Mainstreaming Disaster Risk Reduction for Sustainable Development:

A Guidebook for the Asia-Pacific

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Acknowledgment

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Disclaimer

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Abbreviations

APIS	Asia-Pacific Information Superhighway
BNPB	Indonesian National Board for Disaster Management
DRR	disaster risk reduction
DRM	disaster risk management
CCA	climate change adaptation
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
GDP	gross domestic product
GFDRR	Global Facility for Disaster Reduction and Recovery
ICT	Information and communications technology
IFRC	International Federation of Red Cross and Red Crescent Societies
NEDA	National Economic and Development Authority of Philippines
NIIDM	National Institute of Disaster Management
SDG	Sustainable Development Goals
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNISDR	United Nations Office for Disaster Risk Reduction
UNWCED	United Nations World Commission on Environment and Development

INTRODUCTION

Background

Tackling the underlying risk factors in the natural and built environments and in the social and economic conditions of people remains one the most difficult tasks of disaster risk management (DRM). The strategic approach to this challenge has been broadly described under the genre "mainstreaming disaster risk reduction in development". This approach has been emphasized in various global, regional and national frameworks on DRM, but there has been little progress.

Reports from national governments and regional organizations, biennial global assessment reports on disaster risk reduction (DRR) and independent assessments of civil society organizations have all pointed out that mainstreaming DRR across sectors of development has been the most difficult, slow and challenging of all DRR tasks.

Lack of satisfactory progress in mainstreaming DRR within development is attributed to various factors. First, the task itself is enormously complex and difficult because it is not limited to one sector but covers multiple sectors and agencies. Second, the immediate imperatives of economic growth for the creation of employment opportunities and a better standard of living for all people receives higher priority than addressing the historical or current risks that are accepted as inevitable. Third, addressing risk factors in development does not give the visibility or political mileage that many big-ticket projects may have and therefore loses out in importance in the competitive political economy.

While all these factors have made the task difficult, probably the most important factor that is often not much appreciated is the inadequate comprehension of mainstreaming and the absence of clear, cogent and practical guidelines, tools and techniques for mainstreaming DRR within development. There are isolated and ad hoc examples of mainstreaming in some specific sectors in a few countries, but there are no serious efforts at mainstreaming in an organized and systematic manner across all sectors of development. Systemic mainstreaming cannot be left to the initiatives of sectoral agencies but must be at the centre of the development process.

Contexts

Three landmark events of 2015—the Sendai Framework on Disaster Risk Reduction 2015–2030, adopted at the Third World Conference on Disaster Reduction in March 2015, the 2030 Agenda for Sustainable Development, adopted by the United Nations General Assembly in September 2015, and the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC), accepted by States in December 2015—have created new windows of opportunities for mainstreaming DRR within development.

The Sendai Framework has substantially expanded the scope of DRR to include natural hazards as well as human-made and all related environmental, technological and biological hazards and risks. It has broadened the task of mainstreaming to include the private sector, cultural heritage and tourism. It has advocated an all-of-society and whole-of-government approach for DRR. It has set seven global targets of risk reduction to be achieved by 2030 and prescribed 91 activities for DRR at all levels, clustered within four priorities for action.

The 2030 Agenda for Sustainable Development includes 17 Sustainable Development Goals (SDGs) that now replace the Millennium Development Goals. These goals, with 169 targets, cover every sector of development that concerns the economy, society and the environment. At least eight of the goals and their targets have elements of DRR and building resilience embedded within them. Reducing the risk of disasters across all these sectors is no longer a task of an agency responsible for DRM but of all sectors engaged in a society's development.

The Paris Agreement under the United Nations Framework on Climate Change has, for the first time ever, an article that "recognizes the importance of averting, minimizing and addressing loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset events, and the role of sustainable development in reducing the risk of loss and damage".[1] The Paris Agreement has undertaken to enhance "understanding, action and support" in eight areas of DRR. These are early warning systems; emergency preparedness; slow-onset events; events that may involve irreversible and permanent loss and damage; comprehensive risk assessment and management; risk insurance facilities, climate risk pooling and other insurance solutions; non-economic losses; and resilience of communities, livelihoods and ecosystems. This emphasis clearly implies that industrialized countries should provide the necessary support for reducing the risk of climate-related disasters, which account for more than 80 per cent of disasters in the world. It also implies that the opportunities for integrating DRR with climate change adaptation (CCA) should be expanded.

Integration of DRR and CCA has particular importance in the Asia-Pacific region, with its unequal burden of disasters due to accumulated layers of hazards, vulnerabilities and risks. This existing complexity is further compounded by new drivers of risks, including climate change. The manner in which the region addresses the risk factors in all new investments in the public and private sectors and how it further mainstreams DRR into current and future policies, plans, programmes and projects will shape the outcome of the global development agenda over the next 15 years.

1 See Article 8 of the Paris Agreement, adopted at the 21st Session of Conference of Parties of the United Nations Framework Convention on Climate Change, December 2015.

About this guidebook

Countries have voiced need for guidelines for policymakers and development practitioners on how to mainstream DRR across the different sectors of development. This guidebook responds to that demand by aiming to help countries strengthen their efforts on mainstreaming.

No general set of guidelines for mainstreaming can apply equally to all countries, regions and sectors. It must vary according to the levels of hazards, risks and vulnerabilities of each country and region; the context and dynamics of risks; the levels of economic and social development of countries, their capacities and resources; the types of legal, institutional and regulatory systems; and the sectors of development that would need to be addressed.

But general principles of mainstreaming, strategic approaches in various sectors of development and processes for formulating national and sectoral guidelines on mainstreaming can be suggested. The process of mainstreaming within project cycle management and the tools and techniques that have been applied with varying degrees of success can be laid out, which countries may adopt and adapt according to their specific context, resources and capacities.

This guidebook is divided into seven chapters. The first chapter deals with the conceptual issues of disasters, development, nexus of disasters with development, DRR, sustainable development, the importance of DRR for sustainable development, the Sustainable Development Goals and how they relate to DRR.

The second chapter explains the principles of mainstreaming and evaluates the experiences of mainstreaming gender, environmental sustainability and CCA. The concept of mainstreaming DRR within global frameworks is traced, and the six main principles of mainstreaming and their applications in different countries of the Asia-Pacific region are analysed. In the third chapter, the strategic approach to mainstreaming DRR within sustainable development, the global and regional initiatives on mainstreaming DRR, the strategic framework of DRM and national guidelines for mainstreaming DRR within development are discussed.

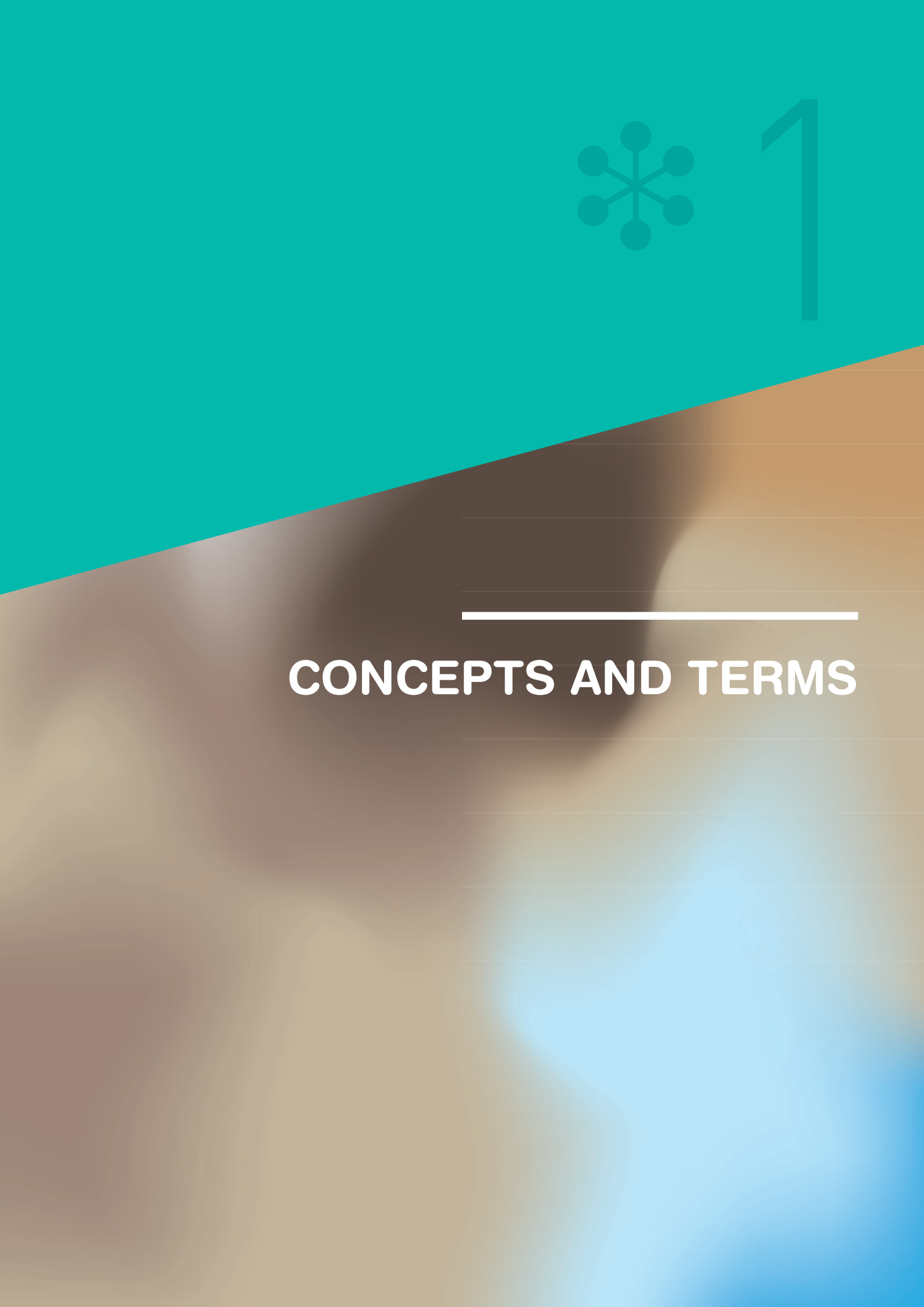
The fourth chapter looks at mainstreaming DRR in five sectors:

1. Social sectors: Education
2. Productive sectors: Agriculture
3. Infrastructure sectors: Road and bridges
4. Infrastructure sectors: Information and communications technology
5. Cross-cutting sectors: gender issues

The fifth chapter deals with mainstreaming DRR within project cycle management and presents various tools and techniques for mainstreaming.

Mainstreaming DRR within subnational planning and development is discussed in the sixth chapter, which presents various country experiences.

The final chapter presents the key issues for mainstreaming from the Sendai Framework and recommended action on mainstreaming DRR in the Asia-Pacific region.



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CONCEPTS AND TERMS

Disasters

The etymology of disaster from two Latin words—*dis* (bad) and *aster* (star)—is embedded in a kind of fatalism, which remained the dominant philosophy of disasters for centuries and still pervades the perceptions of many individuals and communities across countries and continents. The typical offshoot of fatalism is the world view that disasters cannot be controlled, much less prevented, and therefore the only remedy available is to provide relief and humanitarian assistance to victims.

Slowly, this world view has been replaced by the understanding that risks of disasters are created when vulnerable conditions are exposed to the hazards that are either inherent in the process of nature (such as heat or cold wave, heavy or sparse rainfall, earthquakes or mass movements, cyclonic storms or tornadoes) or are created by anthropogenic factors (such as industrial or technological accidents). They can also be a combination of the two (such as an earthquake and tsunami damaging a nuclear power plant) or affected by greenhouse gas emissions.

The vulnerabilities are essentially created due to lack of development or unplanned or unsafe development and may cover a wide range of areas, like physical, social, economic or environmental vulnerabilities. The physical vulnerabilities include unsafe housing and infrastructure, fragile communication systems and networks or weak utilities and services, all of which compound the direct or indirect economic damage and losses due to disasters.

The social vulnerabilities include the vulnerabilities of various social groups, like people who are poor, children, women, older persons, persons with disabilities and others who are not able to cope with the hazards due to lack of social protection. Economic vulnerabilities are created when the means of production or business, like industries, trade or tourism, are located in hazardous zones or business continuity practices are not followed or when an insurance system is not sufficiently developed to cover the risk of doing business.

Environmental vulnerabilities are created when reckless development depletes or damages natural resources or ecosystem services, such as the denudation of mangroves, which exposes coastal settlements to storm surges, or the deforestation of mountains that causes landslides on the slopes or encroachments of flood plains, which results in flooding. Similarly, excessive withdrawal of water from the aquifers exacerbates conditions of hydrological drought, while discharges of polluting effluents into water bodies or emission of obnoxious gases into the air create health-related disasters.

The interplay of hazards, vulnerabilities, exposures and risks can be expressed by the following equation:

$$r = \{(h \times v) \times e\} \div c$$

where "**r**" denotes risks of disasters; "**h**" is hazards or the potential of a physical event that may cause loss of life or property; "**v**" is vulnerabilities or the factors or processes—physical, social, economic and environmental—that increase susceptibility of an area or a community to the impact of hazards; "**e**" is exposure of vulnerabilities to hazards; and "**c**" is the capacities or resources available within a community, society or organization that can reduce the level of risks or the effects of a disaster.

The United Nations Office for Disaster Risk Reduction defines "disaster" as "a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources". [2]

Natural hazards are endemic in the process of nature. They do not create disasters on their own, unless combined with vulnerabilities, which are all anthropogenic. For example, earthquakes do not kill people; it is the collapse of unsafe buildings that does. Therefore, there is nothing that is actually a "natural disaster". Most disasters are essentially human-made, whether caused by natural or human-made hazards.

It is our failure to understand the process of nature and its hazards and our inability to adjust our development policies and practices according to the laws of nature and its resources that "cause disasters". Sometimes, when natural and human-made hazards combine, there are complex disasters, like the Great East Japan Earthquake of 2011, when an undersea earthquake triggered a tsunami that damaged a nuclear power plant, causing radioactive leaks that contaminated the soil, the local water supply and the ocean

Development

Development is broadly defined as improvement in a country's economic and social conditions. More specifically, it refers to improvements in ways of managing natural and human resources to create wealth and improve people's lives. Development has economic, social and human dimensions that are closely interrelated.

Economic development is a measure of how wealthy a country is and of how this wealth is generated and distributed. Economic growth, gross domestic product (GDP)

2 See www.unisdr.org/we/inform/terminology#letter-d.

generally and per capita and poverty levels are the common indicators of economic development.

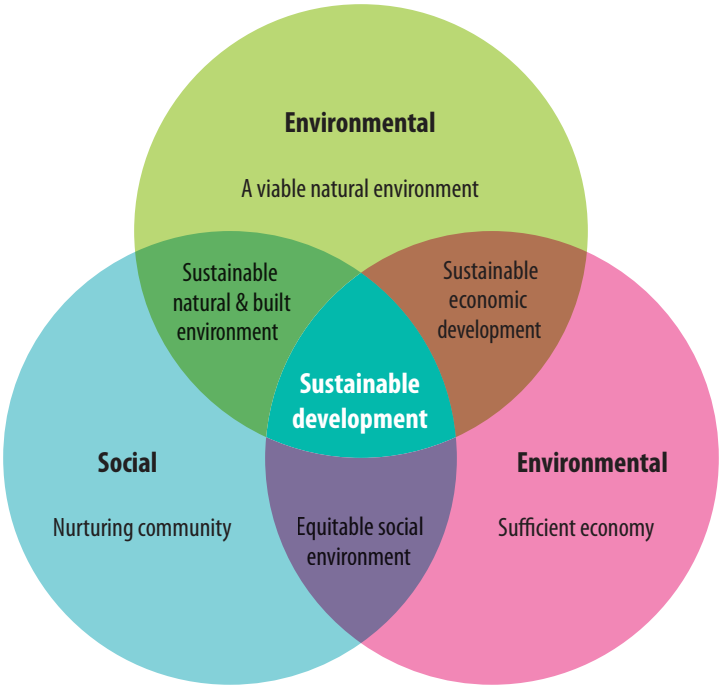
Social development is a process that results in the transformation of social structures to improve the capacity and well-being of all sections of society. Social development means inclusive development of all sections of a society. Common indicators of social development are gender equity, child protection, the fulfilled rights of persons with disabilities, the welfare of older persons and the development of religious and ethnic minorities, indigenous communities and other marginalized groups.

Human development measures the extent to which people have access to wealth, jobs, knowledge, nutrition, health care, leisure, safety, etc. More material elements in this list, such as income and wealth, are often grouped together under the heading "standard of living". Less material elements, such as education, health care and leisure, are often referred to as "quality of life". Indicators of human development include access to basic services, life expectancy and literacy. The United Nations Development Programme (UNDP) ranks countries based on their score within its Human Development Index.

> *Sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (UNWCED, 1987). Inherent in this definition are the twin concepts of "equity"—that development should be inclusive and equitable across regions, countries and social and economic groups and that it should fulfil all the basic needs of human beings—and "intergenerational equity"—that the process of productivity, natural or human, should be maintained indefinitely by replacing "resources used" with "resources of equal or greater value" without degrading or endangering the "natural biotic system".*

Sustainable development is the delicate act of balancing three aspects: the economy, society and the environment, each intersecting with the other (see figure 1). While the economy is a function of the production of goods and services across sectors in rural and urban areas using natural, human and technological resources, the actual process of production is shaped by demands and capacities that are conditioned by the social conditions that have multiple discriminations based on income, class, gender and other divisions. A good economy facilitates better social development, while stable social conditions support a strong economy. A production system that does least harm to the environment and a social system that is based on equity and awareness about the importance and value of the environment and ecology is more sustainable in the long run.

Figure 1 Three circles of sustainable development



Disaster-development nexus

Disasters have a close connection with development. This nexus has three separate but interrelated dimensions:

1. disasters erode gains of development;
2. deficits in development create risks of disasters; and
3. development creates new risks of disasters that compound the existing layers of risk.

Disasters erode gains of development

Disasters erode hard-earned gains of development and further impede the process of development. Geological disasters (earthquakes, volcanic eruptions, landslides and tsunamis), meteorological disasters (tropical cyclones and other severe storms, tornadoes and high winds), hydrological disasters (river floods, flash floods and coastal flooding), climatological disasters (heat and cold waves, wild fires and associated haze), hydro-meteorological disasters (droughts), biological disasters (insect infestation,

epidemics and pandemics) and complex disasters (which combine natural and human-made hazards) all can cause widespread loss of human life and livelihoods, destroy economic and social infrastructure and damage the environment and ecology.

Figure 2 Three-dimensional view of the disaster-development nexus

Deficits in development create risks of disasters

Deficits in development create risks of disasters in multiple ways. First, layers of vulnerabilities—economic, social and environmental—accumulated over the years due to lack of development get exposed, horizontally as well as vertically, to different types of hazards, which create complex risks of disasters. Physical conditions of housing and infrastructure continue to remain poor due to poor standards and specifications of construction and lack of maintenance over time. These conditions become highly vulnerable even during low-intensity earthquakes or storms. Dense informal settlements in flood plains, river banks and other low-lying areas expose large populations to the risk of flood. Poor economic conditions of people do not provide enough means to insure lives and property from the risks of disasters; on the contrary, some of the creeping disasters, like drought, adversely impact the livelihoods of poor people for months and sometime years, pushing them further towards (or into) acute poverty. Lack of social protection of vulnerable groups, such as women, children, older persons and persons with disabilities, make them highly vulnerable during disasters because they are not always able to protect themselves without outside support, which often breaks down during emergency situations.

In many cases, as the economy grows and the country develops, the standard of living of people improves, the socioeconomic vulnerabilities are reduced, the quality of housing and infrastructure is upgraded, social protection systems expand and capacities at every level develop. As the deficits of development are reduced, countries and communities become more resilient to the risk of disasters. Development is therefore key to reducing the risk of disasters.

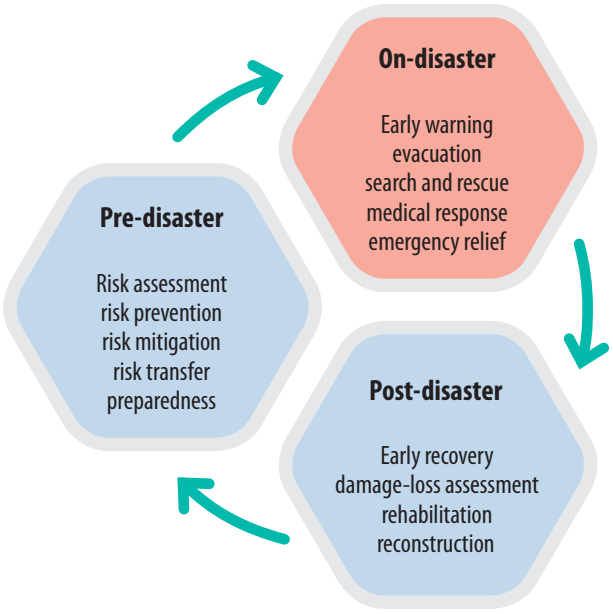
Development creates new risks of disasters

At the other end of the spectrum, development has often created new risks of disaster. Rapid industrialization and unplanned urbanization have encouraged the growth of informal settlements with unstable living conditions. Hazardous industries close to settlements have exposed people to threats of environmental pollution and chemical disasters. Indiscriminate mining, quarrying and extraction of timber have resulted in the degradation of forests and land resources, with long-term adverse consequences on the environment and ecology. Large dams in fragile ecological zones have displaced communities and contributed to the erosion of soil and silting, reducing the holding capacities of reservoirs and forcing the discharge of water that then creates human-made floods in downstream locations. Unsafe building practices in seismic zones and hilly slopes have exposed large stocks of houses and infrastructure to the risk of earthquakes and landslides. Denudation of mangroves and the location of industrial and commercial projects in coastal areas have made them susceptible to the risk of storm surges. Indiscriminate withdrawals of groundwater resources for commercial agricultural practices have reduced the traditional coping mechanisms for dealing with droughts in many countries in Asia and the Pacific.

Disaster risk reduction

DRM involves a complex process of at least 14 tasks spanning the management cycle—before, during and after a disaster, as shown in figure 3.

Figure 3 Tasks during the disaster management cycle



The disaster-response phase of emergency management is the shortest. It continues as long as the emergency situation prevails, but it receives the highest priority as well as resources because it involves the humanitarian response to crisis and distress situations. And nothing is more important than saving lives in distress. The post-disaster recovery-rehabilitation-reconstruction work usually continues from a few months to a few years, depending on the nature of a disaster. This phase also receives priority, especially when the disaster is catastrophic in nature.

Pre-disaster risk assessments, risk prevention, risk mitigation, risk transfer and disaster preparedness are actually a continuing and never-ending process. Yet, they remain little discussed and generally receive low priority because the benefits of investing in them are not seen in the short run. Various empirical studies have shown that in the long run, such investments are highly cost-effective because they save lives and livelihoods and minimize the cost of both on-disaster response and post-disaster recovery and reconstruction.[3] Such investments help ensure that the gains of hard-earned development sustain and are not frittered away by damage and losses due to disasters.

DRR mainly covers the activities of the pre-disaster phase of the DRM cycle, but it is important for the on-disaster phase of response and post-disaster phase of reconstruction as well. Pre-disaster activities of disaster preparedness are basically meant for a better on-disaster response, while post-disaster reconstruction activities provide opportunities for "building back better" to reduce the risk of future disasters.

The United Nations Office for Disaster Risk Reduction, which has a central responsibility of reducing the risks of disasters globally, defines DRR 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".

Mainstreaming

Since the 1990s, the term "mainstreaming" has been used by social scientists and policymakers to highlight critical cross-cutting but neglected issues to bring them centre stage. For example, mainstreaming gender issues in development would mean that gender-based discrimination, which is pervasive, can be addressed only if it does not remain confined within a particular department but becomes a matter of committed concern by all. Similarly, mainstreaming the "environment" would mean

3 See, for example, UNEP, 2014.

that every major development project is assessed on the basis of probable impacts it would have on the environment and ecology.

The objective of mainstreaming is to bring to the forefront an important issue that is not the concern or business of a particular sector but is the common concern of all sectors, or what is often characterized as "everybody's business". The core philosophy of mainstreaming is that by bringing the critical cross-cutting issue to the forefront, it becomes the core principle of governance that permeates all sectors and all levels. And it goes beyond the public sector to include the private sector, the corporate world, academia, media, civil society and communities.

Mainstreaming disaster risk reduction within development

Integrating and further mainstreaming DRR within development has remained one of the most consistent features of global frameworks on DRR.

The International Framework of Action adopted for the International Decade for Natural Disaster Reduction (1990–1999) called upon all governments to "formulate national disaster-mitigation programmes, as well as economic, land use and insurance policies for disaster prevention and to integrate them fully into their national development programmes".[4] The Yokohama Strategy and Action Plan for a Safer World reiterated in 1994 that "disaster prevention and preparedness should be considered integral aspects of development policy and planning".[5]

The Hyogo Framework for Action 2005–2015 was more forthright in stating that "effective integration of disaster risk reductions into sustainable development policies, planning and programmes at all levels" was a strategic goal, and *addressing the underlying risk factors* across all sectors of development was one of its five priorities for action (UNISDR, 2005; Hochrainer-Stigler, and others, 2011).

Mainstreaming DRR within development remains the most difficult, slow and challenging among all the DRR-related tasks, particularly in developing countries (United Nations, 2011, 2013 and 2015). One of the reasons for this lack of progress is that DRM overwhelmingly focuses on disaster response and preparedness, with little effort made to mainstream DRR across the different sectors of development. There is little appreciation for the costs and benefits of risk reduction among agencies

4 See United Nations General Assembly, A/RES/44/236, December 1989.
5 See the 1994 Yokohama Strategy and Action Plan for a Safer World, www.unisdr.org/files/8241_doc6841contenido1.pdf.

responsible for planning and financing of development, which leads to inadequate public investment for disaster reduction. Even the benefits of the limited public investment to date have not been protected because the underlying risks factors were not addressed, while the process of development created new risks, compounding the accumulated risk factors.

The Sendai Framework for Disaster Risk Reduction 2015–2030 highlighted critical gaps and future challenges:

> "More dedicated action needs to be focused on tackling underlying disaster risk drivers, such as the consequences of poverty and inequality, climate change and variability, unplanned and rapid urbanization, poor land management and compounding factors, such as demographic change, weak institutional arrangements, non-risk-informed policies, lack of regulation and incentives for private disaster risk reduction investment, complex supply chains, limited availability of technology, unsustainable uses of natural resources, declining ecosystems, pandemics and epidemics" (UNISDR, 2015).

The Sendai Framework underscores the importance of mainstreaming DRR within sustainable development and further enlarges the scope of mainstreaming to include the respective business models and practices of businesses, professional associations, financial institutions and philanthropic foundations.

The 2030 Agenda for Sustainable Development further pushes mainstreaming across the sectors of development by including elements of DRR and resilience in nine of the 17 SDGs. These include some of the most important and critical areas of development, such as poverty eradication, food security, infrastructure, cities and human settlements, climate change and ecosystems.[6]

6 See Transforming Our World: The 2030 Agenda for Sustainable Development. A/RES/70/1.

2

PRINCIPLES OF MAINSTREAMING

Mainstreaming DRR in development essentially means looking critically at each programme, activity and project that is being planned from the perspective of reducing risks and minimizing the potential contribution of development towards creating new risks. Mainstreaming thus has the dual purpose of ensuring that (1) development is protected from existing and future disaster risks and (2) development does not create any new risks of disasters or exacerbates the existing risks.

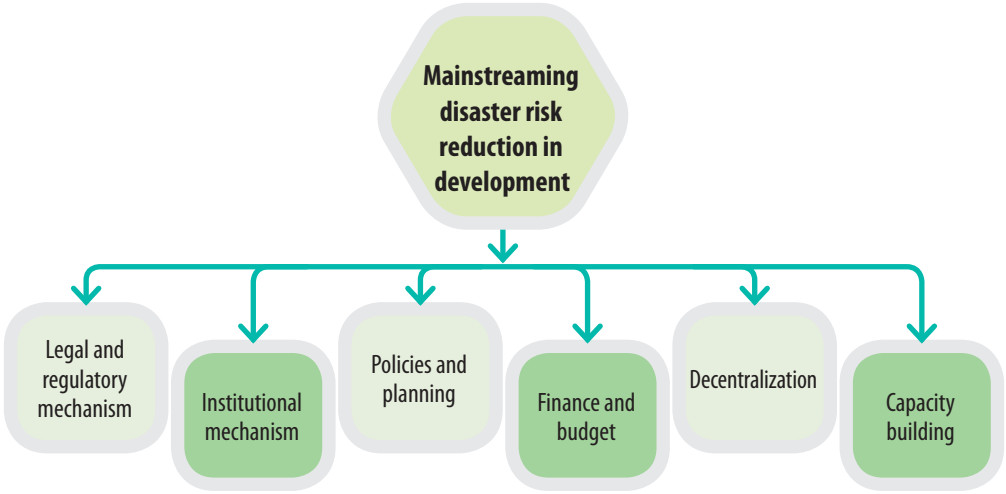
Experiences from mainstreaming various other issues, such as gender, the environment and climate change adaptation, into the process of development generally indicate that six principles are important (see figure 4):

1. develop legal and regulatory mechanisms;
2. set up institutional mechanisms;
3. adopt framing policies and planning;
4. provide financial and budgetary support;
5. decentralize responsibilities to local levels; and
6. build capacities at all levels.

The principles are reflected in the Hyogo Framework for Action and further reiterated in the Sendai Framework. From a theoretical perspective, these principles provide "a horizontally and vertically integrated systems approach with strong coordination across sectors and a delegation of responsibilities at the local level based on the principle of subsidiary".[7]

7 See www.undp.org/content/dam/undp/library/crisis%20prevention/disaster/Strengthening%20Disaster%20Risk%20Governance-Full-Report.pdf.

Figure 4 Principles of mainstreaming disaster risk reduction in development



Legal and regulatory mechanisms

A sound legal and regulatory system is important for the effective mainstreaming of DRR within development. This does not mean there needs to be separate laws for mainstreaming, however; it only implies that risk reduction must be mandated by the legal and regulatory systems of a country. These systems include disaster management law along with legislation in all relevant sectors, as well as rules, regulations and codes developed in accordance with the laws.

Following the Hyogo Framework for Action, most governments in the Asia-Pacific region enacted disaster management laws, which, inter alia, mandated national and local governments to integrate DRR into their development programmes. Several such laws cited mainstreaming of DRR into policies, planning, programmes and management practices. For example, the Philippine Disaster Risk Reduction and Management Act declares that it shall be the policy of the State to "adopt and implement a coherent, comprehensive, integrated, efficient and responsive disaster risk reduction program incorporated in the development plan at various levels" and further to "mainstream disaster risk reduction and climate change adaptation in development processes such as policy formulation, socioeconomic development planning, budgeting, and governance, particularly in the areas of environment, agriculture, water, energy, health, education, poverty reduction, land-use and urban planning, and public infrastructure and housing, among others". [8]

8 See Section 2 of the Philippine Disaster Risk Reduction and Management Act, 2010.

The Vietnam Law on Natural Disaster Prevention and Control, 2013 makes "integration of natural disaster prevention and control into national and local socioeconomic development master plans and sectoral development plans" a basic principle of disaster prevention and control.[9]

Industrialized countries in the region, such as Australia, New Zealand and Singapore, do not have stand-alone laws on DRM, but their systems and processes of risk reduction are firmly embedded across all development sectors, within and outside government. Such integration has taken place over years of development practices, through a continuous process of iterative learning from every successive disaster. The Disaster Countermeasures Basic Act of Japan, for example, provides that the Central Disaster Prevention Council shall formulate a basic disaster prevention plan, which would include (1) a long-term comprehensive plan for disaster prevention and (2) operational and local disaster prevention plans. These plans are "reviewed each year in the light of research findings, conditions of disasters that have occurred and the effect of measures taken" and revised, if considered necessary.[10]

Such a dynamic process of integration is lacking in most of the developing countries, where stand-alone disaster management laws remain compartmentalized in a sector mainly for disaster response and preparedness rather than reaching out to all relevant sectors for disaster prevention and mitigation.

Another challenge for developing countries is to establish appropriate regulatory systems for risk reduction in sectors in which private companies are taking an important role in development, either through public-private partnerships or as business ventures in various infrastructure and real estate projects, such as housing, highways, airports, seaports, power generation, transmission and distribution networks, telecommunication, oil and natural gas and mining. The legal regimes created for regulating these developmental activities have focused mainly on the issues of tariff structures and technical standards and specifications; but the standards have not always factored in structural and non-structural measures for risk reduction. In the absence of such regulatory systems, there are apprehensions that many new development projects may be creating new risks of disasters or exacerbating the existing risks.

Governments are advised to consider the following two important issues:

GUIDANCE

1. ensure that legal mandates do not remain confined in statute books but are implemented; and
2. legal mandates are followed up by appropriate regulatory regimes in all relevant sectors.

9 See Article 4 of the Law on Natural Disaster Prevention and Control 2013 of Vietnam, 2013.
10 See Article 34 Disaster Countermeasures Basic Act (Act No. 223 of November 1961, as modified in June 2007).

Institutional mechanisms

Asia and the Pacific, like other regions of the world, present diverse institutional landscapes for DRR. Broadly, three models have emerged, each with many variations. In the first model, a separate specialized national agency or authority is created by disaster management law, usually with the head of government as the chair, for steering the entire system and process of DRM in the country. This is the dominant model in South Asia, with five of the eight countries—Bangladesh, Bhutan, India, Pakistan and Sri Lanka—opting for a specialized agency (a national disaster management authority or centre).

In the second model, inter-ministerial coordination mechanisms are created in the office of president or prime minister for guiding the process of disaster management, although the basic responsibilities of DRM continue to remain with the respective departments or agencies of the government. This model is followed by China, Japan and many South-East Asian countries, like Cambodia, the Lao People's Democratic Republic, Malaysia, Myanmar and the Philippines. In China, for example, the National Committee for Disaster Reduction, headed by a vice-premier of the State Council and represented by 33 ministries and departments, including relevant military agencies and social groups, operates as an inter-agency coordination body for disaster reduction (UNISDR, 2008).

In the third model, disaster management is the exclusive responsibility of a single agency or department of the government that discharges its responsibilities in coordination with other agencies. This was the dominant model in most countries for a long time, but it is giving way to the first or second model. Several countries, however, such as the Maldives, Nepal, Timor-Leste and most of the Central Asian and Caucasian countries, still follow this model.

Whatever the model, the institutional mechanisms for mainstreaming DRR within development cannot remain limited to the nodal agency responsible for disaster management. It must encompass whole-of-government, covering all sectors of development in the public and private sectors. Having the head of State or government as the head of the national disaster management authority or locating the national commission or committee on disaster management within the office of the prime minister or president was meant to ensure that this whole-of-government approach is followed. But this has not always been the case. Agencies and committees have not met regularly; planning and a strategic action plan for mainstreaming in specific sectors have not been developed; or implementation and monitoring of mechanisms of mainstreaming have not been set up across all development sectors. The coordinating agencies created to assist the national authorities and commissions typically operate in silos without effective outreach to the various development sectors. This trend could be countered, however, by setting up nodal points for DRR within every relevant development sector.

Recognizing that DRR must transcend the boundaries of government to involve all other stakeholders in what is often described as a whole-of-society approach, the Hyogo Framework prescribes "multi-sectoral national platforms, with designated responsibilities at the national through the local levels to facilitate coordination across sectors". But only 14 of 64 countries in the Asia-Pacific region have set up such platforms, and none of them meet regularly to follow through on their expected roles and responsibilities (UNISDR, 2013).

Some of the measures for strengthening institutional mechanisms for mainstreaming may include the following:

1. activating the specialized or coordinating agencies for DRM;
2. constituting multi-stakeholder national and local platforms for DRR;
3. setting up nodal points for DRR within every relevant development sector.

Policies and planning

Most countries of the Asia-Pacific region have developed national policies and strategic action plans on DRM. But few of the plans systematically address the issues of mainstreaming DRR into the various sectors of development. This has resulted in considerable gaps between professed policies and plans and actual practice. There is no guidance on the coherence or integration of long-term national strategy plans, short-term action plans or multi-sectoral development plans with disaster management plans. The net result is that most of the disaster management plans remain disconnected from sectoral development plans and are not implementable because they are either not supported by sufficient resources or lack the backing of an accountability framework.

The track records on implementation of disaster management plans reveal a definite pattern—the few industrialized countries of the region have invested enormous resources on structural and non-structural measures for DRR in the various sectors of development. The emerging economies have started making such investments with some success; most of the developing countries are constrained by lack of resources and capacities, but some of them have innovated on low-cost community-based initiatives for risk reduction. While in the least developed countries, the limited initiatives on mainstreaming are mostly driven by United Nations agencies and donors without significant buy-in from local government agencies.

Japan addresses DRR through its Basic Disaster Management Plan, which is continuously reviewed and updated to strengthen the DRR framework, based on experiences. The

Republic of Korea has implemented measures to strengthen the resilience of critical infrastructure, like roads, railways, energy, communication systems and housing.

In China, the National Disaster Reduction Plan (1998–2010) and the Comprehensive Disaster Reduction Plan (2011–2015) provided the framework for mainstreaming DRR across all sectors of development. The plans aimed to establish a unified management structure, bringing all levels of government together and enabling them to work in coordination with each other. The Planning Commission of the Government of India developed a blueprint for DRR in the Tenth Five-Year Plan (2002–2007). The Eleventh (2007–2012) and Twelfth Five-Year Plan (2012–2017) emphasized that every new development project should be appraised on the basis of a detailed assessment of hazards, risks and vulnerabilities, while every existing project should be retrofitted to guard against the risks of disasters.

Indonesia formulated its National Action Plan for Disaster Risk Reduction for 2006–2009, which was followed by two more plans for the successive three-year planning cycles. Each plan identified hundreds of activities for DRR across sectors to be implemented with financial and technical support from multiple stakeholders and donors, which were not forthcoming.

The Strategic National Action Plan for 2009–2019 of the Philippines lists 18 programmes and projects on DRR, which include projects on mainstreaming DRR into government plans and programmes and supporting DRR mainstreaming through a sectoral approach.

Mainstreaming risk reduction was a strategic goal of the National Plan for Disaster Management, 2010–2015 in Bangladesh. A fivefold strategy was adopted for achieving this goal: advocacy, policy and planning reform, capacity building, planning frameworks and uniform community risk assessments. Bangladesh has made significant progress in integrating DRR into its poverty reduction programmes. Participatory risk assessments, a focus on the multidimensional nature of poverty, the convergence of all development programmes at the community level and the coordinated involvement of all development partners, with a strong presence of civil society groups and women, were the hallmarks of the programme's success.

The Cambodian Strategic National Action Plan for Disaster Risk Reduction, 2008–2013 had six components, including mainstreaming DRR into policies and programmes for relevant government ministries. But implementation of this component has not made much headway. The Strategic Plan on Disaster Risk Management of the Lao People's Democratic Republic provided road maps for the short-term (2005), medium-term (2010) and long-term (2020) periods. Although some of the short- and medium-term activities were taken up for implementation, long-term activities for mainstreaming DRR into various sectors of development were neglected. The Myanmar Action Plan on Disaster Risk Reduction (2009–2015) identified 64 priority projects for mainstreaming DRR, each aligning with the seven components of the action plan, but none of these projects has crossed the inception stage as of yet.

Most of the Pacific Island countries have had some form of national disaster plan for many years. UNDP helped a number of countries to develop more comprehensive plans that covered preparedness, response and recovery activities. Implementation of these plans for mainstreaming DRR often has been adversely influenced by the limited interest of governments and the shortage of suitable funds and human resources.

For national and local policies and planning to become effective instruments for mainstreaming DRR within development, governments should consider adopting the following course of action:

GUIDANCE

1. integrate the main concerns and issues of DRM into national development plans;
2. formulate the strategic action plan on disaster management in coherence with the national development plan through a process of consultation with all relevant development sectors; and
3. ensure that the plans are practical and can be implemented within available financial and technical resources.

Finance and budget

Governments around the world, particularly in the developing world, have cited lack of resources as the main barrier for implementing measures for DRR. This is clearly evident in the national and regional progress reports on the implementation of the Hyogo Framework for Action.

Internationally, resources for DRR represent a small fraction of those dedicated to DRM, which in turn represent a small fraction of the overall development assistance (United Nations, 2015). On average, only around 2 per cent of the total international development assistance is allocated to DRM, and 75 per cent of that budget is allocated to only four countries (GFDRR, 2012a).

Increasingly, countries are creating special funds for DRM, which in some countries are mandated by laws on disaster management, but most of these funds are dedicated for disaster response and humanitarian relief.

Governments do spend budgetary resources for various structural and non-structural measures for DRM in different development sectors, however insignificant these may be in relation to the assessed needs for risk reduction. Taken together, such investments may far outweigh the international aid for DRR (Kellet and Caravani, 2012).

Three studies on tracking public investments for DRR—in the Philippines, Indonesia and India—demonstrated that national governments are making significant investments in different development sectors, which should provide enormous opportunities for mainstreaming DRR within development. The Philippines study looked into the multilayer programmes, activities and projects on DRR in the General Appropriation Act for the three financial years of 2009, 2010 and 2011 (Jose, 2012). The study concluded that the DRR budget allocation expanded by 61.4 per cent in that time period (mainly to address the requirements for rehabilitation and recovery after Typhoons Ondoy and Pepeng in 2009), but it still only comprised a mere 2.1 per cent of the national budget and nearly 0.3 per cent of GDP.

The Indonesian study (Darwanto, 2012) follows Regulation 21 of 2008, which classifies DRR investments in seven categories that are aligned with the Hyogo Framework for Action. Investment on disaster mitigation and prevention accounted for an average of 76 per cent of the total investment on DRR, followed by disaster preparedness (at 12.7 per cent), research, education and training (at 5.8 per cent), early warning system (at 3.3 per cent), institutional capacity building (at 0.8 per cent), community participation for DRR (at 0.7 per cent) and disaster management planning (at 0.5 per cent).

The Indian study (Chakrabarti, 2012) classified government programmes, activities and projects on DRM into two types: (1) dedicated schemes, in which 100 per cent of the allocations were earmarked for DRM; and (2) embedded schemes, in which allocations were less than 100 per cent but contained elements of risk reduction. The study found 38 schemes among eight ministries and departments that were dedicated and 85 schemes of 75 ministries and departments that had the potential for reducing the risks of disasters. Total allocations for the embedded schemes for 2011–2012 were nearly INR3,963 billion (equivalent to around US$72.1 billion), which works out to 32 per cent of the Government's total budget. These elements provided strong entry points for mainstreaming DRR within development.

Mainstreaming DRR within public finance and budgeting can be done through two strategic interventions:

GUIDANCE

1. stepping up direct or dedicated public and private investments for DRR; or
2. recalibrating the existing development schemes in different sectors for optimizing the benefits of such investments for reducing the risks of disasters.

Decentralization

The whole-of-government cum whole-of-society approach to DRM makes it imperative that the business of DRR does not remain centralized in the national government but becomes the joint responsibility of government at all levels, from national to local, with engagement and participation of all stakeholders and communities. The experience with decentralized responsibilities for disaster risk governance in the Asia-Pacific region varies, from *deconcentration*, or partial dispersal of tasks and resources from the central to local government without any devolution of authority (such as in Cambodia, Myanmar, Pakistan, and Sri Lanka), to *devolution*, or dispersal of tasks along with partial dispersal of resources and authority (as in Bangladesh, India and Viet Nam) and *autonomy*, or dispersal of tasks and resources as well as authority (such as in Indonesia and the Philippines). The geophysical conditions of countries have influenced the process of decentralization, such as the dispersed islands and archipelagos in Indonesia and the Philippines, and have made *autonomy* a functional necessity for better risk governance for mainstreaming DRR within development.

Decentralization promotes good governance because it improves the delivery of services (efficiency), involves citizens (participation) and makes the system open and transparent (accountability). It promotes community-based risk assessment, risk reduction and preparedness and enables the effective utilization of local knowledge and resources. It improves the process of two-way risk communication from the local to the national and vice versa. And it enables the participation of many stakeholders including civil society, community-based organizations, local leaders and other opinion makers. In short, it empowers local communities.

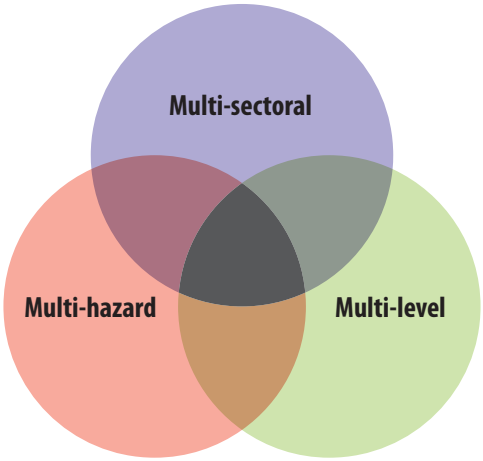
To be effective, formal and vertical decentralization from the national to the local authorities should be supplemented by horizontal and informal decentralization among all stakeholders across all sectors. In most of the region's countries, however, this mix of vertical and horizontal decentralization has yet to take deep root. Either the process of vertical decentralization is top-down, without the effective devolution of power and resources, or it has remained formal, without effective engagement with stakeholders. The mid-term review of the Hyogo Framework in the Asia-Pacific region found that only 20 countries had dedicated budget allocations to local governments, even though 65 per cent of the countries had made local governments legally responsible for local-level DRM (UNISDR, 2011).

Countries are advised to decentralize, delegate and devolve functions, authorities and resources to the authorities in towns and villages so that they can manage and reduce the local risks of disasters.

Capacity building

Capacity building is one of the most crucial elements for mainstreaming DRR within development. Capacity development cannot remain limited to the national agency for disaster management; it must permeate all sectors, at all levels and for all types of hazards—natural as well as human-made—and every aspect of DRM.

Figure 5 Capacity-building framework for disaster risk management



The multi-hazard, multi-sectoral and multi-level capacity development is a massive task that has to be undertaken in an organized and systematic manner. The existing capacities must be assessed, the gaps in capacities must be identified and strategies must be worked out for resolving the gaps in a phased manner.

Some capacities at the level of policymakers—legislative, ministerial and bureaucratic—can be upgraded through sensitization programmes. Some capacities at the middle level can be refreshed through knowledge and information-based programmes, while capacities of cutting-edge functionaries can be developed through skill development. And the capacities of regular citizens and communities can be developed through awareness programmes. All this work, however, requires a large number of trainers and a programme for training the trainers.

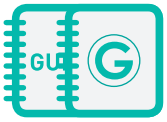
Universities and other institutions of higher learning can develop academic programmes in various disciplines to create a pool of DRM professionals, while research institutions can take up scientific, policy and applied research on different aspects of DRM.

Institutional capacities must be developed so that various institutions assigned responsibilities for DRM can operate effectively.

Several countries of the Asia-Pacific region have created specialized institutes for training on disaster management. For instance, the National Institute of Disaster

Management of India, set up more than a decade ago, has been instrumental in developing capacities across sectors at the national and state levels. The Singapore Civil Defence Academy provides specialized training for disaster response, more specifically towards urban fire management. The Philippines Crisis Management Institute is part of the National Defence College and is similarly oriented towards response. The Indonesian Disaster Management Institute and the Disaster Management Training Centre of Myanmar are in the process of setting up. The Asian Disaster Preparedness Centre in Bangkok has a seminal role in conducting training programmes on various aspects of mainstreaming DRR in the region.

Considering the huge training gaps and training needs, there is strong justification for



1. stepping up of the training and capacity-development initiatives of the existing educational, professional, research and training institutes in the region on disaster management; and

2. creation of new specialized institutions for training and capacity development on DRM, wherever necessary.

3

STRATEGIC APPROACH OF MAINSTREAMING

No general set of guidelines for mainstreaming DRR within development can apply equally to all countries, regions and sectors. It will vary according to the levels of hazards, risks and vulnerabilities of each country and region; the contexts and dynamics of the risks; the levels of economic and social development of each country, their capacities and resources; the types of legal, institutional and regulatory systems; and the sectors of development that would need to be addressed.

However, there are integrated processes for mainstreaming DRR within development involving national planning institutions, national disaster management organizations and sectoral agencies that governments can follow. There are good practices of mainstreaming DRR into subnational and local development planning that can be suitably adapted by governments according to their legal and institutional systems of governance. And there are well-thought-out and tested tools and techniques of mainstreaming that can be applied by governments according to their own contexts and situations.

There are three separate but interconnected processes for mainstreaming DRR within development (see figure 6). Integration and further institutionalization of these processes can provide a good operational framework for mainstreaming DRR across different sectors of development in countries, irrespective of their national system of governance.

Figure 6 Interconnected processes of mainstreaming disaster risk reduction into various sectors of development

Strategic framework for disaster risk management

The overarching strategic framework of DRM in a national development plan may be laid down by the national planning commission or similar institution for a medium- to long-term planning cycle (5–15 years), depending on the systems and practices in place.

National development planning in Asia-Pacific: functions and time frames

The overarching strategic framework of DRM in a national development plan may be laid down by the national planning commission or similar institution for a medium- to long-term planning cycle (5–15 years), depending on the systems and practices in place.

The idea of a national development plan has taken different shapes in different countries, depending on the philosophy and ideology of the ruling political parties. Initially, the communist countries went for a "controlled economy" in which every aspect of the economy is regulated by the government and not by the market to meet the "needs of the people and not for the profit of the investors". Countries with a vision for a socialistic pattern of society went for a mixed economy in which markets are regulated by the government, which intervenes through a long-term development plan that sets the objectives and direction of investment across every sector of the economy, in both the public and private sectors. The national development plan of many countries typically allocated huge investments in the public sector for the development of basic infrastructure, services and core industries.

However, over the years as the countries were exposed to a rapidly globalizing economy and as State-controlled enterprises and mechanisms faced challenges of efficiency, competition and corruption, both the controlled and mixed economic systems went through many changes. Economies were liberalized to permit private investment in a range of sectors, and governments became facilitators in promoting private investment and focusing more on basic issues of governance. Innovative mechanisms for public-private partnerships were developed, even for the delivery of public services.

Despite these changes, most countries of the Asia-Pacific region have retained the national development plan mechanism, which continues to perform several crucial functions. First, a national development plan provides opportunities for the critical evaluation of various policies, plans and programmes across sectors; the analysis of the factors that contributed to the progress or lack of progress in achieving the objectives of the plan; the review of valuable lessons learned; assessment of emerging trends, challenges and opportunities; and redefining and re-imagining the vision, approach and direction for the future. And such a mechanism involves a series of in-depth and independent studies that provide critical perspectives, which are otherwise not available in routine day-to-day functioning of a government. Second, a national development plan provides a macro framework for setting the contexts of micro-level policies, plans and programmes. The national plan provides guidance to regional, local and sectoral initiatives, just as it is informed and influenced by the experiences of these initiatives. This macro-micro process links the national plan horizontally with sectoral plans and vertically with provincial and local plans and provides an integrated framework for the future growth and development of a country.

Third, a national development plan defines both the vision and its limits within the realm of different scenarios—strengths, weaknesses, resources, opportunities and threats—and provides a plan of action that can be both visionary and pragmatic. Finally, a national development plan sets benchmarks, standards and targets to be achieved in different sectors over a period of time and thus remains a reference point or guide for the present as well as the future. A long-term national development plan shapes the contours of annual plans or budgets of a government through which resources are allocated by the finance ministry (or its equivalent) to the various line ministries and departments for the implementation of plans, activities and projects.

Different countries have different time frames for their national development plan, which range from three to ten years. Usually countries with a longer time frame have a rolling plan that integrates a long-term plan with annual plans. Large countries with a federal system of governance have a hierarchy of plans at the federal, provincial and local levels. In most countries, the national development plan contains massive estimates of resources required for implementation, resources expected to be pooled and proposed allocation of resources to various sectors of development. In some countries, the national plan only provides the framework, objectives, goals and physical and financial targets at the macro level and leaves it to the government to allocate funds to the ministries and departments for implementation on an annual basis.

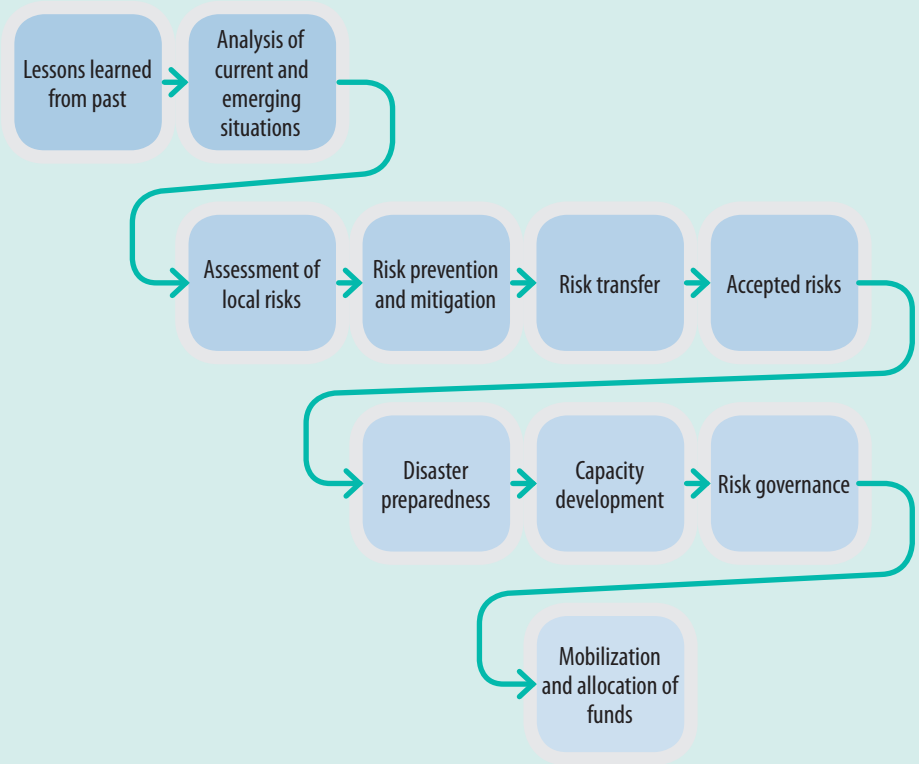
In recent years, the national development plan of countries in the Asia-Pacific region have routinely referred to the importance of DRM for sustainable development and described various initiatives to improve the systems of DRM. But few plans have

provided incisive analysis of previous lessons learned, challenges and opportunities of the present and measures to be taken for improving the system in the future, both in both qualitative and quantitative terms.

It is imperative that a national development plan provides an overarching framework for reducing the risks of disasters, both natural and humanmade, and lays down a complete blueprint or road map for the plan period, building on the achievements and experiences of the past and setting targets for the future.

This overarching framework should cover the following ten aspects in a sequential manner (see figure 7):

Figure 7 Strategic framework for disaster risk management



1. **Lessons from past**

   Critical analysis of lessons learned—achievements made, challenges faced, difficulties encountered—for reducing the risk of disasters during previous national development plans should be the starting point of a strategic framework for DRM.

Tracking the lessons learned from the disasters that have taken place is relatively easy, but analysing lessons from the disasters that could be prevented or mitigated is immensely difficult. There are dangers that subjective perceptions or complacencies may create biases in such analysis. One of the ways to remove such biases is to have such assessments done through independent agencies or think tanks.

2. **Analysis of current and emerging situations**

The strategic framework should be contextualized within the objectives and goals of the current national development plan, emerging challenges and opportunities, obligations under various regional and international agreements, frameworks, etc.

3. **Assessment of total risks**

An assessment of the total or overall risks of disasters of the country would include expected average annual loss and probable maximum loss.

Average annual loss is calculated using available data on actual damages and losses due to previous disasters. Most countries do not have a sound database on damage and loss. The global database does not cover small local disasters. Until a database is developed, governments may base their estimates on an available database. The probable maximum loss is calculated using the worst-case scenarios of catastrophic disasters and the likely return period of such disasters. Both average annual loss and probable maximum loss assess the likely impact of disaster-related damages and losses on GDP and specific sectors of the economy, such as the likely impact on poverty, livelihoods, infrastructure and other critical issues.

Average annual loss and probable maximum loss helps to quantify possible damages and losses due to disasters and provide a good basis for making investment decisions on risk prevention and mitigation.

4. **Risk prevention and mitigation**

Clear and realistic ideas about the risks that can be prevented and risks that can be mitigated, the strategies that may be adopted for prevention and mitigation, likely public investment required and the amount that can be allocated for this purpose during the plan, along with cost-benefit analysis for such investment form the core of the strategic framework on DRM. This requires analytical inputs on various related aspects and investment modelling that are based on disaster scenarios and resource availability. National planning commissions should develop the capability for such sophisticated analysis.

5. **Risk transfer**

Parts of the assessed risk of disasters that cannot be prevented or mitigated or are not cost-effective can be transferred through market-based mechanisms of risk insurance. Sound insurance policies and incentives promote "risk pooling" and "risk transfer" by individuals and institutions. Catastrophic insurance or reinsurance, particularly in respect of disasters that have a long return period, can reduce sovereign liability for disaster recovery and reconstruction.

The strategic plan for DRM should provide clear and realistic ideas about the risks that can be transferred through risk pooling and insurance and the fiscal and non-fiscal mechanisms to be developed for this purpose.

6. **Accepted risks**

The residual risks of disasters that are neither prevented nor mitigated nor transferred form the accepted risks of a country and should be assessed. The probability of occurrence of accepted risks (or part thereof) during the planning period should be analysed through modelling or scenario building to arrive at a clear idea of the likely impact of such disasters on the macroeconomic situation of the country.

7. **Disaster preparedness**

Disaster preparedness of a country is its capacity to respond to disasters in a way that minimizes the loss of lives, livelihoods and assets during and after an event. Ideally, the level of disaster preparedness of a country should match the accepted risks of disasters; in reality, there are gaps. If the gaps are wide, the probability of losses will be large, and thus steps should be taken to bridge the gaps to the extent possible, especially for improving early warning of disasters, the capacity of response institutions through training, scenario building, exercises, mock drills, etc., and strengthening coordination among agencies responsible for emergency support functions. All these measures should be outlined in the overarching national strategic framework on DRM.

8. **Capacity development**

This includes an assessment of the capacity gaps and capacity needs relative to multi-hazard, multi-sectoral and multi-level DRM. It also includes the capacity of institutions, communities and individuals and the capacity for DRR, disaster response, early recovery and reconstruction to support DRM activities in a country.

Capacity development is a continuing process, and the strategic framework should be specific in recommending activities that enhance capacity in all sectors and at all levels.

9. **Risk governance**

Risk governance is the systems and processes by which disaster management laws, plans and programmes are implemented through multi-stakeholder participation. This is crucial because without a robust system of governance, the plans and programmes will not be delivered. The strategic framework should thus critically review the risk governance system of a country and suggest changes to the legal, institutional, regulatory, implementation and monitoring arrangements for improving risk governance.

10. **Mobilization and allocation of funds**

Finally, the framework should estimate the requirement of funds necessary for implementing the framework across all sectors and at all levels and propose how the funds will be mobilized and allocated during the planning period.

Such an overarching framework for DRM can be formulated only through serious research on hazards, vulnerabilities, risks, exposures and capacities in every sector and at all levels. Every country of the Asia-Pacific region has been engaged with DRM for the past several years, which should provide them good experience and insight to develop this framework and road map in collaboration with scientific and technical organizations, academic and research institutions, civil society and regional and international organizations.

Many countries in the region have developed a strategic national action plan on DRM. But most of them are stand-alone initiatives that are not integrated with the national development plan and thus are not well connected with sectoral development plans. They have remained particularly weak in mainstreaming DRR across the different sectors of development.

The Sendai Framework for Disaster Risk Reduction and the 2030 Agenda for Sustainable Development that countries have adopted for implementation over the prescribed 15-year period provide excellent opportunity for developing a comprehensive strategic framework for DRM across all development sectors. The national development plans may broadly follow the process and the elements suggested in the Sendai Framework, but governments may adopt it according to their philosophy, focus and their national and regional contexts.

It is advisable for governments to initiate the development of a framework through a multi-stakeholder process of consultation and to complete the process during the next two to four years. Under the Sendai Framework, governments have already

committed to develop national and local DRR strategies. In fact, one of the adopted global targets for DRR is the substantial increase in the number of countries with national and local DRR strategies by 2020. Governments should thus develop these strategic plans at the national level and further provide guidance for preparation of the plans at the local level.

National guidelines on mainstreaming

The overarching strategic framework of DRM in a national development plan makes it imperative that DRR does not remain the responsibility of any single agency or organization of the government; instead, it must be the responsibility of every development organization at all levels, both within and outside the government. This is what the Sendai Framework describes as the "all-of-society and all-of-State" approach.[11]

This further makes it imperative that, based on the national strategic framework on DRM, broad national guidelines be established for mainstreaming DRR across every sector of development at all levels in unambiguous terms. Such guidelines should be generic, simple and common for all relevant sectors of development and should provide a step-by-step approach to be followed by each sector to develop their sector-specific guidelines.

No other institution is more appropriate to develop such guidelines than the national authorities on disaster management; they are the specialized institutions legally created with mandates to develop and issue such guidelines. In countries that do not have a specialized national institution for DRM, the responsibility can be entrusted to the ministry, department or office in the government that functions as the secretariat of the national coordinating mechanism for DRM.

The national guidelines for mainstreaming DRR across all sectors of development should have the following 10 components (see figure 8). The methodology, toolkits and processes to be followed for each component will vary, depending on the legal-institutional-regulatory framework of each country. These should be explained in detail in the guidelines for the benefit of all the stakeholders in the process. Based on these generic national guidelines for mainstreaming DRR within development, each sector should prepare its own guidelines for mainstreaming DRR into their development plans, programmes and activities.

11 See the Sendai Framework for Disaster Risk Reduction, Guiding Principles, para. 19(d), (e).

1. **Conceptual issues**

   The guidelines should provide clear ideas about the concepts of hazards, vulnerabilities, exposures, capacities, disaster risks, DRM, DRR, mainstreaming DRR and other technical terms. "Mainstreaming disaster reduction into development planning" should mean looking critically at each programme, activity and project that is being planned from the perspective not only of reducing the existing risks of disaster but also of eliminating or minimizing the potential for creating new risks.

2. **Risk assessment**

   The assessment of risks of disasters would include: (1) hazards, both natural and humanmade; (2) physical, social, economic and environmental vulnerabilities; (3) exposure of human beings, assets (individual, household, community, infrastructure and business) and animals; and (4) existing institutional and community capacities to manage the risks of disasters. A checklist of items for which data and other information on hazards, vulnerabilities, exposures and capacities are to be collected would be helpful to ensure that nothing is left out of an assessment. Because a risk assessment is multidimensional, a multidisciplinary team of experts should be involved.

3. **Risk analysis**

   Risk analysis (also known as disaster impact analysis) must be both quantitative and qualitative. Quantitative analysis is the identification and quantification of risks in terms of value of (1) existing risks that would impact on programmes, activities and projects; (2) existing risks that may be reduced or precipitated; (3) new risks that may be created; and (4) additional costs that will be incurred due to prevention or mitigation of existing and/or new risks. Qualitative analysis of risks includes the long-term impacts of programmes, activities or projects, such as the impacts on ecology or intergenerational equity that cannot be easily assessed or analysed in quantitative terms.

4. **Sectoral risk overview**

   While the national guidelines should leave it to the sectors to assess and analyse their risks according to their unique situations, it can give an overview of possible risk scenarios as guidance. This could include:

   - social sectors (health, education, housing and human settlements);
   - productive sectors (agriculture, manufacturing, business);
   - infrastructure sectors (roads and bridges, water supply, power transmission and distribution, communications);

- cross-cutting sectors (poverty reduction, gender issues, human rights); and
- multi-sectoral planning processes (urban and rural development).

5. **Designing programmes, activities and projects**

   Every programme, activity or project that is planned should have a risk management approach built into it. It should not only identify, assess and analyse the risks, it should also have a risk management plan that includes measures for risk prevention and risk mitigation, preparedness for response and recovery, training and capacity development and institutional and operational systems and processes for risk management. The project design should consider all possible alternatives and adopt the most cost-effective and efficient option that has the least likelihood of creating new risks of disaster.

6. **Consultative process**

   All programmes, activities and projects should be developed through a consultative process that is transparent, inclusive and accountable. The consultative process must "give voice" to marginalized groups (including impoverished households) who are often among the most vulnerable to natural hazards and ensure that their interests are adequately addressed and their rights are protected.

7. **Cost-benefit analysis**

   Analysis of risks, in both quantitative and qualitative terms, would enable the cost-benefit analysis of a programme, activity or project. Although direct costs and benefits of the project are easier to be assessed, the indirect costs and benefits may not be so simple. The tools and methodology of cost-benefit analysis of projects are explained separately in the chapter on project cycle management.

8. **Implementation of programmes, activities and projects**

   Every development project has its own cycle, which starts with the conceptualization of the project and goes through the process of feasibility study, design, appraisal, financing, implementation, operation, maintenance and monitoring. The initial planning stage of the project cycle (feasibility, design and appraisal) are the key entry points when risks of DRR can be factored into projects, but the process should go on during all subsequent phases of implementation, operation and maintenance. There are many instances when a project was designed 100 per cent appropriately but supervision during construction was not so ideal, resulting in lacunae that played havoc during a disaster.

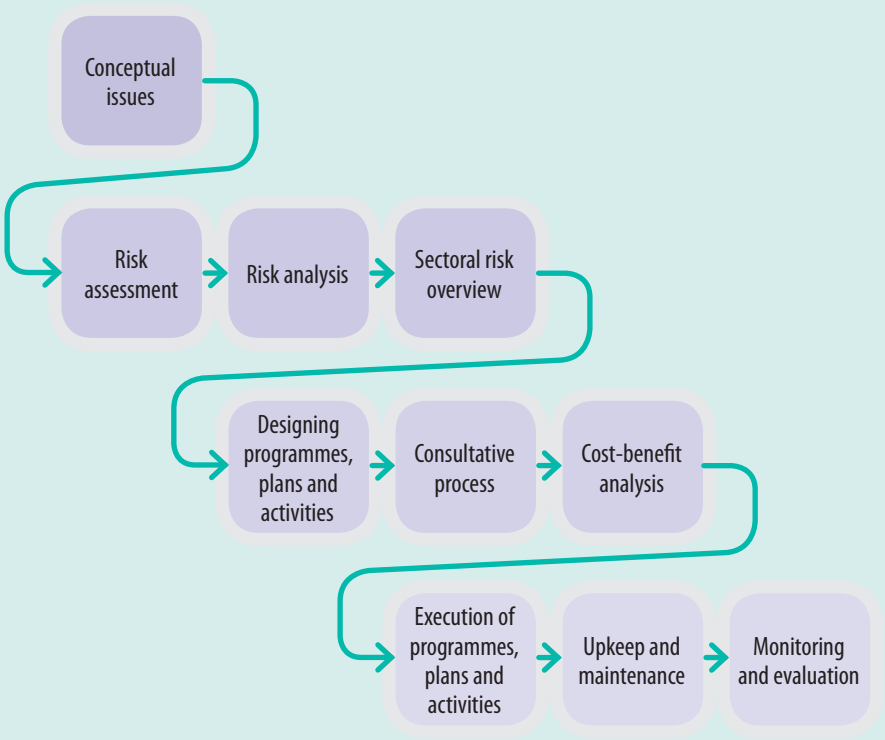
9. **Maintenance and upkeep**

There are instances when a well-constructed project failed due to poor operation and maintenance. Programmes, activities and projects should have built-in provisions for adequate upkeep and maintenance to ensure that the assets created due to development investments remain in good condition and are resilient to the risks of disasters.

10. **Monitoring and evaluation**

Risk monitoring should be an integral part of the monitoring and evaluation process of all development programmes, activities and projects. The risks are always quite dynamic in nature because the complex layers of vulnerabilities may interact with hazards in a way that is not always anticipated at the stage of conceptualization or appraisal of a programme, activity or project. This may warrant mid-course correction. Further advances in technology or economy may offer better options, which may make earlier versions outdated. Experiences from previous disasters may also give valuable lessons that should be incorporated into the development of programmes, activities or projects for better results. Various tools and techniques of monitoring and evaluation are available, such as log frame analysis, results-based management and theory of change, which would require the development of input, output, outcome and impact indicators specific to a programme, activity or project.

Figure 8 Components of national guidelines for mainstreaming DRR across all development sectors



Based on the national guidelines on mainstreaming DRR into development, the sectoral guidelines for mainstreaming DRR may be developed by the each ministry or department to cater to the specific needs of their sector. Such sectoral guidelines should be developed in consultation with the national authorities on disaster management This would ensure that while the process is owned by each sector and is driven by the unique demands and requirements of that sector, it still conforms to the overall national framework and guidelines, and there are no differences or contradictions in approaches, principles and methodologies of mainstreaming between the national and sectoral plan and among the sectoral plans.

Few countries in Asia and the Pacific have developed such comprehensive national and sectoral guidelines for mainstreaming DRR within development. In the absence of such guidelines, various sectoral agencies do not have clear ideas on how to retrofit their sectoral programmes, activities and projects in terms of safeguarding against the risks of disasters.

This explains why mainstreaming is routinely stated in every framework, policy and plan but hardly implemented in a systematic and effective manner.

4

MAINSTREAMING IN DEVELOPMENT SECTORS

The issues, approaches and strategies of mainstreaming DRR vary from one sector to another. These further vary in different subsectors within the same sector. They also vary from one country to another. However, the basic sector-specific components for mainstreaming may by and large be common to all countries of Asia and the Pacific. This chapter highlights the elements that are common in one specific subsector in each of the three key sectors of development—social, productive, infrastructure and in all cross-cutting issues as well.

Social sectors: Education

There are layers of social and economic vulnerabilities in the countries of the Asia-Pacific region, such as poverty, illiteracy, disease, malnutrition, gender discrimination and unsafe housing, that have exposed them to disasters and often resulted in huge loss of life and livelihoods. Every developing country in the region has been implementing social sector development and social protection schemes that are designed to improve the socioeconomic conditions of their citizens. While the cumulative impacts of these projects over the years have helped to reduce the vulnerabilities of large segments of the population, enhance their capacities and reduce the risk of disasters, many development programmes and activities have created new risks of disasters that could have been easily prevented if DRR measures had been mainstreamed into the schemes. For example, the collapse of school buildings during an earthquake could have been easily avoided if the structures located in seismic zones had been designed and constructed with earthquake-resistant building codes. Similarly, millions of people lifted from poverty through creation of income-generating assets with government subsidies and credit could have been helped from sinking back or even deeper into poverty when their assets were destroyed during a flood or cyclone if the assets had been secured through insurance and other securities. Lessons from previous disasters need to be incorporated into the social sector guidelines for mainstreaming DRR in development. Education is a key social sector in which the mainstreaming of elements of DRR into programmes, activities and projects can be crucial towards reducing the loss of life and assets during a disaster.

Unsafe school buildings constructed in areas prone to various hazards of nature have suffered extensive damages during earthquakes, landslides, cyclonic storms, etc., resulting in the death of many schoolchildren and teachers, which could have been

prevented had the structures been built with disaster-resistant building designs. Schools, colleges and universities are important institutions that produce new generations of leaders and workers through education, awareness, knowledge and skills.

Education and awareness about disasters at the school level and advanced learning on various scientific, technical and professional aspects of DRM in universities and in engineering, medical and management schools can help to create a culture of disaster prevention and preparedness in a country and create a professional pool of experts. Hence, education is an important sector in which DRR can be mainstreamed in a significant way.

Essentially, the mainstreaming of DRR within education can be done through three strategic interventions:

GUIDANCE

1. First, disaster management education should be made compulsory in the curriculum of school education so that every child is aware of natural hazards and the measures that should be adopted in schools and at home to protect them from injuries during a disaster. Such education should be imparted in innovative ways through drills, exercises, film shows and other means so that students do not find them to be an additional burden. This would require revision of school curricula, the development of textbooks and teaching aides and the training of teachers.

2. Second, DRR requires advanced scientific, technical and professional skills on subjects like earthquake engineering, meteorology, hydrology, communication technology, disaster medicine, psychosocial care and emergency management. Thus, colleges, universities and technical and professional institutes should design advanced courses that respond to the demand for human resources in all areas of DRM specialization.

3. Third, every school building must be made resistant to disasters by following earthquake- and other disaster-resistant building designs and technology. Similarly, disaster safety audits of all school buildings should be conducted; all unsafe schools must be retrofitted to make them resistant to disasters. This will be a relatively difficult task because the technical and financial resources necessary for such retrofitting may not be available. Education departments should put forward a strategy to prioritize a school-safety programme for high-risk schools in high-risk zones. The programme then can be extended to other areas in a phased manner.

Productive sectors: Agriculture

Agriculture and business (including manufacturing, services and trade) are the main productive sectors of the economy in which investments are made, wealth is generated and employment is created. Taken together, these sectors drive the economy. Each, however, is susceptible to disaster-related risks and has the potential to create new disaster-related risks. Yet, no systematic attempts have been made to reduce the risks in the productive sectors, resulting in mounting economic losses due to disasters.

One reason for the relative neglect of these sectors in risk-reduction initiatives is that the businesses are mostly owned by private entrepreneurs and therefore are not completely under the control of public authorities. Agriculture and business are directly connected with the welfare and well-being of the population because they provide employment and sustenance and are major sources of revenue that a government then spends on welfare programmes. Thus, no government can remain immune to the risks of disasters in these sectors.

It is extremely important that these risks are assessed and analysed in a comprehensive manner, that the potential losses and possible impacts on the economy are studied and then necessary steps are taken to reduce the risks, all in consultation with the active participation of stakeholders. Mainstreaming DRR in these sectors includes creating dynamic platforms for the scientific assessment of risks, providing early warning of disasters, facilitating training and capacity building, developing incentive structures for risk mitigation and risk transfer and integrating elements of risk reduction in all existing programmes, activities and projects.

Agriculture depends significantly on the natural resource base, like land, water, precipitation and temperature. Natural hazards, such as flood, drought and saline water ingress impact on these resources and affect agricultural operations. This has creeping impact on rural livelihoods and adverse impacts on food and nutritional security of the affected people. This further affects downstream agribusinesses, trade and commerce. The warming climate and increasing variability of rains compound the risks in agriculture. On the other hand, unsustainable agricultural practices, like the excessive use of chemical fertilizers, which reduces the fertility of soil, overdraws groundwater and depletes natural aquifers, create harmful effects on human health.

Protecting agriculture from natural disasters and climate change are matters of prime concern for every developing country. Dedicated programmes on DRR, such as drought mitigation and flood protection, are few and far between; efforts should be made to mainstream DRR in existing programmes, activities and projects that will have a multiplier effect on risk reduction. For example, programmes on soil and water conservation, water harvesting, improved varieties of seeds and biofertilizers, drip irrigation and weather forecasts can be tailored to enhance the resilience of agriculture to the risk of droughts and floods. There are many innovative traditional and modern practices that should be documented and disseminated for the benefit of farming communities.

Similarly, agricultural research and extension services can be reoriented to find innovative ways by which improved agricultural inputs and practices can better adapt to the impacts of climate change. Many countries in Asia and the Pacific are leading the way.

Infrastructure sectors: Road and bridges

Rapid economic development across Asia and the Pacific has increased the vulnerability of critical infrastructure, such as roads, bridges, railways, metros, seaports, airports, power plants, transmission lines, gas and oil storage depots, water-supply systems, telecommunication networks, schools, hospitals, administrative headquarters and emergency operation centres, to disaster-related risks (ESCAP, 2013). Many of these facilities were constructed years back and have not been upgraded or retrofitted according to revised standards or the changing risk profile of an area.

Complex disasters have unleashed forces of unforeseen nature that have wrought considerable damage to unprepared infrastructure. But disasters of even a non-catastrophic nature have also taken a heavy toll on the critical infrastructure in many developing countries in the region. In many cases, the breakdown of one piece of the infrastructure has had a cascading effect on the other infrastructure, further disrupting normal life and compounding the challenges of recovery and reconstruction. Even industrialized countries with good coping capacities have suffered colossal losses due to the breakdown of critical infrastructure, as demonstrated during the Great East Japan Earthquake in 2011. It is extremely important that all new critical infrastructure are constructed with a greater-than-usual margin of safety and that the safety of all existing critical infrastructure, both in the public and private sectors, are regularly audited against the worst-case scenarios to bring them in line with the prescribed international standards. This may be a challenging task, which must be attended as a matter of priority and not deferred for the future.

A comprehensive strategy for building resilience in critical infrastructure should be adopted, which can include the mapping of all critical infrastructure, reviewing standards and codes, reducing vulnerabilities and strengthening each structure's resilience (PwC, 2013). All the major infrastructure ministries and departments with responsibility for roads, highways, shipping, railways, energy, etc. should include these activities as part of mainstreaming DRR in their respective sectors.

Roads and bridges are critical infrastructure that are vital for the economic and social development of a country. Roads connect people with places and provide access to markets, production centres, schools, hospitals and other amenities. The impacts of natural hazards on roads and bridges range from temporary traffic disruption to major calamities that result in deaths and long-term loss of access to major economic corridors, which may interrupt national economic development.

The construction of resilient roads and bridges can reduce the impact of specific hazards and help to improve connectivity and communications, thus ensuring the continued access to goods and services. There are numerous options for mainstreaming DRR into the road and bridge sector.

GUIDANCE

1. First, in the planning and designing stages, roads should avoid areas that are extremely vulnerable to hazards, like landslides or floods. In case this is unavoidable, the design and standards of construction should ensure that the roads can withstand the impact of disasters even in worst-case scenarios. Even in normal conditions, roads must be constructed as per standards and specifications of internationally prescribed and nationally approved codes. Such codes should be revised periodically to incorporate the latest standards of technology and materials. This may provide options for cost savings while maintaining high standards.

2. Second, the actual construction of roads must conform to approved designs and specifications. Many roads and bridges collapse due to faulty construction related to the poor supervision of the work, the poor quality of materials used and/or other unethical practices.

3. Third, well-designed and smartly constructed roads have collapsed due to poor standards of maintenance. The upkeep and maintenance of roads and bridges are as important as new construction projects, but this does not receive adequate attention from the authorities due to the poor allocation of budget for maintenance.

4. Fourth, well-planned, designed, constructed and maintained roads may survive the hazards of nature, but they may create new risks of disasters if the possible impacts on the surrounding environment are not considered and dealt with. For example, the raising of a road embankment in a low-lying area may obstruct the natural drainage of water and create a risk of flooding. The construction of a road through a forest may involve the felling of trees and the blocking of a natural corridor for the movement of wild animals. These possibilities need to be anticipated at the time of the initial planning and designing of a project.

5. Mainstreaming DRR within the road sector means anticipating these issues and factoring the various possibilities into the planning, design, construction and maintenance so that road projects promote economic development without creating any risks of disasters—while remaining resilient in the face of current and emerging risks of disasters.

Infrastructure sectors: Information and communications technology

Information and communications technology (ICT) has been widely recognized as a development enabler that will contribute towards and accelerate achievement of the SDGs. In particular, SDG 9, which includes building resilient infrastructure, is highly relevant in the context of ICT and DRR. Considering the significant progress of ICT these days and its heightened potential to strengthen the adaptive capacity of critical infrastructure and of societies in general, e-resilience has gained traction in Asia and the Pacific. E-resilience is the ability of ICT systems to withstand, recover from and change in the face of an external disturbance, such as a natural disaster.

In this context, ESCAP supports the Asia-Pacific Information Superhighway (AP-IS), a regional broadband connectivity initiative mandated by member States to enhance connectivity from Turkey to Kiribati through a web of open-access cross-border infrastructure that will be integrated into a cohesive land- and sea-based fibre network. There are four pillars of the AP-IS: physical broadband connectivity, internet traffic management, e-resilience and inclusive broadband access. The AP-IS aims to catalyse the development of seamless regional broadband networks that can help improve affordability, reliance, resilience and coverage and thereby address the causes of digital divides. It also seeks to develop an internet-based ecosystem that can augment the implementation of the SDGs and further stimulate the digital economy in Asia and the Pacific. Visit www.unescap.org/apis for details about the activities.

ESCAP's Asia-Pacific ICT & DRR Gateway (accessible through http://drrgateway.net) is an online portal providing policymakers and stakeholders with news, tools and resources from a spectrum of international organizations, regional agencies and national ministries in the region. The ICT & DRR Gateway also offers an E-Resilience Toolkit, which includes tools and good practices for protecting critical ICT infrastructure and vulnerable communities in the region.

Cross-cutting sectors

There are many issues of development that are not limited to any particular sector but are relevant for a number of sectors. For example, poverty reduction concerns agriculture, employment and industry as well as multi-sectoral development processes, such as rural and urban development.

The first step in mainstreaming risk assessments in poverty-reduction programming is to conduct a poverty risk profile to understand the nature, incidence, severity and exposure of people to poverty and how poverty causes or worsens the disaster-related risks. Relevant issues to analyse include the living standards of people who are poor, their main source of income and major consumption items, the public services they have access to and the quality, reliability and cost of those services. Two other considerations are what assets poor households own and the security of their access to natural resources.

At the risk assessment and identification stage, it is essential to analyse the major disaster risks that poor households face, how those risks are determined by natural hazards and people's vulnerability to those hazards. This requires consideration of the types and sources of physical, environmental, economic and social vulnerabilities. It also includes determining how poverty affects the onset, intensity and distribution of some types of hazards, like drought or pest attack, which has a creeping effect on the livelihoods as well as food and nutritional security.

Decision-making in a poverty risk assessment involves identifying how poor households deal with the disaster risks, including their survival and coping strategies. In addition, it is necessary to determine what levels of risk are acceptable for impoverished households and the suitability of measures and options for addressing unacceptable risks for poor populations. Effective participation of poor households in the process is essential in identifying risks in their relevant context and in evaluating and selecting appropriate measures to prevent or reduce those risks.

Every poverty-alleviation programme should be designed so that the gains accrued from the scheme are fully protected from the risks of natural disasters through innovative protections, like support to self-help groups of beneficiaries, microcredit and microinsurance. These schemes can be used as a protective cushion for poor households during a disaster or impending disaster. For example, an employment guarantee scheme can be designed to provide employment to farmers and agricultural labourers during a drought; a skill development programme can be applied for offering alternative livelihood options that can supplement existing incomes.

Several countries in the region have introduced innovative approaches for integrating DRR into their poverty-reduction programmes. Bangladesh, for example, developed tools for participatory risk assessment and focused on the multidimensional nature of poverty and the convergence of all development programmes at the community level, with the coordinated involvement of development partners and the strong presence of civil society and women. In India, the National Rural Employment Generation Programme is used to provide livelihood support to people affected by drought, floods and cyclones.

5

MAINSTREAMING WITHIN PROJECT CYCLE MANAGEMENT

Programmes, activities and projects are the vehicles through which development policies and plans are implemented. The process of mainstreaming DRR within development is not complete unless it is built into programmes, activities and projects, across sectors and at all levels.

Programmes are the general schemes or channels through which specific projects and activities are conceptualized and funded. Projects are a set of structured, interrelated tasks that are executed over time, with certain costs for achieving the objectives. Activities, however, are structured less rigidly and may be performed on a continuing basis within or outside the programmes. For example, the promotion of higher education and research may be a component in the education sector under which an institute of advanced technology is developed as a project, while academic programmes and research are carried out as activities. Projects are generally the hardware of development while activities are mostly soft initiatives, although many development activities can be taken up as projects.

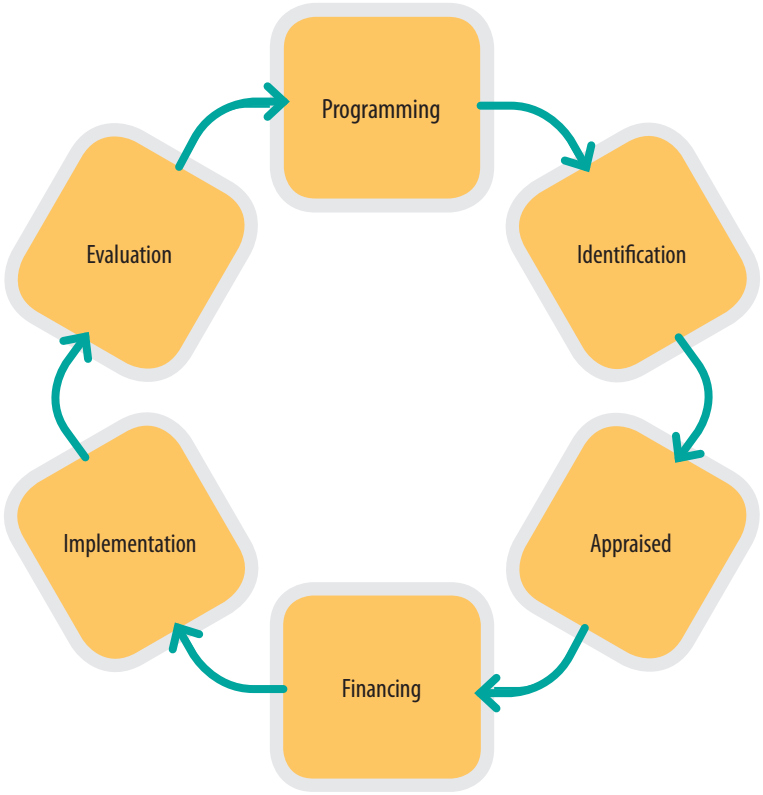
Development projects, particularly large development projects, provide good opportunities for mainstreaming approaches that reduce risks and prevent the creation of new risks of disasters. Conversely, without effective mainstreaming, development projects may exacerbate existing risks or unwittingly create new ones.

Project cycle management

The best way to ensure that DRR is mainstreamed into projects is to integrate it into the management of the project cycle, defined as "the process of planning, organizing, coordinating and controlling of a project effectively and efficiently throughout its phases, from planning through execution, completion and review, to achieve the objectives or satisfy the project stakeholders by producing the right deliverables at the right time, cost and quality" (European Commission, 2004).

There are six phases in project cycle management: programming, identification, appraisal, financing, implementation and evaluation, as figure 9 illustrates.

Figure 9 Project cycle



DRR can be mainstreamed into each of these six phases of the project cycle. The first three phases are the initial planning phases of the project, which provide key entry points for mainstreaming.

Programming: No project is taken up in isolation. The objectives of national and sectoral plans provide the rationale of the project, while strategic considerations of resources and economy justify its size, scope and location. Against those factors, the project is formulated, with goals and objectives defined and specific tasks outlined. This portion of the process provides opportunity to integrate DRR into the objectives and programmes of the project. This may not always be easy, however, because project objectives in different sectors may be remotely connected with risk reduction. DRR may be included as a proxy objective of every project, irrespective of its primary objectives, when the project formulation goes through the analysis of threats and opportunities. Disaster risks can create potential threats to any project and undermine its objectives. Therefore, measures for risk reduction would be useful for protecting the perceived gains of a project, even though it may involve marginally greater investment. Once the strategic goals of risk reduction are factored into the objectives of a project, the

subsequent mainstreaming DRR, including financial investment, becomes easier to accomplish.

Identification: Once the project objectives are defined and the tasks outlined, the next phase is to identify the elements of the tasks that need to be performed, design various structural and non-structural elements of the project and analyse the problems, needs and interests of all possible stakeholders, particularly the vulnerable sections of a population. This part of the process provides opportunity for detailed risk analysis to determine the hazards, vulnerabilities and risks of disasters that may impact on the project. It also provides opportunity to assess whether the project will have any adverse impact on communities or the environment and to accordingly design the specific elements that should be built into the project to minimize such impacts.

Appraisal: Once the project objectives are defined, tasks identified and structural and non-structural elements designed, the next phase is appraisal of the project. All relevant aspects of the project are studied, including the costs and benefits, views of stakeholders, feasibility and other issues. Logical or results-based management frameworks and activity and implementation schedules are developed, and the required inputs are calculated. The outcome is a decision to take the project forward or not. In this phase, the cost-benefit analysis is a good entry point for incorporating DRR elements that may increase project costs but provide long-term benefits to the society. In the conventional cost-benefit analysis, indirect and usually long-term benefits of risk reduction are not always appreciated because the methodologies for estimating such benefits are cumbersome, and considerations of the short-term economic benefits prevail over other considerations, unless there are strong political commitments for risk reduction.

Financing: Once a decision has been taken to go ahead with the project, various options for financing are explored, such as budgetary support, equity, market borrowing, bonds and external assistance, and decisions deemed appropriate are taken. Financing is not always a separate stage because financial decisions may be taken at different points in the cycle (for instance, at the end of the identification or appraisal phases), depending on the procedures being followed. This provides an entry point for mainstreaming DRR within the project cycle management because it opens up considerations of various options of risk financing and risk transfer that may reduce the immediate burden of investment while incorporating elements of risk reduction into the project.

Implementation: The implementation phase is especially important because the project managers must ensure that all the designed standards and specifications are complied with and that there is no slipping or compromise on the agreed parameters and processes. This is also the phase to closely monitor the progress, adjust to changing circumstances and do midcourse corrections, if necessary to achieve the objectives of the project.

Evaluation: The project cycle ends with an evaluation and audit of the results achieved and the lessons learned, which are useful for deciding to extend or replicate the project. Every project has a logical framework with input, process, output and outcome

indicators for measuring progress achieved at every stage. Assessing the impacts of the project is more difficult because they are felt over a longer time frame. There are well-defined theories of change, however, that can help assess the long-term impacts of projects.

Tools of anticipatory impact analysis, such as environmental impact analysis and disaster impact analysis, are available for analysing the possible impacts of projects. Such tools are usually applied at the project formulation phase. Concurrent evaluations are conducted during project implementation, while performance auditing and result framework analysis are conducted after a project ends.

Tools for mainstreaming disaster risk reduction in projects

GUIDANCE

Among the various toolkits available for mainstreaming DRR within project cycle management, the following have been applied in countries in the Asia-Pacific region with varying degrees of success:

1. marginal investment analysis
2. cost-benefit analysis
3. multipurpose development projects
4. disaster impact analysis
5. checklists for DRR.

Marginal Investment Analysis

Mainstreaming DRR does not necessarily mean that a large amount of new investment must be made for risk reduction in every project—existing investments can be designed and calibrated in a way that does not exacerbate the latent risks or create new disaster-related risks. But incorporating elements of risk resilience into the concept, design, management and evaluation of existing and new programmes, activities and projects may necessitate additional investment. The tools of marginal investment analysis are useful to determine the effectiveness of such additional investment for DRR.

The construction of schools, hospitals, roads, bridges and buildings, for example, are investments that are routinely made in the public or private sectors in every country in different hazard zones. But these structures are not always resistant to the hazards.

Making them as hazard-resistant as possible requires an additional investment of a marginal nature, which most countries fail to do, thereby leaving them vulnerable to earthquakes, landslides, floods and cyclones. Similarly, there are many non-structural measures that can enhance the resilience and effectiveness of structures and other related programmes. Various studies have demonstrated that the benefits of such marginal investment far outweighs the costs and make structure investments more enduring and sustainable. The marginal higher costs in earthquake-resistant buildings, for example, is 2.5 per cent for structural elements and 0.8 per cent for non-structural elements (Pereira, 1995), but the benefits are equal or higher than the replacement costs of these structures if they collapse in an earthquake.

There are hundreds of programmes, activities and projects across the different sectors that can be calibrated to incorporate DRR elements for sustainable development. The marginal costs in such exercises are generally cost-effective, even though the processes involved may not always be so easy and may require difficult and cumbersome tasks. These can include the reassessment and redesigning of programmes and projects and development of new standards, codes, guidelines and capacities. It also can necessitate buy-in from stakeholders who are used to business-as-usual approaches and practices, even in hazard-prone countries, where repeated disasters have caused recurrent damage and loss to life and assets.

Cost-benefit analysis

Elements of the cost-benefit analysis are inherent in a marginal benefit analysis, but a full-scale cost-benefit analysis for DRR is usually applied for new and exclusive risk-mitigation projects. The tasks involved are not simple nor straightforward. The costs of such projects can be estimated in terms of projected investments, but the benefits cannot be calculated so easily because they are largely the direct and indirect damage and losses that did not occur or were reduced. Future risk patterns are not known clearly due to the dynamic nature of hazards and vulnerabilities. Additionally, the location-specific nature of risk patterns, coupled with divergent perspectives on the effectiveness of risk-reduction strategies, complicates the evaluation of costs and benefits. As well, the way costs and benefits of projects are distributed among various vulnerable groups cannot be calculated so easily. Data on vulnerabilities and impacts are also not available in many contexts and for many indicators. The techniques applied for quantifying avoided losses and valuing non-market benefits or costs also vary and are more often controversial. The choice of discount rates affects the results of an analysis and, despite extensive research and agreement among economists, it often remains controversial among policymakers and other stakeholders. As Benson and Twigg (2004) noted:

> "In the absence of concrete information on net economic and social benefits and faced with limited budgetary resources, many policymakers have been reluctant to commit significant funds for risk reduction, although [they are] happy to continue pumping considerable funds into high-profile, post-disaster response."

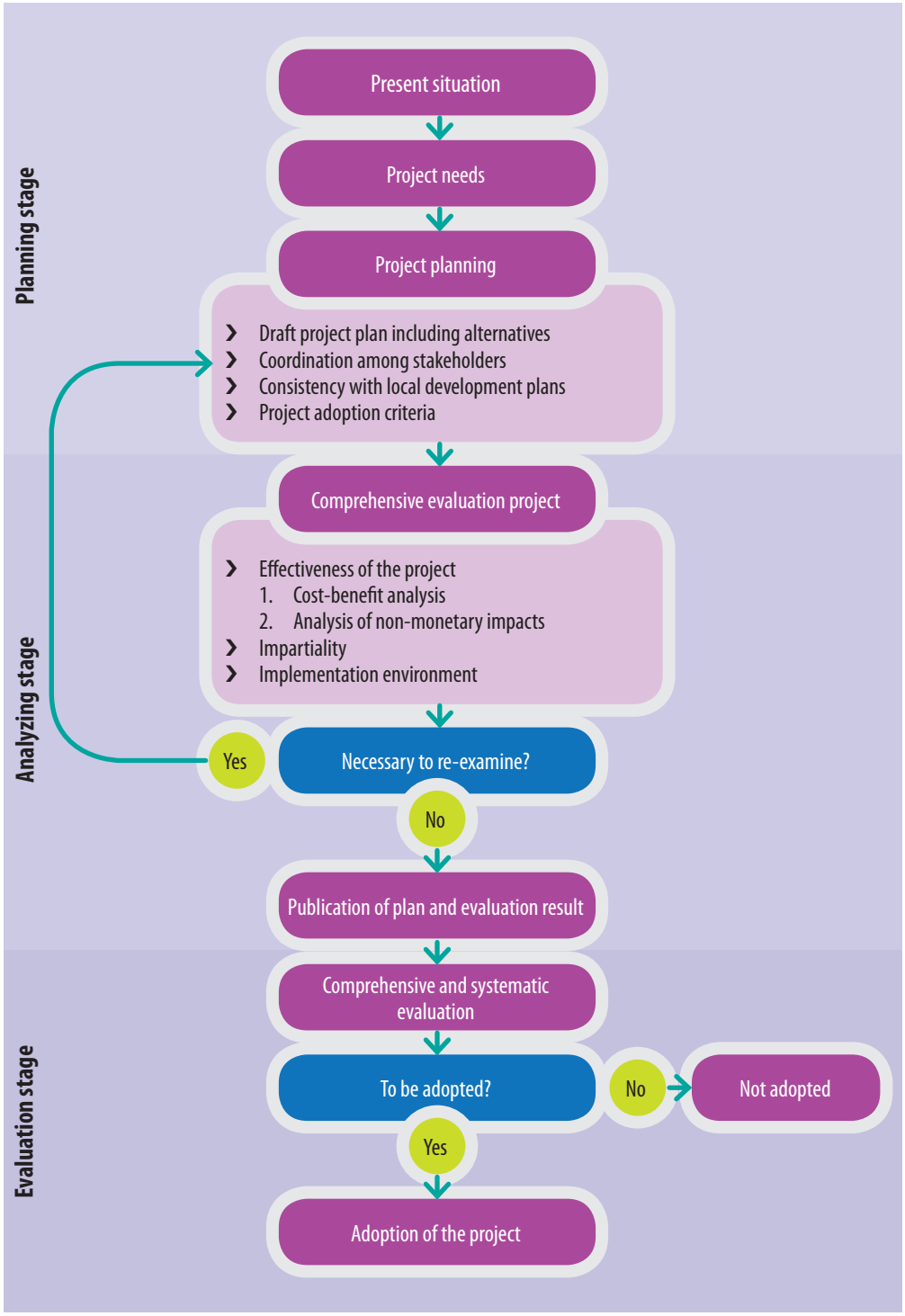
Despite these critical limitations, the cost-benefit analysis of mitigation projects are finding increasing acceptance as the empirical evidence of benefits far outweighing the costs of such projects builds up. Reinhard Mechler, one of the pioneers of cost-benefit analysis on DRR projects, has catalogued such evidence (Mechler, 2005; Hochrainer-Stigler and others, 2011). Many of the examples are from the Asia-Pacific region. For instance, China invested US$3.15 billion in the 1960s and 1970s on flood-control measures that averted damages of more than US$12 billion (Benson, 1998). The mangrove plantation project of the International Federation of the Red Cross in Viet Nam, at US$7.2 million, significantly reduced the maintenance expenses for dykes, in addition to saving lives and property. The cost-benefit ratio worked out to be as high as 52 from 1994 to 2001 (IFRC, 2002). The integrated water management and flood protection scheme for Semarang, Indonesia, had an internal rate of return of 23 per cent and a cost-benefit ratio of 2.5 (Mechler, 2004).

The combined disaster mitigation and preparedness programme in Bihar and Andhra Pradesh, India, had a cost-benefit of 3.76 (Venton and Venton, 2004). In a community-based disaster preparedness programme in Bangladesh, implemented over a 15-year period, the benefits exceeded the costs by between 3 and 5, even though many supposed benefits had to be excluded from the calculation due to difficulties in collecting data (IFRC, 2012). The 2015 earthquake in Nepal destroyed houses and infrastructure, but many buildings and infrastructure constructed per earthquake-resistant technology survived even in the most affected areas. Around 160 school buildings retrofitted in Kathmandu Valley under an Asian Development Bank-supported school safety programme, for instance, withstood the shock of the 7.8 magnitude earthquake.

Japan invested heavily on various structural and non-structural measures for DRR during the 1960s (at around 7–8 per cent of the national budget) and is reaping tremendous benefits of reduced risk of disasters, even though the country was struck by some of the worst natural and humanmade disasters in subsequent years. If Japan had not made those investments, the extent of the devastation of the Great Hanshin Earthquake in 1995 and the Great East Japan Earthquake in 2011 could have been much worse (GFDRR, 2012b).

Japan developed significant policy and legal frameworks and guidelines for disaster impact assessments of development projects. These include the Government Policy Evaluation Act, 2001 and the Technical Guidelines for Cost-Benefit Analysis of Public Work Projects, 2004. Regulatory impact analysis has been legally mandatory since 2007 to improve the objectives and transparency of the regulatory process. The Ministry of Land Infrastructure Transport and Tourism established a comprehensive process that ensures that all construction projects are designed in such a manner that no new risks of disasters are created while existing risks are reduced through the co-benefits (see figure 10).

Figure 10 Project evaluation process in Japan



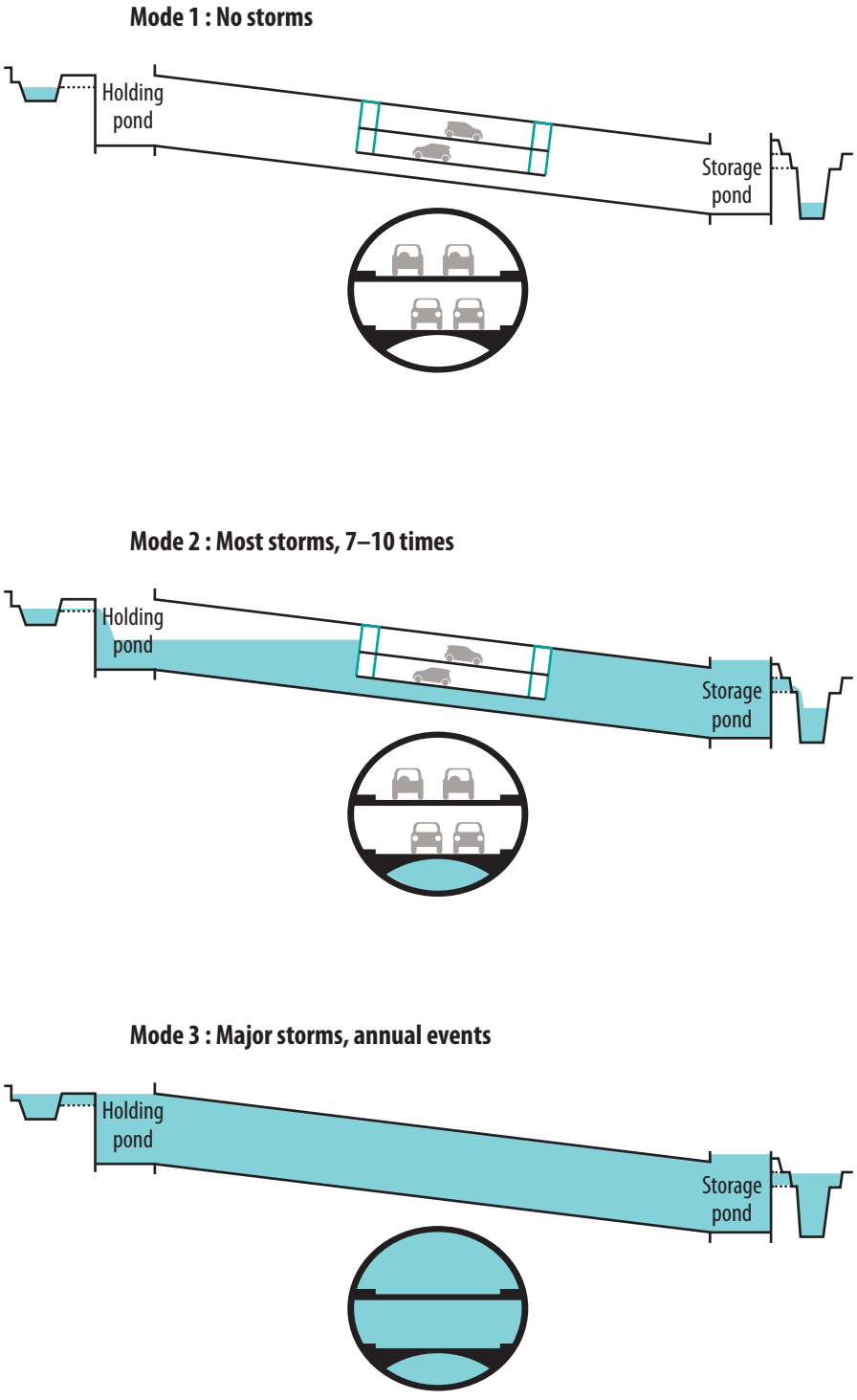
Multipurpose development projects

In developing countries, DRM projects do not receive high priority due to competing demands of scarce resources from other priority sectors, where the benefits of investments are more direct and immediate. One way out of this impasse is to design projects in such a way that the long-term benefits of risk mitigation are combined with the more short-term benefits of priority sectors. Such dual or multipurpose development projects can reduce the risk of disasters and, at the same time, provide direct economic benefits that would enhance both the cost-benefit ratio and the internal rate of return and thus justify the investment.

One of the most common examples of such multiple purpose development projects are large hydroelectric dams that generate electricity, provide irrigation and protect downstream locations from floods. The greatest example is the Three Gorges Dam of China that combines multiple co-benefits that far outweigh the costs. It supports the largest power station of the world, with installed capacity of 22,500 MW; avoids the emission of greenhouse gases equivalent to 100 million tonnes of CO2; releases 12 cubic kilometres of water for agriculture and industry; enhances the shipping capacity of the Yangtze River by 10 times; and, most importantly from the perspective of DRR, reduces the potential risk of major downstream flooding from once every 10 years to once in 100 years (Chinese National Committee on Large Dams, 2012). The Yellow River of China, which was once known as the "river of sorrow" because of recurring floods is now the "river of prosperity".

There are many examples of innovative multipurpose development projects in the Asia-Pacific region that have resulted in DRR. One such example is the 9.7 kilometre-long storm water management and road tunnel in Kuala Lumpur, Malaysia, the longest stormwater tunnel in South-East Asia (see figure 11). It has three levels: the lowest for drainage and the upper two layers for road traffic. This structure simultaneously solves the problem of flash flooding and reduces traffic jams during rush hours. It also ensures maintenance of a drain that otherwise would be used only sporadically (World Bank, 2010).

Figure 11 Three modes of the stormwater management and road tunnel



Most countries of the Asia-Pacific region have huge deficits in critical infrastructure. Governments are introducing significant policy reforms to create an enabling environment for private and foreign direct investment in infrastructure, manufacturing, tourism and other sectors. Trillions of dollars of investment are expected to be made in the region during the next decade. This will provide opportunities for the innovative designing of infrastructure and other projects that can reduce the risk of disasters in a cost-effective manner.

Disaster impact analysis

The environmental impact assessment of development projects has been institutionalized in many countries, with established norms, procedures and toolkits. Drawing on the concept of the environmental impact assessment, some countries have initiated disaster impact assessments of selected development projects. Sri Lanka, for instance, adopted a Roadmap for Disaster Risk Management (2005–2015) that stipulated that disaster impact assessments are to be integrated into the approval process of all development projects; guidelines and procedures are to be developed and persons trained to conduct such an assessment. The Disaster Management Centre of Sri Lanka developed a disaster impact assessment checklist in four parts: (1) assessing risks, (2) incorporating risk reduction measures into designs, (3) monitoring during construction and maintenance and (4) analysing post-disaster impacts. The disaster impact assessment checklist was introduced and field-tested in the road sector and has been proposed for application in other sectors (Secretary Disaster Management, 2013).

Under the Comprehensive Disaster Management Project, Bangladesh introduced the practice of disaster impact and risk assessment for analysis of all development projects. Detailed sector-specific guidelines and tools have not yet been developed, which has weakened the programme.

There are apprehensions that disaster impact analysis and disaster impact and risk assessments, in addition to environmental impact assessments, may create another bottleneck for clearing development projects and may retard the rapid economic growth necessary for creating employment opportunities and alleviating poverty. The disaster impact assessment does not have the mandate of law and can be perceived as weak and ineffective. As a countermeasure, the disaster impact analysis could be incorporated within the framework of the environmental impact analysis. These are important arguments for and against disaster impact analysis and countries have to reach a consensus on how to strike a balance between economic considerations and the environment for sustaining development.

Checklists for disaster risk reduction

The Government of India attempted to strike a balance by issuing a notification in 2009 that stipulates that any new project costing more than a billion rupees (INR) must have a Checklist for Natural Disaster Impact Assessment, which provides information on the hazards, risks and vulnerabilities of the project. The checklist includes the probable effects of natural disasters on the project and the possible new disaster-related risks the project could create. The costs involved in the prevention and mitigation of both types of impacts are to be built into the project costs, along with an assessment of the economics and viability of the project. The checklist is intended as a self-assessment by implementing agencies rather than an independent evaluation by a body of experts.

6

MAINSTREAMING WITHIN SUBNATIONAL PLANNING

To be effective, national-level strategy planning and guidelines and sectoral-level guidelines for mainstreaming DRR within development must percolate down to the subnational levels—provinces, districts and rural and urban local governing institutions, which ultimately shape and implement programmes, activities and projects. Although the basic principles of DRR remain the same at all levels, the application of these principles at different levels will vary. National guidelines are more strategic and generic, while subnational and local-level guidelines are more practical and oriented to the local context. The local contexts present a range of diversities, depending on the hazards, vulnerabilities, capacities and risks and the unique needs to address the risks. Subnational governments thus must have the autonomy to creatively interpret, apply and implement the national and sectoral guidelines.

In large federal countries, like Australia, India and Pakistan, it is the provincial governments that are constitutionally and legally vested with powers and authorities to manage their risk of disasters, with material and financial assistance from the national government as may be necessary. Because many provincial governments are large in terms of areas or population, further devolution of powers and authority to the districts and other local authorities are crucial for the effective mainstreaming of DRR within development. Such devolution, however, is not always forthcoming.

In the context of the region's growing urbanization, it is the city governments that control many critical development activities—especially considering they cover almost half the population of the region. Municipal authorities also thus must be vested with powers, authority and capacities to mainstream DRR within development programmes, activities and projects. This, too, unfortunately, is not taking place in most cities.

In many countries, particularly in the mountainous, coastal and island countries and in countries with large archipelagos, such as Indonesia and the Philippines, devolution of authority and resources to the local units are functional necessities because the subnational entities are so dispersed geographically that central directions do not reach them quickly. Central governments have delegated powers, responsibilities and resources to the local administrative units to manage the local risks and resources.

Experiences in subnational mainstreaming

Subnational and local-level planning and development make sense because local governments and individuals are best aware of their hazards, vulnerabilities and risks and can plan their resources for the managing those risks in a more efficient manner than can central planning and regulation.

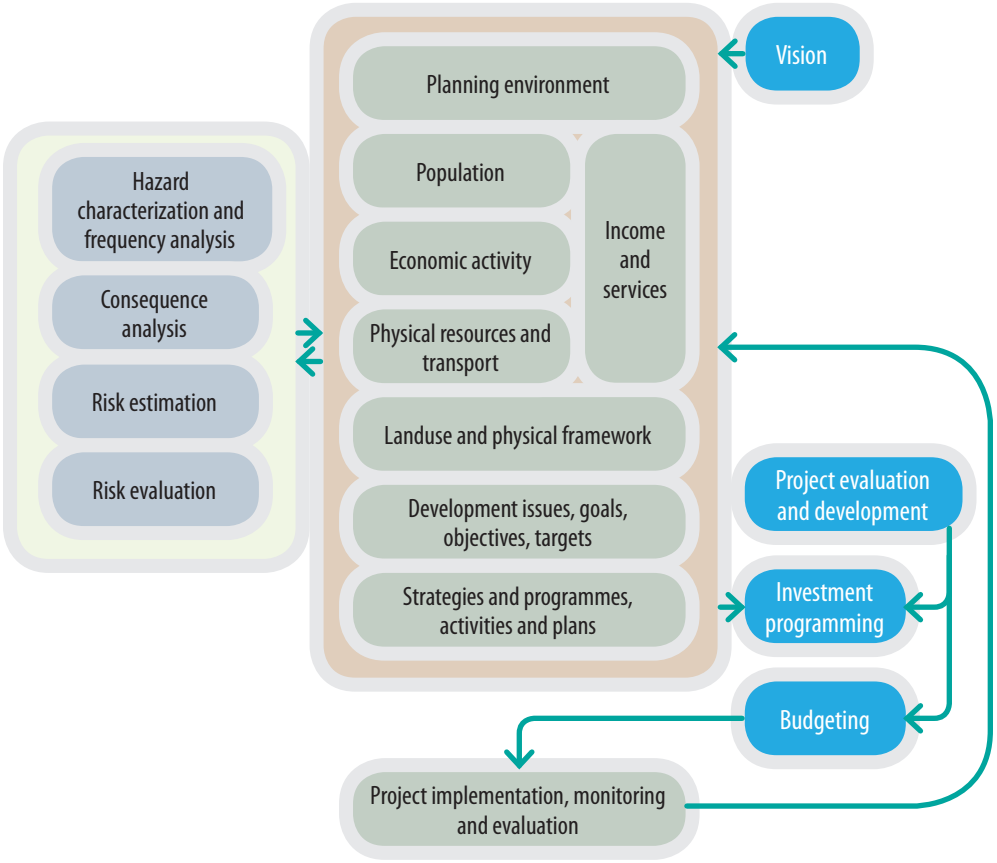
More and more national governments around the world are appreciating the importance of subnational planning and governance for the effective management of disaster-related risks. The dominant theoretical framework that has emerged is the *principle of subsidiary*, which means that local tasks are best managed if important decisions are taken as close as possible to the people who will be affected. This makes the decisions better informed, inclusive and participatory, and the quality of governance improves.

The concept of community-based disaster preparedness has been successfully implemented by national and international NGOs in developing countries all around the Asia-Pacific region. Based on their experiences, several countries have involved urban and rural communities in nationwide programmes on disaster preparedness. Communities have been encouraged to prepare their own disaster management plans, which include plans for DRR. Many of these plans have, by default, elements of mainstreaming because communities, through their own ingenuity, use existing development programmes to design projects and activities that reduce the various risks.

But there have not been many systematic efforts for mainstreaming DRR within subnational planning and development. The Philippines is among a few countries that have issued structured guidelines for mainstreaming DRR within subnational planning and development (NEDA, 2008). The National Economic and Development Authority of the Philippines developed guidelines to supplement guidance previously issued in the Provincial Development and Physical Framework Plan (see figure 12).

The Philippine guidelines describe four steps in disaster risk assessment and five DRR entry points in the plan-formulation process. The disaster risk assessment involves: (1) hazard characterization and frequency analysis, (2) consequence analysis, (3) risk estimation and (4) risk prioritization. The entry points in the plan are: (1) analysis of the planning environment; (2) identification of issues and problems; (3) formulation of goals, objectives and targets; (4) formulation of development strategies; and (5) identification of programmes, projects and activities.

Figure 12 Philippine guidelines on mainstreaming disaster risk reduction within subnational planning



The Philippine guidelines have been useful to the provincial governments in:

1. identifying areas that are highly prone to the adverse impacts of natural hazards;

2. selecting indicators to identify and describe vulnerability and resilience and their integration within the DRM framework;

3. making differentiated decisions on land use, which may involve specifying acceptable land use based on the risk assessment, for example, agricultural use of flood-prone areas might be allowed but settlements would not be; and

4. developing disaster risk criteria in land-use planning and zoning, particularly in urban areas.

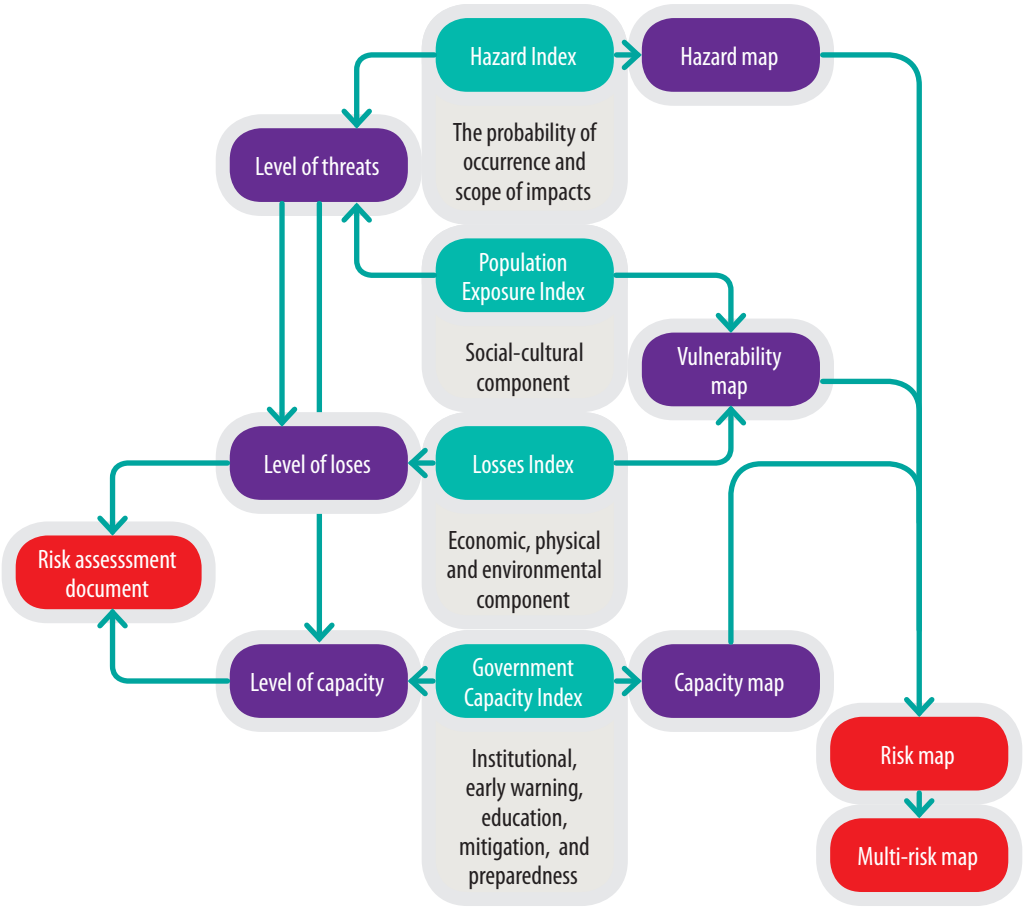
The guidelines, however, have not been helpful in dealing with the two core issues of subnational mainstreaming: (1) how to integrate DRR within existing development plans in different sectors in local areas; and (2) how to design new risk reduction plans and prioritize such plans for investment. Most of the existing development programmes, activities and projects are framed and funded by the national government, and thus

subnational entities are more at the receiving end and do not have an effective say in either revising the existing schemes or designing new schemes.

The Indonesian National Board for Disaster Management (BNPB) has developed multi-hazard risk maps for all provinces, districts and municipalities of the country, based on assessed hazards, vulnerabilities and capacities. The BNPB used this information to produce a composite Disaster Risk Index of Indonesia, or DRII (BNPB, 2013).

The DRII provides information on the level of various disaster risks in each district and municipality to enable them to make appropriate investment decisions for mitigation (see figure 13). Although the DRII has helped to prioritize investments for DRR in local areas, it has not resulted in mainstreaming DRR in existing or new investments in the various development sectors.

Figure 13 Risk mapping and risk assessment in the Disaster Risk Index of Indonesia



Viet Nam has institutionalized the process of DRR mainstreaming into its sectoral and local development plans. Article 42 of the Vietnamese Law on Natural Disaster Prevention and Control defines the DRR-specific responsibilities of 12 sectoral ministries, while Article 43 mandates the provincial and district People's Committees with responsibility

to integrate natural disaster prevention into local socioeconomic development master plans. Similarly, the commune People's Committees have responsibility to elaborate, approve and implement plans on natural disaster prevention and to integrate such plans within the local socioeconomic development master plans. Viet Nam developed a similar system of integration of climate change adaptation within local plans, which has facilitated the process of integration of DRR with CCA.

The legal mandates for the preparation of district and subdistrict disaster management plans in many countries has created opportunity for mainstreaming DRR within local development planning, but in the absence of systematic guidelines, the opportunities have hardly been utilized. The National Disaster Management Authority of India developed a model framework of a district disaster management plan.[12] Chapter 4 of the model, titled "Prevention and Mitigation Measures" refers to the mainstreaming of DRR within development plans and programs to "develop synchronization" between different centre and state sector schemes and flagship programmes. But there are no guidelines on how such synchronization can be effected in practice. Previously, the National Institute of Disaster Management had issued a model template for a district disaster management plan that had a section on "Linking with the development plan", with the following generic guideline:

> "Linkages with the developmental plan is established by sensitizing the planners about the vulnerability aspects of the location and necessary changes needed in building the capacity of the government and other structures and institutions in dealing with such disasters. Incorporation/integration of mitigation components within the development plan facilitates implementation of both [district disaster management plans and district development plans] and aids in long-term risk reduction process." (NIDM, 2004)

Generic guidelines have the advantage of permitting innovations and flexibility in mainstreaming, in line with the local context and requirements; but practical experiences of mainstreaming DRR into local-level planning and development have not been encouraging. A review of more than 300 district disaster management plans in India found that few of them had indicated how DRR should be mainstreamed within the existing local development plans. And none proposed any new development programme, activity or project for DRR (NIDM, 2010).

The reasons for lack of initiative for local-level mainstreaming are not difficult to work out. First, most development programmes, activities and projects are planned and designed at the national or provincial level and given to the local authorities for implementation under rigid guidelines that provide little scope for innovation. Second, the entire allocations on district or subdistrict development plans are committed to the existing schemes, which does not leave any leeway for planning or designing new local initiatives. Third, local capacities and coordinating mechanisms are not strong

12 See the Model Framework for District Disaster Management Plans (NDMA, 2014).

enough to synchronize development schemes of multiple departments for reducing the risk of disasters.

Mainstreaming DRR across the development sectors is challenging enough at the national level due to the various legal, institutional, policy and financial barriers; so it is not realistic to expect that it can take place automatically or autonomously at the local level without proper direction, guidance and resources from the national level and without local leadership and capacity development.

Guidelines for subnational mainstreaming

GUIDANCE

Mainstreaming within subnational planning and development can be effective if it is mandated by the constitution and/or legal system of a country. Mandates to provincial governments in federal countries are clear and direct under a constitutional arrangement of shared responsibilities. But the mandates to other subnational authorities, such as districts, subdistricts and urban and rural local authorities, are not always well defined. If the devolution of functions to local authorities for DRM are mandated by law, the chances of institutionalization of mainstreaming at the local level will be better than under an executive directive. Executive directives can change at any time, which makes them not so conducive to the autonomous discharge of such responsibilities at the local level.

The second issue of importance is the devolution of financial resources. Local authorities are heavily dependent on the higher levels of government for grants; but such grants are often earmarked for disaster response, relief and rehabilitation. The allocation of funds for DRM are meant to be spent on specific programmes, activities and projects under rigid guidelines that do not provide much scope for local innovation in mainstreaming. Innovation can be encouraged by way of devolving untied grants for risk mitigation or through matching grants if local authorities can mobilize their share of contributions.

The third important factor for successful local-level mainstreaming is capacity development. Local authorities have good knowledge about local vulnerabilities and the risks of disasters and a good understanding of what will work in their conditions. But they do not always have the scientific knowledge to assess and analyse the risks or know how to design structural or non-structural measures for risk mitigation and management. Capacity development of local authorities is an important issue that must be addressed at both the national and provincial levels.

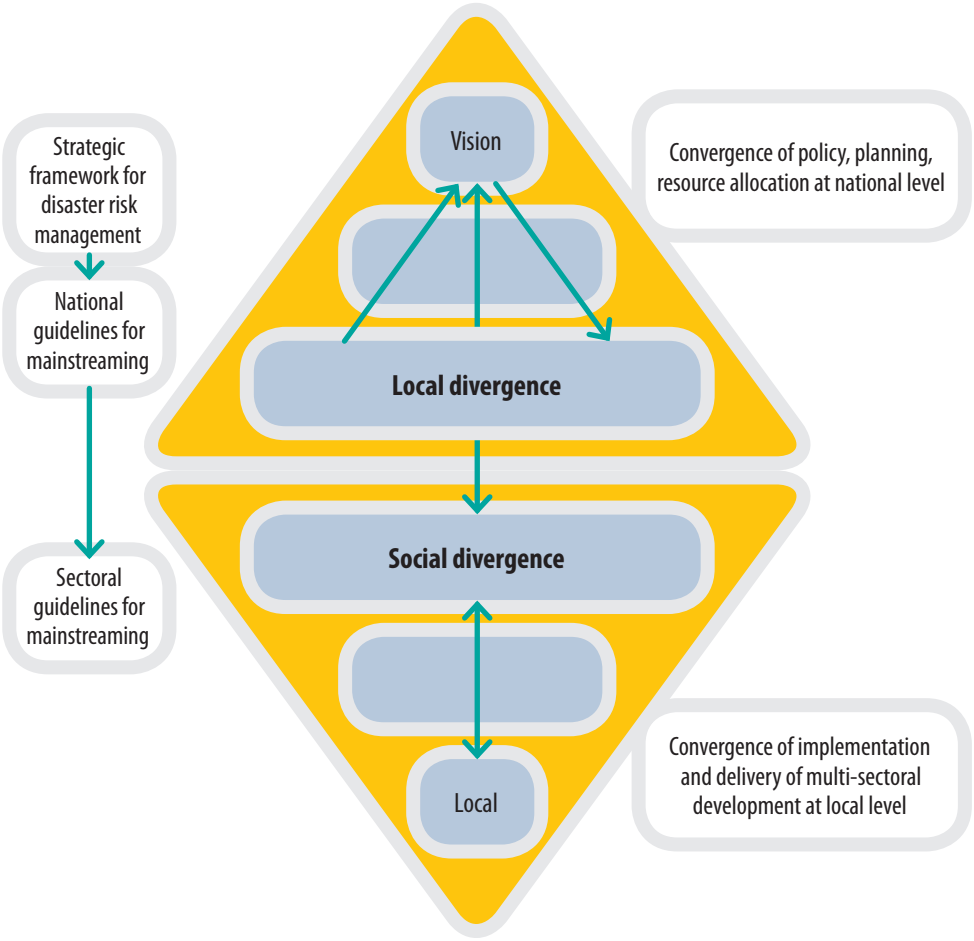
Given clear mandates, resources and capacities, mainstreaming may work effectively for local-level planning and development for the same reasons the principle of subsidiary has been advanced for inclusive and effective governance. First, local people have a better understanding and appreciation of their hazards, vulnerabilities, capacities and risks. Second, local authorities can better plan and implement location-specific programmes, activities and projects that can mitigate the risks of local disasters in a cost-effective manner. Local leadership can better coordinate with different development sectors for mainstreaming DRR within all existing programmes, activities and projects.

Local leadership can also mobilize local resources to supplement resources from the national and provincial governments, and they can prioritize investment of such resources for optimal use for development that is sustainable and resilient.

But local authorities cannot remain isolated from the provincial and national authorities. The legal, regulatory, policy, planning and funding mechanisms for DRR must flow from the national level, but they are ultimately implemented at the local level for the benefit of the communities (in either urban or rural areas). Local communities have intimate knowledge of their risks, resources and needs, which must feed into the national policies and planning. This two-way process of development makes mainstreaming of DRR both top-down and bottom-up—with national policies, planning, guidelines and resources informed by local-level risks, capacities and need.

In another sense, it is both vertical and horizontal, with the vertical process of interlinked planning at the national, provincial, district and local levels and the horizontal process of sectoral development planning across multiple sectors of development (see figure 14). Mainstreaming DRR must interlink the top-down and bottom-up vertical process with the multi-sectoral horizontal process.

Figure 14 Integrated framework of vertical and horizontal process of mainstreaming disaster risk reduction within development



The hierarchical processes of decision-making from the bottom of the pyramid at the local level through the provincial level and from the multiple sectors of development converge at the national level. This provides integrated perspectives for decision-making that are always top-down, but they informed by the bottom-up process from the local areas as also from the sectors. The implementation and delivery of all development programmes, activities and projects ultimately converge, directly or indirectly, at the local level. This provides opportunities to local authorities to integrate programmes, activities and projects according to their needs and resources, provided they have the autonomy and flexibility to creatively mainstream DRR in the implementation and delivery of the programmes.

Prescribing common guidelines for mainstreaming DRR at the local level may run contrary to the basic philosophy of local-level planning, particularly when such guidelines are meant for the Asia-Pacific region as a whole, with extremely diverse landscapes of hazards, vulnerabilities, risks, exposures and capacities.

Despite the diversities in situations, there will always be scope and opportunities for local mainstreaming that may be underlined for the understanding and appreciation of the local leadership. Proactive leadership can utilize these opportunities for reducing their area's risk of disaster.

GUIDANCE

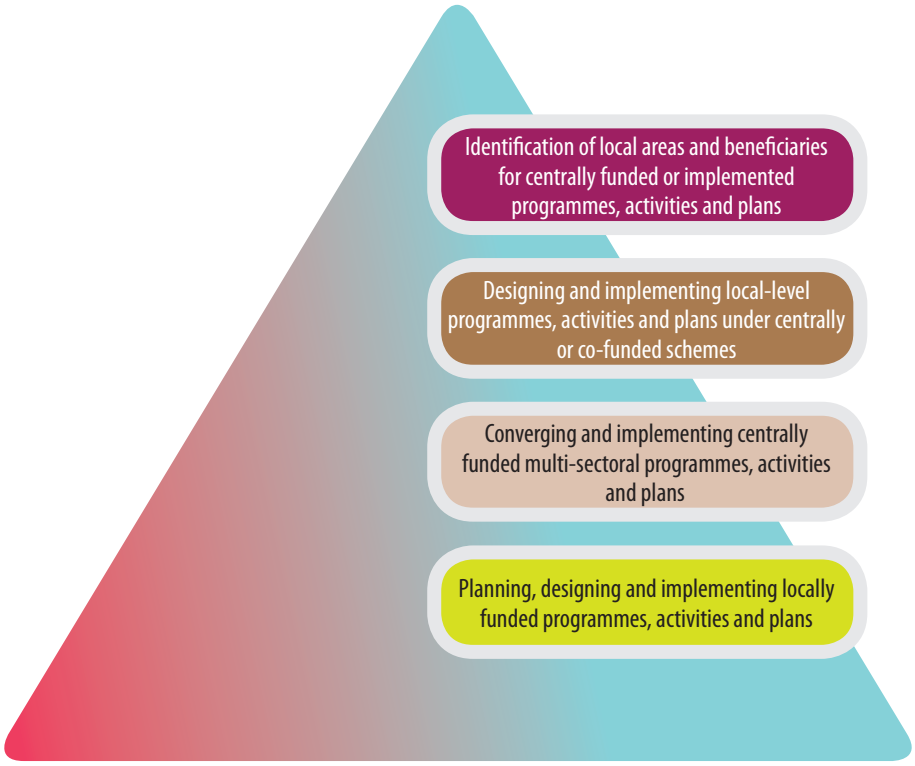
First, national or provincial programmes, activities and projects, however rigidly framed, cannot be implemented from the top. There will be many aspects in implementation in which local-level decisions must be left open to communities and their leaders. These mostly relate to the selection of areas where the schemes will be implemented or of which communities or individuals who will be the beneficiaries of the schemes. This process provides opportunities for prioritizing areas and communities that are most vulnerable to disasters. Simultaneously, this further provides opportunities to ensure that investments are avoided in areas that are prone to hazards or retrofitting such investments in case relocation is not possible.

Second, most local-level development projects, like the construction of roads, school buildings, irrigation channels, flood protection bunds and soil and water conservation measures, are determined at the local level. National or provincial governments only provide broad guidelines. This extends considerable leeway to local leaders to design the schemes as per local needs and requirements.

Third, whether nationally or locally designed, most development projects are implemented at the local level. This provides opportunities to ensure that projects are implemented as per the design and specifications and that the DRR concerns are incorporated into the project cycle management. This further provides opportunities to local leaders, if they are strong and enterprising, to integrate various sectoral development projects to avoid duplication and ensure that there are DRR co-benefits from the projects. The best opportunities of convergence are the programmes, activities and projects related to DRR and CCA in sectors of development that have remarkable similarities but are driven by different policies, institutions and funding mechanisms.

Finally, many local development programmes are funded by local resources mobilized through taxation, borrowing and public-private partnership arrangements. These resources are sizeable in many local areas, particularly in large urban areas. The municipal authorities in such areas have their own budget, and many risk management activities and projects are routinely implemented for protecting cities from natural hazards, like floods and landslides, and humanmade hazards, like fires and accidents. Municipal authorities have complete autonomy to plan, design and implement such locally funded projects

Figure 15 Opportunities for local-level mainstreaming of disaster risk reduction within development



Mainstreaming disaster risk reduction in urban areas

In the context of burgeoning urban risks of disasters due to the rapid and unplanned growth of cities and increasing exposure of people and their built environment to natural and human-made hazards, particularly in developing countries, the mainstreaming of DRR within development assumes importance for building up the resilience of cities.

Most cities have a master plan, and many cities have detailed zonal plans and zoning regulations that define the purpose for which an area can be used, such as commercial, residential, institutional, recreational, city forests or park. Preparation and revision of these plans provide good entry points to study the physical characteristics of the land, such as location, elevation, geological composition, soil characteristics, availability of surface and sub-soil water and natural hazards, and then factor that data into the preparation of a land-use plan. Risk-sensitive land-use planning implies using land for the purposes that will reduce the risks of disasters or at least will not aggravate such risks. For example, low-lying areas and flood plains will not be used for construction and areas prone to liquefaction will not be used for high-rise building. This implies

using land as a resource for permitting high-value high-rise construction in areas that are well connected with transportation and other facilities that may reduce the risk of disasters.

Unsafe stocks of buildings in thickly congested areas are the biggest source of risks in Asian cities. Historically, hordes of buildings have been constructed without conforming to any standards of safety or resistance to natural hazards, like earthquakes and storms. Archaic tenancy and land-ceiling legislation have not provided incentives for the regular maintenance and upkeep of many buildings. Old, dilapidated buildings have collapsed in many cities, even without any natural hazard. Streams of migrants from rural areas in search of livelihoods have resulted in the mushrooming of slums in risk-prone areas and exposing poor people to multiple risks of disasters. Inefficient and corrupt municipal governance have compounded the risks by permitting the unauthorized and unplanned construction of buildings.

In this scenario, the single-most important activity of DRR in most Asian cities is the preparation and enforcement of building codes, which can ensure that all new buildings are resistant to the common natural hazards of the area and that all existing buildings are retrofitted to conform to the same standards. The latter task is more daunting and may seem well beyond the capacity of most municipal authorities to achieve. Therefore, every city may develop its own strategy to regulate building activities to reduce the stock of unsafe buildings; the strategy likely will include a range of measures, such as surveying buildings, identifying the vulnerable buildings, demolishing unsafe buildings, offering incentives for retrofitting of buildings and imposing penalties for non-conforming building practices.

The root causes of urban sprawl and unsafe construction practices have to be addressed in a holistic framework, which should include relaxing land-ceiling laws to release more land for housing markets, granting titles to slum dwellers to encourage investment in housing, lifting arbitrary rent controls to improve the condition of houses, developing satellite towns to decongest cities, providing subsidized housing for impoverished households and developing the capacity and accountability for enforcement of building codes. The 2010 World Bank report *Natural Hazards, UnNatural Disasters* pointed out that giving urban dwellers title to their property encouraged them to invest in their safety and lifting rent controls created incentives for landlords to comply with building codes because they could then recoup the cost. When enforcement is weak due to poor governance or corruption, a collateral mechanism of independent inspections by the housing credit and insurance agencies may push better compliance with building codes. Similarly, better awareness and information about building safety will generate demand for safer houses, which will put pressure on builders to comply with the codes. These are multifarious tasks that provide entry points for DRR in urban local areas.

The United Nations Office for Disaster Risk Reduction launched in 2009 a campaign on Making Cities Resilient: My City Is Getting Ready, with the following 10 essentials for urban resilience:

1. institutional and administrative framework

2. financing and resources
3. multi-hazard risk assessment
4. infrastructure protection, upgrading and resilience
5. protecting vital facilities of education and health
6. building regulations and land use planning
7. training, education and public awareness
8. environmental protection and strengthening of ecosystems
9. effective preparedness, early warning and response
10. recovery and rebuilding communities.

These 10 essentials replicate the principles and strategies of mainstreaming as discussed in chapters 3 and 4 of this guidebook. Almost 3,000 cities have signed up their commitment for these essentials, and nearly one third of them are in the Asia-Pacific region. A *Handbook for Local Government Leaders* was developed for providing guidance to city mayors and managers on each of these 10 essentials (UNISDR, 2011). Following the essentials for urban resilience will advance the cause of mainstreaming DRR in urban areas.

Mainstreaming disaster risk reduction in rural areas

The resilience of rural areas has not been a theme of any campaign, but there are important opportunities for mainstreaming DRR in various rural development programmes. Although the share of agriculture in GDP in most Asian countries is declining, a corresponding decline in rural populations is not taking place in many countries, despite continuing rural-to-urban migration, there are growing levels of unemployment and poverty in the rural areas of many countries.

To counter this trend as well as stem the rural migration to urban slums, many Asian governments have taken up ambitious programmes for rural poverty alleviation, employment guarantees and promotion of agribusiness and other non-farm employment-generation activities. All these initiatives have significant potential for reducing the vulnerabilities of rural populations when agriculture fails due to calamities, like droughts, floods and cyclone. A few countries, like India and Viet

Nam, have appreciated this potential and taken measures for dovetailing the rural development schemes for disaster relief activities, like food-for-work programmes. But the systematic mainstreaming of a plethora of schemes for rural development, agriculture and poverty alleviation has not taken place in most countries.

There is need to review all existing and new programmes and projects on rural development, along with the schemes on agriculture and poverty alleviation, and restructure them so that they can simultaneously reduce the risks of disasters by better planning, design and application (while delivering on their original objectives). This will significantly lower the need for separate and additional investments for DRR, which does not receive high priority from most governments.

7

MAINSTREAMING DISASTER RISK REDUCTION WHEN IMPLEMENTING THE NEW GLOBAL FRAMEWORKS

The new global frameworks

In 2015, countries adopted three interrelated global frameworks and agreements:

1. Sendai Framework for Disaster Reduction 2015–2030

2. 2030 Agenda for Sustainable Development (including the Sustainable Development Goals)

3. Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC).

These frameworks and agreements emphasize mainstreaming DRR and building resilience across the development sectors. The Sendai Framework is direct and forthright in its reference, while it is embedded in at least eight of the 17 SDGs. The Paris Agreement, a legally binding instrument on 196 countries that signed it, incorporates the cardinal elements of DRR in a separate article that reinforces the obligations under the Sendai Framework and the SDGs.

It is necessary to look at the relevant provisions of these three mutually reinforcing global frameworks and agreements to pursue the DRR mainstreaming agenda in the Asia-Pacific region.

Mainstreaming disaster risk reduction in the Sendai Framework

The Sendai Framework document emphasizes the importance of mainstreaming DRR for sustainable development throughout its provisions. First, the preamble reiterates that the commitment to disaster risk reduction should be addressed with "a renewed sense of urgency in the context of sustainable development and poverty eradication and integrated into policies, plans, programmes and budgets at all levels".

Second, at least three of its four priorities for action discuss mainstreaming in different contexts. Priority for Action 2 on *strengthening disaster risk governance to manage disaster risk* broadens the scope of mainstreaming to include all sectors of development in the public as well as private sectors and prescribes that laws, regulations and public policies should be calibrated to:

1. address disaster risk in all publicly owned, managed or regulated services and infrastructures;

2. promote and provide incentives for actions by persons, households, communities and businesses;

3. enhance relevant mechanisms and initiatives for disaster risk transparency, which may include financial incentives, public awareness-raising and training initiatives, reporting requirements and legal and administrative measures; and

4. put in place coordination and organizational structures (para. 27(a)).

This is probably the strongest-ever statement on mainstreaming because it calls for mainstreaming DRR in both the public and private sectors and further suggests the role of legal, regulatory, institutional and policy frameworks as well as incentives, awareness, capacity building and transparency in governance that would involve businesses, communities, households and individuals.

The Priority for Action 3 on *investing on disaster risk reduction for resilience* prescribes the integration and mainstreaming of DRR within several sectors, such as:

1. critical facilities, in particular schools and hospitals and other physical infrastructure (para. 30(c));

2. land-use policy, including urban planning, land degradation assessments and informal and non-permanent housing, anticipating demographic and environmental changes (para 30(f));

3. rural development planning and management of, inter alia, mountains, rivers, coastal flood plain areas, drylands, wetlands and all other areas prone to droughts and flooding, including areas that are safe for human settlement (para. 30(g);

4. building codes, standards, rehabilitation and reconstruction practices, particularly in informal and marginal settlements (para. 30(h));

5. primary, secondary and tertiary health care, especially at the local level (para. 30(i));

6. social safety net mechanisms, integrated with livelihood enhancement programmes, and access to basic health care services, food security, nutrition, housing and education (para. 30(j));

7. protection of cultural and collecting institutions and other sites of historical, cultural, heritage and religious interest (para. 30(d));

8. financial and fiscal instruments (para. 30(m));

9. sustainable use and management of ecosystems and integrated environmental and natural resource management (para. 30(n));

10. business models and continuity of services, including the supply chains (para. 30(o));

11. protection of livelihoods and productive assets, including livestock, working animals, tools and seeds (para. 30(p)); and

12. tourism industry, given the often-heavy reliance on tourism as a key economic driver (para. 30(q)).

The Priority for Action 3 further prescribes the allocation of necessary resources, including finance and logistics, at all levels of administration for the development and implementation of DRR strategies, policies, plans, laws and regulations in all relevant sectors.

The Priority for Action 4 on *enhancing disaster preparedness for effective response* prescribes the integration of DRR into every aspect of disaster response preparedness (para. 32) and the integration of post-disaster reconstruction into the economic and social sustainable development of affected areas, including temporary settlements for persons displaced by a disaster (para. 33(i).

Third, the framework makes clear that while States have the overall responsibility for mainstreaming DRR within development, it is a shared responsibility between governments and all stakeholders. Non-state stakeholders have an important role as enablers in providing support to States, in accordance with national policies, laws and regulations, in the implementation of the framework at the local, national, regional and global levels. Their commitment, goodwill, knowledge, experience and resources will be vital (para. 35).

In particular, businesses, professional associations and private sector financial institutions, including financial regulators and accounting bodies, as well as philanthropic foundations, have a responsibility to integrate DRR into their respective business models and practices through disaster risk-informed investments, especially in micro, small and medium-sized enterprises; to engage in awareness raising and training for their employees and customers; to engage in and support research and innovation as well as technological development for DRM; to share and disseminate knowledge, practices and non-sensitive data; and to actively participate, under the guidance of the public sector, in the development of normative frameworks and technical standards that incorporate all-inclusive and all-of-society DRM (paras. 35 and 36(a).

Mainstreaming disaster risk reduction within the Sustainable Development Goals

The 2030 Agenda for Sustainable Development embeds DRR in as many as eight of the 17 SDGs, with specific targets for building disaster resilience across the development sectors:

- **Goal 1:** Ending poverty in all its forms; target 1.5: Reduce exposure of the poor to climate relate extreme events and disasters
- **Goal 2:** Ending hunger, achieving food security and promoting sustainable agriculture; target 2.4: Strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters
- **Goal 3:** Ensuring healthy lives; target 3.6: Develop early warning and reduce risk of national and global health
- **Goal 4:** Ensuring inclusive and equitable quality education; target 4a: Build and upgrade educational facilities that are safe
- **Goal 9:** Building resilient infrastructure; target 9.1: Develop quality, reliable, sustainable and resilient infrastructure
- **Goal 11:** Making cities and human settlements safe, resilient and sustainable; target 11.5: Significantly reduce the number of deaths, affected and economic losses by disasters
- **Goal 13:** Combating climate change and its impacts; target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters
- **Goal 15:** Reversing land degradation; target 15.3: Restore land affected by drought and floods

Elements of DRR and resilience are embedded within the targets of each of these eight SDGs. These goals represent eight foundational sectors of development: poverty alleviation, agriculture, health, education, infrastructure, urban development, climate change and natural resource management, which are crucial for the developing countries of the Asia-Pacific region. Striving towards achieving these goals and targets would mean that substantial efforts and initiatives are made for mainstreaming DRR in all these sectors. This provides an opportunity for mainstreaming DRR in development as never before—previously, "mainstreaming" was more of rhetoric that was routinely mentioned in all global and national frameworks but hardly pursued in a systematic manner. The SDGs and targets provide a definite agenda and a mechanism for national commitment and international support for implementation of the agenda.

The monitoring and review systems at the national, regional and global levels also make it an active agenda for sustainable development for the decade to come.

Although each country will be taking up initiatives for the implementation of the agenda according to their context and requirements, an indicative list of generic activities can be suggested for each of the eight global goals and targets against each of the four Priorities for Action in the Sendai Framework (see the matrix table on p. 74).

Mainstreaming disaster risk reduction within the Paris Agreement

The Paris Agreement adopted at the 21st Session of the Conference of Parties of the UNFCCC in December 2015 does not explicitly use the term "mainstreaming", but implicit in the agreement is the recognition that DRR is crucial for reducing the damage and loss associated with the adverse effects of climate change. The Paris Agreement recognizes the intrinsic relationship that climate change actions, responses and impacts have with "equitable access to sustainable development and eradication of poverty". The agreement identifies eight areas of DRR that require "cooperation and facilitation to enhance understanding, action and support":

1. early warning systems;
2. emergency preparedness;
3. slow-onset events;
4. events that may involve irreversible and permanent loss and damage;
5. comprehensive risk assessment and management;
6. risk insurance facilities, climate risk pooling and other insurance solutions;
7. non-economic losses; and

8. resilience of communities, livelihoods and ecosystems.

All these areas of action find resonance in the Sendai Framework and in the SDGs. Early warning systems and emergency preparedness figure prominently in Priority for Action 4, while comprehensive risk assessment is the core of Priority for Action 1 of the Sendai Framework. Slow-onset events and events that cause irreversible and permanent loss and damage are echoed in SDGs 1, 2, 13 and 15, while resilience of communities, livelihoods and ecosystems are the core objectives of the SDGs.

The complementary and mutually reinforcing nature of these three global frameworks create the enabling environment for integrating and mainstreaming CCA and DRR within every relevant sector for sustainable development for building the future we want.

Table Mainstreaming disaster risk reduction through the SDGs—Indicative activities for implementation of SDGs under Priorities of Action of Sendai Framework for Mainstreaming Disaster Risk Reduction within development

Sustainable Development Goals and targets with elements of DRR and resilience embedded	**Action areas in Sendai Framework for Mainstreaming Disaster Risk Reduction in Development**			
	Priority 1 *Understanding disaster risk*	Priority 2 *Strengthening disaster risk governance to manage disaster risk*	Priority 3 *Investing on disaster risk reduction for resilience*	Priority 4 *Enhancing disaster preparedness for effective response*
Goal 1	End poverty in all its forms			
Target 1.5: Reduce exposure of the poor to climate relate extreme events and disasters.	Assess the vulnerability of lives and livelihoods of poor people exposed to various hazards.	Redesign and deliver poverty alleviation programmes to protect the poor from disasters.	Invest in social safety nets for poor households affected by disasters. Support restoration of livelihood.	Prioritize the needs of the poor in disaster response and reconstruction.
Goal 2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture			
Target 2.4: Strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters.	Understand comprehensively the impacts of climate change on agriculture, horticulture, animal husbandry, fisheries etc. Assess the long-term impacts of climate change on agriculture and allied practices.	Design and implement a strategic action plan for adapting climate change in agriculture and allied practices covering aspects, such as water and soil conservation, climate resistant seeds, extension services and insurance.	Retrofit agriculture and allied activities from extreme climatic events through investments on research, early warning, irrigation and flood protection systems, storage, processing and marketing support.	Ensure that the minimum needs of food and nutrition and the special needs of children and lactating mothers are taken care of during humanitarian responses and relief activities.

Sustainable Development Goals and targets with elements of DRR and resilience embedded	Action areas in Sendai Framework for Mainstreaming Disaster Risk Reduction in Development			
	Priority 1 *Understanding disaster risk*	Priority 2 *Strengthening disaster risk governance to manage disaster risk*	Priority 3 *Investing on disaster risk reduction for resilience*	Priority 4 *Enhancing disaster preparedness for effective response*
Goal 3	Ensure healthy lives and promote well-being for all at all ages			
Target 3.6: Develop early warning and reduce risk of national and global health.	Evaluate the risks of biological hazards, like epidemics and pandemics; conduct safety audits of hospitals.	Develop a health reconnaissance and alert system and mechanisms for prevention and early cure. Protect hospitals from disasters.	Invest on the provision of basic health services, like safe water, sanitation, immunization, etc. Retrofit critical health facilities.	Ensure that the emergency health and mental health needs of affected people are fully responded to.
Goal 4	Ensure inclusive and equitable quality education for all			
Target 4a: Build and upgrade educational facilities that are safe.	Assess the safety of school buildings and other educational institutions from the hazards of nature.	Introduce disaster management education at all levels. Ensure that all new school buildings are resistant to disasters.	Invest in a phased manner to provide structural and non-structural safety to all educational institutions.	Ensure that alternate arrangements for education are made to children in shelter camps.
Goal 9	Build resilient infrastructure			
Target 9.1: Develop quality, reliable, sustainable and resilient infrastructure.	Check the resilience of lifeline and other infrastructure from natural and human-induced hazards	Ensure that all critical infrastructures are constructed as per disaster resistant technology.	Invest in retrofitting existing infrastructure and making new infrastructure resistant to disasters.	Quickly restore critical facilities, like water, power, communication, roads, etc.
Goal 11	Make cities and human settlements safe, resilient and sustainable			
Target 11.5: Significantly reduce the number of deaths, affected and economic losses by disasters.	Make comprehensive assessment of hazards, vulnerabilities, and risks of disasters in human settlements particularly large urban areas.	Enforce building codes and zonal regulations. Develop contingency plans and standard operating procedures and improve disaster preparedness through mock drills, exercises and campaigns.	Design and implement projects for mitigating the risks of flood, earthquake, landslide and cyclones in urban areas and major rural towns.	Have prearrangements for urban search and rescue. Ensure that damaged houses and infrastructure are "built back better".
Goal 13	Take urgent action to combat climate change and its impacts			
Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters.	Downscale climate risk assessment and assess the impacts of climate change on lives and livelihoods of communities in rural and urban areas.	Integrate climate change adaptation with disaster risk reduction in all relevant aspects and ensure that coordination mechanisms are set up at all level.	Design and implement projects on climate change adaptation with a focus on reducing the underlying risks of extreme climatic events.	Factor the projected rise of extreme climate events in the design and specifications of houses, infrastructure and livelihood restoration.

Sustainable Development Goals and targets with elements of DRR and resilience embedded	Action areas in Sendai Framework for Mainstreaming Disaster Risk Reduction in Development			
	Priority 1 *Understanding disaster risk*	Priority 2 *Strengthening disaster risk governance to manage disaster risk*	Priority 3 *Investing on disaster risk reduction for resilience*	Priority 4 *Enhancing disaster preparedness for effective response*
Goal 15	Halt and reverse land degradation			
Target 15.3: Restore land affected by drought and floods	Understand the process of land degradation due to various natural and anthropogenic factors in hazard zones.	Establish and enforce regulatory mechanisms for land and water. Develop and implement measures for land reclamation.	Design and implement measures for early warning of climate related disasters, drought resistance, flood protection etc.	Include structural and non-structural mitigation measures in drought- and flood-recovery programmes.

Action plans for mainstreaming

Regional, national and subnational levels each has a distinctive role in the implementation of these new global agendas. Action plans are being drawn up at all levels, which is opening up new opportunities for mainstreaming DRR within development.

The vision of the United Nations Secretary-General on prevention

The United Nations Secretary-General's vison on prevention highlights that climate-related natural disasters are becoming "more frequent and their destructive powers more intense" and calls for a "risk-informed development strategy" as an integral part of sustaining peace and achieving the 2030 Agenda. Preventing crises now will be one of the main priorities of the United Nations and will be operationalized in four ways: a surge in preventive diplomacy; implementing the 2030 Agenda and sustaining peace as essential to long-term prevention; strengthening partnerships and reforms to overcome fragmentation; and consolidating the United Nation's capacities under

the One UN approach to meet the prevention challenges, to prevent human suffering and to achieve progress towards the goals of sustainable development.[13]

United Nations Plan of Action on Disaster Risk Reduction for Resilience

The revised United Nations Plan of Action on Disaster Risk Reduction for Resilience: Towards a Risk informed and Integrated Approach to Sustainable Development was prepared in response to the new international agreements to ensure that the implementation of the Sendai Framework contributes to a risk-informed and integrated approach to the achievement of the 2030 Agenda for Sustainable Development (United Nations, 2017). It outlines three commitments and nine results. The commitments are:

1. strengthen system-wide coherence in support of the Sendai Framework and other agreements, through a risk-informed and integrated approach;

2. build United Nations system capacity to deliver coordinated, high-quality support to countries on disaster risk reduction; and

3. ensure that DRR remains a strategic priority for United Nations organizations.

Regional road map for implementing the 2030 Agenda for Sustainable Development in Asia and the Pacific

The regional road map for implementing the 2030 Agenda on Sustainable Development in Asia and the Pacific was adopted at the fourth session of the Asia-Pacific Forum on Sustainable Development in 2017.[14] The road map contains six priority areas of cooperation, including DRR and CCA, with a focus on the practical means of implementation. The aim of the road map is to enhance and facilitate regional cooperation, with support from the ESCAP secretariat and other United Nations entities. It was endorsed by ESCAP member States during their 73rd session.

Asian Regional Action Plan

The First Asian Ministerial Conference on Disaster Risk Reduction held in November 2016 in New Delhi adopted the Asia Regional Plan for Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030 to provide:

1. broad policy direction to guide the implementation of the Sendai Framework in the context of the 2030 sustainable development agendas in the region;

13 See www.un.int/sites/www.un.int/files/Permanent%20Missions/delegate/attachment_the_vision_of_the_sg_on_prevention.pdf.

14 See E/ESCAP/FSD(4) /2/Rev. 1., www.unescap.org/sites/default/files/pre-ods/B1700338_Report%20No.%202_Rev.%201_E_replaced%2031%20Mar%2017.pdf.

2. long-term road map, spanning the 15-year horizon of the Sendai Framework; and

3. two-year action plan with specific activities that are prioritized based on the long-term road map and in line with the policy direction.

The policy directions for implementation of the Sendai Framework in the region are threefold:

1. **Coherence and integration:** Risk reduction and resilience is a common element across various global frameworks and agreement. Therefore, countries in the region need to ensure that DRR is an integral part of the implementation and monitoring of the SDGs while recognizing the need to achieve the more specific targets and indicators of the Sendai Framework.

2. **Guiding principles:** The guiding principles of the Sendai Framework are primary responsibility of the State to prevent and reduce disaster risks; shared responsibilities across all levels, sectors and stakeholders with an all-of-society engagement approach; integration of gender, age, disability and cultural perspective in all policies and practices; risk-informed public and private investments; "building back better" in post-disaster recovery, rehabilitation and reconstruction; effective and meaningful global partnerships; and adequate, sustainable and timely provision of support from industrialized to developing countries. These principles should be adopted and/or adapted by the countries in their national policies and strategic action plans for implementation of the Sendai Framework.

3. **Enabling environment:** An enabling environment shall be created by a government and other stakeholders for risk resilient development. This would include (a) making DRR a development practice to achieve resilient public investment; (b) encouraging private sector engagement towards risk sensitive investments; and (c) building capacity and leadership to implement the Sendai Framework at the national and local levels.

The 15-year time frame for the Sendai Framework and the SDGs engenders opportunity for greater coherence and mainstreaming DRR within development in terms of planning, implementation and monitoring. The regional plan has set milestones to achieve the seven global targets of the Sendai Framework. The initial biennial milestones (2016, 2018, 2020 and 2022) are sequenced to achieve the targets regarding national disaster management strategies and action plans, disaster damage and loss databases, etc., which will help achieve other global targets, namely a reduction in mortality, the numbers of people affected, economic losses and losses of critical infrastructure and services.

The two-year action plan (2017–2018) is broken into activities to be carried out at the regional, national and local levels under each of the four priorities for action within the Sendai Framework. The focus is on the initial steps for implementing the Sendai Framework, such as reviewing existing strategies and plans, establishing risk information systems, strengthening multi-stakeholder and multi-sectoral national

and local platforms, improving the legal, policy and regulatory environment for incentivizing DRR, developing guidelines for the coherent implementation of the 2030 Agenda and building up local leadership. Except for education and health, none of the development sectors figure into the first biennial action plan for the Sendai Framework, which leaves scope for their incorporation into subsequent plans.

ASEAN-United Nations Strategic Plan of Action on Disaster Management

The Association of Southeast Asian Nations and the United Nations Joint Strategic Plan of Action on Disaster Management 2016–2020 was developed in 2016 to strengthen cooperation and partnership between ASEAN and United Nations partners.[15] Through their collaborative efforts, the plan aims to deliver eight priority programmes:

1. AWARE: A risk-aware ASEAN Community;
2. BUILD Safely: Building safe infrastructure and essential services in ASEAN;
3. ADVANCE: A disaster-resilient and climate-adaptive ASEAN Community;
4. PROTECT: Protecting the economic and social gains of ASEAN Community integration through risk transfer and social protection;
5. RESPOND as One: Transforming mechanisms for ASEAN leadership in response to DRR;
6. EQUIP: Enhance the capacities for One ASEAN One Response
7. RECOVER ASEAN: Promoting resilient recovery; and
8. LEAD ASEAN: Leadership for excellence and innovation in disaster management.

ASEAN declaration on institutionalizing resilience

The ASEAN member States adopted in 2015 the Declaration on Institutionalizing the Resilience of ASEAN and Its Communities and Peoples to Disasters and Climate Change, which commits them to reducing existing disaster- and climate-related risks, preventing the generation of new risks and adapting to changing climate conditions. The Declaration underlines the importance of producing coherence, consistency and alignment across all relevant sectors of ASEAN by systematically mainstreaming DRM and CCA into sectoral policies, strategies, plans, programmes and projects. It also promotes cross-pillar and cross-sectoral collaboration on DRM, CCA, sustainable development and related cross-cutting concerns.

15 See https://docs.unocha.org/sites/dms/ROAP/Partnership/ASEAN-UN%20JSPADM%20(2016-2020)_final.pdf.

National and subnational action plans

The national governments of Asia and the Pacific are in the process of assimilating these frameworks, action plans and declarations and developing their national strategies and plans of action for implementing the global frameworks. The global target of the Sendai Framework to substantially increase by 2020 the number of countries with national and local DRR strategies implies that, over the next three years, the governments that have already developed national strategies and plans of action will update them in accordance with the new framework. The governments that have not done so will develop their national strategies and plans of action. Both processes will open up opportunity for mainstreaming DRR within the sectors responsible for national planning and development.

And that further implies that such strategies and plans of action are developed by subnational governments and authorities. Disaster-management laws and strategies need to make it mandatory that every province, district and city develop their own DRR plan. A large number of provincial and district plans and a few city-level disaster management plans have been developed already in the region. These will need to be updated. The provinces, districts and cities that do not have such a plan as yet will be expected to develop an action plan for DRR. This process can be facilitated if each government develops guidelines and provides a model template for a subnational plan for DRR that are aligned with the national plan and with the global development agenda. The guidelines should, inter alia, provide a detailed step-by-step approach for mainstreaming DRR into local development plans.

More than the preparation of the action plans, it is important that they are all followed through on at the regional, national and local levels. It is hoped that this regional guidebook will provide guidance to national governments, subnational entities and other stakeholders in the Asia-Pacific region for mainstreaming DRR across all sectors of development and at all levels, thereby supporting the achievement of the new global frameworks.

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FROM RISK TO RESILIENCE SERIES

R2R SERIES

This series—a product under the **Enhancing Knowledge and Capacity to Manage Disaster Risk for a Resilient Future in Asia and the Pacific Project**—is part of a larger effort within ESCAP to support its member States in building up their resilience to changes in climate conditions and to help foster sustainable development. ESCAP and partners initiated the project with support from the United Nations Development Account.