

# DISASTER RISK REDUCTION





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# ABBREVIATIONS

<b>BBB</b>	Build Back Better
<b>CBO</b>	Community-Based Organisations
<b>CSO</b>	Civil Society Organisations
<b>DALA</b>	Damage and Loss Assessment
<b>DRM</b>	Disaster Risk Management
<b>DRR</b>	Disaster Risk Reduction
<b>EU</b>	European Union
<b>GDP</b>	Gross Domestic Product
<b>GFDRR</b>	Global Facility for Disaster Reduction and Recovery
<b>HCT</b>	UN Humanitarian Country Team
<b>HDI</b>	Human Development Index
<b>HFA</b>	Hyogo Framework for Action
<b>HRNA</b>	Human Recovery Needs Assessment
<b>IASC</b>	Inter-Agency Standing Committee
<b>IFIS</b>	International Finance Institutions
<b>MDG</b>	Millennium Development Goals
<b>MDTF</b>	Multi-Donor Trust Fund
<b>NGO</b>	Non-Governmental Organisation
<b>PDNA</b>	Post-Disaster Needs Assessment
<b>PRSP</b>	Poverty Reduction Strategy Paper
<b>RF</b>	Recovery Framework
<b>RS</b>	Recovery Strategy
<b>TOR</b>	Terms of Reference
<b>UN</b>	United Nations
<b>UNCT</b>	United Nations Country Team
<b>UNDP</b>	United Nations Development Program
<b>UNDAF</b>	United Nations Development Assistance Framework
<b>UNISDR</b>	United Nations Office for Disaster Risk Reduction



## INTRODUCTION

This chapter is intended to guide the Disaster Risk Reduction (DRR) assessment team in the Post-Disaster Needs Assessment (PDNA). The guidance provided is for assessing DRR from the broader perspective as it relates to recovery planning and response, and does not include sector-specific DRR considerations such as livelihoods, education, health, land and property, etc. This sector-specific guidance is available in the sectoral chapters of the present PDNA Volume B, which should be used as additional references.

DRR is understood (United Nations Office for Disaster Risk Reduction [ISDR] Terminology) as “the concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.”

Disaster risk reduction in post-disaster recovery is about ‘building back better,’ in line with the following strategic goal of The Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters (HFA): The systematic incorporation of risk reduction approaches into the implementation of emergency preparedness, response and recovery programs.

The 2004 UNDP global report “Reducing Disaster Risk: a Challenge to Development” notes “the importance of using disaster response and recovery periods as opportunities for reflecting on the root causes of disaster, and recasting development priorities to reduce human vulnerability and natural hazard. Simply reinventing pre-disaster conditions is a wasted opportunity. This is as true for the institutions of governance as it is for physical infrastructure.”

The assessment of the DRR issues focuses on the following main elements:

1. Infrastructure and assets: to assess the damage to infrastructure and assets of DRR-related institutions;
2. Service delivery: to assess the disruption of services provided by DRR institutions, and access to these by affected communities;
3. New and emerging risks: to assess the risks that may have developed as a result of the disaster and that, if not addressed, may deteriorate disaster conditions or put at risk the recovery process, and to identify the measures needed to address these;
4. The performance of the DRR system: to assess how the DRR system performed in relation to the disaster event in question and identify the gaps and needs that must be addressed in the recovery strategy; and

5. Building back better: to identify the capacity-building measures needed to ensure a resilient recovery by building back better.

Furthermore, the assessment team provides additional guidance where required to sector assessment teams, to identify sector-specific DRR issues and offer them practical solutions to integrate DRR in the sectoral recovery process.

It is important to note that strengthening national DRR systems to address the weaknesses exposed by the disaster may require long-term interventions, such as introducing or updating legislations and national policies, and it may not be practical or feasible to include such long-term measures in the recovery process. The DRR recovery plan should strive to provide strategic options that are both viable within the timeframe of the recovery process and financially realistic.

## THE ASSESSMENT PROCESS

The DRR assessment focuses on those policies, institutions and practices related to DRR and to building back better that are not covered by other sectoral assessments, such as the national institutions specifically responsible for DRR, national policies on DRR, specialised emergency response institutions, etc. As noted, other sector teams cover sector-specific DRR considerations, such as the safe construction and application of building codes in the housing sector, disaster risk-sensitive natural resource management, disaster-resilient agriculture, etc. In certain PDNAs some of the above aspects may not be covered by other sector teams due to the lack of available expertise for a given sector or for other reasons. In such cases, the DRR assessment team shall conduct an assessment of those aspects and include them in the DRR recovery plan. During the PDNA it will be important to have inter-sectoral consultations to ensure the collection of all information and data that describes effects of the event and that double counting of these effects are avoided.

Managing the DRR assessment process is as important as the production of the report in terms of influencing in-country institutional and policy improvements. Recovery is a complex and long process that depends on the pre-disaster conditions, the capacity of government, and the impact of the disaster. Internal and external partners need to work together to restore services and build capacities for longer-term disaster risk reduction.

The assessment of the DRR issues will often be led by the government office responsible for DRR in the country, as designated by national authorities, such as the National Disaster Management Authority/Office. This ensures alignment of the DRR assessment and recovery plan with the national DRR system. The DRR assessment team should include DRR specialists and/or sector-specific DRR specialists from the World Bank (WB), European Union (EU) and other UN agencies. The team needs to have at least one DRR system and recovery expert, and one DRR expert with training in the PDNA methodology. Where coordination mechanisms exist, such as the National Disaster Management Commission, an Inter-Agency Standing Committee (IASC) cluster for preparedness, or an NGO humanitarian forum, they shall be invited to participate or be consulted to assist in the assessment process, to ensure the harmonisation of their support to the recovery plan. Where relevant and possible, it may also include government experts on hydro-meteorological/climatic hazards, geological hazards and sociologists. It is preferable that these experts are drawn from local institutions; e.g. the meteorological service, the geology department of national university, the ministry of environment, the ministry of water resources, the national disaster management office, etc. Clear roles and responsibilities should be developed and assigned to different departments and stakeholders.

The DRR assessment team will need to work with two broad categories of stakeholders: i) those linked to overall recovery planning and able to contribute to building back better, including sector ministries, and ii) those responsible for DRR in the country. The operational responsibilities for different aspects of DRR are spread across various ministries and departments, which vary from country to country. Normally the institutional system for DRR in any country can be classified into four categories:

1. Institution/s with primary responsibility for DRR coordination and policy guidance; e.g. Ministry of Interior, National Disaster Management Authority, Federal Emergency Management Agency, or Ministry of Disaster Management and Relief, etc.;
2. Fully dedicated institutions with specific responsibilities on different aspects of DRR; e.g. Meteorological Services, Civil Defense, seismic research centers, search and rescue teams, fire departments, the National Red Cross/Crescent Societies etc.;
3. Sectoral ministries and local governments which have a role in integrating DRR into development planning (land-use, safer construction, rangeland management, water conservation and management, awareness and education); e.g. agriculture, environment, education, urban development, water, transport, gender/women's affairs/social affairs. In some countries, almost all governmental ministries may have an existing or potential role in DRR; and
4. Private sector and civil society organizations (CSOs); e.g. insurance companies, business associations, and including international NGOs, community-based organisations and women's organisations, etc.

The team should consult with stakeholders, including women and men of all ages, and marginalised or disadvantaged groups (ethnic, religious, caste, etc.) from the affected population in order to understand and take into account their distinct experiences of the disaster, and their specific needs and priorities for reconstruction and recovery. Specific arrangements may be required to facilitate meaningful discussions with all of these groups and may include having a gender balance in the assessment team, separate single-sex focus groups, private interviews with men and women, attention to the time and venue of the assessment, etc.

Given that DRR is recognized as a cross-cutting issue and its importance to building back better is acknowledged, it is recommended that a Steering Committee be formed comprising all relevant sector stakeholders to oversee the integration of the DRR issues into the recovery strategy. The Committee should be led by the government and include members from the WB, EU, UN, the Ministry of Planning, Ministry of Interior (Civil Defense), Environment, Water Resources, Transport and others. Any other ministries can be invited to the Steering Committee based upon the nature of disaster and the overall disaster profile of the affected country. The Steering Committee should meet regularly to guide the process and assess progress.

Normally, the PDNA exercise starts with an orientation/training for all participating experts and sectoral teams about the PDNA. Given the multi-sectoral nature of DRR, the assessment team shall contribute a session and presentation on the multi-sectoral nature of DRR and strategies to integrate DRR into sectoral recovery processes. In this presentation the team can clarify the basic concepts on integration of DRR into sectoral assessment and provide practical guidance for each sector. During the PDNA process, the team should continue to liaise with other sectoral teams on their progress in DRR integration.

Disaster risk reduction is not just an institutional issue, to be addressed by ministries and departments. It greatly concerns the daily life and well-being of individual women, girls, boys and men within the affected

communities and society at large. Therefore, the DRR assessment team must look into socio-cultural structures and processes, and their relationship to generating or reducing disaster risks. This includes the links between disaster risk and poverty, gender, population growth, public awareness, and in certain cases, social exclusion (where certain minority groups are forced to live in risky locations due to the nature of their livelihoods or pure exclusion based on ethnicity, race or religion). The team shall analyse such aspects while assessing the exposure and conditions of vulnerability of society to disaster risks. The team shall also ensure that the sectoral teams consider these aspects during their assessment, through the collection and analysis of sex and age-disaggregated data and a gender/vulnerability analysis. Later, while planning to build back better and improve the DRR system, specific recommendations should be made to address these.

## BASELINE INFORMATION SECTOR OVERVIEW

To inform the integration of DRR issues into the assessment and recovery strategy, it is necessary to understand the country's DRR system, structure, mechanisms and processes, as well as its past experience with disasters, response, recovery, risk reduction and building back better. This baseline information should be collected as a first step in the assessment. Below are examples of baseline information that should be considered:

### **Institutional Mechanisms and Capacities for DRR**

- Existing institutional bodies and mechanisms responsible for DRR;
- Inventory of DRR-related government buildings in disaster-hit areas;
- Pre-disaster staffing and human resource capacities relating to DRR at all levels;
- Existing legislative frameworks and national policies relating to DRR;
- Annual public budget for DRR;
- Existing early warning and risk information systems and their effectiveness;
- Existing governmental policies, programs and/or plans to integrate DRR into recovery;
- Government's knowledge and previous experience with DRR;
- Existing mechanisms to develop, plan and track progress in DRR, such as multi-sectoral committees for mainstreaming and monitoring DRR;
- Level of participation of civil society (NGOs, community-based organizations, civil society groups including women's organizations, etc.) in DRR policy formulation and decision-making; and
- Responsibilities and resources of local authorities for DRR.

### **Risk and Vulnerability Information**

- Historical data on past disasters in the country, and their effects and impacts;
- Scientific data on hazard exposure of the country (including probability, frequency, intensity and scale);



- Existence of national and local risk assessments, which may include hazard, vulnerability and/or risk maps or studies available for decision-makers and populations at risk;
- Data on determinants of conditions of vulnerability; e.g. poverty indicators, gender indicators and analysis, population growth rate, cutting of forests and mangroves (% per year), livestock patterns, building vulnerability analysis, people's awareness about hazard etc.;
- Systems of indicators of disaster risk and vulnerability at national and sub-national scales that will enable decision-makers to assess the impact of disasters;
- Availability of statistical information on disaster occurrence, sex-disaggregated data impacts and losses; and
- Existing early warning and weather forecasting systems for different hazards, their strengths and weaknesses. (This shall include the assessment of both hardware infrastructure, as well as capacities for analysis of risk information and the dissemination of warnings to different stakeholders from national to community levels).

### **Past Experience and Lessons Learned**

- Studies or evaluations about disaster risk issues and the functioning of DRR system in the country;
- Past/existing programs of different stakeholders on DRR capacity development and future plans;
- Response analysis of how government, NGOs, civil society, international organisations, private sector and communities responded to past disasters –strengths and weaknesses of response; and
- Previous evaluations, studies and lessons-learned exercises relating to past recovery programs, and particularly on the integration of DRR in these.

A range of information sources within the country can provide the above baseline information. Below is an indicative list of potential sources:

- National Disaster Management Authority/Office;
- Sub-national/regional disaster management authorities;
- Civil Defense;
- The National Red Cross and Red Crescent Societies;
- Universities and research centers;
- Line ministries;
- Meteorological Services and geological and climate research centers;
- National and local DRR strategy or plan;
- National and local development plans;
- International NGOs and UN agencies;
- Media (newspapers);

- National statistics offices/bureaus; and
- National women's organisations.

At the international level a number of organisations produce analysis on disaster issues and contain country level information. They include the following:

- CRED (EM-DAT) – Provides historical disaster analysis since 1900: [www.cred.be](http://www.cred.be);
- RELIEFWEB – Provides information on current disaster events, impact, humanitarian response: [www.reliefweb.int](http://www.reliefweb.int) ;
- ISDR – Provides information on global, regional trends, global and regional frameworks and forums, analysis on lessons learnt in DRR and technical documents: [www.unisdr.org](http://www.unisdr.org);
- PREVENTIONWEB– Provides information on hazards, policies, plans, statistics: [www.preventionweb.net](http://www.preventionweb.net);
- ALNAP (Active Learning Network for Accountability and Performance in Humanitarian Action)– Provides evaluations on disaster response and lessons learnt: [www.alnap.org](http://www.alnap.org);
- UN-IASC– Provides information on humanitarian response to current disasters and provides technical guidelines: [www.humanitarianinfo.org/iasc](http://www.humanitarianinfo.org/iasc);
- ADRC – Provides documents on country policies and systems for DRR: [www.adrc.asia](http://www.adrc.asia); and
- Gender and Disaster Network (GDN) – Provides guidance and tools on gender relations and their relevance in disaster contexts: <http://www.gdnonline.org/>.

## ASSESSMENT OF DISASTER EFFECTS

An assessment of DRR mechanisms considers the overall effect of the disaster on the institutional infrastructure, assets, equipment and other resources responsible for disaster risk reduction at the national and local levels. It also analyses their capacity for service delivery such as early warning information, emergency response, and public awareness, as well as the capacity of the government to mainstream DRR into recovery process to build back better. This section provides guidance on the key elements to consider during the assessment of disaster effects on DRR mechanisms.

### EFFECTS ON INFRASTRUCTURE AND ASSETS

Disasters can affect institutions responsible for DRR at the national or local level, which in turn can limit their ability to deliver their services, to lead and implement DRR-related recovery programs, and to support the mainstreaming of DRR into the recovery process. The PDNA should collect information on the physical destruction of offices responsible for DRR and their service delivery structures, as well as on other resources that make these organisations functional (human resources, equipment, finances).

### DRR INSTITUTIONS TO ASSESS

Before assessing physical damage, make sure to consider all public and private sector institutions that play a role in all elements of disaster risk reduction, including civil society, research and academic bodies, technical institutions, etc. Consider, for example:

- Government bodies responsible for policy formulation and decision-making in DRR, for example the Ministry of Interior, National Disaster Management Authority, Federal Emergency Management Agency, or Ministry of Disaster Management and Relief, Ministry of Environment etc.;
- District-level government bodies responsible for DRR;
- National platforms for DRR or other coordination mechanisms;
- Technical institutions responsible for monitoring natural hazards; geological, hydro-meteorological, climatological, disease breakout etc.;
- Bodies that manage early warning systems and disseminate warnings;
- Disaster management office;
- Civil Protection / Defense;
- Research or academic bodies that collect and disseminate data or information on hazards or risks; and
- Search and rescue teams, fire departments, etc.

## EFFECTS ON INFRASTRUCTURE AND ASSETS

It should be noted that many of the disaster's effects on infrastructure and assets in the area of DRR will be captured by the PDNA Infrastructure Team, as well as by some sectoral ministries. Any information, collected by the DRR team about effects to infrastructure and assets should therefore be passed to the infrastructure team for presentation within that report. The following are the main elements for consideration in terms of the operational capacity/functionality of these institutions:

1. **Public infrastructure:** buildings and facilities of institutions that play a key role in disaster risk reduction at the central level and those of local governments in disaster-hit areas. The assessment should consider the buildings and other facilities of offices responsible for disaster management, of technical institutions that monitor geological and meteorological hazards and manage early warning systems, bodies responsible for policy formulation, coordination, planning and implementing DRR, etc.;
2. **Disaster mitigation schemes:** assess damaged or destroyed mitigation schemes in affected areas such as dykes, flood breaks, sea walls, etc.;
3. **Equipment and technology:** such as for early warning monitoring, office equipment, resources and assets, such as vehicles, etc. The warning equipment may include rain-gauges, hydraulic-gauges, weather stations, weather radars, seismographs, buoys in the ocean and computer systems monitoring flood levels, etc.;
4. **Human resources:** the effect of the disaster on the staffing levels of DRR-related institutions, due to loss or absence of personnel; and
5. **Public records and documents:** public records related to DRR, databases, and data-gathering systems.

## EFFECTS ON SERVICE DELIVERY AND ACCESS TO SERVICES

When disasters damage or destroy the infrastructure, equipment and other resources of government institutions, it will inevitably affect their capacity to function and deliver services. Therefore the assessment evaluates how the services are being disrupted and how this negatively influences the public's access to those services. The main questions are:

- What services were being provided by the DRR institutions to communities in the affected areas?
- Which service-delivery capacities have been disrupted and in what ways?
- What urgent options exist to restore the critical services in the short to medium term during the recovery process?

Service-delivery capacities need to be assessed for a multitude of tasks including risk assessment, early warning, disaster preparedness, risk reduction and disaster management at the national and local levels. Below are examples of DRR-related services and resources to consider during the assessment.

## AVAILABILITY OF DRR KNOWLEDGE, SERVICES AND RESOURCES

### 1. Risk identification and risk knowledge

Identify the availability of risk-related information, information systems, inventory of disaster losses and baseline datasets, e.g. by National Disaster Observatories; the availability of risk assessment studies, hazard maps and historical databases on hazards; and national-local information exchange mechanisms.

### 2. Early warning

This includes evaluating the disaster's effect on the country's ability to forecast hazards, with appropriate equipment, technology and technical staff, as well as early warning services for public dissemination; the capacity of technical agencies to model, forecast, assess and monitor risks associated with hazards and climate change.

### 3. Disaster management and preparedness

Evaluating if the government body responsible for disaster management and preparedness has adequate staffing, equipment, logistical capacity, as well as the national and local emergency operations centers and communications systems; if there are national and local preparedness plans, and public awareness of risks. While central-level preparedness is essential for large-scale disasters, local institutions such as NGOs, civil society organisations, municipalities and neighbourhood groups need to be strengthened primarily in high-risk areas and within at-risk communities.

## ACCESS TO DRR KNOWLEDGE, SERVICES AND RESOURCES

Access to knowledge, services and resources related to disaster risk reduction by the affected population must also be considered by the assessment team. While DRR-related services may still be functioning it is possible that the disaster disrupted people's access to these or that resources are not readily available to local authorities. Below are factors to consider:

- Level of access to early warning information on various hazards at the community level;
- Awareness of actions to be taken at household level to protect lives, assets and livelihoods;
- Access to information on shelters and evacuation centers in case of emergencies;
- Participation in disaster preparedness activities, such as contingency planning and simulation exercises;
- Community's access to DRR resources, such as hazard maps, contingency plans, building standards, relevant policies;
- Community knowledge and awareness of natural hazards, of exposure and risks;
- Access by local authorities to DRR legislation and policies, building codes and standards, hazard information, national contingency plans, etc.; and
- Access by local authorities to practical tools and guidance on integrating DRR into local recovery.

## EFFECTS ON GOVERNANCE AND DECISION-MAKING PROCESSES

As mentioned above, when disasters damage or destroy the infrastructure, equipment and other resources of government institutions it will inevitably affect their capacity to function and deliver services. Therefore the assessment evaluates how the technical, administrative and management capacities are affected by the disaster. The key questions to ask are:

- In what way did the disaster affect the operational capacities of key DRR institutions?
- How did the disaster affect the capacity of the DRR authorities to coordinate the humanitarian response and recovery process?
- What capacities are brought to the disaster response through international aid agencies, and how can this capacity be used to support the recovery process?
- Are early warning systems , weather forecasting systems and search and rescue equipment affected by the disaster, are the relevant departments/authorities able to continue services, and what additional capacities will they need to continue services?

In assessing the effects on DRR governance and decision-making processes, the assessment team will need to identify the necessary capacity-building measures needed to strengthen the government's institutional arrangements, human and material resources, technical assistance, and policy frameworks to enable it to mainstream DRR into recovery and to build back better. The following governance elements can be considered:

1. **Institutional arrangements to lead and manage DRR:** Disaster risk reduction is multi-dimensional, relevant to all sectors, and involves multiple areas of expertise and stakeholders. The team will need to consider the government's institutional capacity and identify gaps that need to be addressed. Consider the need to establish a technical and independent advisory council that can play a key role in setting the DRR blueprint for the recovery strategy, advise the reconstruction agency, and monitor progress. Clear roles and responsibilities should be defined for the lead coordinating body and members of the council. This council can also act as the coordination mechanism with key stakeholders for ensuring an integrated multi-sectoral approach to DRR.

2. **Policy and regulatory capacity:** Relevant national legislation and policies need to be in place on disaster risk reduction in the context of post-disaster recovery, to provide the framework and clear mandate for decision-makers, planners, practitioners as well as civil society. When this is not the case, the team will need to identify the new policies or amendments to existing policies that will be needed. This may include a specific policy for recovery or standard operating procedures outlining the basic principles to be followed, the minimum standards, the DRR criteria for recovery investments, etc.
3. **Technical expertise:** The successful integration of DRR into recovery will require personnel in many areas of expertise. The team will need to assess the experts that will be needed and if there is adequate personnel within the government to fulfill the tasks and guide the mainstreaming of DRR, or if external recruitment or capacity-building training is required.
4. **Practical tools:** Mainstreaming DRR into recovery often requires guidance and tools that should be identified by the team to facilitate decision-making and the practical application of DRR. Consider for example data, maps and information required, databases, information-management systems, manuals and guidelines for national and local authorities or other stakeholders, studies, best practices and lessons-learned.
5. **Decentralised Implementation:** Local authorities will be at the forefront of planning and implementation, and it is therefore important that the assessment identify the support or mechanisms needed to ensure that local governments have the capacity to implement DRR, in terms of technical expertise, resources, guidance, training, practical tools, etc.
6. **Participation:** Civil society organisations, affected communities and the private sector are important stakeholders in the recovery process, and the team will need to identify the mechanisms that will ensure participatory processes and systems, inclusive of all women, girls, boys and men.
7. **Monitoring:** Identify mechanisms to track progress and monitor DRR during the recovery process.

## EMERGING RISKS AND VULNERABILITIES

Disasters can create new threats or conditions of vulnerability that can worsen conditions if not attended to immediately. Therefore, a priority in the assessment is to identify immediate and emerging risks, particularly risks to the population resulting from the disaster. This may include the risk of additional landslides, heavy rains or further tremors, which can threaten more lives and livelihoods. Below are some key indicators to assess:

- Additional hazards that may threaten the recovery process, for example further landslides, an approaching rainy season, hurricane season, further tremors, etc.;
- Environmental risks such as from chemical waste or contaminants, deforestation, etc.;
- Sector-specific risks, such as food insecurity risks or the further spread of disease due to numerous factors; e.g. lack of drainage or poor hygiene;
- Socio-political risks, including conflict risk, tensions between population groups, etc.;
- New vulnerabilities created by the disaster that may present additional threats; and

- Population groups that may face greater risks or that are particularly vulnerable due to gender, age, socio-economic condition, culture, religion, geographic location, etc.

Measures needed to correct, mitigate or reduce these threats should be identified and adopted as part of the recovery process, giving immediate priority to those issues that pose the greatest risks, to avoid another disaster or the further deterioration of current conditions. Consider preparedness planning needed to respond in case of anticipated threats.

## **ESTIMATING THE VALUE OF THE EFFECTS OF THE DISASTER**

The value of the disaster's effects will need to be estimated, based on the results of the assessment as indicated in the previous section. The estimate should consider those elements that have financial implications, in terms of the damage to infrastructure and assets, as well as the loss due to changes in financial flows linked to services, governance and risks. Below are elements to consider to cost disaster effects:

1. Economic value of total/partial destruction of infrastructure and assets related to DRR;
2. Economic value of changes in DRR service delivery and access to services; and
3. Economic value of changing risks (emerging risks and vulnerabilities).

The estimate of costs provides a main component of the costing for reconstruction needs (linked to the cost of the damage) and recovery needs (linked to the cost of the loss). The damage analysis looks at infrastructure including office buildings, dykes, dams, embankments, mangroves, and other DRR-related facilities including equipment and furniture. Damage is defined as the value of destroyed durable physical assets, replaced with the same characteristics and standards as they had prior to the disaster. In principle, assessment of damage to infrastructure is done on a facility-by-facility basis, usually based on detailed estimates of numbers of square metres of the infrastructure damaged (disaggregated for roofing, floors, walls, etc.) with average unit costs per square meter for repair. When large numbers of DRR facilities are damaged in the disaster affected area, estimates of the proportion of damaged facilities can be made, for example based on an extrapolation of the proportion of infrastructure damaged under housing, and using average rehabilitation and reconstruction costs.

Losses refer to changes in the financial flows of the sector due to the temporary absence of infrastructure and assets, and to increased or new demands for DRR services for the affected population. Losses are measured as the change in operational costs for the provision of post-disaster risk information, rescue services, fire services, evacuation services, and shelter services. They usually include higher expenditures over and above the normal budgetary appropriations for the DRR sector, and lower revenues. (See *Damage, Loss and Needs Assessment: Guidance Notes. Volume 2. The World Bank. 2010.*)

Most interventions that involve increased expenditures are those that are managed as humanitarian response interventions to address the immediate consequences of disaster upon the affected population. Interventions included under loss are mostly linked with service delivery, access, governance and risks, but also to the damaged infrastructure. See typical examples for damage and loss in Table 1. The method to calculate the costs of damage and loss is described in further detail in the DaLA guidance notes.

Typical elements included in the damage table **for each level** of DRR facilities:

Numbers and percentages of totally destroyed facilities/infrastructure:

- Unit cost for full reconstruction of the facility (as it was prior to the disaster);
- Unit costs for replacement or repair of office equipment and furniture; and
- Unit costs for replacement of field-based infrastructure; e.g. rain gauges, hydraulic gauges, seismographs, weather stations, weather radars, buoys etc.; usually based on an estimated percentage of the full reconstruction costs (for example 10%).

Numbers and percentages of partially damaged facilities:

- Unit cost for repair of partially damaged facility: either based on detailed assessments of all damaged facilities based on unit costs per square metre, or in the case of large numbers of facilities affected, based on a percentage of full reconstruction costs (for example average 25-30% of the costs of full reconstruction);
- Unit costs for the replacement of furniture and equipment: either based on detailed assessment of all partially damaged facilities, or in case of large numbers of facilities affected, based on a percentage of rehabilitation costs (for example 30-40% of the rehabilitation costs); and
- Unit costs for replacement of field based infrastructure; e.g. rain gauges, hydraulic gauges, seismographs, weather stations, weather radars, buoys etc.; usually based on an estimated percentage of the full reconstruction costs (for example 10%).

**Table 1:** Typical Elements Included in DaLA

Damage to Infrastructure and Assets	Loss
<ul style="list-style-type: none"> <li>• Office buildings of Civil Defense, NDMA, NDMO, rescue services, fire services, meteorological service etc.;</li> <li>• Equipment and furniture damaged in the above offices;</li> <li>• Hazard monitoring and forecasting equipment damaged in the field; e.g. rain-gauges, seismographs, weather stations etc.;</li> <li>• Mobile response teams, fire trucks etc.;</li> <li>• Relief goods warehouses, stored relief goods; e.g. food, shelter materials etc.</li> </ul>	<p>Increased expenditures for:</p> <p><b>Infrastructure</b></p> <ul style="list-style-type: none"> <li>• Removing debris, mud and other bio-hazardous materials from the destroyed or damaged facilities;</li> <li>• Service delivery and access;</li> <li>• Establishing temporary early warning, public awareness facilities for affected population;</li> <li>• Restoring temporary rescue and fire services with the help of private sector;</li> </ul> <p><b>Governance</b></p> <ul style="list-style-type: none"> <li>• Costs of increased coordination needs, support management capacity for service delivery;</li> <li>• Risk reduction;</li> <li>• Additional expenditures for monitoring and prevention of possible hazards in the affected areas; e.g. floods, rains, landslides etc.</li> </ul>

It is important to determine the time needed for rehabilitation and reconstruction of building and infrastructure, and installation of hazard monitoring/weather forecasting equipment for planning of the reconstruction for the DRR sector. The determination of time need for rehabilitation and reconstruction of buildings and infrastructure



should be led by the Infrastructure Team and any information collected by the DRR team should be passed to the Infrastructure Team to avoid double counting.

## ASSESSING PERFORMANCE OF THE DRR SYSTEM

Once the team has assessed the effect of the disaster on DRR-related infrastructure, assets and service delivery, the next step is to assess the performance of the DRR system in relation to the disaster event that has occurred. This exercise will inform needs-based capacity-building strategies in the recovery plan for DRR and will form the basis for building back better. Disasters often occur when the existing DRR system fails to protect against the hazard. It is essential to find out what worked, what worked for whom, what did not work well and why, and what needs to be changed to ensure replication of good practices and avoid poor ones. To assess the performance, the team can focus on answering the following questions:

- Did the local population have sufficient knowledge and awareness of the hazard and risks involved to families, homes, assets, jobs, etc.?
- Does the country have adequate data and information on this hazard and associated risks, such as hazard maps, historical data on disasters, risk assessments, etc.?
- Was there timely and effective early warning for the affected communities? If not, what elements did not function and why?
- Were there preparedness plans, contingency plans and standard operating procedures already developed for this type of disaster at both the national and local levels? If so, were they successfully activated and implemented for the disaster response?
- Were there sufficient and adequate shelters for the local populations, and contingency supplies of water, food, etc.? If not, identify measures needed for the future.
- Did the operations center function effectively before the disaster and during the response? If not, assess the reasons and possible solutions.
- What were the vulnerabilities in the affected areas that contributed to the disaster? For example, the lack of evacuation plans or mitigation measures, weak coordination arrangements, limited knowledge of DRR, etc.
- Were the underlying risks factors being addressed at the local level, for example mitigation measures such as for flood control, reforestation, sound natural resource management practices, land-use planning, enforcement of building standards, etc.? If not, what was missing and why?
- Were there appropriate legal and policy frameworks, national plans and institutional mechanisms in place by the government on DRR? How were these effectively used or not?
- Were local authorities aware of existing legislations and policies relating to DRR?
- Did national and local authorities have a DRR strategy/plan, budget and institutional mechanism in place? If so, in what ways did it contribute to reducing risks or the impact of the disaster? If not, what can be done to improve this?

- What were the causal factors of the disaster? For instance, in the case of floods, the causes may include non-maintenance of water drainage systems, blockage of floodways by informal structures or trans-border issues.

Previous PDNAs have highlighted weak coordination as one of the most important causes of the failure of the DRR system. The 2010 flood in Pakistan showed that even though Pakistan had a DRR framework which 'connected' the relevant sectors at federal and provincial levels, the framework was not backed by an actionable system where stakeholders accounted for their responsibilities. Therefore, the presence of a comprehensive framework didn't prove effective against the disaster. Assessments indicate that significant confusion can occur where there are parallel structures of authority with weak institutional coordination and arbitrary funding and reporting lines of response agencies.

Assessing the performance of the DRR system will highlight the limitations and weaknesses that should be addressed as part of the recovery strategy. The team should identify the capacities that must be developed to make the DRR system work better in the future and offer practical high-priority solutions to improve DRR in the short-to-medium term, taking into account the necessary budget allocation.

### Examples of Recovery Interventions in DRR

#### *Disaster Preparedness*

- Support development of disaster management information systems;
- Promote development of contingency and emergency response plans at the national and local levels;
- Help establish an institutional framework for disaster management in the country;
- Support disaster management coordination;
- Develop evacuation plans, including simulation exercises;
- Enhance the country's emergency response capacity, with equipment, training, prepositioning of stocks, etc.;
- Develop emergency shelters at the community level; and
- Set up revolving funds managed by the community to better cope in disaster situations.

#### *Awareness-raising, Education, Training and Early Warning*

- Create awareness generation campaigns at the local levels on DRR and/or disaster management, safe building practices, etc.;
- Introduce course curriculum training programs on DRR in schools;
- Support training and capacity building for government authorities;
- Initiate training of local labor, contractors and community members on safe building practices, technologies and designs, ensuring that women and men have equal opportunities to participate in such trainings, as is contextually appropriate;
- Strengthen early warning systems at the national and local levels. This may include technology or information systems for hazard prediction, weather and climate forecasting, communication tools, etc.; and
- Install simple community-based early warning systems and communication mechanisms.

# ASSESSMENT OF DISASTER IMPACT

## THE HUMAN DEVELOPMENT IMPACT

Disasters increase risk when they contribute to ecosystem degradation, such as increased soil erosion or deforestation. It is also well documented that disasters can increase poverty, and compromise the achievement of sustainable development. The team should assess the potential long-term impact on disaster risk in the country and geographic areas affected, particularly if remedial actions are not taken in the recovery strategy, and the implications it may have for sustainable human development.

The focus should be on non-sector specific disaster risks and human development since other sector teams are expected to consider these for their respective sectors, such as the potential impact on the sustainable development goal of eradicating poverty. Nonetheless coordination and triangulation with other sector teams will be important to the process, as well as with the team assessing human development more broadly if it has been established. Consider the following variables:

- New risks created by the disaster, such as landslides or flooding due to damaged or destroyed mitigation works such as dykes. Consider the possible impact this may have should a future event take place and if no measures are taken to reduce these risks, including a larger-scale disaster or larger geographic areas at risk;
- Population displacements caused by the disaster and driving large numbers of people to marginal rural lands or urban areas that are more exposed to risk;
- Increased future risk due to ecosystem degradation caused by the disaster, such as increased land degradation, destruction of mangroves and deforestation, which reduce nature's defense capacity against hazards and will aggravate the impact of future disasters;
- The potential impact if DRR is not mainstreamed into the recovery process and if measures to build back better, such as sustainable land-use planning, are not adopted and implemented, including future loss of reconstruction investments and populations at risk;
- The risks involved if new legislations, policies or other key elements of risk governance are not introduced, amended or reinforced.

The measures needed to arrest or reduce the potential long-term impact on disaster risk and on human development should be identified, and projects and policies should be introduced to correct negative trends in human development found in the assessment.

Finally, an effort should be made to outline the ways in which the proposed measures and policies will link with and support the country's DRR strategy and its commitments to the Hyogo Framework for Action and its post-2015 successor, as well as national development goals and priorities, where possible aligning the recovery process to the broader strategic development objectives of national authorities and the UN system.

# ENSURING RESILIENT SECTORAL RECOVERY: BUILDING BACK BETTER

Since DRR is a cross-cutting issue, in addition to performing the tasks mentioned above, the DRR assessment team also performs the additional function of coordination with sectoral teams to integrate DRR into their strategies for ensuring resilient recovery.

Post-disaster recovery relates to geographic areas typically at risk of natural hazards, and decisions taken within the context of recovery will directly influence disaster risks in the future. Therefore, one main goal of the assessment is to ensure that sectoral recovery investments are protected from future risk. The DRR assessment team must therefore work with other sectoral teams in order to ensure that each team includes sector-specific disaster risk reduction measures into its reconstruction and recovery plan. The assessment team must organise itself to ensure regular communication with other sectoral teams before, during and after the field-based assessments in order to review the respective sectoral strategies and provide inputs for integration of risk reduction measures into them. If possible, a team of additional DRR specialists could be recruited to completely dedicate their time on coordination with sectoral teams by embedding within them.

The types of risk reduction strategies adopted will depend on the risk environment of affected areas. The assessment team will need to assess the risk environment, to identify the natural hazards and vulnerabilities to which the affected areas are exposed, or those present in new relocation areas. All known hazards and vulnerabilities should be identified to ensure that recovery investments are protected from these.

Planning against these known risks forms the basis for sustainable recovery. The measures needed to protect recovery investments and ensure resilience must be integrated into the recovery strategy based on the results of risk assessments. The risk assessment can be based on available maps, data and studies, as listed in the section above on baseline information.

Based on the risk assessment, the team can identify critical measures to be adopted in the recovery strategy to manage future risks and ensure resilience. These measures may be classified into three types:

1. **Avoiding risk:** some risks may need to be avoided to ensure resilience, such as prohibiting or restricting residential reconstruction in high-risk areas through new recovery regulations or policies. Another example are building regulations to guide reconstruction and recovery, such as new or amended policies specifying design standards, building codes, retrofitting measures, etc.
2. **Separating risk:** measures to protect communities and their lifeline assets from existing risk, for example by proposing elevated areas for these to protect them from floods or storms, or by relocating communities to safer areas.
3. **Controlling risk:** defense measures that help to control risk such as building sea walls, levees or flood breaks. Vegetative defenses is another example, and includes reforestation to mitigate landslides and flooding.

The assessment itself may not fully evaluate all these elements but it should establish the basis for this to be achieved, for example by:

- Identifying the data, studies and additional information needed to plan safely, such as a land evaluation or detailed risk assessment;
- Identifying the expertise needed, such as technical experts in land-use or urban planning, engineers, architects, lawyers, etc.;
- Identifying the need to revise or develop DRR or BBB guidelines for reconstruction and recovery; and
- Assessing which regulations or policies need to be introduced or revised in order to ensure compliance with BBB principles.

### Examples of Recovery Interventions to Build Back Better

- Promote the use of standard DRR criteria for design, approval and implementation of infrastructure projects;
- Encourage the revision or development of new zoning and land-use regulations;
- Promote hazard-resistant construction technologies, taking into account indigenous knowledge;
- In the reconstruction of critical infrastructure such as housing, schools etc., support the development of minimum standards for construction, the design for disaster-resistant housing units, and provision of a roving retro-fitting service;
- Develop mitigation schemes such as for flood control or build natural vegetative defenses against landslides or storm surge; and
- Support development of environmental impact assessments, risk assessments, hazard mapping.

### Key DRR Elements to Consider Within Sectors

Risk Factors	Example of Sector-Specific DRR Considerations
Immediate and emerging risks	The new or emerging risks within the sector that resulted from the disaster and that need immediate remedial action. For example, the rapid repair of shelters to free education facilities and enable the resumption of classes, or the cleaning of debris on agricultural land to enable the rapid rehabilitation of the sector and avoid increased food insecurity.
Risk knowledge and early warning	Damage to sector-specific early warning systems that need to be repaired, such as for food security and nutrition surveillance, disease monitoring, etc.
Underlying risks	The underlying risks and vulnerabilities that contributed to the disaster within the sector and that need to be addressed in the recovery process, for example lack of building codes for schools and hospitals, environmental degradation, unsustainable farming practices, etc.
Preparedness	The preparedness measures that were not in place before the disaster and contributed to its impact within the sector, such as evacuation plans for schools, contingency plans for hospitals, temporary shelters for displaced, etc.
Risk governance	Capacity-building measures needed to ensure sector ministries have the guidance, expertise, training, practical tools, infrastructure and equipment, policies and overall institutional capacity to integrate DRR into sector recovery plans and to implement these effectively.
Building back better	Identifying the key elements needed to ensure that sector recovery investments build back better and are sustainable, such as the safe location of homes and schools, building codes, construction and design standards, sound agricultural technologies and farming practices, restoring ecosystems, natural resource management, etc.
Costing	A budget allocation for DRR and building back better within sector recovery plans, addressing all the needs identified in each risk factor.

# THE DRR RECOVERY STRATEGY

The recovery strategy for DRR follows the guiding principles, objectives and consultative process of the overall PDNA as outlined in Volume A of the PDNA Guidelines. As such the sector recovery strategy will include the following core components:

1. The agreed vision and guiding principles on DRR and building back better;
2. The recovery needs in DRR, based on the results of the assessment;
3. The sector recovery plan for DRR; and
4. The implementation arrangements.

## THE SECTOR RECOVERY VISION

This section should define the vision in terms of the desired long-term recovery outcome in the DRR sector, which should include measures to achieve building back better and to improve the performance of the DRR system. Guiding principles for disaster recovery should be defined to inform the sector recovery strategy and guide the recovery process in an effective, transparent and accountable manner. These should be agreed to within the sector team under the leadership of the government and in consultation with relevant stakeholders including women and men of the affected populations as well as broad representation from civil society.

The DRR sector recovery strategy shall be guided by a vision to introduce a more effective DRR system, wherever possible. Therefore, it would be useful, if the DRR sector assessment team could include a capacity needs assessment of the existing system and based upon this propose interventions to improve the DRR system in the affected region and at national level (if the dynamics at that moment allows for this). The improvement of the DRR system shall be considered with regards to i) Improving institutional arrangements to lead and manage DRR in a multi-sectoral, multi-stakeholder context; ii) Improving policy and regulatory capacity for preventive and preparedness oriented approaches; iii) Increasing technical capacities of the concerned agencies through training, education and brain-gain; iv) Developing technical tools for mainstreaming DRR into development planning; v) Implementing local DRR programs to reduce vulnerabilities; and vi) Ensuring effective monitoring of disaster risks and risk reduction programs.



## Examples of Recovery Interventions to Strengthen Risk Governance

- Capacity-building training for government authorities responsible for DRR to enable them to mainstream into recovery planning;
- Defining DRR indicators for the recovery strategy, including sectoral monitoring indicators;
- Introducing a policy on DRR to reinforce its mainstreaming into all sectoral recovery projects, with agreed principles, standards and practical guidance;
- Establishing financial instruments to ensure that funding for reconstruction is dependent on the integration of safe construction standards;
- Providing technical back-stopping to assist with the integration of DRR into sectoral recovery plans;
- Promoting planning and management of risk-free human settlements
- Developing land-use plans to guide recovery, especially the rebuilding of critical infrastructure, based on environmental and risk assessments;
- Supporting decentralised local governance systems for disaster risk reduction;
- Developing model “Safe Areas” for reconstruction; and
- Developing manuals and guidance material on DRR for national and local authorities

## RECONSTRUCTION AND RECOVERY NEEDS

Building on the guidance provided thus far and following the assessment findings, recovery needs for DRR should be identified for each of the key elements associated with disaster effect and impact. The table below provides an outline of what needs can be considered based on assessment results.

Reconstruction Needs	
Rebuilding or replacing infrastructure and assets damaged or destroyed	<ul style="list-style-type: none"> <li>• Public infrastructure: restoring damaged public administration buildings and facilities of institutions responsible for disaster risk reduction at central and local levels.</li> <li>• Disaster mitigation schemes: restoring damaged or destroyed mitigation schemes in affected areas such as dykes or sea walls.</li> <li>• Equipment and technology: replacing equipment such as for early warning, office resources and assets, vehicles, etc.</li> <li>• Human resources: personnel and technical expertise needed.</li> <li>• Documents: replacing public records, databases, and data-gathering systems related to DRR.</li> </ul>
Recovery Needs	
Addressing emerging risks and vulnerabilities	The mitigation or preparedness measures needed to address the new or emerging threats resulting from the disaster and that need immediate action.
Restoring DRR services and access to these services	To restore the operational capacities of key DRR institutions, their functions and services, such as the availability of risk knowledge, early warning services, disaster management and preparedness capacity, etc. The needs for restoring people’s access to DRR knowledge, services and resources should also be considered.
The performance of the DRR system	Measures to address the weaknesses in the DRR system that were exposed by the disaster, including on risk identification and knowledge, early warning, governance, and preparedness.

Recovery Needs	
Strengthening the capacity to build back better	<p>Strengthening risk governance:</p> <ul style="list-style-type: none"> <li>• Institutional capacity and arrangements to lead and manage DRR;</li> <li>• Policy and regulatory capacity such as appropriate national legislation and operating procedures that need to be in place to BBB;</li> <li>• Technical expertise and human resources;</li> <li>• Decentralised implementation to enable local authorities;</li> <li>• Participation: mechanisms that will ensure participatory processes;</li> <li>• Monitoring mechanisms and systems;</li> <li>• Risk assessments, land-use planning, mitigation efforts;</li> <li>• Information, maps, studies or data needed to inform BBB, such as vulnerability profiles, detailed or local risk assessments, multi-hazard mapping, environmental impact assessments, etc; and</li> <li>• Measures needed to mitigate, reduce or control future risks in geographic areas affected.</li> </ul>

It is important to ensure that the identified recovery needs are triangulated with those identified by other sector teams to avoid double counting and complement recovery strategies.

## THE SECTOR RECOVERY PLAN

In line with the PDNA guidance on the recovery strategy (in Volume A), the DRR sector recovery plan should be formulated following the results-based model, and therefore include: 1) Priority needs; 2) Interventions required; 3) Expected outputs; 4) Recovery costs; and 5) Intended outcomes. These should be identified in the short, medium and long terms. The table below provides an example of how this may be done. Also see Annex 3 for a table that may be used for the sector recovery plan.

### Indicative Example of a Results-Based Recovery Plan in DRR

Priority Recovery Needs	Interventions	Expected Outputs	Recovery Costs*	Intended Outcomes
Mainstream DRR into the local recovery plan for X province to ensure building back better	<p>Creating a multi-sectoral body of experts to guide the integration of DRR into the recovery/development of the territory.</p> <p>Creating a training center for DRR</p> <p>Developing a provincial land-use plan.</p>	A multi-sectoral recovery plan with well-designed DRR measures	\$4,300,000	Province X is rebuilt in a sustainable manner within 4 years.

**Note:** Recovery costs must be aligned with the valuation of the effects of the event

## PRIORITISING AND SEQUENCING PRIORITY NEEDS

To identify priority needs, the team will need to agree on criteria or indicators, some of which may include the following:

1. **Geographic or sectoral priorities:** The team should take into account the economic sectors, geographic regions or population groups which the assessment identified as the most affected areas or population groups, and which the government and other stakeholders consider most critical for



enhancing resilience. For example, inclusive consultations can demonstrate what sector stakeholders consider most important for development of the country, which must be targeted for disaster risk reduction; e.g. agriculture or protecting critical infrastructure, etc.

2. **Key risks and vulnerabilities:** Prioritise the risks that contributed to the scale of the disaster's effect/ impact on communities, systems and infrastructure, and that must be avoided in the future. Also give priority to immediate risks that emerged as a result of the disaster and that threaten to deteriorate disaster conditions if not addressed.
3. **Absorptive capacity of implementing agencies:** Some government ministries and supporting institutions may not have the requisite technical and management capacities for large-scale interventions. Therefore, the DRR team must be cognisant of the financial, technical and management capacities of key stakeholders while proposing priorities for capacity development and the timelines and resource requirements. For example, if a national risk assessment is proposed, the team needs to consider whether national institutions have the ability to conduct the risk assessment, if they have done this in past, who will conduct the assessment, how capacities of national institutions can be enhanced to conduct the assessments, etc. Financial management capacities are also an important consideration. Many times the national institutions manage very small budgets; however, in the aftermath of disasters they are flooded with considerable financial resources. Each funding partner would require that the money be spent in the fastest manner, with each of them requiring the application of their own procurement and reporting procedures. In such contexts, it is critical that the DRR team doesn't propose recommendations that will overwhelm the capacities of government institutions.
4. **Financial resources:** This is probably the most important factor that the DRR assessment team must consider while proposing priorities for capacity development. This first and most important question is if the government is willing to allocate financial resources to reduce future risk and build back better, and if so how much. Would those resources be sufficient for effective DRR and BBB, or would it require support from international development partners? The DRR Assessment Team must consider whether the government is not willing to put its own resources and reconsider the inclusion of interventions not prioritised by the government. If it is not feasible to raise resources through the government, the team may recommend mobilisation of resources through international development partners. Generally, the resources are raised through multiple funding windows, but a certain level of financial commitment from the government acts as a catalyst for raising resources from other partners.
5. **Timeline and phasing:** The team should also consider the timeline while proposing priorities, arranging them into short, medium and long-term interventions. Recommendations related to policy formulation and institutional strengthening, the integration of DRR into development and similar initiatives require longer-term commitments and resources and should be considered carefully before prioritising. The team can use a phased approach in proposing the priorities.

## RECOVERY COSTING

Costs are calculated once recovery priorities have been identified with their corresponding interventions, outputs and final intended outcomes. Typically costs are calculated for each of the expected outputs and intended outcomes included in the sector recovery strategy. The initial estimated costing of outputs should be done by the

sector team, and subsequently shared with other relevant sector teams to compare and ensure comprehensive coverage without double counting, as some interventions can address needs in more than one sector. To assist with this coordination among sectors, it is important that the various sector teams meet regularly during the assessment and planning process. It is expected that the team will be guided by the Ministry of Planning, Finance or Technical Cooperation as entities such as these would have a sense of expected inflation rates and standard costs for activities and or specialised equipment that may be under consideration by the DRR Team.

When preparing the budget consider all the priority needs identified during the assessment for each element of disaster effect and disaster impact:

1. To repair, rebuild or replace infrastructure and assets damaged or destroyed;
2. To address emerging risks and vulnerabilities;
3. To restore DRR services and access to these services;
4. To improve the performance of the DRR system; and
5. To ensure a resilient recovery by strengthening the capacity to build back better.

## CONSIDERATIONS WHEN COSTING DRR

- The costs for DRR and BBB should be proportionate to the costs of recovery and reconstruction needs, as well as to the type of disaster. For example, droughts may have very low reconstruction needs, but high needs to invest in resilience/BBB.
- The costs for BBB should be realistic compared to the financial envelope pledged by the government and international development partners, taking into account that most funds will be needed for physical reconstruction and compensation of losses.
- The costs for BBB should be realistic regarding the absorption capacity of the country and what is feasible to achieve over a period of 3 years.
- Estimating recovery costs can be calculated using either unit cost of replacement and management costs. Unit cost is the established cost of an item or service based on the standard of living index in the country or an agreed schedule of costs used by the sector ministries for development planning. In certain cases, a new project would be developed, the cost of which would depend upon the actual cost of intervention rather than replacement value.
- Unit costs may change due to a disaster. Given the demand and the possibility of decreased supply, unit costs of items may increase significantly. In the absence of standard unit costs, the costing process generally used in planning projects can be used to develop the costs. Project costs can be used for interventions such as provision of skills training to a specified population group or the development of an information management system and other elements such as administration, and logistics, among others. It is important to make explicit all assumptions, possible formulas and references used for unit costs for each budget line item. Inflationary costs should be considered.

## IMPLEMENTATION ARRANGEMENTS

### PARTNERSHIPS, COORDINATION AND MANAGEMENT

The mechanisms for implementing the DRR recovery strategy should be led by the national DRR agency. Based on the estimation of needs for improving the DRR system, the national DRR agency should develop a programme that addresses key lessons emerging from the analysis of the disaster events.

A DRR programme is generally multi-sector in nature and composition. So the national DRR agency will need to seek the assistance of other agencies to implement the programme. For instance, a programme for strengthening early warning would be implemented in partnership with the national meteorological agency. Similarly, risk reduction measures such as flood protection, and building codes for seismic safety need to be implemented in partnership with other ministries such as Irrigation, Housing, and local governments.

A DRR programme in the wake of a disaster would tend to focus on those areas directly affected by the event. It would require the partnership and support of local governments. A DRR programme would, therefore, require a more decentralised approach. The actual implementation would be carried out by local governments, while the DRR agency would provide the oversight.

Several academic organisations and NGOs work in the area of DRR. Their support and cooperation would be critical for implementing a DRR programme. They need to be informed about the PDNA and its recommendations. The roles that these partners can play in implementing the DRR measures should be mentioned very clearly in the assessment. A set of clear recommendations regarding the DRR measures as well as the suggested implementation structure would improve the feasibility of any recovery strategy in respect to the DRR.

### LINKS TO DEVELOPMENT

The DRR recovery plan needs to contribute to overall institutional capacity for protecting people's lives and well-being. It thus helps countries protect development gains. The DRR plan, therefore, has a strong linkage with development efforts.

The best way to promote the linkages of DRR recovery plan is to align it with the national DRR policies and frameworks. Such an alignment secures political and institutional support for DRR. If it is demonstrated to achieve the HFA goals, it gains validity and has a better prospect of securing resources from international development partners. Similarly, its linkages with other framework documents as the National Action Plan for Climate Change and United Nations Development Assistance Framework (UNDAF) also lend more support for international assistance.

### MONITORING AND EVALUATION

Setting up a monitoring system will allow the national DRR agency to assess progress and effectiveness of the recovery interventions. The Monitoring and Evaluation (M&E) plan should focus on a few critical indicators, which emphasize the effectiveness of DRR services such as early warning, preparedness, response, and recovery.

The national DRR agency should work with other partner agencies for monitoring these indicators. It should lay down the timing and frequency of M&E activities. It should also suggest the human and budgetary resources required for M&E. The mobilisation of resources, its disbursement, and the expenditure on various activities also need to be monitored.

It is critical that both the activities and results of the recovery interventions are monitored. Activity monitoring involves checking that resources (human, financial and material) and services are being used as planned, visiting field sites, and meeting the concerned officials and communities. Monitoring results refers to the overall objectives of the DRR services. M&E should be supported by reporting and documentation.

## KEY ASSUMPTIONS AND CONSTRAINTS

The analysis presented in the assessment report generally refers to the functioning of the DRR system in the limited context of the disaster event. It does not include a survey and evaluation of the entire DRR system. The recommendations emerging from the assessment could, therefore, be limited in nature and scope.

An assessment of DRR institutions is also a reflection of the overall national capacity in the area of governance. DRR institutions cannot be expected to be strong when other governance institutions are weak. A certain level of understanding the institutional development is necessary for providing a realistic assessment of the DRR Sector.

It takes considerable time to build DRR institutions and facilities. The national capacities in DRR cannot be developed in a short span of time. The recovery plan should be provided with an adequate time span for implementation.

Developing an effective DRR system is a multi-agency effort. The national agency for DRR at times finds it difficult to coordinate with other agencies. The institutional capacity for coordination is often a reflection of influence and clout an institution has within structure of governance.

Mobilising resources for DRR is often very difficult. It is not a very high priority for many governments. Presenting the lessons from a recent disaster event in a way that leads to more resources being made available for DRR capacity building is generally a difficult challenge for the DRR national agency.



# REFERENCES

The following resources were used as references for developing the present guide. These can be consulted for more detailed information on assessing this sector.

Reducing Disaster Risk: a Challenge for Development, UNDP. 2004

The Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters, ISDR, 2005

Early Recovery, Vulnerability Reduction and Disaster Risk Reduction: A Contribution to the 2009 ISDR Global Assessment Report on Disaster Risk Reduction. UNDP. 2009

Tools for Mainstreaming Disaster Risk Reduction: Guidance Notes for Development Organizations. ProVention Consortium. 2007

Disaster Risk Reduction (DRR), World Bank Good Practice Notes. 2008

Integrating Disaster Risk Reduction Into The Common Country Assessment And United Nations Development Assistance Framework. UNDG. 2009

Natural Disaster and Disaster Risk Reduction Measures: A Desk Review of Costs and Benefits. DFID and ERM. 2005.

TRIAMS Working Paper – Risk Reduction Indicators. ProVention Consortium. 2006

Post Nargis Recovery and Preparedness Plan: Disaster Risk Reduction Sector Plan. Technical Working Group on DRR. 2008.

Checklist For Mainstreaming Disaster Risk Reduction Into Long-Term Recovery (Context Of 2008 Kosi Floods In Bihar)

# ANNEXES

## ANNEX 1: MODEL TORS FOR DRR ASSESSMENT TEAM

Post Title:	Disaster risk reduction expert
Type of Contract:	TBC
Starting Date:	Immediately
Duration:	2-3 weeks
Duty Station:	[ ]

### I. BACKGROUND

[Brief description of the disaster and response to date]

#### Post-Disaster Needs Assessment (PDNA)

[Background on the request for the assessment]

A Post-Disaster Needs Assessment (PDNA) is a government-led exercise, with integrated support from the UN, the EC, the World Bank and other national and international actors. A PDNA pulls together, into a single, consol-

dated report, information on the physical impacts of a disaster, the economic value of the damages and losses, the human impacts as experienced by the affected population, and the resulting early and long-term recovery needs and priorities.

The background documents and previous PDNA reports could be found in a collaborative on-line workspace: [www.recoveryplatform.org/pdna](http://www.recoveryplatform.org/pdna). The background documents can be found under the key documents. In addition, during each disaster, an online collaborative workspace for the PDNA team will be established on the IRP website which will be unique to that disaster and all team members will be expected to use it as a resource. The instructions to access this is in PDNA Volume A. Finally, also look up the DRR chapter of PDNA for background material on DRR. Instructions to access the PDNA materials are also provided in annex II to these TORS.

**Guidance for conducting PDNAs is provided in the:**

- Post Disaster Needs Assessments Guidelines, Volumes A and B.
- The UN ECLAC Manual for Estimating the Socio-Economic Effects of Disasters, Volumes I-IV.

**PDNA deliverables include:**

- A consolidated government-owned set of sector analyses (one per sector) representing the dual perspectives – the valuation of physical damages and losses and the impacts of the damages and losses on human development – and identifying the early and longer-term recovery priorities in the sector;
- A comprehensive recovery strategy presenting the early, medium and long-term recovery needs across all sectors in the order of priority, cost, timeline and the actors most likely involved in such recovery activities; and
- Lessons relevant to the assessment process, in general, and the use/generation of assessment tools and outputs in particular, for improving the PDNA practice globally.

The assessment mission is seeking the services of a disaster risk reduction (DRR) expert who, as part of a team of experts, will assess the physical damages and their equivalent economic values (direct and indirect), the impacts of the disaster on human development, and the early and longer-term recovery needs.

## II. DUTIES AND RESPONSIBILITIES

The DRR assessment team, working with other experts as determined by the overall team composition, is responsible for:

1. Delivering an analysis and section of the PDNA report on DRR as specified in Annex I;
2. Delivering a multi-hazard risk assessment for inclusion in the introduction of the main PDNA report;
3. Providing other input as appropriate into sectoral/thematic sections of the report such that:
  - i) DRR system assets (observing systems, flood protection works, civil defense buildings, etc.) are included in the damage and loss valuations of the relevant sectoral sections of the report, such as infrastructure and transportation;
  - ii) Input is provided on how to document hazard exposure, vulnerability and risk in each sector, and

- iii) Suggested guidance is available on risk management measures within each sector to inform recovery and reconstruction including input as necessary on DRR measures to include in the recovery strategy for each sector; and
- iv) Input is provided for gender analysis and suggested guidance is available for gender mainstreaming and targeted gender interventions relevant to the DRR report.

Tasks assigned to the DRR assessment team will include the following general and specific tasks.

## General

- Participating in an overall orientation and team-building session and fulfilling all responsibilities of a team member as expected by the team leader and agreed by the team members;
- Undertaking, as required, secondary data collection and field visits to the affected areas;
- Contributing to design of surveys/interviews for obtaining information on human impacts and recovery priorities directly from the affected population;
- In coordination with the gender advisor, contributing to the overall gender analysis and mainstreaming gender in the DRR report;
- Providing other inputs to the PDNA report as requested by the team leader;
- Using the PDNA collaborative workspace established for the use of the team during this disaster (instructions for accessing the PDNA collaborative workspace are provided in PDNA Volume A); and
- Presenting results of the assessment as requested.

## Sector-Specific DRR

The multi-hazard risk assessment for the introductory section of the main PDNA report should include:

- A summary of historical disaster occurrences (i.e. “realised risk”) – Information on disaster losses from the beginning of the 20th century to the present is available for all countries in the world from EM-DAT: The OFDA/CRED International Disaster Database – [www.emdat.be/database](http://www.emdat.be/database) – Université Catholique de Louvain – Brussels, Belgium. Additional data on historical disaster-related losses at sub-national scales may be available from national data sources maintained at the country level. The historical analysis should include the main hazards present, and the magnitude, frequency and geographic distribution of historical losses.
- Information on potential future losses (i.e. “unrealised risk”) – Risk information on the global scale for most major hazards is available from Natural Disaster Hotspots: A Global Risk Analysis published by The World Bank and Columbia University (2005) and the International Strategy for Disaster Reduction Global Assessment Reports. This global scale information should be complemented or replaced by national-local scale risk information where available.
- General implications of the risk profile of the country for recovery planning in the aftermath of the current disaster – Reduction of risks associated with hazards other than the one that triggered the current disaster should also be emphasised.

Characterization of the DRR system in the country – its constituent elements, scope, legal basis, governing policies and institutional architecture:

- Identify the major components (observing systems, infrastructure, institutions, policies, laws, mandates, etc.) comprising the DRR system in the country at national and local levels. The purposes of this exercise are:
  - to ensure that all portions of the DRR system which are the responsibility of specific sectors – e.g. which fall under the mandates of specific ministries or local administrations – are covered in the relevant sectoral sections of the PDNA report, (see indicative checklist in Annex 2); and
  - to isolate non-sectoral aspects of the DRR system. These latter elements are the subject of the DRR-specific chapter of the PDNA report, described below.
- Liaise with other sector experts as described above in point 3 above to ensure that relevant DRR information is reflected in the damage and needs assessments, recovery and reconstruction priorities of each sectoral section of the PDNA report (an indicative list of sector-specific disaster reduction measures for selected sectors appears in Annex 3).
  - Suggest DRR Sector-related and context specific desirable results, outputs, activities, inputs, indicative costs, and monitoring and evaluation indicators, and sequencing of activities, i.e. immediate, medium- and longer-term.
- Assessment of the DRR system’s performance and present capacities and developing an action plan to enhance DRR capacity in the short and medium terms as part of the recovery process.
- Produce a section of the PDNA report on DRR using guidance provided in Volume B of the PDNA guidelines and associated material including as available in the PDNA online resources provided by the International Recovery Platform website (instructions to access this is on page 1).
- An annotated outline of the DRR chapter of the report is provided in Annex I, below.

#### IV. QUALIFICATIONS:

##### Education and Experience:

- Advanced university degree in disaster management or related field;
- 10 years professional experience and field experience in disaster risk reduction in developing country contexts;
- Experience in conducting post disaster needs assessments is desirable;
- Knowledge of disaster relief and recovery contexts;
- Experience in development and/or recovery program development;
- Program management and coordination skills;
- Experience in gender and disaster risk reduction is desirable;
- Experience with a humanitarian organization is an advantage; and
- Familiarity with the UN system and/or international finance institutions is an asset.



## Skills:

- Excellent interpersonal skills, team-oriented work style;
- Excellent written and oral communication skills;
- Self-motivated, ability to work with minimum supervision;
- Excellent ability to quickly grasp and synthesize inputs;
- Fluency in English [and/or other languages as required]; and
- Proficiency in using computer applications (word processing, spreadsheets, presentations, project planning, e-mail, graphics, Internet).

## ANNEX 2: INDICATIVE QUESTIONS FOR ASSESSMENT OF DRR SYSTEM

### NATIONAL INSTITUTIONAL AND LEGISLATIVE SYSTEM (HFA PRIORITY FOR ACTION 1)

#### Policies

- Does the country have a national law or policy concerning DRR?
- Does the country have related regional, local and sectoral laws and policies on DRR?
- Does the policy/policies have legal coverage from relevant bodies; e.g. parliament?
- Do the national and other related laws address all aspects of DRR spectrum in line with HFA?
- What are the gaps in the scope of policies/laws?

#### Institutions

- Does a national DRR focal institution exist in the country?
- Do related regional and local level institutions exist?
- Do these institutions have legal coverage under the national and regional laws/policies?
- Does the mandate of national, regional and local institutions cover all aspects of DRR, including gender, in line with HFA,?
- What are the gaps in the mandate of DRR institution/s?
- Do the DRR institutions have supportive strategies and plans to implement the laws and policies?
- Are those strategies and plans being implemented or not? If not, why? What are the bottlenecks?
- Do the institution/s have sufficient budget allocations from the government to meet their operational costs and perform the developmental functions? If not, why, what are the reasons for lack of sufficient funding for DRR institutions? What are the opportunities for increasing funding for DRR institutions?
- Do the DRR institutions have clearly designed organograms suitable to performing various functions as per their mandates?

- Do the DRR institutions have sufficient qualified personnel to enable them to deliver on their mandates. If not why? What are the bottlenecks? What are the options for DRR institutions to acquire qualified personnel?
- What key results have the DRR institution/s achieved in the past?
- What challenges do the DRR institutions face in implementing their mandate, and what lessons have they learnt?
- Does a multi-stakeholder platform exist in the country to ensure coordination for disaster risk reduction? Does it represent all key stakeholders or are some important stakeholders missing? Is it fully operational and meeting regularly? What are the bottlenecks in setting up an effective platform? And what opportunities exist in this regard?
- Do the DRR institutions have sufficient capacity on gender mainstreaming and is there a specific unit/department/focal point tasked with this responsibility?

## RISK IDENTIFICATION AND EARLY WARNING SYSTEM (HFA PRIORITY FOR ACTION 2)

- Does the country have a system to periodically assess disaster risks? Which key institutions/organisations have this responsibility?
- Does the country have a national risk assessment report available? How recent is it? Does the report provide a good picture of risk levels and scenarios?
- Is the report available to key stakeholders? Are they using it for development programming?
- What are the capacity gaps of existing institutions with regards to their mandate?
- What strategies can be adopted to strengthen their capacities?
- What will be the costs of setting up an effective disaster risk assessment system, and producing a preliminary disaster risk assessment report?
- Does the country have an effective early warning system with relation to key hazards, comprising: hazard monitoring, risk analysis, scenario building, generation of alerts and warning dissemination to all stakeholders including ministries, local governments, communities (women and men of all ages and sub-groups of the population) and international organisations?
- Do the relevant institutions have sufficient infrastructure to monitor hazards; e.g. rain-gauges, weather stations, flood gauges, seismographs etc.?
- Does a national multi-sectoral committee for early warning exist, which brings together all warning related institutions and allows them to share information and generate warning alerts?
- Do the warning institutions have sufficient qualified staff with relevant skills for hazard analysis, vulnerability analysis, gender analysis, scenario building and generating and disseminating warning alerts?
- What are the gaps in the existing early warning system and how could the system be further strengthened?

### KNOWLEDGE, INNOVATION AND EDUCATION SYSTEM (HFA PRIORITY FOR ACTION 3)

- What are the priority needs for training, education and awareness in the country?
- Does the country have institutions and programmes for human resource development for DRR?
- Do the existing programmes address training, education and awareness needs adequately? If not, what are the gaps?
- If no institutions and programmes exist on DRR training, education and awareness, what opportunities are there to establish such programmes? At which institutions could such programmes be set up? What will be the costs?
- What is the role of mass media in improving public awareness on disaster preparedness and prevention? How could this role be strengthened?
- What is the role of traditional institutions; e.g. mosques, churches, community groups, tribal leaders etc. in increasing community awareness? How can their role be strengthened to perform community awareness for disaster risk reduction?

### REDUCE THE UNDERLYING RISK FACTORS OR DRR MAINSTREAMING: (HFA PRIORITY FOR ACTION 4)

- Do the environmental, land-use and climate change-related policies and plans address disaster risk reduction concerns? What gaps and opportunities are there? What strategies can be adopted to integrate DRR into environmental, land-use and climate change sectors?
- Are the national and local authorities implementing policies and programs to reduce vulnerabilities of high risk communities through poverty reduction, job creation, income generation and social safety nets or not and, if available, are these equally accessible to women and men? What gaps and opportunities are there? What social development policies can the government adopt to reduce vulnerabilities of high-risk communities?
- Do the sectoral policies and plans for major sectors of economy of the country address concerns of disaster risk reduction; e.g. agriculture, livestock, industry? What gaps and opportunities are there? What strategies can be adopted to integrate DRR into major productive sectors of the economy?
- Do the urban authorities implement building codes to promote safer construction in high-risk zones? What gaps and opportunities are there? What strategies can be adopted to promote adoption of building codes?
- Does the government have policies and plans in place to ensure that post-disaster recovery processes are sensitive to disaster risk reduction? What gaps and opportunities are there? What strategies can be adopted to integrate DRR into recovery processes after disasters?
- Are procedures in place to assess the disaster risk impacts of major development projects, especially infrastructure? What gaps and opportunities are there? What strategies can be adopted to ensure that disaster risk impact assessment is integrated into major development projects and infrastructure?

## DISASTER PREPAREDNESS FOR EFFECTIVE RESPONSE: (HFA PRIORITY FOR ACTION 5)

- Does the country have policies on response and recovery that define standards for relief and recovery; e.g. minimum food, water, clothing, shelter, security standards, OR the amount of compensation for loss and damages to life, livestock, business, home and property etc.?
- Does the country have disaster contingency plans in place at all levels? Do the contingency plans define departmental roles and responsibilities clearly for organising emergency response in line with international standards; e.g. SPHERE?
- Are regular drills and training conducted to develop skills and test the contingency plans?
- Does the country have sufficient search and rescue, firefighting and medical first aid capacities to deal with major hazards, e.g. earthquakes and flooding, to reduce loss of life?
- Does the country have an emergency fund or relevant procedures in place to mobilise financial resources to organise fast track response and relief after disasters?
- Are procedures in place to exchange relevant information during hazard events and disasters, and to undertake post-event reviews?
- What gaps exist in disaster preparedness system of the country and what strategies can be adopted to address them?
- Which institutions must be strengthened/established for better disaster preparedness?

## PERFORMANCE ANALYSIS OF THE DRR SYSTEM

- Which social groups were most affected and why?
- Which sectors of economy were most affected and why?
- Which social groups and sectors of economy were less affected and why?
- Which parts of the disaster preparedness and response system performed well and why?
- Which parts of the disaster preparedness and response system performed badly and why?
- What were the major causes of disaster impact? Poor early warning, poor response (e.g. evacuation, rescue, first aid and firefighting), or poor prevention (unsafe construction practices, or land-use practices)?
- Did the institutions perform poorly due to lack of policies, mandates, and financial resources or due to the lack of qualified human resources?
- Did the system perform badly in all areas or better in certain aspects and not so well in other aspects? What were the reasons for good and bad performances in different areas?
- Did the institutions collect sex- and age-disaggregated data and gender-sensitive information? If not, why not?

**ANNEX 3: INDICATIVE EXAMPLE OF A RESULTS-BASED RECOVERY PLAN**

Priority Recovery Needs	Interventions			Expected Outputs	Recovery Costs			Intended Outcomes
	Short-term	Medium-term	Long-term		Short-term	Medium-term	Long-term	
By region	To repair/rebuild damaged infrastructure and physical assets							
By region	To resume service delivery and access to goods and services							
By region	To restore governance and social processes							
By region	To reduce risks and build back better							

**ANNEX 4: SAMPLE OF DRR SECTOR-RELATED QUESTIONS**

**FLOOD PREDICTION SYSTEMS:**

- What are the various agencies and institutions engaged in prediction of rainfall?
- What equipment and facilities support their function and how did it work in the current floods?
- Data on flood origins and precipitation – rain, release of dams etc.
- Areas inundated and duration of inundation.
- What worked and what did not work well in the current floods in terms of prediction and warning dissemination.

**Early Warning**

- Is there a standard flood warning and communication system established?
- What systems of communication are used to disseminate the warnings from federal to state and community level (formal and informal systems)?
- Are the roles of the various entities in flood warning defined clearly and how did it work in the current floods?
- What were the loopholes (if any) in communication and dissemination of flood warnings?

## Policy and Institutions for DRR

- Does the current policy adequately cover all hazards and address disaster risks in the country?
- Does the national and/or local authority responsible for DRR have corresponding roles and responsibilities defined for implementation of the DRR policy and institutional arrangements?
- What additional measures will be required to clarify the roles and responsibilities for each agency vis à vis prediction, warning dissemination, release of water from dams, etc.?

## Ministry of Lands, Housing and Urban Development

- What is the status of hazard risk information in land-use planning and settlements?
- What efforts have been or will be made to develop hazard-resilient designs in rural housing in hazard-prone areas?
- What plans does the ministry have to ensure compliance and enforcement of local building laws that require standards prescribed in building codes in urban hazard-prone areas?
- Does the ministry have any plans to update and enforce national building codes that have special provisions for enhanced design standards for buildings in areas affected by natural disasters?
- What kind of coordination and support will be required from other ministries to create awareness on land-use planning, better construction designs etc.?
- What technical capacities exist at the national, state and local level to support implementation and enforcement of land-use plans?
- What additional gaps have you noted related to housing needs?
- How do you propose to support housing reconstruction if necessary after the floods?
- Does the housing stock conform to housing policy (codes and location ) and minimum safety standards?
- Are there appropriate building codes, by-laws, policies and plans in place by the government for disaster-resilient housing stock and settlements?
- Is housing policy for disaster resilience enforced?
- Are there adequate trained personnel (engineers and masons) to guide hazard-resilient construction?

## Ministry of Agriculture and Natural Resources

- What agricultural practices and technologies can be introduced to reduce the vulnerability of farmers to natural hazards?
- Are there plans and programs for contingency crop planning to deal with climate variations?
- What can be done to develop effective programs of crop diversification, including the use of hazard resistant crops, to deal with shifts in climate patterns?

- Are there plans and programs to ensure sustainable livelihoods in areas of recurrent climate risks by promoting supplementary income generation activities from off-farm and non-farm activities?
- Are there effective insurance and credit schemes to compensate for crop damage and losses to livelihoods due to natural hazards?

### Ministry of Education

- Are the physical environments of schools safe and conducive to learning?
- Is DRM and risk reduction integrated into school curricula? What is being taught on DRR? Does the learning content address learners' protection and safety needs?
- Are there appropriate policies and plans in place by the government for responding to education-related issues in emergencies?
- What is needed to create a safe learning environment with safe location, construction and retrofit?

### Ministry of Environment (MoE)

- Are there plans/programmes to mainstream DRR into environmental policies and programmes?
- Is DRR incorporated into the design of ecosystem and natural resource management programmes?
- Is DRR mainstreamed into the national environmental impact assessments for new development projects?

### Ministry of Health (MoH)

- Are the physical environments of hospitals safe and conducive to healing?
- What is capacity of health personnel and the level of preparedness of hospitals?
- Are there appropriate policies and plans in place by the government for responding to health emergencies, preparedness and long-term resilience of the sector?
- Assess hospitals located in hazard-prone areas, analyze the vulnerability of health facilities and identify ways to increase the resilience of health facilities to hazards.
- Identify what is needed to develop and implement a hospital preparedness plan for all health facilities.

### Ministry of Water Resources

- Is there a policy and practice to ensure regular maintenance of dams in the country to protect and prevent communities from flood and related hazards?
- Is hazard information used in the installation of safe water and sanitation facilities?
- Are the safe drinking water and sanitation facilities accessible during flood and drought?
- Is DRR incorporated into assessments as part of the planning process before construction of dams and water channels?

### Ministry of Women's Affairs (or equivalent)

- Review national DRR policies, strategies and plans to ensure that gender equality and women's perspectives have been mainstreamed.
- Mobilise women's organisations and/or women's networks within the affected area to ensure their participation in all DRR and sectoral consultations and planning exercises.