

Chapter 12: Disaster risk reduction integrated in development planning and budgeting

12.1

The importance of integrating disaster risk reduction in development planning

Development can be a major driver of disaster risk, for example when it results in populations and economic assets being located in exposed geographic areas; in the accumulation of risk in urban areas due to rapid and unplanned developments; when it places excessive strains on natural resources and ecosystems; and when it exacerbates social inequalities if the income-generating

opportunities for some population groups is curtailed. Therefore, risk should be seen as a normal and inseparable part of economic activities and development, as something built into particular development pathways and practices, constructed through day-to-day decisions by those who have a stake in particular patterns of development. Disaster risk is thus a social construct conditioned by each society's perceptions, needs, demands, decisions and practices.²⁰⁰

As presented in previous GARs and reiterated in this edition, it is time to cast off the notion that risk is exogenous to development, something that can be reduced simply by complementing development

200 (Lavell and Maskrey 2013)

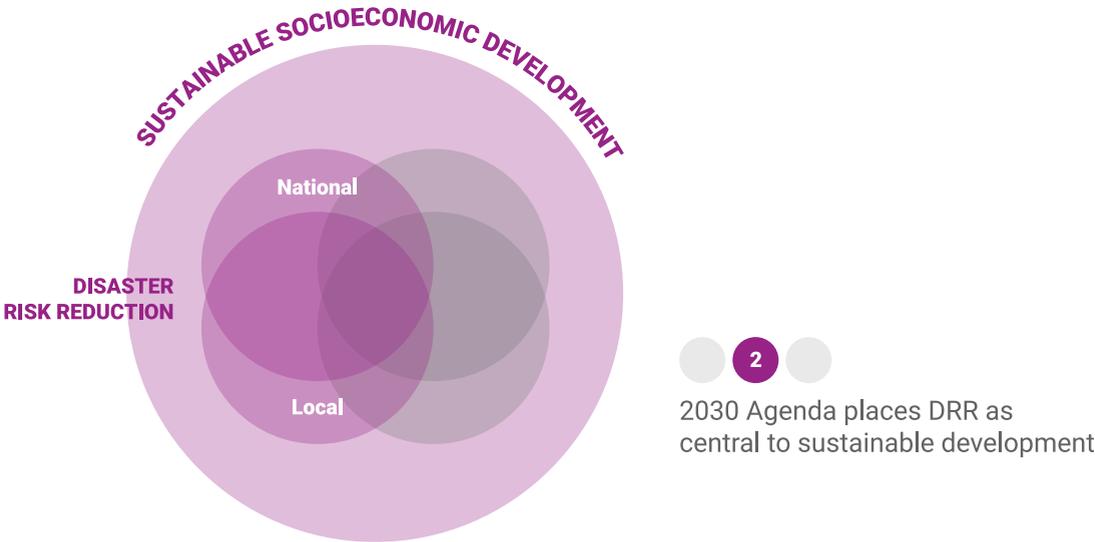
with risk reduction measures.²⁰¹ Integrating (also termed mainstreaming) risk reduction must be driven from within key development sectors to ensure that specific sectoral vulnerability can be assessed, and risk management institutionalized in the policymaking, planning, project cycle and investment planning processes. The integration of DRR into development planning and budgeting is therefore predominantly a governance process. It needs to ensure that development is risk informed to improve the safety of people and critical facilities, to protect the natural and built environment, and to build resilient livelihoods and economic activity. Although risk governance is a multi-stakeholder task, governments have an exemplary role as risk avoiders providing public goods and services by refraining from actions that generate risk.²⁰²

The practical relationship between disaster risk and development therefore provides the core rationale for integrating DRR into development planning and budgeting.²⁰³ However, the need to address the development-based drivers of risk, and the acceptance that disaster risk is a symptom of unsustainable maldevelopment, have yet to fully

permeate conventional DRR and development policy and practice.

Avoiding the creation and propagation of risks that occur through flawed development pathways, can best be addressed through prospective and corrective DRM measures; both of which require systems-based approaches to managing risk. Prospective measures to prevent or reduce risk creation can be combined with corrective DRM efforts that reduce the level of existing risk (e.g. through retrofitting of critical infrastructure such as schools or hospitals). Compensatory risk management activities also have a role in strengthening the social and economic resilience of individuals and societies in the face of residual risk (the remaining risk that cannot be effectively eliminated), for example through preparedness, response and recovery activities, contingent credit, insurance and safety net programmes that are designed to help affected populations mitigate disasters or recover from their impacts. The Sendai Framework supports all of these approaches, but as part of a holistic approach, not as a set of alternatives or options.

Figure 12.1. The 2030 Agenda recognizes DRR as central to sustainable development



(Source: UNDRR 2019)

As risk is increasingly multifaceted, integrating DRR into development planning and practice needs to consider multiple and intersecting threats. Risks associated with natural hazards can manifest in conjunction with man-made hazards, epidemics, conflict or economic shocks for example, which can interact, cascade and amplify impact across sectors, geographies and scales. Pursing integration solely from a DRR angle is therefore unlikely to achieve the targets and indicators of the Sendai Framework and SDGs. There is agreement however that the realization of SDGs will depend on the successful implementation of the Sendai Framework and the Paris Agreement. Success therefore hinges on the ability of decision makers to realize risk-informed development, so driving integrated DRR approaches, different aspects of which can also be described as policy coherence, integrated risk governance and systemic risk reduction.

12.2

The Sendai Framework and integrating disaster risk reduction in development

12.2.1

Scope of the Sendai Framework

Integrating DRR into development planning and budgeting is not a new goal in global policy processes.

It was already part of the 1989 resolution on IDNDR,²⁰⁴ the 1994 Yokohama Strategy and Plan of Action,²⁰⁵ the 1999 ISDR,²⁰⁶ and of course HFA.²⁰⁷ HFA called for reducing underlying risk factors to address disaster risk in sectoral development planning and programmes as well as in post-disaster situations, yet the integration of DRR into policy and legal instruments remained at a nascent stage in most countries by the end of the HFA decade. Even where this had occurred, progress in implementation was limited according to HFA monitor reports.²⁰⁸

The Sendai Framework commits Member States to address DRR within the context of sustainable development and poverty eradication, and to integrate DRR into policies, plans, programmes and budgets at all levels. It states that effective DRM, addressing underlying risk drivers through risk-informed public and private investments, contributes to sustainable development. It recognizes the importance of integrating DRR within and across all sectors of development to achieving disaster and climate risk-informed development.²⁰⁹

The Sendai Framework highlights several specific entry points that can be pursued to foster the integration of DRR into development. For example, inclusive risk-informed decision-making that is based on the exchange and dissemination of disaggregated data is included under the Sendai Framework principles. Priority for Action 2 recognizes that strengthening disaster risk governance is a means to foster collaboration and partnership across mechanisms and institutions for the implementation of sustainable development. It specifically mentions that integrating DRR into development requires national and local frameworks of laws, regulations and public policies to define roles and responsibilities and to guide the public and private sectors. Priority for Action 3 calls for integrating disaster risk assessments into land-use policy

²⁰¹ (Lavell and Maskrey 2013); (Aysan and Lavell 2015); (UNDP 2017c)

²⁰² (Wilkinson, Steller and Bretton 2019)

²⁰³ (UNDP 2017c)

²⁰⁴ (United Nations General Assembly 1989)

²⁰⁵ (IDNDR 1994)

²⁰⁶ (United Nations General Assembly 1999)

²⁰⁷ (UNISDR 2017d); (Aysan and Lavell 2015)

²⁰⁸ (UNISDR 2013b); (UNISDR 2015c)

²⁰⁹ (United Nations 2015a)

development and implementation, including urban planning, land degradation assessments, and informal and non-permanent housing, as well as into rural development planning and management of various ecosystems. Priority for Action 4 stresses the need to: (a) incorporate DRM into post-disaster recovery and rehabilitation processes; (b) facilitate the link between relief, rehabilitation and development; and (c) use opportunities during the recovery phase to develop capacities that reduce disaster risk, including through land-use planning, improving structural standards and others.²¹⁰

Compared with HFA, the Sendai Framework places a much greater focus on the drivers of disaster risk, such as poverty, climate change, improper land-use planning, environmental degradation, weak building codes and governance, which also undermine sustainable development. However, the calls to curb the creation of new risk through informed development practice and investment that prioritizes long-term risk reduction are what truly sets the Sendai Framework apart from its predecessor. As discussed in section 11.5.5, the World Bank contends that such risk-informed development is possible in low- and middle-income countries – particularly in respect of infrastructure development – through more efficient spending based on system-wide policies.²¹¹

As elucidated in Part I of this GAR, the Sendai Framework also has a much wider scope in terms of the hazards it covers (natural, man-made, environmental, biological and technological) and the types of disasters (slow and fast-onset, extensive and intensive disasters), while also widening the spectrum of actors it includes.²¹² This is intended to facilitate integration of DRR practices into sectors in a way that is more conducive to the systems thinking required for risk and loss to be reduced and resilience strengthened, and mobilize development actors as architects and vehicles of risk reduction. The Sendai Framework thus has the potential to simultaneously transform the risk landscape and facilitate accelerated achievement of the goals and targets of the climate change and SDG agendas.

12.2.2

Disaster risk reporting under the Sustainable Development Goals

Integration post-2015 is not unidirectional. All 46 Member States that presented voluntary national reviews of progress in achieving SDGs at the United Nations HLPF in 2018 included disaster-related information, with many highlighting the importance of implementing different risk reduction measures. These elements are reported differently by different countries. Some focused on identifying hazards, and others described their understanding and effort in implementing the Sendai Framework, relating their work on DRR to a specific SDG.

As discussed in Part II of this report, within the 2030 Agenda, SDGs 1, 11 and 13 include explicit risk reduction indicators for measuring progress in achievement. However, with the scope of Sendai Framework hazards and risks ranging from the biological, to environmental, to technological processes and phenomena, many of the other goals are of relevance.²¹³

This is propelling the development of integrated approaches, in implementation, monitoring and reporting. The Philippines and Mexico are harmonizing processes and methods to enable coherent implementation of the Sendai Framework, NUA, the Paris Agreement and the 2030 Agenda at the national level. The Department of the Interior and Local Government of the Philippines is harmonizing risk assessment approaches and planning guidelines of different ministries, to provide clear guidance to local government units on the prioritization of measures and planning that take climate and disaster risks into consideration (e.g. in public building codes). In Mexico, the Ministry of Finance and Public Credit is being supported to develop methodologies and processes for prioritizing the projects that require an in-depth disaster risk analysis, and for integrating risk mitigation and CCA measures into prioritized projects. Additionally, Mexico is integrating the requirements of the Sendai Framework into the National Agenda for Sustainable Development.²¹⁴

12.3

Country experiences with integrating disaster risk reduction into development planning and budgeting

Integrating DRR into development strategies and plans is complex and highly context specific. Countries are pursuing a range of different entry points in their quests to undertake risk-informed development, and there is no single blueprint plan. Instead, learning and sharing from experience, including from other cross-cutting issues, has been of great value. Mainstreaming is a dynamic process that aims to understand risk at the heart of development decisions in policymaking, planning, budgeting, programming, implementation, monitoring and evaluation at national, sectoral and subnational levels, rather than seeing risk management as an add-on.²¹⁵ Since development does not follow a linear path, it is important to be sufficiently flexible to seize the opportunity to undertake risk-informed development when and where the political economy is ripe.

DRR mainstreaming at the local and subnational levels encounters similar challenges and constraints as at the national level, but there are often more pronounced gaps in resources and capacities. For local-level mainstreaming efforts to be successful and take root, they are best

pursued as part of a wider national undertaking that spans all scales of government administration, several sectors and groups of stakeholders. Joint approaches in mainstreaming of related cross-cutting issues, such as DRR, climate adaptation and gender equality, are also likely to result in more cohesive and effective action.

Experiences with DRR mainstreaming vary considerably among countries with federal or centralized systems, and small or geographically dispersed countries. In many resource-constrained contexts, such as the Pacific Island countries, integrated approaches to DRR and climate adaptation have gained much traction (e.g. in the Framework for Resilient Development in the Pacific: An Integrated Approach to Address Climate Change and Disaster Risk Management).²¹⁶ Some urge caution, warning of the risk of overburdening already strained capacities.²¹⁷ In Fiji, risk reduction was integrated within approaches mainstreaming the already familiar themes of gender and social inclusion. Familiarity with such mainstreaming approaches promoted acceptance of the concept by those involved, who could easily identify the people more affected by climate change and disaster.²¹⁸

Several analyses of DRM and its relationship to development and overall governance suggest that as a general rule the higher the level of development in a country, the greater the progress made in incorporating DRR into development pursuits.²¹⁹

In the following sections of this chapter, country-level experience is examined according to the five entry points for integrating DRR into development planning and budgeting shown in Box 12.1. Although these are presented as separate entry points for analysis, they are, of course, interrelated.

210 (United Nations 2015a)

211 (Rozenberg and Fay 2019)

212 (United Nations 2015a)

213 (UNISDR 2015f)

214 (Steinich 2018)

215 (UNDP 2010)

216 (SPC et al. 2016)

217 (Aysan and Lavell 2015)

218 (UNDP 2019h)

219 (Lassa 2019); (Wilkinson, Steller and Bretton 2019); (Hamdan 2013)

Box 12.1. Entry points for integrating DRR into development

- **Policy and law:** Providing the enabling environment for DRR mainstreaming and achieving risk-informed development. Entry points include: leadership and advocacy; legislation and regulation; policies, strategies and plans; and standards.
- **Organization:** Supporting the implementation of risk-informed policies and plans. Entry points include: coordination and responsibilities for mainstreaming; capacity development; procedures and tools; and programmes and projects.
- **Stakeholders:** Enabling the involvement of critical actors in mainstreaming, such as government, civil society, the private sector, and partnerships and networks.
- **Knowledge:** Driving the mainstreaming process through raising the risk awareness and understanding the links with development. Entry points include: risk assessment; awareness and education; and monitoring and evaluation.
- **Finance:** Providing the essential support for implementation. Entry points include: budgeting and expenditure analysis; public and private sector resource mobilization; risk financing and transfers; and risk-informing investments.

(Source: UNDP 2019o)

12.3.1

Policy and law as an entry point for mainstreaming

Integrating risk into laws, policies and plans is an important conduit for translating political will into concrete risk management actions. The policy entry points are at national, sectoral and local levels, where plans may be conceived through a mix of bottom-up and top-down processes to reflect the needs and capacities of communities exposed to natural hazards. Mainstreaming DRR into development planning requires a systematic effort to assess the risks from and to development, identify DRR measures, apply them to development activities and include them in a strategy document that guides annual planning and budget allocations and public investment instruments.

Legal and regulatory frameworks play a complementary role to plans and strategies as they establish the institutional mandates, the system of accountability for making risk reduction a priority,

and budget allocations for implementation. While dedicated DRM laws have been the vehicle of choice for DRR integration so far, there are also efforts being made to integrate risk management in sectoral laws and regulations. The sectors driving economic growth and development in many developing countries (e.g. agriculture, manufacturing and tourism) have a significant influence on the development-based drivers of risk, so the regulatory frameworks that guide these sectors should receive more attention.²²⁰

Standards are also a form of regulation, either voluntary or compulsory, that are approved for common and repeated use in sectors – these include building codes, standards on electrotechnical equipment, electricity plants and electrically powered utilities, management system standards, codes of best practice on social responsibility, technical standards of professional associations of architects and engineers,²²¹ and the Sendai Framework minimum standards and metadata for disaster-related data, statistics and analysis.²²² A range of relevant standards developed by the International

Organization for Standardization (ISO) also exist, including Environmental Management Systems (the ISO 14000 family of standards), the new ISO Risk Management Guidelines (ISO 31000:2018) and Societal Security Emergency Management (ISO 22320:2011), which includes risk management as an “integral part of business”.²²³ There are

highly relevant new ISO standards under development under the category of “Sustainable cities and communities”, which are close to being launched. Sustainable cities and communities – indicators for resilient cities (ISO 37123)²²⁴ and Sustainable cities and communities – indicators for smart cities (ISO 37122)²²⁵ are the most relevant to urban DRR. These



Flooding in Philippines

(Source: Mathias Eick EU/ECHO)

standards indicate which SDGs they contribute to, and their use will require a high level of policy coherence and integrated implementation.

As sectoral standards are often market driven and developed to respond to requests from industry or

consumer groups, governments or regional organizations and administrations, they tend to command a high degree of ownership, which facilitates compliance. Ultimately, political leadership and advocacy to create the political will to reduce risk must go hand in hand with self-regulation – through

²²⁰ (IFRC and UNDP 2014b); (IFRC and UNDP 2014a)

²²¹ (Jachia 2014)

²²² (UNISDR 2018c)

²²³ (ISO 2018)

²²⁴ (ISO 2019)

²²⁵ (ISO 2019)

mechanisms such as standards and community leadership – to drive and eventually absorb the integration approach.²²⁶

Country experiences

In Kenya, DRR was successfully integrated as a cross-cutting issue to be addressed in nine thematic areas and sectors in the Second and Third Medium Term Development Plans (2013–2017 and 2018–2022). A new National Disaster Risk Management Policy was approved in 2018 – which is currently being translated into an act of parliament – demanding various sectors to integrate DRR into the sectoral planning process at national and subnational levels.²²⁷ The policy was initially championed by the Ministry of Planning, and then taken

on by the National Disaster Risk Reduction Platform, which has a wider representation from technical ministries, academia, United Nations agencies and civil society. A key lesson from the Kenya experience has been that high-level political goodwill is a prerequisite for success. The support of the Kenyan President for the Sendai Framework and the involvement of the Parliament and Senate by identifying focus politicians were key factors in the push for legislation.²²⁸

The five-year National Socio-economic Development Plan VIII (2016–2020) of Viet Nam, and the Philippines Development Plan (2017–2022) consider DRR as a main cross-cutting concern. Such integration will increasingly help to mobilize required financial resources for national and subnational government bodies to implement



Clean up work in Kisumu, Kenya
(Source: Tejas Patnaik /UNDRR)

programmes and projects addressing DRR.²²⁹ In Tunisia, DRR, was for the first time, explicitly introduced in the five-year development plan for 2016–2020 under a chapter on green growth.²³⁰ Indonesia is another example of advanced DRR mainstreaming practice, where the National Development Planning Agency took the lead in integrating DRR into Indonesia’s Mid-Term Development Plan 2010–2014, as one of nine development priorities.²³¹ The national DRM law in Armenia mandates all development processes in the country and all development sectors to integrate disaster risk considerations.²³²

The legal basis for DRR mainstreaming was also a decisive factor in Costa Rica, where the 2005 National Law on Emergencies and Risk Prevention considers DRM as a cross-cutting issue to all development practices, requiring that all institutions must plan and budget for disaster prevention and preparedness. As a consequence, an increasing number of public services in Costa Rica now carry out risk assessments and adopt measures to control risk. To date, 10 public policies related to planning and investment in different sectors (urban, rural and natural resource management) have benefited from DRR mainstreaming. The scope of integration is significant; they include: the National Development Plans for 2014–2018 and 2019–2022; the National Housing and Human Settlements Policy and Plan; the National Policy of Territorial Organization; the National Urban Development Policy; the National Wetlands Policy; the National Health Policy; the National Policy of Adaptation to Climate Change; the National Public Investment Plan; the National Water and Sanitation Policy; and the Risk Management Strategy of the Education Sector.²³³ Recognizing that municipalities have a particularly central role in risk management, the Government of Costa Rica also strongly advocates

integration of risk management into local planning instruments, rather than developing stand-alone local risk management plans.²³⁴

Uganda pursued the mainstreaming process through an integrated approach that encompassed DRR and climate adaptation into development planning. Both issues are recognized in the Resilience and Disaster Risk Management Strategic Framework and Investment Program 2015, which will operationalize the country’s National Development Plan 2015–2020. DRR and CCA have also been integrated into Uganda’s National Building Control Regulations and the National Urban Policy, which reaches over 1.2 million people with its safety measures. In 2018, the National Development Plan was being reviewed to assess the impacts of disasters during its implementation period, which will provide recommendations for the development of the third National Development Plan.²³⁵

In Mozambique, DRR is considered an integral part of the National Strategy for Climate Change Adaptation and Mitigation (2013–2025), which has 13 strategic actions that are expected to guide adaptation and DRR measures. Subsequent to the national plan, DRR and CCA have been mainstreamed into district planning and budgeting systems in the eight key sectors of agriculture, health, water, social protection, roads, the environment, meteorology and energy.²³⁶ Bosnia and Herzegovina also approached DRR and CCA mainstreaming in an integrated way by making it a mandatory part of the country’s strategic planning process through its Law on Development Planning and Management.²³⁷ By using the existing development planning process for DRR integration that built on agreed methodologies and organizational frameworks, the issue is now mainstreamed into 23 local and 8 cantonal development

226 (UNDP 2019o); (La Trobe and Davis 2005)

227 (Kenya 2018)

228 (Omoyo Nyandiko and Omondi Rakama 2019)

229 (Maeda, Shivakoti and Prabhakar 2019)

230 (UNDP 2019o)

231 (Maeda, Shivakoti and Prabhakar 2019)

232 (UNDP 2019a)

233 (Costa Rica, Ministerio de la Presidencia 2019); (Costa Rica n.d.)

234 (UNDP 2019e)

235 (UNDP 2019p)

236 (UNDP 2019g)

237 (UNDP 2019c)

strategies. The standard planning process was complemented by risk assessments and enforced with guidelines on DRR mainstreaming.²³⁸

Indonesia, the Philippines and the province of Potenza in Italy are also integrating resilience, DRR and CCA concepts into local development and land-use planning.²³⁹ However, experiences are mixed. For example, in Indonesia, the 2007 Disaster Management Law made subnational governments at provincial, district and subdistrict levels responsible for DRR integration into development programmes, requiring them to allocate sufficient funding to do so. Pilot projects on DRR planning were implemented at the community level, which were expected to feed into village level development plans, which were to inform development planning processes at the subdistrict and district level. However, these efforts have had low rates of success due to limited involvement of executive and legislative bodies of district and subdistrict governments, etc.²⁴⁰ of the sectoral integration of DRR into development may have originated in the education and agriculture sectors. Madagascar has been one of the first countries to have integrated DRR into the education sector. In 2006, a student manual and a teacher's guide on integrating DRR into the school curriculum were developed and are being updated. The Ministry of Education is also committed to strengthening the resilience of the education system and has established a department for DRM within the Directorate of Educational Planning. This has been complemented by capacity-building support for the Heads of the Regional Directorates of National Education.²⁴¹

In a subsequent wave, other key development sectors have been selected for mainstreaming activities such as health, infrastructure, tourism, urban planning and housing. While numerous sectoral mainstreaming tools and guidelines have been developed, aside from the agricultural and infrastructure sectors, very few systematic analyses of the experiences and lessons learned have been carried out.²⁴² One such study in Southern Africa found that DRR mainstreaming across sectors appears to be generally low, except within climate change policy. Key sectors such as health

and education rarely refer to global, regional or national policy frameworks for DRR. Nonetheless, because of the nature of their mandate, health sector policies and strategies in Southern Africa implicitly incorporate risk reduction tools and activities, undertaking risk assessments, prevention activities (for example, for malaria), conducting disease surveillance, early warning and emergency management.²⁴³

An interesting angle on sectoral mainstreaming has taken root in the agricultural sector in several countries, where complementary planning processes on DRR, climate adaptation and agriculture are being promoted in a three-pronged approach that entails: (a) integrating DRR into agricultural sector plans; (b) designing dedicated DRR plans for the agricultural sector; and (c) prioritizing agricultural risk management practices in national DRR strategies and plans (case study countries included Belize, Cambodia, Democratic People's Republic of Korea, Dominica, Guyana, Jamaica, Lao People's Democratic Republic, Nepal, Paraguay, Philippines, Saint Lucia, Saint Vincent and the Grenadines, Serbia and Zimbabwe).²⁴⁴ This is exemplified by the Coconut Risk Management and Mitigation Manual for the Pacific Region, and related training. Supported by an integrated planning approach and developed by the Pacific Community and development partners, it takes into account CCA, DRR and business continuity risk management in the production and market dimensions of this key industry for the region.²⁴⁵

Space for cross fertilization among different government planning processes on DRR must be created and timelines coordinated to ensure DRR take-up in the different planning documents that have pre-set time frames such as agricultural sector development plans. This highlights how planning for DRR in a sectoral context is not an isolated process; it should link to and complement other sectoral planning processes, such as those related to NAPs, NDCs or similar.²⁴⁶

12.3.2

Organization as an entry point for mainstreaming

For DRR mainstreaming to take root, a change in organizational culture is required,²⁴⁷ as accompanied by the institutionalization of risk management process in the procedures, tools and project management cycle of public and private sector organizations.²⁴⁸ Examples include risk screening tools for sector planners, or checklists in approval mechanisms that integrate risk. Such measures facilitate the implementation of risk-informed projects and programmes that build disaster and climate resilience. The organizational entry point for integrating DRR into development planning is significantly determined by the organization's broader institutional and governance challenges. Established bureaucratic procedures can be very challenging to reform.²⁴⁹

A lack of personnel, expertise and capacity to operationalize DRR mainstreaming has been a bottleneck in many countries, especially when the mainstreaming process moves to the subnational level.²⁵⁰ It is of paramount importance that staff are aware of their roles and have the commensurate technical and management capacity to conduct their assigned risk management functions and drive the mainstreaming process. To be effective, capacity development needs to move beyond traditional training approaches and support more sustained changes in behaviour.²⁵¹ Other stakeholders (e.g. civil society, communities, the private sector and contractors) need to be equipped with mainstreaming know-how, in addition to public planners and sectoral staff.

The interdisciplinary nature of DRR demands that coordination and collaboration arrangements among a wide group of government and non-government stakeholders should be established with roles clarified. National Platforms for Disaster Risk Reduction or National Disaster Risk Reduction Committees should be go-to mechanisms, but have so far been only modestly effective in promoting DRR mainstreaming.²⁵²

Country experiences

While there are many mainstreaming tools and approaches,²⁵³ mainstreaming DRR effectively into planning processes and project cycles is still a challenge resulting in scattered implementation of DRR measures. However, there is a growing number of countries that have made strides in this direction.

In Ghana, a Guidebook on Integrating Climate Change and Disaster Risk into National Development, Policies and Planning was already developed in 2010. The guidebook suggests a five-step process to integrate CCA and DRR into the planning process at the district level, resulting in projects or programmes now being included within the district composite budgets.²⁵⁴ Bosnia and Herzegovina pursued DRR mainstreaming through the existing development planning process by way of agreed methodologies and organizational frameworks supported by DRR mainstreaming guidelines.²⁵⁵

In the ASEAN region, Member States have agreed on a "plan-do-check-act" (PDCA) cycle for DRR which incorporates climate change impacts consisting of five stages: institutional and policy

²³⁸ (UNDP 2019c)

²³⁹ (Attolico and Smaldone 2019); (Maeda, Shivakoti and Prabhakar 2019)

²⁴⁰ (Hillman and Sagala 2012)

²⁴¹ (Maeda, Shivakoti and Prabhakar 2019)

²⁴² (Koloffon and von Loeben 2019); (United Nations Economic Commission for Africa 2015); (UNDP 2018c)

²⁴³ (United Nations Economic Commission for Africa 2015)

²⁴⁴ (Koloffon and von Loeben 2019)

²⁴⁵ (SPC Land Resources Division 2018)

²⁴⁶ (Koloffon and von Loeben 2019)

²⁴⁷ (UNDP 2010)

²⁴⁸ (Benson and Twigg 2007)

²⁴⁹ (Lassa 2019); (Hyden, Court and Mease 2003)

²⁵⁰ (UNDP 2010)

²⁵¹ (UNISDR 2015e)

²⁵² (UNISDR 2013a)

²⁵³ (UNDP 2016a)

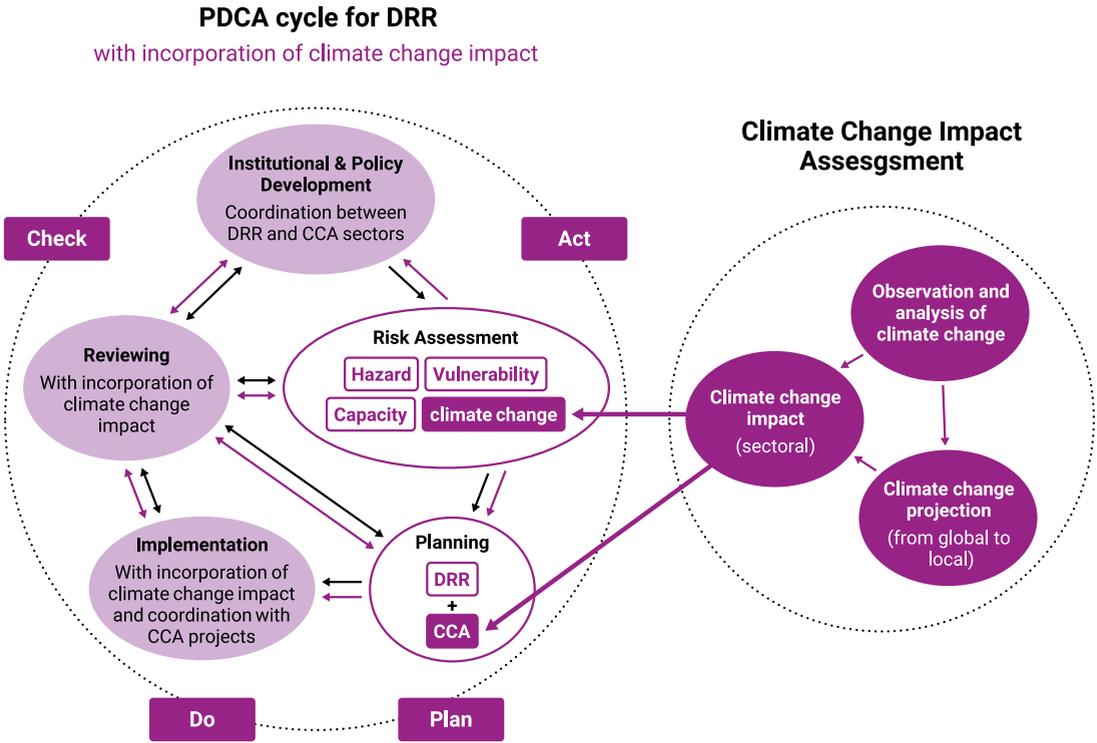
²⁵⁴ (Nelson et al. 2010)

²⁵⁵ (UNDP 2019c)

development, risk assessment, planning, implementation and reviewing.²⁵⁶ However, a regional study on risk-informed public investment planning found that there is not yet a sufficient or consistent level of attention to climate and disaster risk information. For example, road sector public investment

plans do not yet undergo a systematic environmental or social impact assessment, and cost-benefit analysis does not routinely cover risk scenarios by calculating costs and benefits with or without risk reduction measures.²⁵⁷

Figure 12.2. Incorporation of climate change impact in an ASEAN region PDCA cycle for DRR



(Source: Japan International Cooperation Agency 2017)

In Fiji, the Ministry of Rural and Maritime Development formally adopted risk screening into its standard operating procedures, making it an ongoing requirement that eventually helped transform the national public sector investment programme managed by the Ministry of Economy.²⁵⁸ In Tonga, the Ministry of Finance and National Planning is piloting risk screening of development projects that are funded through the national budget to facilitate systematization of a risk-informed approach throughout government.²⁵⁹

A critical aspect of strengthening mainstreaming capacities is to encourage sharing of expertise and learning across actors from different backgrounds through joint analysis of the challenges and the development of context. For example, in Ethiopia, the Africa Climate Change Resilience Alliance has developed a training programme for government and civil society organizations to mainstream DRR and CCA. The initiative focuses on practical learning that can be readily applied, to gradually provide knowledge and skills and bring together a range

of participants with different expertise and from a variety of agencies.²⁶⁰

In Uganda, a key starting point for integrated mainstreaming of DRR and adaptation at sub-district level was sharing good practice among local governments. District DRM committees headed by the Chief District Administrative Officer brought together stakeholders to discuss and understand the potential threats, hazards, disaster-prone areas and identification and mobilization of resources to implement DRR options. The discussions drew on information from Uganda's damage and loss database that has 30 years of historical data. The capacity-development approach was also complemented by training local-level planning officials on the use of risk information in development planning.²⁶¹

In Kenya, the DRR mainstreaming process was initially championed by the Director of Planning, who provided decisive leadership. A systematic training programme on integrating DRR into development planning was implemented through the Ministry of Devolution and Planning. Participants in the training included policymakers, planning officers, DRR focal points from different line ministries, military and police officers, emergency service providers, civil society members, humanitarian workers and interested members of the public. Of particular note is the training of County Development Planning Officers from all 47 counties in Kenya, which was an important enabler of the integration of DRR into the development plans of some counties.²⁶²

In Indonesia, the National Development Planning Agency offers two-week training for national and local government officials on integrating DRR and climate change concepts into local development

plans.²⁶³ Other examples of training at the local level are found in the agricultural sector in Indonesia, Myanmar and the Philippines, where farmers are provided with location-specific weather and rainfall forecasts, and are trained to use this information to increase crop yields.²⁶⁴

Establishing DRR focal points in sectoral departments as a vehicle for advancing sectoral mainstreaming has yielded mixed results globally. This has proved successful in a regional programme in the Pacific where full-time senior government posts were established in ministries – such as local government, agriculture, finance and planning, and women's affairs – in Fiji, the Solomon Islands, Tonga and Vanuatu.²⁶⁵ The posts were important for building in-house capacity to drive and sustain risk-informed development within subnational development planning. They also identified existing and new development projects that were at risk from disaster or climate change, or that could inadvertently drive risk accumulation.²⁶⁶ In some cases, these posts resulted in new institutional arrangements for resilience, such as the Risk Resilience Unit embedded in Vanuatu's Ministry of Agriculture. Most of these posts were permanently adopted within public service within a period of one to two years. Initial coaching through the regional programme is gradually being replaced by peer to peer networks that enable in-country and regional learning.

The expectation that National Disaster Risk Reduction Platforms would be able to advance the DRR mainstreaming agenda has not materialized as hoped. For instance, a 2013 review showed that more than half of the national platforms surveyed did not address public investment or risk transfer options within their work. Only 35% assisted stakeholders with the integration of risk-sensitive

256 (Maeda et al. 2018); (Japan International Cooperation Agency 2017)

257 (UNDP 2018c)

258 (UNDP 2019h)

259 (Tonga 2018)

260 (Twiggs 2015)

261 (UNDP 2019p)

262 (UNDP 2019e); (Omoyo Nyandiko and Omondi Rakama 2019)

263 (Maeda, Shivakoti and Prabhakar 2019)

264 (Maeda, Shivakoti and Prabhakar 2019)

265 (UNDP 2019h); (Tonga 2018); (UNDP 2019i); (UNDP 2019q)

266 (UNDP 2019h); (Tonga 2018); (UNDP 2019i)

analysis of public investment systems and the use of financial mechanisms to reduce or transfer risk.²⁶⁷ However, there are numerous examples of cross-agency collaboration in DRR mainstreaming. One such example is in Ghana, where the integration of DRR and climate adaptation into district development plans has become a collaborative effort of the Environmental Protection Agency, NDMO and the National Development Planning Commission. The process began with district and local assemblies validating the approach and was followed up by systematic training. Despite such progress, implementation in Ghana has been challenged by limited funding at district level.²⁶⁸

Cross-sectoral coordination is also being strengthened in the Philippines where the National Disaster Risk Reduction and Management Council and the Climate Change Commission have a memorandum of understanding for effective cooperation and collaboration.²⁶⁹ In Viet Nam, the General Department of Disaster Prevention and Control under the Ministry of Agriculture and Rural Development coordinates effectively with other departments in charge of management of flood risks, water resources, agriculture and forestry within the ministry.²⁷⁰ Yet some national DRM lead agencies – that have long fought for adequate status and resources – find it difficult to “relinquish power and resources” linked to DRR to other departments. This has restricted institutional and organizational change in some countries.²⁷¹ Fiji, the Solomon Islands, Tonga and Vanuatu have all recognized that mainstreaming requires: horizontal collaboration – by linking central with sectoral planners across key development sectors; vertical collaboration – by linking national with subnational and community levels; and diagonal collaboration – by linking sectors, including the private sector, with local and community levels.²⁷²

12.3.3

Knowledge as an entry point for mainstreaming

Knowledge is a critical component of any mainstreaming process. The ability to make a strong case for the link between disaster risk and development and to provide the evidence base for risk-informed development hinges on having access to risk information and knowledge. This entry point also encompasses public education and awareness campaigns to build a common understanding of why mainstreaming is important, and to secure the buy-in of policymakers and other stakeholders to mobilize the resources and capacities needed. In addition, DRR knowledge should be integrated into the curricula of schools, universities, and public and professional training institutes. Formal education and training are key entry points for mainstreaming.

Knowledge related to risk assessment deserves special attention as the foundation for developing a shared vision of what needs to be done. Information on the nature and extent of hazards, vulnerabilities, and the magnitude and likelihood of potential damage and loss needs to expand from single-hazard to multi-risk assessments to capture the range of intersecting threats. For example, addressing desertification and drought risk in Sudan needs solutions that take into consideration the factors that result in heightened competition over land and resources between settled cultivators and nomadic pastoralists.²⁷³

Integrating risk management into development decision-making and the roles of development actors requires a good appreciation of the wider development context, the political economy and how it supports or hinders DRR.²⁷⁴ As outlined above, effective mainstreaming of DRR requires a sustained commitment that needs to be nurtured over time. The ability to evaluate the impact of DRR integration through good monitoring and evaluation systems is therefore vital, albeit challenging, because measuring the avoided or reduced risk is not an easy task.²⁷⁵ Monitoring compliance with legal frameworks, including land-use regulations

and building codes, can provide an insight into how DRR measures can make a difference. However, blurred lines of accountability between the many stakeholders involved often hampers such monitoring and compliance.²⁷⁶

Country experiences

In the ASEAN region, most countries have prepared hazard and risk maps for floods, storms and landslides. However, the scale, including topographic data, often does not provide enough information for detailed quantitative risk assessment, land-use planning, evacuation planning and the design of prevention and mitigation measures.

Several countries are integrating climate change impacts when developing risk maps. For example, Indonesia, Malaysia, the Philippines, Singapore and Viet Nam are using climate data downscaled from global climate models for risk mapping and planning for DRR and CCA. However, countries are also struggling to use this type of climate risk information due to the high level of uncertainty of global climate projections and a lack of standardized guidelines for incorporating the information into planning and implementation processes.²⁷⁷

Several countries have made impressive progress in the application of risk information in policy and planning processes. The Rwanda National Risk Atlas provides a comprehensive assessment of existing risks at the national and local level across the country's 30 districts.²⁷⁸ The atlas features sex-disaggregated data on population exposure to risks related to earthquakes, landslides, storms

and drought. Since its launch in 2015, the risk atlas has shaped the government's DRR agenda and has contributed to updating the national and district land-use master plans, the Rwanda Building Code and district development plans.²⁷⁹

Uganda has also recognized that building a credible risk knowledge base is a driving force for change at policy and local levels. Since 2013, the government has developed hazard, vulnerability and risk profiles for all of the country's 112 districts. Apart from informing public investment decisions and national and local development planning, they also feed into contingency planning and preparedness measures. In 2017, the government further systemized its risk assessment work through the National Disaster Risk and Vulnerability Atlas, which will shape the second National Development Plan. The atlas focuses on seven major hydrometeorological and geological hazards, and is complemented by online and offline data-sharing mechanisms.²⁸⁰

Making hazard, land-use and vulnerability data freely accessible to increase awareness of policy-makers and citizens alike is a feature of Bosnia and Herzegovina's Multi-Hazard Disaster Risk Analysis System, which maps high-risk areas using a GIS.²⁸¹ This risk information has been applied in cost-benefit analysis to help make the economic rationale for public and private sector investment in DRR and to support consideration of alternative interventions.²⁸² In the ASEAN region, countries have yet to start quantitatively assessing the effects of DRR and CCA measures on economic performance.²⁸³ Countries participating in the Pacific Risk Resilience Programme are conducting risk governance needs assessments, which have been instrumental in

267 (UNISDR 2013a)

268 (UNISDR 2017d)

269 (Maeda et al. 2018)

270 (Maeda et al. 2018)

271 (Aysan and Lavell 2015)

272 (UNDP 2019h); (Tonga 2018); (UNDP 2019i); (UNDP 2019q)

273 (Aysan and Lavell 2015)

274 (UNDP 2019h)

275 (Aysan and Lavell 2015); (World Bank 2017); (Mitchell 2003)

276 (Planitz 2015)

277 (Maeda, Shivakoti and Prabhakar 2019)

278 (MIDIMAR 2015)

279 (UNDP 2017a)

280 (UNDP 2019p)

281 (UNDP 2018a)

282 (UNDP 2019c)

283 (Maeda, Shivakoti and Prabhakar 2019);

aligning the leadership at all levels in support of the respective countries' risk reduction priorities.²⁸⁴ The programme also conducts risk assessments; these are not pursued as a stand-alone activity, but build on pre-existing community priorities, identifying the risks with the greatest potential impact as priorities for action.²⁸⁵

The spatial and temporal complexity of multiple hazards requires sector-specific risk assessments that can consider highly localized extensive risk, as well as a broader range of hazard types to which a particular sector may be exposed. Private utilities are often at the forefront when it comes to risk assessment and taking measures to protect their services. However, the information and know-how are rarely shared with other private or public sector entities.²⁸⁶

12.3.4

Stakeholders as an entry point for mainstreaming

Although governments have the primary responsibility to prevent and reduce risk, the Sendai Framework states what is well established, that DRR requires an all-of-society engagement and partnership if it is to be effective.²⁸⁷ Private sector investment has long surpassed that of the public sector, and with it the greater potential to generate risk.²⁸⁸ Likewise, actions and decisions at household and community level can contribute to the accumulation of risk, although finding the means to meaningfully involve such stakeholders in risk management can be a hurdle. Government is also made up of a myriad of sectors and departments, interests, powers and knowledge bases that need to be well understood to be effectively deployed in the process. Decision makers, legislators and administrators at national, sectoral and local levels must also set the necessary regulations and exercise their coordination and oversight functions to ensure implementation and compliance. It is critical that governments set the enabling environment and provide incentives for the engagement of other stakeholders in the risk management process.

Ultimately, such engagement promotes broader ownership and sustainability of mainstreaming efforts and related DRR measures.

As DRR mainstreaming needs to be driven from within the development sector, the proactive involvement of development actors is needed. Although national disaster management authorities have been indispensable for paving the way and advocating for mainstreaming, most countries have been able to make significant progress only after getting the full engagement of development, planning and finance ministries. This ensures a more holistic approach with explicit linkages to development planning and implementation at all levels. Involving a country's development planning system helps to overcome obstacles linked to horizontal and vertical integration of DRR, as well as mainstreaming DRR more systematically by way of cooperative goal definition, planning and action. This ambition is a long-term, incremental process towards risk-informed development that requires strengthening incentive systems to cooperate with others on shared tasks. Since the role of many traditional DRM institutions is still in need of support, a two-track approach is recommended that also helps consolidate and strengthen the legitimacy and accountability of national DRM authorities or civil protection agencies.

Communities play a key role in terms of their local knowledge, articulating social demands for DRR measures, and ultimately implementing these. Distinct attention must be placed on involving all members that make up a community, including women, youth, older persons, minority and marginalized groups, and persons with disabilities. The mainstreaming process cannot be separated from gender and other social factors that determine vulnerabilities, capacities and exposure to natural hazards. Civil society organizations are indispensable as intermediaries between government and communities, as service deliverers and as activists.

Within the private sector, some companies have been observed to go beyond social responsibility considerations recognizing DRR as a means to ensure competitiveness and business continuity in

the event of a disaster.²⁸⁹ But the short-term business focus of some companies and sectors still stands in the way of long-term sustainability in DRR. For example, maximizing income at the expense of fragile ecosystems is unfortunately still the norm in many sectors.²⁹⁰ Many businesses do not consider their exposure to risk, and face losses every year, even in high-income countries.²⁹¹ However awareness is growing within governments and business sectors of the need to strengthen disaster and climate resilience of their own businesses and those of their suppliers, including SMEs. This has been notable in South-East Asia, particularly since the 2011 Bangkok floods.²⁹²

Other key stakeholders include academia and research institutions, as well as the media in terms of its role in fostering awareness, transparency, and influencing decision makers and the wider public, while noting that ill-informed media may also be harmful. Partnerships and networks can be effective in bringing together multiple actors. Their respective comparative advantages, skills, experiences and resources can be pooled, and can help connect sectors and overcome institutional silos.

Country experiences

Lessons from mainstreaming DRR in the agricultural sector emphasize that the process must transcend government boundaries and involve other stakeholders such as academia, NGOs and people at risk such as farmers.²⁹³ In the Solomon Islands, for example, community knowledge hubs were initiated to improve communication between farming communities and government extension workers, thus providing a platform for regular information

exchange and training on climate resilience crops.²⁹⁴

An interesting example of private sector involvement was pursued in Fiji's Northern Division when one of the first risk-screened capital projects was implemented in the road sector. In addition to addressing the risks to, and from, the road project in each and every phase of the project management cycle, the contractors received targeted risk management instructions to fully understand the rationale behind risk-informed road construction. As this is one of many publicly financed initiatives, over time, this approach is expected to positively affect practice throughout the construction sector.²⁹⁵

In the municipalities of Paraná in Brazil, the University Center for Studies and Research on Disasters has promoted the Making Cities Resilient (MCR) Campaign as a means to strengthen risk management capacities. The University Centre has started a network of 23 public and private sector institutions at state, federal and international level, called REDESASTRE. It is the first thematic network officially established in Brazil to promote cooperation and scientific and technological exchange on reducing disaster risk. Thanks to its pluralistic composition, the network has proved a success and a valuable resource to over 80% of municipalities in Paraná seeking to promote resilience in their cities.²⁹⁶

284 (UNDP 2017b)

285 (UNDP 2019h)

286 (Sands 2019)

287 (UNISDR 2015e)

288 (UNISDR 2013b)

289 (UNISDR 2015e)

290 (UNISDR 2013b)

291 (Sands 2019)

292 (ADPC 2017b); (Asia Pacific Economic Cooperation Secretariat 2013)

293 (Koloffon and von Loeben 2019)

294 (UNDP 2016b)

295 (UNDP 2019h)

296 (Pinheiro et al. 2019)

Case study: Community-driven mainstreaming in the Ha'apai Islands, Tonga

Water scarcity has been a persistent problem in the Ha'apai Islands, negatively affecting people's health, crop yield and livestock productivity. It was therefore not surprising that community consultations to draw up risk-informed community development plans identified water supply as the top priority. Site selection, safe access to water at night for women, and accessibility of persons with disabilities and older persons were among some of the issues discussed and solutions identified.

The pooling of technical and financial resources from a wide range of partners increased the purchasing power to obtain new water tanks and overcome the logistical

challenges of transporting equipment to isolated islands. Drawing upon local volunteers and engineers ensured that capacity to implement and maintain the project was kept local. Low-technology equipment and training of village committees also helped strengthen the communities' technical capacities to cope. As a result of this bottom-up mainstreaming initiative, the Ministry of Finance and National Planning has started to make decisions based on the community needs and priorities outlined in community development plans. The ministry has also started to pilot risk screening of development projects funded through the national budget in a top-down process that contributes to further systematizing the risk-informed approach throughout government.²⁹⁷

12.3.5

Finance as an entry point for mainstreaming

The issue of funding needs to be approached with an awareness of the scale of change required to move towards risk-informed sustainable development, and the challenges countries face where resources are scarce and everyday decisions must be made about where to spend precious budget allocations. Many countries report financial constraints as the main barrier to mainstreaming and that these explain the lack of progress in reducing underlying risks nationally and locally.²⁹⁸ The low level of financing reflects a lack of overall means in many countries, but it also reflects perceptions and priorities of governments and donors on where investment should be made. Historically investment that supports long-term resilience tends to lose out to investment focused on shorter-term goals. Amplifying long-standing arguments that risk reduction is a better public investment than disaster recovery and reconstruction, the World Bank provides evidence – in respect of infrastructure – of how resources can be optimized if spending

is undertaken strategically and from a systems perspective.²⁹⁹

Financing for prospective DRM can be pursued through development processes such as infrastructure investments through detailed engineering design and planning; this can entail little incremental expense (on average 4.5%), for as long as regulation is strong enough to mandate and monitor these requirements.³⁰⁰ Strengthening financial mechanisms for DRR remains important. So too, understanding the resources the public sector invests in risk reduction, and the relationship among earmarked budgets and allocations internal to ministerial or agency budgets. The latter is not always straightforward, as risk reduction measures are not always clearly labelled as such, take investment in forestry management in areas exposed to high levels of landslide risk for example.

Having dedicated budget lines for DRR within sectoral budgets is one of the most promising approaches for integrating DRR in national and local budgetary systems. As an intermediate measure, it may be necessary to establish dedicated funds for

DRR, or to allocate a portion of such funds for risk reduction, as is done in the Philippines.

Dedicated funding has yielded good results in some countries, but may also be a disincentive for

sectoral ministries and agencies to allocate their own resources, unless it is possible to trace their allocations through budget tagging, as the Philippines is doing for mainstreamed climate change expenditure.³⁰¹

Case study: Risk reduction budget in the Philippines

The Philippine Disaster Risk Reduction and Management Act 2010 (DRRM Act)³⁰² has detailed provisions on risk reduction budgets:

- Under the DRRM Act, the national budget for DRRM is appropriated under the annual General Appropriations Act, and is known as the National DRRM Fund. The amount must be approved by the President. The DRRM Act specifies that, of the amount appropriated for the National DRRM Fund, 30% is allocated as a Quick Response Fund for relief and recovery and the remaining 70% can be used for broader DRR, preparedness and recovery activities (Act s.22).
- The DRRM Act also requires local governments to establish local DRRM funds by setting aside at least 5% of their revenue from regular sources, to support all types of DRRM activities:
 - Of the Local DRRM Fund, 30% is automatically allocated as a Quick Response Fund for relief and recovery programmes.

- The remaining 70% can be used for pre-disaster measures. This Local DRRM Fund may also be used to pay premiums on calamity insurance (Act s.21).

- State budget for DRRM also includes the Office of Civil Defense annual budget allocation, provided for in the DRRM Act (s.23).

The Act (s.22) and the Implementing Rules and Regulations also authorize all government agencies to use a portion of their appropriations on DRRM projects in line with the National DRRM Council guidance and in coordination with the Department of Budget (Act s.5, Rule 19).

While not a focus of this GAR, as noted in Chapter 10, risk transfer mechanisms are receiving increasing attention as a means to manage shocks incurred when residual risk is realized – risks that are not, or cannot be reduced through risk management

measures, or that may not be cost-effective to reduce further. Access to and deployment of disaster risk financing mechanisms is becoming an increasingly popular option for governments seeking to manage such risk, especially from large

297 (UNDP 2019n)

298 (Aysan and Lavell 2015)

299 (Rozenberg and Fay 2019)

300 (UNDP 2018c)

301 (Alampay et al. 2017)

302 (Philippines 2010a)

and infrequent events.³⁰³ Such mechanisms are made increasingly available through international and regional mechanisms, including a range of tailored insurance products for sovereign risk; as discussed in Chapter 8 in respect of Sendai Framework Target F on international cooperation, and in Chapter 10 on regional initiatives (see section 10.1).

As elucidated in previous GARs, engineering risk-informed investment by the private sector is arguably the key to effective risk reduction. There is important work to be done on how governments can create incentives to engage and mobilize the private sector more fully in this joint enterprise, for example through the lens of business continuity, or in encouraging risk-reducing behaviour in the capital markets – “green bonds” for climate-resilient investment that are subject to voluntary principles within the capital markets framework,³⁰⁴ for instance.

The featured case study prior to Part I of this GAR, on SME disaster resilience in the Philippines, illustrates how in recognizing the benefits to efficient operations, the country’s major businesses have invested in disaster resilience of supply chains through the Philippine Disaster Resilience Foundation. This mechanism collaborates with the government to provide training on business continuity planning and capacity-building. The increasing use of public–private partnerships to build new infrastructure provides governments the opportunity to steer or incentivise investment that prevents the creation of new risk, thereby enhancing the quality and resilience of the built environment.³⁰⁵

Public resource allocation is influenced by competing plans, policies and pressures that are present during the bureaucratic process of preparing budget proposals and the political process of approving them. This calls for careful analysis of the potential to leverage resources to attract private, public and international finance (which is especially relevant for national disaster management authorities, climate services or similar). A shift is required in the determination of what constitutes a “good” investment. Investments that truly pursue the societal sustainability and resilience outcomes of the

post-2015 agreements must consider the wider risks emanating from the interaction of human and ecological systems. Especially, as the consequences of failing to do so will have potentially more widespread and less foreseeable impacts, as interactions among social, ecological, economic and political systems intensify.

In summary, governments can choose from a range of financing options that include ex post measures such as tax increases, donor assistance, raising debt and budget reallocation. Other options include risk transfer, contingent financing and reserve funds. The potential of private sector investment in risk reduction has yet to be harnessed. The conversation on how to achieve risk-informed development through more efficient investment of the available resources using a systems-based approach is only just beginning.

Country experiences

Governments are increasingly creating internal mechanisms to ensure public investment in new development is vetted for its risk-reducing or risk-generating impacts. Examples include the Ministries of Finance in Fiji, Peru, Tajikistan, Tonga and Uzbekistan, which have recognized the need to align public investment decisions more closely with a strong understanding of disaster risk and its potential economic impacts.³⁰⁶ The implementation of public investment rules in Costa Rica, Peru and the Plurinational State of Bolivia are good examples of how mainstreaming can go beyond pure declarations of intent.³⁰⁷

In general, budgetary allocations for DRR and CCA are found to be insufficient, and the funding gap between the plans and implementation is increasing. A study on the agricultural sector found that dedicated funding for DRR in agriculture was difficult to obtain, unless this was backed by legislation or mandatory allocations for DRR across sectors. But there are exceptions, such as in the case of Cambodia; in 2017, the national budget indicated a considerable increase of the Ministry of Agriculture’s budget for climate adaptation from \$23

million to \$247 million, which directly contributed to flood control and drought management measures. In the ASEAN region, countries have taken initiatives to establish dedicated disaster funds to finance disaster prevention and climate adaptation. Also, national climate adaptation funds, such as the Indonesia Climate Change Trust Fund and the Philippine People's Survival Fund, have promoted local adaptation and disaster resilience projects in water resources management, land, ecosystems conservation and EWSs.³⁰⁸

For subnational financing of DRR, the Government of Viet Nam piloted a mechanism to link DRR and climate adaptation plans to the annual provincial budget process and targets. The approach was rolled out in eight high-risk provinces and reached more than 8,000 people, of whom over 50% were women, and is now being scaled up in more than 1,700 communes.³⁰⁹ In Cuba, municipalities are integrating DRR into the investment planning process. Every public entity is legally obliged to include actions to reduce risk in its economic planning. The National Civil Defense authority carries out regular inspections, and when DRR is not fully integrated in the local investment planning, a mandatory action plan is recommended for implementation by municipal governments within a certain time frame.³¹⁰

As noted in the Philippines case study above, a mandated funding pool of 5% of local government budget for DRR and management activities in the Philippines has strengthened the capacity of local governments in prevention and mitigation measures.³¹¹ Indonesia also has a sophisticated legal framework that sets out the principles to ensure DRR is factored into national and regional budgets, as part of the overall disaster management funding structure. The complexity of the

system means that it is difficult to track and assess the budgeting and funding flows for DRR, and the actual investments in DRR are probably higher as many activities are "embedded" within other sectors and not identified as disaster management/DRR related.³¹² However, tracking of public expenditure on DRM is a useful exercise to review how public funds are spent by governments across sectors nationally and/or subnationally, and what was achieved as a result.

A Disaster Risk Management Public Expenditure and Institutional Review conducted by UNDP in Lao People's Democratic Republic, Thailand and Viet Nam found that expenditure in support of DRM appeared to be low in relation to GDP and total budget expenditure in the three countries.³¹³ However, estimated expenditure on DRM-related activities was higher than that estimated for climate change investments in a similar review on climate change expenditures in Thailand and Viet Nam. Expenditure on DRM-relevant activities was concentrated in a small number of similar ministries and agencies across each of the three countries. These ministries included those responsible for agriculture, irrigation, natural resources, environment and construction. DRM-relevant expenditure that was specifically focused on activities related to DRM policy, community awareness, capacity-building, early warning and research, was very small and usually embedded as components in other projects and investments.

While its ability to support prospective risk management is under-optimized, leveraging the private re/insurance industry and capital markets can afford some degree of fiscal protection in disaster-prone economies. Examples of regional parametric insurance schemes were highlighted in section 10.1, but

303 (Alton, Mahul and Benson 2017)

304 (International Capital Market Association 2019)

305 (World Bank 2018)

306 (UNDP 2019h); (UNISDR 2017d)

307 (Bolivia (Plurinational State of) 2015); (UNDP 2019d); (Peru, Office of the Director-General of Public Investment, Ministry of Economics and Finance 2016)

308 (Maeda, Shivakoti and Prabhakar 2019)

309 (Digregorio and Teufers 2019)

310 (UNDP 2017a)

311 (Maeda, Shivakoti and Prabhakar 2019); (Philippines 2010)

312 (IFRC 2016a)

313 (Lavell et al. n.d.); (Abbott 2018)

national schemes are also emerging. Parametric insurance is a financing tool for governments to transfer their rising climate and disaster risk to the international insurance markets. It allows for fast payouts in the wake of disaster, triggered by agreed parameters, which are correlated with insured damages, financial losses or funding needs.

The introduction of the Turkish Catastrophe Insurance Pool in 2000 has resulted in 47% of dwellings having compulsory earthquake coverage.³¹⁴ Other sovereign risk transfer options include Mexico's Catastrophe ("CAT") bonds, which allow the government to transfer a pool of disaster risk to the capital markets.³¹⁵

In the Philippines, the parametric insurance scheme covers 25 provinces. Mexico's committee for response to national disasters and emergencies (CADENA in its Spanish title) has established an agriculture pool that offers more traditional livestock insurance and crop area-linked index insurance. For such financing mechanisms to work effectively, they need to be built on thorough national and regional level risk information. This is also the approach of the Risk Assessment and Financing Program in the South-West Indian Ocean, which is led by the Prime Minister's Office and the Ministry of Finance in Madagascar.³¹⁶

indicator of unsustainable development, have yet to permeate conventional DRR and development policy and practice. As described previously in this GAR, especially in Chapter 2, this requires a new understanding of risk in the interactions between the environment and human-made systems, and a shift towards systems-based thinking in risk reduction within mainstream policymaking at practice.

There has been some progress in DRR mainstreaming through a range of entry points such as policy, organizations, knowledge, stakeholder engagement and finance. However, several key challenges remain. The capacities and skills to drive mainstreaming and risk reduction processes over a sufficient length of time are still not adequate. Despite many innovative financing mechanisms and regulatory advancements, bottlenecks persist in financing the effort required to achieve the risk reduction goals that countries have set for themselves, including those enshrined in their global commitments under the Sendai Framework, Paris Agreement, 2030 Agenda and other global frameworks.

Setting the right incentives to engage key stakeholders in a meaningful way, including communities at risk and the private sector, is not a new challenge, but is one that requires genuine action. There are still gaps in generating and making accessible risk information, the related tools that are able to generate disaggregated and geospatial data down to the lowest level of analysis, and also in understanding the vulnerability of human systems to cascading and systemic risk.

12.4

Conclusions

The clear relationship between risk from natural and man-made hazards and risks to and from development is the core rationale for integrating DRR into development planning and budgeting. Unless nations accelerate their efforts to curb the development-based drivers of risk, sustainable development may not be possible, and certainly not achievable by 2030. However, recognition of the need to address these development-based risk drivers, and to accept that disaster impacts are an

³¹⁴ (UNDP 2018b)

³¹⁵ (International Capital Market Association 2019)

³¹⁶ (Andriamanalinarivo, Falyb and Randriamanalina 2019)