forecasts of both governmental expenditures and revenues. National government revenues primarily take the form of income, corporation and sales taxes. Expenditure covers both recurrent expenditure (such as public sector wages, operational and maintenance costs and social transfers), and individual capital investment initiatives.

Effective DRM requires three basic forms of disaster risk financing:

1. financing for dedicated risk reduction and preparedness initiatives (e.g., flood defences, hazard monitoring, early warning systems);
2. financing to ensure that other new development investments (e.g., schools, health clinics, roads, bridges) are disaster resilient; and
3. financing for disaster relief, recovery and reconstruction.

In addition, adequate maintenance budgets can play a key role in minimizing loss of life and property in the event of a natural hazard.

The preparation and approval of a government budget is a highly political as well as technical process. It requires careful negotiation within incumbent powers and between incumbent powers and opposition parties to agree on the total levels of expenditure, the size of budget deficits and the sources of revenue.

DRM practitioners have a role to play both in:

- supporting technical aspects of public budgeting for DRM; and
- ensuring that political deliberations are based on knowledge of the potential fiscal, macroeconomic and social consequences of disasters, and the net returns to investments in DRM.

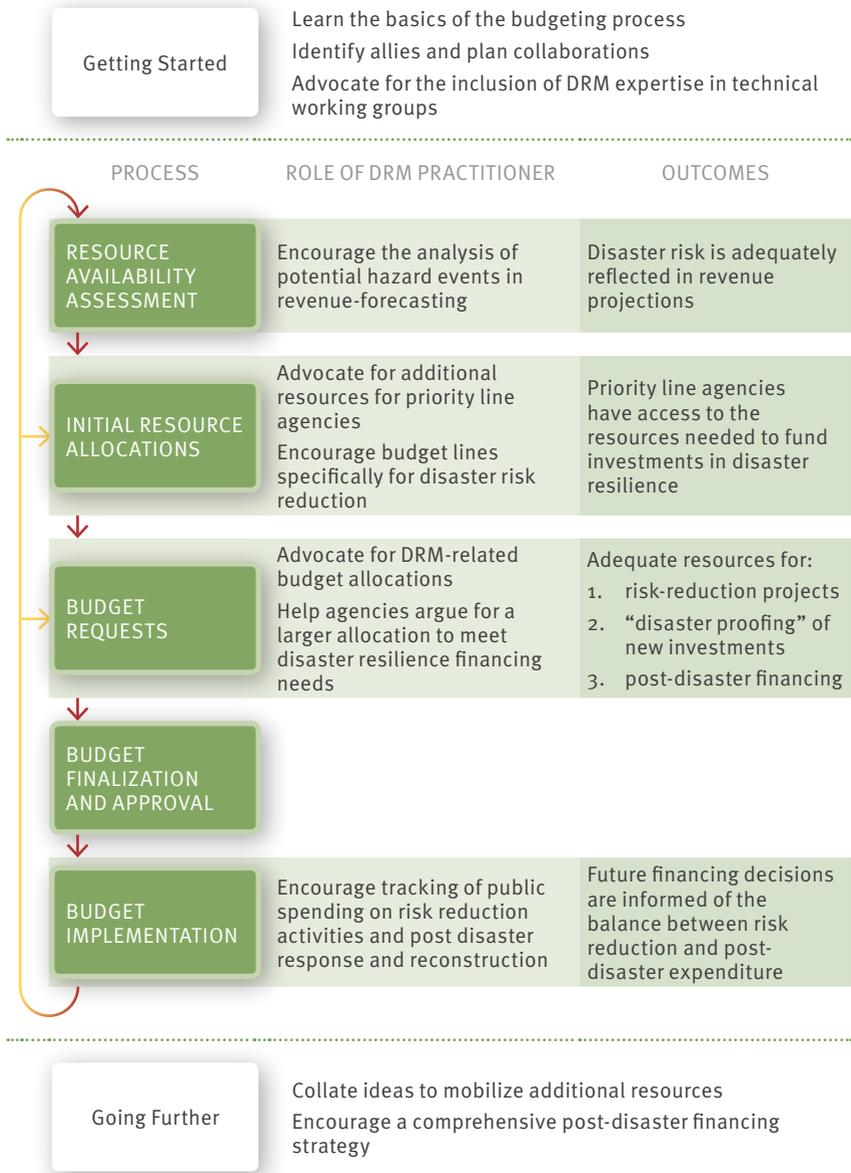
## THE GOALS OF THE DRM PRACTITIONER

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By engaging in the budgetary and resource allocation process, the DRM practitioner aims to ensure that:

- Public expenditure on risk reduction, both in total and as a proportion of expenditure on any individual development investment, are sufficient relative to the level and nature of disaster risk, the expected social and economic returns, and the reasonable responsibilities and obligations of government in reducing risk.
- There are satisfactory financing arrangements in place to manage the remaining risk that could not be reduced – that is, to provide resources for relief, early recovery and reconstruction without disrupting existing public investment plans.
- Fiscal instruments are used to encourage private sector and household investment in disaster risk reduction and transfer, reducing the government's contingent liability (Benson, 2009; Benson and Mahul, forthcoming).

**FIGURE 5** The DRM practitioner's contribution to the budgetary process



## GETTING STARTED

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DRM practitioners can begin by ensuring that they are familiar with the basic budget approach and budget preparation and approval processes followed in their countries. They are likely to have some understanding of this process as their own agency will be required to prepare budget requests and will have some dialogue with the central budget agency and other relevant agencies on its budget allocation. The aspects of the process with which they are less familiar can quickly be grasped through a meeting with a well-informed mid-level civil servant from the central budget or finance agency. A complementary meeting with a relevant line agency (e.g., the Ministry of Public Works) is also useful to understand the process from the perspective of a line agency that undertakes considerable capital investment and annual maintenance. The DRM practitioner should seek information (including related documentation) in particular on:

- basic stages in the preparation of the budget, covering the determination of resource availability and allocation, as well as the time schedule for annual budget preparation to ensure timeliness of inputs;
- working groups and committees, including their composition and function; and
- processes underlying multi-year budgeting and investment programming, where applied.

Potential allies can be identified and collaborative efforts planned at this preliminary stage. While all agencies are potential allies, climate change adaptation practitioners, together with legislators and high-ranking government officials with a strong interest in DRM, are obvious ones. Depending on the extent to which a particular government practices participatory budgeting, other potential allies may include CSOs and local community groups in high-risk areas.

Additionally, a budget committee or technical working group may be formed to review the revenue forecasts, expenditure ceilings and financing strategies. This body may include members from the national planning, budgeting and finance agencies, line agencies and local planning departments. DRM practitioners may choose to advocate for the inclusion of experts on the economics of disasters to ensure that disaster risk is adequately reflected in revenue projections and resource allocations.

## SUPPORTING DRM INFORMATION AND KNOWLEDGE REQUIREMENTS

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Governments require two key types of data to plan their disaster risk financing strategies: contingent liability in the event of a disaster and specific DRM investment requirements.

**Contingent liability.** A quantitative assessment of disaster-related contingent liability – that is, of the losses that are the government’s responsibility in the event of a disaster – provides a crucial starting point in ascertaining funding requirements. It informs resource needs both for disaster risk reduction to reduce that contingent liability and for disaster relief, early recovery and reconstruction. This quantitative assessment requires a disaster risk assessment, ideally based on probabilistic disaster risk models as well as historical loss data. It also requires clarity on the types of and extent of loss that will be borne by the government to determine its share in total disaster risk.

Technical expertise beyond the skill sets of most, if not all, DRM practitioners are needed to undertake the risk assessment. DRM practitioners can support the government in this assessment, which will most likely be overseen by the central budget or finance agency. For example, the practitioner can make the connection with universities that have some of the skills needed. The practitioner can also assist by maintaining comprehensive databases on

historical losses, covering high frequency, low impact localized events as well as major ones and by collating existing hazard and disaster risk assessments.

DRM practitioners can also maintain detailed records on actual forms and levels of public support in the event of a disaster to help determine assumed government responsibilities and, where they do not already exist, advocate for regulations establishing roles and responsibilities. Governments can formalize disaster response and recovery commitments to help define government contingent liability and support the development of sound disaster risk financing strategies. A clear delineation of public and private roles and responsibilities in the event of a disaster is essential in encouraging private commercial and domestic uptake of risk transfer products and investment in risk reduction (Benson and Mahul, forthcoming).

DRM practitioners can encourage governments to review contingent liability estimates on a regular basis, particularly in countries experiencing rapid socio-economic change, and where forms and levels of vulnerability may be constantly fluctuating.

**Site-specific hazard and vulnerability data.** Individual line agencies and local governments require site-specific hazard data to assess the levels of disaster risk associated with their existing investments and to ensure that new investments are disaster resilient. Information on the level of resilience of existing investments is required to help determine any retrofitting needs and, since a considerable element of disaster risk may be created through poor upkeep, maintenance budget requirements.

Both national and local government DRM practitioners can support individual line agencies and local governments in accessing available hazard and disaster risk data for proposed and existing investment localities. This can be achieved by collating and disseminating relevant data and assessments, and by seeking to redress major gaps in knowledge. DRM practitioners can also

proactively alert relevant line agencies and local governments to areas of high risk and to particularly vulnerable infrastructure, as well as support the creation of risk-sensitive land use plans. | see URBAN  3.2 for more information |

## THE DRM PRACTITIONER'S CONTRIBUTION TO THE BUDGETARY PROCESS



*The budgetary process begins with an assessment of resource availability, focusing on the year ahead or, under a medium-term budgetary framework, on a longer period of time. The available resources may be determined using a complex econometric forecasting model, a qualitative analysis of macro-fiscal trends or some combination of qualitative and quantitative techniques. It takes account of the potential collection of tax and non-tax revenue, borrowing capacity and availability of loans, and the aid committed to support budget programs and projects (World Bank, 2013).*

DRM practitioners do not need to understand the detailed technicalities underlying these forecasts. However, they can encourage the budget or finance agency, the national planning agency, the Central Bank and other key agencies engaged in revenue forecasting to take potential hazard events into account in their analysis, if they do not already do so. To support their case, DRM practitioners can draw on historical evidence on the nature and extent of impact of disasters on productivity in affected sectors. Disasters can result in a fall in various forms of

tax and non-tax revenue while simultaneously creating sudden additional spending demands in the form of relief, recovery and reconstruction needs. This can place public budgets under considerable pressure if adequate disaster risk financing arrangements are not in place. Moreover, aid resources may be reallocated to the disaster response efforts, derailing planned development initiatives yet further.

Risk-sensitive revenue projections may be best undertaken by examining the implications of a range of moderate and extreme disaster scenarios for the availability of public resources. DRM practitioners can provide advice on reasonable disaster scenarios, including key types of direct losses. This provides a starting point for the Ministry of Finance and other concerned agencies to explore likely indirect impacts through the economy; consequences for sector output, imports and exports, and other macroeconomic aggregates; and implications for public revenue.

	ROLE OF DRM PRACTITIONER	OUTCOMES
 <div style="background-color: #4F81BD; color: white; padding: 5px; text-align: center; width: fit-content;"> <b>INITIAL RESOURCE ALLOCATIONS</b> </div>	Advocate for additional resources for priority line agencies Encourage budget lines specifically for disaster risk reduction	Priority line agencies have access to the resources needed to fund investments in disaster resilience

*Governments often make initial resource allocations for individual spending agencies over the forthcoming budgetary period based on past spending, new priorities and policies, and relevant guidance provided by the cabinet, council of ministers, or a similar body (World Bank, 2013).*

DRM practitioners can help advocate for additional resources for those line agencies that have adopted new DRM priorities and policies, or for those who have performed poorly with regard to DRM in the past due to funding constraints. They can draw on the findings of cost-benefit analyses on the potential net returns to investments in resilience, both from their own country and

elsewhere to support them in this process (Box 7). They can also highlight the realized benefits of past DRM spending by establishing and maintaining a collection of success stories, covering both local and larger-scale actions to strengthen resilience of both public and private initiatives, and periodically producing summary reports on outcomes. In addition, they can document evidence on the costs incurred by ignoring disaster risk, as manifested in subsequent loss of public infrastructure and related loss of human life.

#### BOX 7

#### Gathering information on the net returns to investments in disaster resilience

Evidence on the net economic benefits of investments in resilience can play a crucial role in securing greater funding commitment for disaster risk reduction. Economic criteria are not the only measures by which potential investments are judged. However, in the face of tight budget constraints and many competing demands for public resources, there is widespread pressure to demonstrate that public resources are well spent (Benson and Twigg, 2007).

In practice, the paucity of evidence on the net benefits of investment in resilience has proved a major stumbling block in attracting resources. Little can be categorically stated about the net returns on a particular action to strengthen resilience because the existing body of evidence is too limited to draw basic rules of thumb (ADB, 2013). Evidence at an individual country level is even more limited.

DRM practitioners can encourage governments, their international development partners and NGOs to address this knowledge gap. However, this will require time and money. In the meantime, DRM practitioners can seek out benefit-cost evidence both from their own and other countries to help develop the case for investment in resilience. Some examples are presented in Table 3. To support them in this process, and in collaboration with their DRM counterparts elsewhere, they can seek the assistance of international development partners and regional associations to establish and maintain central online, open access repositories of cost-benefit analyses.

TABLE 3

The net benefits of investment in disaster risk reduction: cost-benefit analysis findings for Asia and the Pacific

Country	Hazard	Intervention	Net benefit*
Fiji	Flood	Warning system for the town of Navua	3.7 - 7.3
Indonesia	Flood	Strengthened resilience of housing	2.7 - 6.73
Indonesia	Flood	Integrated water management and flood protection scheme for the city of Semarang	2.5
Nepal	Flood	Range of community-based interventions	3.49
Philippines	Flood	Hanging footbridge over river connecting two communities, sustaining economic activity and access to schools and health centers during floods	24
Samoa	Flood	Improved flood forecasting system for a river catchment	1.72 - 1.92
Samoa	Flood	Strengthened resilience of homes	4 - 44 2 - 28
Thailand	Typhoon/flood	5-7 day typhoon forecasts, facilitating the early harvest of crops	1.76
Viet Nam	Typhoon	Mangrove planting programme in eight provinces	55
Multi-country	Multi-hazard	Swiss Agency for Development and Cooperation spending of around USD 10 million per annum in recent years on activities covering the five HFA priorities	4 - 7

\*Net benefit is based on the benefit to cost ratio of the intervention.

Table reproduced from ADB (2013)

Sources: Hochrainer-Stigler et al, 2011; Holland, 2008; IFRC, 2002, 2009; Mechler, 2005; SDC, 2011; Subbiah et al, 2009; White and Rorick, 2010; Woodruff, 2008.

DRM practitioners can advocate for the creation of cross-government disaster risk reduction budget lines, preferably linked to performance-based incentives (Box 8). Such budget lines contradict efforts to integrate DRM into regular development initiatives and hopefully will not be required in the long term.

However, in the shorter term, resources that are dedicated specifically for disaster risk reduction and are made available as additional financing beyond agreed allocations to individual government agencies can incentivize investment in this area. By subsequently demonstrating the net benefits of these investments, this approach can ultimately encourage greater direct investment from sector budget allocations (Benson, Arnold and Christoplos, 2009).

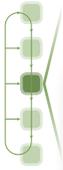
#### BOX 8

#### Creating cross-government disaster risk reduction budget lines

There are a range of potential forms that a cross-government disaster risk reduction budget line could take:

- Multi-sector disaster risk reduction budget lines for use by national line agencies. This funding could be used both to finance dedicated disaster risk reduction investments and to provide additional resources to strengthen the hazard resilience of other approved development projects (e.g., schools, health centers).
- Centrally held disaster risk reduction budget lines for use by local government. Access to this financing could be limited to local governments that have established sound DRM initiatives and that are willing to provide matching funding to demonstrate their commitment to risk reduction. Straightforward application procedures and clear guidelines on eligible uses would be required to maximize effectiveness.
- Additional discretionary resource allocations to more hazard-prone areas as part of the annual budget transfer from central to local governments. Again, this incremental transfer could be linked to performance, requiring evidence of DRM initiatives or strengthened resilience to qualify for funding.

*Source: ADB, 2013*



	ROLE OF DRM PRACTITIONER	OUTCOMES
<b>BUDGET REQUESTS</b>	Advocate for DRM-related budget allocations	Adequate resources for:
	Help agencies argue for a larger allocation to meet disaster resilience financing needs	<ol style="list-style-type: none"><li>1. risk-reduction projects</li><li>2. “disaster proofing” of new investments</li><li>3. post-disaster financing</li></ol>

*Based on preliminary instructions from the Ministry of Finance, including where specified information on initial resource allocations, spending agencies prepare detailed annual or multi-year budget requests. These requests reflect sector strategies and the estimated costs of continuing and new activities; they detail specific items of planned recurrent and capital expenditure over the budget period.*

DRM practitioners can work alongside relevant agencies to advocate, once again, for adequate resource allocations to meet their disaster resilience goals and objectives. Where required, they can also help agencies develop the case for larger total budget allocations to cover DRM needs. As before, to make the case for investment in resilience they can draw on the findings of benefit-cost analyses, on evidence on the realized benefits of past DRM spending and on evidence of the costs incurred by ignoring disaster risk.

DRM-related budget allocations need to cover:

- ongoing and newly approved dedicated disaster risk reduction initiatives;
- the incremental costs incurred in making other on-going and new development investments resilient; and
- potential post-disaster relief, early recovery and reconstruction spending requirements (see “Going Further” at the end of this chapter for a discussion regarding post-disaster financing).

Adequate coverage may require some trading of priorities, a process that may require considerable dialogue extending well beyond the budget preparation. For instance, the construction of a more resilient school may require more resources, slowing the pace of construction of new schools if the budget for new school construction cannot be increased. Drawing on their previous experience, DRM practitioners can provide helpful technical advice on the additional costs of strengthening development investments against natural hazards to inform such discussions. Costs may be as low as a few percentage points more than construction without strengthening features (ADB, 2013). For instance, much of the cost of earthquake design is incurred in making the structural frame more robust through the use of additional materials, such as extra reinforcing steel and concrete. In East Asia and the Pacific, this is estimated to add only around 2-4 per cent to the overall cost of construction (GFDRR, 2010).

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#### BUDGET FINALIZATION AND APPROVAL

*Budget requests of each spending agency are reviewed, taking into account sector strategies and the availability of resources. Following further dialogue with spending agencies, additional cabinet guidance and consideration of the required trade-offs, proposed budget allocations are finalized. The proposed budget is endorsed by the cabinet and then submitted for legislative approval. Spending agencies subsequently finalize their sector strategies and spending plans (World Bank, 2013).*

Over the course of this whole process, it is still possible for the addition of new budget line items, or for the alteration of conditions on the use of certain funds. DRM practitioners can continue to advocate for adequate allocations for DRM, where necessary supported by a sound analysis of shortfalls in the current proposal.



	ROLE OF DRM PRACTITIONER	OUTCOMES
<b>BUDGET IMPLEMENTATION</b>	Encourage tracking of public spending on risk reduction activities and post disaster response and reconstruction	Future financing decisions are informed of the balance between risk reduction and post-disaster expenditure

*Once the budget is enacted and spending agency plans are finalized, the disbursement of funds begins.*

DRM practitioners can encourage both the central budget or finance agency and individual spending agencies to track public spending on both risk reduction and post-disaster response from all sources of funding over the course of budget implementation. Tracking is required to:

- help monitor progress in implementation of DRM actions;
- help avoid deviations in project design, scope and coverage of particular development investments that would lessen their disaster resilience; and
- inform future structured, evidence-based decision-making around the appropriate balance and composition of risk reduction and disaster relief, early recovery and reconstruction expenditure (Benson, 2011a).

Tracking of expenditure on post-disaster response is additionally important to support effective management of disaster response efforts, monitor potential gaps in financing in this regard and evaluate the effectiveness of related financing arrangements. This tracking should also cover sources of funding, including reallocations from previously planned expenditure.

Simplified systems providing a broad gauge of disaster-related spending are adequate and help overcome some of the complexities of recording relevant expenditure down to the last dollar across many spending agencies. All development initiatives can simply be tagged according to one of the following:

- explicit disaster risk reduction expenditure (e.g., construction of sea dykes; research on flood-resistant crops);
- spending that incorporates disaster risk reduction features at some cost, in effect disaster-resilient development (e.g. construction of seismically strengthened schools);
- spending that contributes to disaster risk reduction at no additional cost (e.g., irrigation); or
- other spending (Benson, Gyanwaly and Regmi, 2009).

DRM practitioners can support the budget or finance agency in strengthening technical capabilities of spending agencies to identify relevant spending and in developing related guidance materials. This capacity development is likely to be essential in establishing and maintaining a sound tracking system. Advice and experience may also be gleaned from DRM tracking initiatives underway in other countries and from colleagues engaged in

#### BOX 9

#### Disaster risk reduction public spending targets - pros and cons

Disaster risk reduction public spending targets can be a useful tool to promote investment in risk reduction. Delegates at the 2009 session of the Global Platform for Disaster Risk Reduction called for at least 1 per cent of both national development funding and international development assistance to be allocated for risk reduction (UN, 2009), while delegates at the Fourth Asian Ministerial Conference on Disaster Risk Reduction called for 2 per cent of development assistance to be assigned for disaster risk reduction by 2015 (AMCDRR, 2010). Many participants at both meetings also supported the allocation of 10 per cent of humanitarian relief funds for disaster risk reduction. Whether these goals are reached is in part dependent on labeling systems. Disaster risk reduction spending requirements also vary between countries, implying that different targets may be appropriate in different contexts. Nevertheless, the establishment of global and regional targets can provide extremely useful mechanisms for drawing attention to the often considerable under spending on disaster risk reduction and for rallying support for increased expenditure. Similar mechanisms can also be explored by local governments.

*Source: ADB, 2013*

While DRM has, to an extent, been incorporated into Indonesia's Medium-term Regional Development Plan and Annual Government Plan, adequate investment in risk reduction activities has yet to be made. A critical issue is the under utilization of the budget allocated for the implementation of the National Action Plan (NAP) for Disaster Risk Reduction, with nine ministries using less than the allowed budget for risk reduction activities.

### What is causing the gap?

- There is no directive to integrate DRM activities into development programs and projects.
- Where DRM is not included in an agency's Strategic or Annual Plan, DRM-inclusive proposals are not approved by the planning bureau.
- The concept of disaster risk reduction is not well understood; it is often confused with disaster response.
- There is a prevailing misconception that Parliament does not approve budget proposals for disaster related activities because a budget for disaster purposes is allocated to the Indonesian National Board for Disaster Management.
- The NAP documents were unavailable or unknown at the time of budget preparation.
- Activities in the NAP are not considered a priority for many ministries.

### How to bridge this gap?

- A high level DRM policy, requiring agencies to implement DRM activities. Such a policy may be based on a law or a ratified international agreement and be in the form of a Presidential Decision.
- An action plan with a funding allocation for each participating ministry. This plan needs to be incorporated into the Medium-term National Development Plan and annual Government Working Plan, as well as accommodated in Ministries' Strategic and annual Working Plans.
- A reporting system to inform all participating parties about the activities undertaken.
- A coordinating unit to monitor and evaluate budget allocation and application.
- Periodic meetings to discuss issues involved.
- A budget code specifically for DRM activities to improve investment tracking. Every activity that has a purpose to reduce disaster risk should use the appropriate code.
- Achievement indicators by which to evaluate DRM investments.
- Public awareness of national and local DRM activities and their importance.

tracking expenditure on other cross-cutting issues, such as climate change adaptation, poverty reduction and gender equality.

## GOING FURTHER

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**Mobilizing additional resources for DRM.** Public resources are limited and additional resources therefore need to be secured to help meet the cost in strengthening resilience. Substantive progress in strengthening resilience therefore requires considerable effort on the part of DRM practitioners to help identify additional sources of financing and to support local authorities in accessing these resources. Specific needs for investments in resilience exist at a local, rather than national level. However, national DRM practitioners can play an important supportive role, collating ideas on opportunities both domestically and internationally.

Local DRM practitioners, with support from the national level, can:

- **Advocate for the use of discretionary budget resources** under the jurisdiction of legislative representatives for local risk reduction actions and support the identification of potential initiatives.
- **Encourage local authorities to take disaster resilience needs into account** in determining the use of development partner social funds. These funds provide block grants to poor communities for investment in small-scale socio-economic infrastructure, productive investments (e.g., micro-finance and income-generating projects), social services and capacity building programs. They can be used, for instance, to strengthen local institutional DRM capacity; invest in structural risk reduction measures; and increase access to basic social services, micro-credit and micro-insurance in order to build livelihood security and resilience to cope with shocks.

- ▶ **Encourage local government to offer financial grants, subsidized loans and tax breaks** to stimulate investment in resilience, thereby leveraging increased private investment in DRM and reducing public contingent liability. In Pune, India, for instance, property tax incentives are offered to encourage households to recycle wastewater and store rainwater runoff and, thus, reduce the risk of severe flooding.
- ▶ **Together with local government, explore the scope for financing investments in resilience through user fees, tariffs or benefit-related taxes**, focusing in particular on key resilience strengthening needs. The resulting revenue can be used to offset part of the initial investment cost or maintenance costs. For instance, there can be potential user fee opportunities in the provision of solid waste management and drainage, both of which can contribute to reductions in flooding (Benson, 2011b).
- ▶ **Establish partnerships with local companies to run risk reduction awareness and capacity building campaigns**, focusing on both the business sector and at-risk households, again reducing public contingent liability. In India, for instance, Tata Steel (the country's largest private sector steel company) has partnered with various Indian state governments in funding the training of masons in safe construction methods.
- ▶ **With support from national DRM practitioners, explore potential options for pooling local government disaster contingency funds.** By pooling reserves, local authorities increase the scale of resources that they can access in the event of a disaster without incurring additional opportunity costs associated with committing additional public resources for contingency reserve purposes.
- ▶ **Advocate for the passage of legislation** permitting the transfer of unutilized local government disaster relief, early recovery, and reconstruction appropriations for disaster risk reduction at the end of the fiscal year. In the Philippines, for instance, unutilized local government disaster response

budget allocations now accrue into a special trust fund. This fund is solely for use in supporting disaster risk reduction and management activities. After five years, any remaining funding reverts to the general fund for expenditure on other social services.

Financial and other incentives are also required to motivate greater private sector and household investments in resilience. DRM practitioners at both national and local levels can support this, advocating for financial grants, revolving loan funds and tax breaks to stimulate the development, marketing and uptake of disaster risk reduction technologies and disaster risk transfer products, and retrofitting (Benson, 2011b).

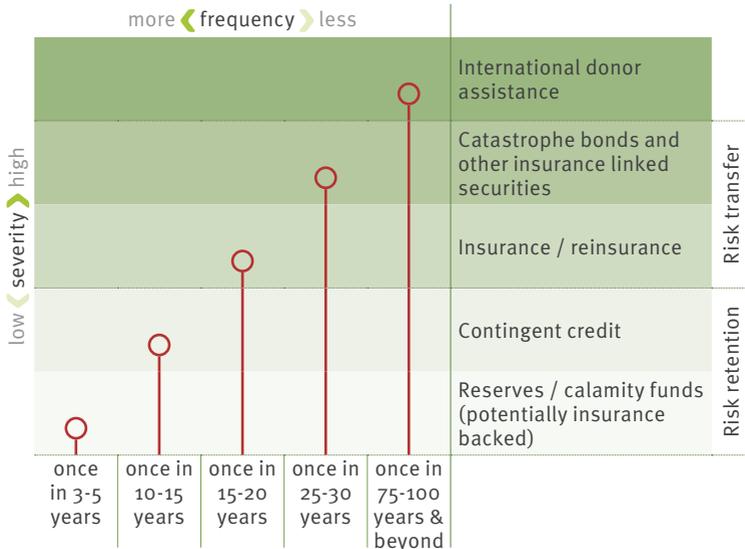
#### **Post-disaster relief, early recovery and reconstruction financing.**

Timely and adequate resources for post-disaster response play a key role in supporting rapid recovery and reconstruction of a country following a disaster, and in minimizing indirect impacts and secondary effects incurred as a consequence of the direct physical losses. These resources can be provided through ex ante financing arrangements such as indemnity and parametric insurance and catastrophe bonds, contingent loans and disaster reserves, each entailing some element of forward planning and related budgetary allocation in anticipation of a disaster. They can also be provided via arrangements put in place after a disaster has occurred, for instance via budget reallocations (with related opportunity costs), tax increases, new government borrowing and international assistance.

A layered approach is widely advocated, combining an array of financing instruments to meet the remaining risk variously associated with low-impact/high-frequency, medium-impact/medium-frequency, and high-impact/low-frequency events (Figure 6), and including some instruments that can be activated very rapidly.

FIGURE 6

Risk layering and the application of financial instruments



Source: ADB, 2013; adapted from Cummins and Mahul, 2009.

DRM practitioners should encourage the agency responsible for budgeting and finance and other concerned agencies to develop comprehensive financing strategies, building on the analysis of contingent liability and of the potential fiscal impacts of disasters to determine how they would meet the liability associated with hazard events of varying severity. DRM practitioners should also provide advice and support on mechanisms to embed DRM principles firmly within this financing strategy. For example, governments can require “build back safer” reconstruction and place limits on central government post-disaster support to line agencies and local governments that have made insufficient progress in risk reduction or that do not have insurance cover.







## INTEGRATING DRM INTO DEVELOPMENT PROJECTS

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### OVERVIEW

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For most countries in Asia and the Pacific, Projects are the chief implementation mechanism by which governments use resources to realize policy goals, actions plans and budgets as tangible outputs. Each government agency, whether a national line ministry or a local authority, will typically have a program of projects to be implemented within a given year or multi-year time period, depending upon the budget that they have been allocated. These projects are often large infrastructure development projects, such as building a road, a school or a dam. They can also be “soft” projects, such as training on farming techniques, health campaigns or revision of educational curricula.

Public investment projects have specific objectives to achieve within a defined time period and using a defined budget. As such, many governments in the region use established project management cycles to guide project-related decision-making. Governments often establish a series of guidance tools to provide instruction on how to proceed in each stage of the process. By doing so, governments are attempting to ensure that all relevant issues and conditions are taken into account throughout the project’s design and implementation.

Effective risk-sensitive decision-making requires the integration of disaster risk assessment and treatment throughout the project management cycle. When disaster risk is effectively managed, the risk that natural hazards will impede the achievement of



project outcomes is substantially reduced, and the project's implementation does not exacerbate the vulnerability and exposure of communities in and around the project area.

With the large number of public development projects that are undertaken by governments at any given time, it is not practical for the DRM practitioner to support the design and implementation of each project being implemented in a country. Instead, the practitioner plays a role in institutionalizing the integration of DRM within public project management by embedding the stages of the DRM process within the appropriate pre-established project management procedures. To do so will involve incorporating the following activities:

- obtaining and understanding the significance of disaster risk information within the context of the project;
- incorporating disaster risk considerations into project appraisal; and
- identifying risk reducing or managing activities for inclusion in project implementation.

## THE GOALS OF THE DRM PRACTITIONER

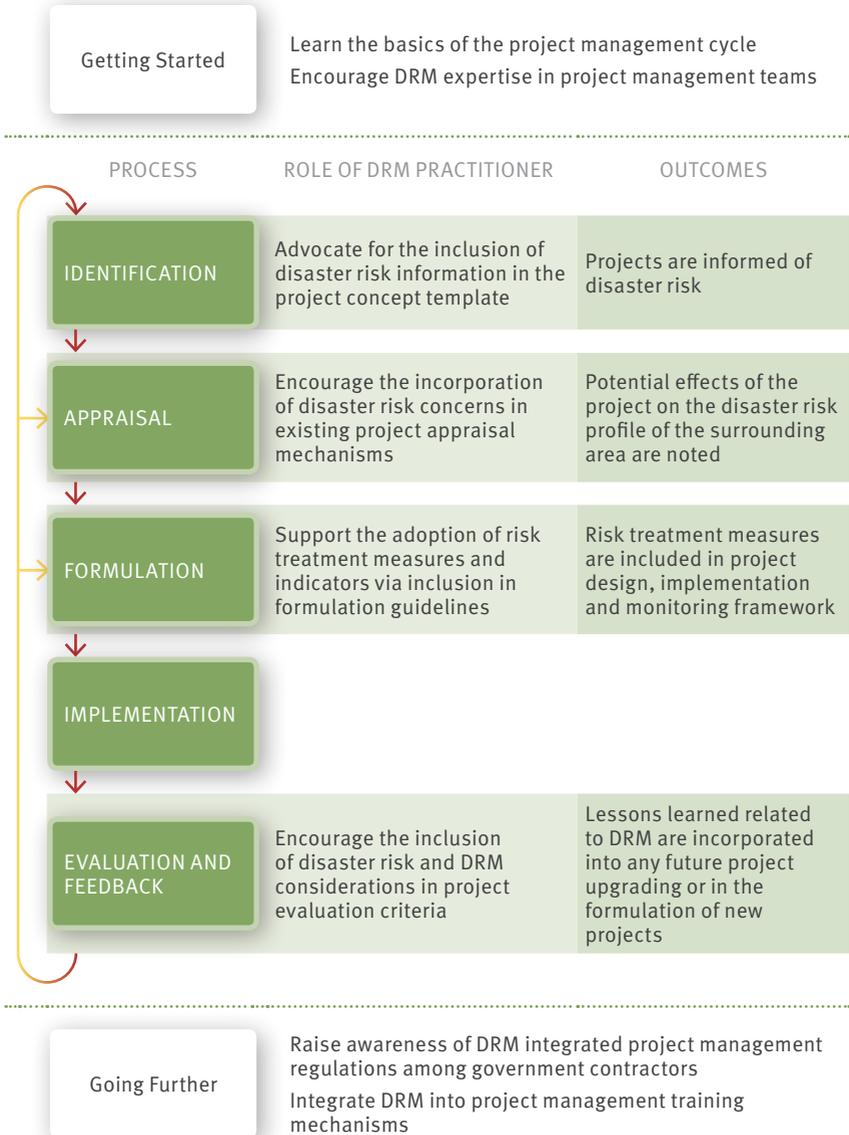
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The goals of the DRM practitioner are to ensure that:

- the tools and procedures that guide project management include directives requiring the consideration, evaluation and treatment of disaster risk within the relevant stage of the project management process; and
- DRM is incorporated into existing mechanisms for training on public project management and implementation.

FIGURE 7

The DRM practitioner's contribution to project management



## GETTING STARTED

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A project is a series of activities that aim at accomplishing specific goals or objectives within a defined time-period. Project management involves allocating finite amounts of human and financial resources, as well as equipment and materials, in order to achieve the project's goals as efficiently and effectively as possible. While the exact project management cycle followed varies between agencies and countries, it generally involves project identification, appraisal of social, economic and environmental feasibility, formulation of the implementation plan, followed by implementation, monitoring and evaluation of the project activities.

The DRM practitioner can start by becoming familiar with the basic project management approach followed in the country, including:

- procedures for project formulation and approval, and the responsible agencies;
- legal requirements for project design (e.g. mandatory environmental assessments); and
- standardized templates or checklists for project proposals, project planning frameworks, monitoring and evaluation, etc.

In many cases, there are standardized procedures for project management for all sector agencies, which are explained in detail in guidelines and training programs developed by the national planning or other relevant agency. For example, the Philippines uses a Project Management Cycle Manual which governs the management of government projects. The practitioner can also follow up with sector planning departments, as sector specific guidelines may be available. A meeting with a mid-level planning officer of a line ministry should suffice to fill the gaps on how project management is undertaken. It is important to identify these procedures and the associated guidance tools, as they

provide the opportunity for institutionalizing the integration of DRM into project management.

Often, the government agency responsible for a particular project nominates a project manager or constitutes a project management team to guide project design and implementation. This may be an agency officer, an internal technical team or an outside consultancy firm.

If a non-government contractor is going to manage the project, the DRM practitioner can advocate that project management regulations stipulate that contractors include DRM expertise on the project management team, where relevant. This can be done within the scope of work of the call for proposals and project contract, for example.

To advocate for the inclusion of DRM in project management regulations, the DRM practitioner can show examples of projects that have been negatively impacted by recent hazard events, as well as describe how current and future disaster risk concerns can be addressed using project management tools. The practitioner can also caution against the unintentional exacerbation of exposure or vulnerability of communities in the project area that can occur if DRM is not incorporated into project management.

## SUPPORTING DRM INFORMATION AND KNOWLEDGE REQUIREMENTS

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Individual line agencies and local governments require site-specific and sector-specific hazard and vulnerability data to assist in the design and implementation of disaster resilient projects. This data is essential to assess the level of disaster risk associated with the project site and to inform decisions on the project design and implementation strategy.

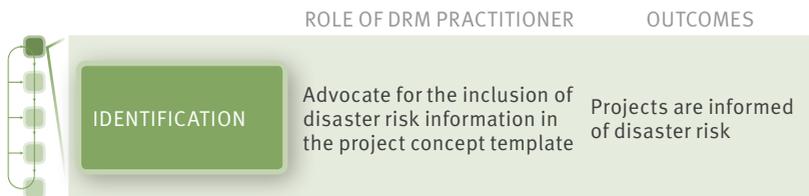
In order to design and implement safe projects, access to relevant risk information is necessary. The DRM practitioner can support individual line agencies and local governments in accessing available hazard and disaster risk data for proposed development projects. The DRM practitioner can facilitate access to this information via a wide range of public and government organizations (see Table 4) by collating relevant data and assessments, and maintaining them in a centralized, open-source location; and by seeking to redress major gaps in knowledge. DRM practitioners can also proactively alert relevant line agencies and local governments to areas of high risk, as well as support the creation of risk-sensitive land use plans | see URBAN  3.2 for more information |

In addition to site-specific disaster risk information, project management teams must also consider sector-specific disaster risk information. For example, if the project is the construction of a primary education facility, relevant disaster risk information might include the number of such facilities (or schools in general) damaged during previous disasters, the duration of disruption, and number of school children fatalities and injuries, or the amount of time the school was used as an evacuation shelter. This information will help the project management team to make decisions that will increase the resiliency of the new school. Where possible, the DRM practitioner can work to make sure sector-specific risk information is also easily available.

**TABLE 4** Examples of risk information and where to find it

Risk information	Possible sources
<b>Hazard profile</b> , including types, frequencies, intensities, geographical coverage, etc.	<ul style="list-style-type: none"> <li>• National and local DRM offices</li> <li>• International databases like EM-DAT</li> </ul>
<b>Disaster damage and loss history</b> of the project area	<ul style="list-style-type: none"> <li>• Damage and loss assessments</li> <li>• National DRM offices</li> <li>• Local governments</li> <li>• Media reports</li> <li>• Disaster loss inventories like DESINVENTAR (<a href="http://www.desinventar.org">www.desinventar.org</a>)</li> </ul>
<b>Topography and soil conditions</b> , including run-off and drainage capacity, to determine the potential for landslides or liquefaction	<ul style="list-style-type: none"> <li>• National geological surveying agencies</li> <li>• Ministries of Agriculture</li> <li>• National hydrological services</li> <li>• National irrigation agencies</li> </ul>
<b>Geological structure and fault lines</b> to determine earthquake potential	<ul style="list-style-type: none"> <li>• National geological surveying agencies</li> <li>• Associations of seismic engineers</li> <li>• Universities and research centers</li> </ul>
<b>Coastal and river proximity</b> to determine the potential impacts from cyclones, storm surges or tsunamis	<ul style="list-style-type: none"> <li>• National mapping agencies</li> <li>• Subnational land use regulatory agencies</li> </ul>
<b>Highest flood level data sets</b>	<ul style="list-style-type: none"> <li>• Hydrological or irrigation agencies</li> <li>• Universities and research centers</li> </ul>
<b>Local perceptions</b> of hazards, and changes in hazard frequency and impact; and of vulnerability and capacity to cope with disasters	<ul style="list-style-type: none"> <li>• Local leaders and community members</li> <li>• Local CSOs</li> </ul>
<b>Climate change scenarios</b> that indicate projected changes in hazard occurrence and exposure, if available.	<ul style="list-style-type: none"> <li>• Intergovernmental Panel on Climate Change</li> <li>• Ministries of environment or science</li> <li>• Climate Change Adaptation Commissions</li> </ul>
<b>Planning tools</b> such as disaster management plans, land use plans, hazard zonation, regional development plans	<ul style="list-style-type: none"> <li>• Local governments</li> <li>• Disaster management offices</li> <li>• Planning agencies</li> </ul>

## THE DRM PRACTITIONER'S CONTRIBUTION TO PROJECT MANAGEMENT



*Project identification often overlaps the planning and budgeting phases of the development process. Governments usually identify development projects based on an assessment of the problems, needs and interests of national stakeholders. These potential projects are screened and prioritized based on the targets and indicators outlined in national development plans. The aim of this identification process is to determine projects eligible for public funding.*

Depending on the country, the initial idea for a project may be identified in the development plan and later developed further into a concept paper for annual programming and budgeting approval purposes. The level of detail captured in the project identification stage may differ from country to country, but commonly includes: the rationale of the project, details of the project site, and a baseline assessment of potential environmental impacts.

In countries where a project concept document is used for project identification, the national agency responsible for regulating project management may provide a template (often the national planning or budget agency). The DRM practitioner can advocate for the inclusion of DRM considerations in this template.

In order to justify this inclusion, the practitioner can highlight any recent examples of development projects that suffered from hazard impacts shortly after completion. Additionally, the DRM practitioner

can explain that disaster risk is not constant but changes over time as a result of changes in climate and because of development trends such as population growth and urbanization. These changes are felt particularly strongly at the project level | See [CLIMATE](#) 3.3 for a further discussion on climate change and projects |. If these changes are not monitored and alterations in project functioning not made in response, then development projects will not achieve objectives and can potentially exacerbate disaster risk further.

Possible points to include in the template are:

- a section identifying the hazards that affect the project site and the potential risk they pose to the completion of the project and accomplishment of its objectives;

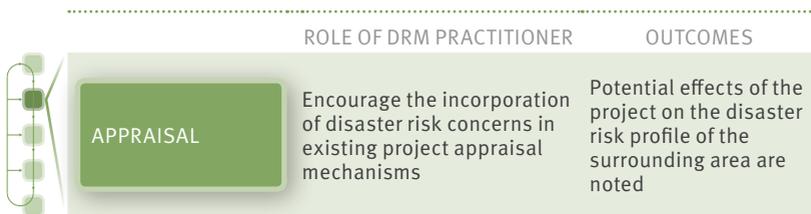
#### BOX 10 Prioritizing projects: An example from India

In India, the planning commission has identified a system to prioritize national projects for implementation. Projects are rated against the following criteria and then put in priority order:

- Degree of scientific, technological or management innovation, including peoples' participation.
- Capacity to deliver “best practices” for others to emulate.
- Level of appropriate technology for the local context and use of traditional construction materials and techniques.
- Amount of local employment generated for unemployed able-bodied people through government schemes for construction of public assets, infrastructure and amenities.
- Degree of sustainable capacity building to empower local communities to manage their own affairs in the event of a disaster.
- Role of cross-cutting themes like disaster education and community leadership development, public awareness development, gender mainstreaming, special focus on the needs of women and children, vocational training of unemployed youth, and concern for physically challenged persons.
- Since disasters know no district or state boundaries, projects of interest to two or more districts or states may score over those yielding localized benefits.

- a directive to examine how potential hazard events are likely to interact with changes brought about by the project to communities (especially community livelihoods), environment and infrastructure; and
- a section proposing possible DRM measures that could be integrated into the project to manage the identified risks.

The DRM practitioner may choose to advocate for a stipulation requiring that further analysis be undertaken in the case the initial analysis reveals high levels of risk. This would ensure that adequate and appropriate levels of risk are identified early on in the project cycle, and that risk treatment measures are correctly identified.



*Following project identification, all significant aspects of the project concept are studied, taking into account stakeholders' views, relevance to national development objectives, feasibility and other issues. The outcome is a decision on whether or not to take the project forward.*

Project appraisal tools that analyze economic, social and environmental feasibility and impact provide an important entry point to gather and assess detailed information on disaster risk. The DRM practitioner can find out which basic appraisal methods are utilized to screen projects by the ministry of planning or finance or within the sector line ministries, and promote the inclusion of disaster risk considerations within the tools and regulations that guide these appraisals. Box 11 presents some appraisal types and the kinds of DRM considerations to include. Box 12 gives an

**Technical Analysis**

- Does project design incorporate disaster risk?
- Are activities designed to resist hazard impacts?
- Do activities contribute to risk reduction?
- Is the project still technically feasible given the disaster risk?

**Financial Analysis**

- How will hazard impacts affect project cost and sustainability?
- Can the project still pay for itself if a disaster occurs?
- Is there budget allocation for maintenance?
- Does the project incorporate financial protection (e.g., insurance)?
- What is the additional cost of measures to strengthen resilience?

**Economic Analysis**

- Is disaster risk taken into account in estimating the project's net benefit or internal rate of return?
- How would potential adjustments to the project to strengthen disaster resilience affect the project's net benefit and internal rate of return?

**Social Impact Assessment (SIA)**

- Involve the public by identifying and working with all groups that may be exposed to greater (or lesser) disaster risk as a result of the project.
- Develop scenarios of the social consequences of exposure to the hazards identified.
- Are the proposed DRM options acceptable to the public?

**Environmental Assessment**

- Identify hazards, scenarios and related vulnerability in the project area
- If hazard-related issues are significant, include them as key issues to be addressed in the environmental assessment.
- Assess the impact of project on vulnerability to hazard events, evaluate risk reduction options, select preferred option and determine feasibility.

*Source: Adapted from NEDA, UNDP, ECHO, 2008*

## BOX 12 Integrating DRM into development projects in Pakistan

In 2010, the Planning Commission of Pakistan issued a circular stating that the design of all development projects must include a consideration of vulnerability to the impacts of natural and human-induced hazards in order to be considered for approval.

Checklists developed for projects in the infrastructure, social and productive sectors are used for project appraisal and feasibility studies. The following questions are examples from the public infrastructure checklist:

- Which hazards are unavoidable and thus a condition for project design?
- Is the project prepared using the 2007 Building Codes and byelaws?
- Does the project incorporate territorial planning regulations?
- Is the project designed to resist the impact of hazards and to contribute to the reduction of vulnerability?
- Does the project design include a plan for infrastructure maintenance that is designed to reduce the disaster vulnerability of both the asset and the surrounding population? Does it include sufficient funding?
- Does the budget and cash flow of the project include provision to respond to emergencies?
- Does the project incorporate financial protection during execution and after the completion of the project (e.g. insurance, indemnity, guarantee, contingency credit arrangements, etc.)?
- Does the project incorporate an adequate contingency plan for possible disasters with a communication system for emergencies established (i.e. warning system)?

example of how Pakistan incorporated DRM considerations into a project appraisal tool.

Of all the project appraisal tools, the environmental assessment provides the most logical entry point for incorporating DRM because it already concerns itself with the relationship between the project and its surrounding environment. Additionally, most countries in the region mandate the use of environmental assessments for large infrastructure projects, such as roads and airports, etc.

Within environmental assessment, there are two main ways to integrate DRM. One is within the screening process for determining what level of assessment is required for individual projects, and the other is within the assessment itself.

In many countries, it is the national environmental agency that determines the level of environmental assessment required for each proposed project. Often, decisions regarding the level of assessment required are based primarily on the cost threshold and the sector of investment. However, the DRM practitioner can advocate to the environmental agency to revise the categorization to include a consideration of the project’s relationship with natural hazards.

Table 5 provides an example of a potential categorization method that an environmental agency could adopt in order to determine the level of assessment required as determined by its impact on vulnerability to natural hazards.

	<b>Project Impact</b>	<b>Project Examples</b>	<b>Screening Required</b>
A	Environmental impacts are highly likely to contribute to increased vulnerability to hazards	Projects that are likely to impact resource and land use in the surrounding environment, like mining, power generation, large-scale water supply, large roads, etc.	Full environmental assessment
B	Environmental impacts are likely to increase vulnerability but are typically site-specific and reversible	Smaller scale and localized projects like rural water supply, community irrigation, construction of school buildings and other social infrastructure	Less extensive environmental assessment
C	Project is likely to have minimal or no adverse environmental impacts	Projects intended to improve social capital like training, direct subsidies, nutrition and health	No extensive environmental screening required

In 2012, Lao PDR's Ministry of Natural Resources and Environment recognized that the Environmental Impact Assessment (EIA) provided an entry point to ensure disaster resilient projects. Via expert consultation and public engagement, they altered the country's EIA guidelines. Modification of the guidelines focused on two important stages of the assessment process: scoping and reporting.

### Scoping Stage

During the scoping stage, data and information are gathered. The guidelines require that the assessment team gather the following DRM-relevant data and information:

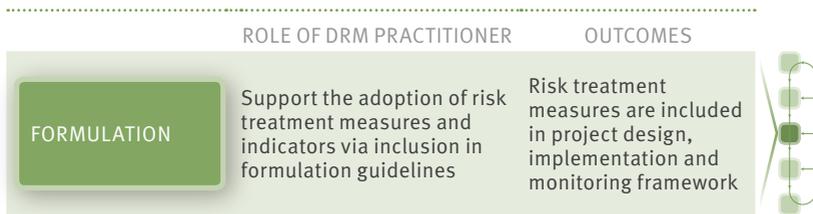
- 👉 **Description of the Natural and Social Environment:** What are physical systems relating to natural hazards? What are the socio-economic characteristics of the population that may result in disaster vulnerabilities? Who are particularly vulnerable groups?
- 👉 **Impacts on the Natural and Social Environment:** What are the links between the impact on the environment and the occurrence of hazard events? What are the project's potential impacts on the socio-economic characteristics of local communities that could result in increased vulnerability to disasters?
- 👉 **Impacts, Risk Reduction Measures and Residual Impacts:** What are potential measures to reduce hazard impacts on the project and elements associated with it (i.e. personnel, utilities, facilities)?

### Reporting Stage

During the reporting stage, data and information collected in the scoping stage are analyzed and a report is prepared. The guidelines require action under the following categories:

- 👉 **International Conventions and Treaties:** While conducting the EIA, the team must follow principles of the United Nations Convention for Climate Change (1992).
- 👉 **Mapping:** Natural hazard mapping and modeling of long-term natural environment scenarios.
- 👉 **Impact Assessment and Risk Reduction Measures:** The team must consider how the project can increase the occurrence of hazard events, and levels of exposure and vulnerability. The team must include disaster risk reduction and climate change adaptation measures.
- 👉 **Risk Assessment section:** refer to disaster risk assessments.
- 👉 **Public Consultation and Disclosure:** The team must gather information on disaster-vulnerable groups.

Once the level of screening has been identified, the scope of the assessment is defined. Most countries that mandate environmental assessment for certain categories of projects have assessment guidelines. These guidelines typically require only a one-way assessment: considering the impact of the project on the environment. As a result, natural hazards, or the impact of the environment on the project, are ignored. The DRM practitioner can argue to the agency responsible for environmental assessment guidelines, that the project’s sustainability will depend also on the environment’s impact on the project, including natural hazards, and thus this topic should also be examined. The practitioner can seek to ensure that the potential changes in hazard profiles due to climate change are also taken into consideration, such as extreme weather events that may require higher drainage capacity, sea level rise that may affect road siting, etc.



*Once a project is approved for implementation, detailed design and planning is undertaken. Work plans, logical frameworks and schedules for implementation are developed, and the required resources (e.g. human and financial resources, materials) are calculated.*

A development project with well-integrated DRM will have clear and measurable objectives for hazard safety. It will also specify measures to ensure that the design and implementation arrangements for the project satisfy these objectives.

The tools used to guide project formulation differ by country and by agency. Sometimes project formulation is regulated centrally, with one universal guideline. In other places, there are different

procedures depending on the type of project, the source of funding, or the size of the investment. For example a country might have a different guide for projects funded by external donors, for projects that involve public-private partnerships, for critical infrastructure construction, etc.

The DRM practitioner can best facilitate the integration of DRM into these guidelines by encouraging the responsible agency to require the inclusion of risk treatment measures in project design based on the results of project appraisal. Stress that different types of measures will be necessary for different types of projects, and that these measures should aim to both reduce disaster risk as well as manage the remaining risk that cannot be reduced.

For example, treatment measures for building construction projects in seismically active zones could include both the use of an earthquake-resistant structural design as well as the purchasing of earthquake insurance. Table 6 provides some examples of DRM measures that may be included in development projects.

Additionally, the practitioner can emphasize to the responsible agency that project budgets will need to include the potential extra costs of material, skilled labor, etc. to undertake the DRM measures.

During project formulation, a monitoring framework is established, setting out targets and indicators that will be used to measure a project's performance. Using disaster risk-related targets, indicators, means of verification, and assumptions in the project's management system or logical framework will enable project management teams to track the progress of DRM in relation to the overall objectives of the project.

The DRM practitioner may choose to encourage the responsible agency to include a requirement for project monitoring from a DRM perspective. Suggest to the agency that this can be achieved by including the procedures listed below in the relevant section of

TABLE 6 Examples of risk treatment measures

Measure	Reduces risk	Manages remaining risk
Barriers, e.g.: <ul style="list-style-type: none"> <li>• sea walls to protect coastal projects</li> <li>• mangroves as a natural storm surge barrier to protect coastal livelihoods</li> <li>• retaining walls to prevent river bank erosion near bridges</li> </ul>		
Public investment placement to reduce hazard exposure: <ul style="list-style-type: none"> <li>• Initial site selection</li> <li>• Relocation</li> </ul>   see URBAN  3.2 about site selection using risk-informed land-use planning		
Natural hazard insurance (against fires, earthquakes, etc.)		
Seismic resistant building design		
Strengthening, e.g.: <ul style="list-style-type: none"> <li>• existing structures (i.e. retrofitting)</li> <li>• grass and bio-nets for slope stabilization</li> </ul>		
Early warning systems and evacuation planning		
Calamity funds (reserves and credit)		

any guidelines describing how to set up a logical or results based framework for project monitoring (adapted from UNDP, 2008).

- Include targets and indicators to monitor any DRM-related project components.
- Consider potential hazard impacts when identifying critical risks and assumptions.
- Include a consideration of natural hazards when developing the project’s risk management plan and establishing risk indicators;

- Monitor and assess project performance in terms of any DRM components and in terms of the impact of any disaster event on the project and its surrounding environment. Where necessary, modify project activities, targets, and objectives accordingly.

In addition, the DRM practitioner can promote the establishment of sector-specific DRM-related targets and indicators to use for future projects. The targets and indicators for measuring DRM are most effective when they are adaptive, dynamic, active and participatory. To support sector agencies in monitoring DRM, the practitioner can establish a list of potentially appropriate DRM indicators by sector or theme that can be referred to in setting indicators during the design of future projects. Numerous resources are available to support the DRM practitioner on this point (see ADAPT criteria: <http://www.ukcip.org.uk/adaptme-toolkit/>).

#### BOX 13 Integrating DRM into housing projects in India

In the aftermath of the 2001 earthquake in Gujarat, India, the housing recovery project was formulated. This project incorporated specific risk reduction measures into the design of housing in order to reduce future earthquake impacts. The financial support provided by government included the extra cost of risk reducing elements, such as the capacity building of engineers and masons, development and distribution in the project area of literature in the local language on multi-hazard resistant construction. To manage the remaining risk, the houses were insured for 14 types of hazards.

*Source: Thiruppuzah and Kumar, 2009*

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## IMPLEMENTATION

*The implementation phase sees the use of the agreed resources to carry out the planned project activities and thereby achieve project objectives. Progress is assessed through monitoring to enable adjustment to changing circumstances.*

The potential for incurring extra costs in order to implement the DRM measures stipulated in the project design, as well as the higher quality of construction practices that may be required, can sometimes lead to the cutting of corners during implementation. The DRM practitioner can advocate for the routine appointment of an independent monitoring agent or team to be responsible for tracking and ensuring the project's compliance with DRM-specific targets and indicators.

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	ROLE OF DRM PRACTITIONER	OUTCOMES
	Encourage the inclusion of disaster risk and DRM considerations in project evaluation criteria	Lessons learned related to DRM are incorporated into any future project upgrading or in the formulation of new projects



*The assessment of the project's relevance and success is based upon an examination of the efficiency, effectiveness, impact and sustainability of the project measured against the project objectives. The conclusions of this evaluation are taken into account when planning and implementing similar projects in the future.*

Because new projects are largely designed in response to experiences and lessons learned from past projects, ensuring the evaluation of projects for their effectiveness at reducing disaster

risk is an essential aspect of working towards long-term disaster resilience. Evaluation is therefore a vital tool for institutionalizing DRM in the project cycle management process.

The DRM practitioner can encourage sector and planning agencies to include disaster risk and DRM in project evaluation criteria. Often governments will have a standard set of project evaluation

**BOX 14** Considering DRM in project evaluation criteria

<b>Evaluation Criteria</b>	<b>DRM-inclusive Evaluation Questions</b>
<p><b>RELEVANCE</b>  <i>The extent to which a project’s objectives are consistent with development needs.</i></p>	<p>By addressing disaster risk did the project work towards achieving poverty reduction and socio-economic development targets?</p>
<p><b>EFFECTIVENESS</b>  <i>The extent to which a project or program achieves its objectives and outcomes.</i></p>	<p>Have any hazard events occurred that inhibited the achievement of project objectives?</p>
<p><b>EFFICIENCY</b>  <i>A measure of how resources (funds, expertise, time, etc.) are converted into outputs.</i></p>	<p>Were the quality and cost of materials and skills sufficient and appropriate to address the level of disaster risk identified?</p>
<p><b>IMPACT</b>  <i>Primary and secondary long-term economic, environmental, and social change produced (or likely to be), after project implementation.</i></p>	<p>Did the project contribute to an increase or decrease in vulnerability and exposure of communities and assets (including the project outputs) to natural hazards?</p>
<p><b>SUSTAINABILITY</b>  <i>Whether the benefits of a project are likely to continue after its termination.</i></p>	<p>Has the inclusion of DRM measures increased the financial and technical sustainability of the project?</p>

criteria to assess project relevance, effectiveness, efficiency, impact and sustainability. The DRM practitioner can recommend to sector agencies that these criteria are expanded to address the effectiveness of any risk reduction measures undertaken.

Box 14 gives some examples of how DRM considerations can be included in evaluation criteria.

## GOING FURTHER

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Once DRM considerations are incorporated into the rules and regulations governing public management of development projects, the DRM practitioner can further support actual implementation by raising awareness of government and private sector contractors and project managers. This may involve acquiring a list of companies usually contracted by the various sector agencies and sending them information regarding the changes in project requirements with respects to DRM. Alternatively, the DRM practitioner may choose to contact national societies of engineers or contractors and offer to present the new regulations in their next meeting.

Where they exist, the DRM practitioner can make contact with national organizations responsible for training civil servants on project management and suggest integrating information regarding the new regulations into the course curriculum.





## KEY MESSAGES

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**The DRM practitioner has an important role to play in shaping safe and sustainable socio-economic development across Asia and the Pacific.**

Immediate action is required to counteract growing disaster losses, both in terms of human lives and economic production. As vulnerabilities and exposure continue to grow, the scope and need for effective DRM has never been greater. This handbook has given both strategic and practical options for operational implementation of DRM within a selection of development processes.

The following are key messages to the DRM practitioner for this work:

**THE DRM PRACTITIONER RECOGNIZES THAT DISASTER RISK MANAGEMENT IS ESSENTIAL FOR LONG-TERM SUSTAINABLE DEVELOPMENT.**

Disasters not only destroy hard-earned gains, but they also restrict the potential for future development.

**THE DRM PRACTITIONER UNDERSTANDS THAT DISASTER RISK MANAGEMENT SHOULD NOT EXIST AS AN ISOLATED ACTIVITY.**

To cope with the expanding challenge of reducing disaster risk, it is essential for the DRM approach to be woven into all relevant development processes and tools. In effect, it is essential to strengthen resilience within government and, ultimately, society.

### THE DRM PRACTITIONER PROMOTES CONTINUAL INTEGRATION OF DRM INTO THE DEVELOPMENT PROCESS.

Integration is not a one-time event but rather a continual cyclical process of using and assessing risk information, implementing the appropriate risk reducing measures and evaluating the efficacy. With each loop of the cycle, DRM is further integrated and development is more resilient.

### THE DRM PRACTITIONER IS NOT SOLEY RESPONSABLE FOR INTEGRATING DRM.

The DRM practitioner can leverage the extensive network of organizations and individuals working in DRM to assist in the integration process. Other colleagues in government, private companies, CSOs, universities and other research organizations, international development partners and citizens can all contribute.

### THE DRM PRACTITIONER RECOGNIZES THE NEED TO INTEGRATE DRM INTO PRIVATE AS WELL AS PUBLIC ACTIVITIES AND DECISIONS.

In addition to government, the DRM approach can be of benefit to private companies, development partners, CSOs and individuals alike. Government is in a unique position to set the example, as well as encourage other development actors to adopt a risk-reducing attitude as well.



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## GLOSSARY

<b>Capacity</b>	The combination of all the strengths, attributes, and resources available to an individual, community, society, or organization, which can be used to achieve established goals (IPCC 2012).
<b>Climate change adaptation</b>	In human systems, the process of adjustment to actual or expected climate and its effects in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate (IPCC 2012).
<b>Disaster</b>	Severe alterations in the normal functioning of a community or a society due to hazardous physical events interacting with vulnerable social conditions, leading to widespread adverse human, material, economic, or environmental effects that require immediate emergency response to satisfy critical human needs and that may require external support for recovery (IPCC 2012).
<b>Disaster risk</b>	The likelihood over a specified time period of severe alterations in the normal functioning of a community or a society due to hazardous physical events interacting with vulnerable social conditions, leading to widespread adverse human, material, economic, or environmental effects that require immediate emergency response to satisfy critical human needs and that may require external support for recovery (IPCC 2012).
<b>Disaster risk financing</b>	Application of financial instruments as part of a systematic approach to managing disasters in order to anticipate, plan for, reduce, transfer, and respond to natural hazard events. It is intended to capture various financial mechanisms and policy options that enable greater financial resilience to natural hazards.

<b>Disaster risk management (DRM)</b>	Processes for designing, implementing, and evaluating strategies, policies, and measures to improve the understanding of disaster risk, foster disaster risk reduction and transfer, and promote continuous improvement in disaster preparedness, response, and recovery practices, with the explicit purpose of increasing human security, well-being, quality of life, and sustainable development (IPCC 2012).
<b>Disaster risk reduction (DRR)</b>	Denotes both a policy goal or objective and the strategic and instrumental measures employed for anticipating future disaster risk; reducing existing exposure, hazard, or vulnerability; and improving resilience (IPCC 2012).
<b>Early warning system</b>	The set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss (UNISDR, 2009).
<b>Environmental impact assessment</b>	Process by which the environmental consequences of a proposed project or programme are evaluated, undertaken as an integral part of planning and decision-making processes with a view to limiting or reducing the adverse impacts of the project or programme (UNISDR, 2009).
<b>Exposure</b>	The presence of people; livelihoods; environmental services and resources; infrastructure; or economic, social, or cultural assets in places that could be adversely affected (IPCC 2012).
<b>Hazard</b>	The potential occurrence of a natural or human-induced physical event that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, and environmental resources (IPCC 2012).
<b>Hydro-meteorological hazard</b>	Process or phenomenon of atmospheric, hydrological or oceanographic nature that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage (UNISDR 2009).

<b>Land use planning</b>	The process undertaken by public authorities to identify, evaluate and decide on different options for the use of land, including consideration of long term economic, social and environmental objectives and the implications for different communities and interest groups, and the subsequent formulation and promulgation of plans that describe the permitted or acceptable uses (UNISDR, 2009).
<b>Non-structural measures</b>	Any measure not involving physical construction that uses knowledge, practice or agreement to reduce risks and impacts, in particular through policies and laws, public awareness raising, training and education (UNISDR, 2009).
<b>Preparedness</b>	The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions (UNISDR, 2009).
<b>Prevention</b>	The outright avoidance of adverse impacts of hazards and related disasters (UNISDR, 2009).
<b>Recovery</b>	The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors (UNISDR, 2009).
<b>Residual risk</b>	The risk that remains in unmanaged form, even when effective disaster risk reduction measures are in place, and for which emergency response and recovery capacities must be maintained (UNISDR 2009).
<b>Resilience</b>	The ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures and functions (IPCC 2012).
<b>Response</b>	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 (UNISDR, 2009).



<b>Risk</b>	The combination of the probability of an event and its negative consequences (UNISDR, 2009).
<b>Risk assessment</b>	A methodology to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihoods, or the environment on which they depend (UNISDR 2009).
<b>Structural measures</b>	Any physical construction to reduce or avoid possible impacts of hazards, or application of engineering techniques to achieve hazard-resistance and resilience in structures or systems (UNISDR, 2009)
<b>Sustainable development</b>	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (UNISDR, 2009).
<b>Vulnerability</b>	The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard (UNISDR, 2009)



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