Chapter 13: Integration between disaster risk reduction and national climate change adaptation strategies and plans

13.1

Disaster and development risks from climate change

13.1.1

Risk from climate change is profound and urgent responses are needed

Current national commitments to reduce GHG emissions and otherwise mitigate global warming under the Paris Agreement will not contain global warming within 2°C above pre-industrial levels, let alone the preferred containment within 1.5°C. The IPCC SR1.5 projects that, based on Member States' current NDCs, the climate system is heading off track into the territory of 2.9°C to 3.4°C warming.[317] If this happens, it would take future hydrometeorological hazard extremes well outside the known range of current experience and alter the loss and damage equations and fragility curves of almost all known human and natural systems, placing them at unknown levels of risk. This would render current strategies for CCA and DRR, in most countries, virtually obsolete. It also means that it is no longer sufficient to address adaptation in isolation from development planning, and that sustainable socioeconomic development, by definition, must include mitigation of global warming.

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317 (IPCC 2018)

The IPCC SR1.5 and its Fifth Assessment Report (published in 2014)[318] have also reiterated that global warming triggers climate change effects that are not linear. This is based on multiple lines of evidence, including on observations already made in recent decades and on the projections of a range of different global climate models about future effects. So even if global warming is contained within the range of 1.5°C to 2°C, there will be very significant health and socioeconomic effects due to increasing average temperatures. In addition, and significantly for understanding and reducing risk, humanity now faces the current reality and the future prospect of more-extreme and much higher frequency "natural" hazards – extremes of cold to heat-waves, longer and more sustained drought, more intense and more frequent storm events, heavier rainfall and more flooding. This means that the line between DRR and CCA, if indeed such a line ever existed, is no longer possible to discern. Climate change is by no means the only source of disaster risk. As the foregoing parts of this GAR have emphasized, risks arise from a range of other natural, environmental, biological and technological hazards and drivers. Climate change is increasing the risk of disaster – amplifying existing risk and creating new risks including the direct consequences of a warming planet – with cascading consequences in the short, medium and long term.

In this sense, CCA can be characterized as essentially a subset of DRR. Climate mitigation can also be understood as a subset of development planning.[319] The main policy implication, within the risk framework of this GAR, is that at a minimum, CCA needs to be integrated with DRR, and that governments need to move to a coherent policy approach that sees both of these risk reduction measures as integral to planning for sustainable development.

This situation has become much clearer since the Sendai Framework was agreed in 2015. There is also no obligation on Member States to divide their policy formulation and implementation according to the scope of different international agreements negotiated along thematic lines. Accordingly, this chapter is an account of a range of country policy practices on integration of CCA and DRR. It also gives some examples of fuller integration into development planning and an exhortation to governments to explore more fully the efficiency and effectiveness benefits of taking a systems-based approach to disaster and climate risk management.

13.1.2

International framework

As part of the processes and mechanisms under the 1992 UNFCCC,[320] the Paris Agreement established a global goal on adaptation of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change. It seeks to contribute to sustainable development and ensure an adequate adaptation response in the context of the temperature goal referred to in Article 2: "Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change." [321]

In the years before the Paris Agreement, during the climate negotiations, and since 2015, there has been considerable debate about the likely differences in impact between warming of 1.5°C and 2°C, focusing on the capacity and scope for adaptation. Since 1990, this debate has included a strong message from the Alliance of Small Island States[322] that containment of warming within 1.5°C was essential for socioeconomic survival of its members, and in many cases their physical existence, due to projected sea-level rise and other climate change impacts.[323]

As the United Nations body for assessing the science related to climate change, IPCC was created in 1988, to provide policymakers with regular scientific assessments on climate change, its implications and potential future risks, as well as to put forward adaptation and mitigation options. Its assessment reports, based on the work of a large network of experts globally, have long been familiar to policymakers in the fields of environmental protection and hydrometeorology.[324] Its work

is also now widely recognized as relevant to policymakers concerned with the broader agendas of development planning and DRR.

The last major synthesis report of the IPCC, the Fifth Assessment Report, was published in 2014,[325] and was informed by research undertaken for the 2012 Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation.[326] These remain current and relevant resources. The 2018 IPCC SR1.5 is significant in that it addresses the probable differences in impacts of global warming of 1.5°C compared with 2°C, specifically "in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty."[327] It is a compelling new resource that makes it clear that addressing climate change mitigation and adaptation is an urgent global and national priority for DRR strategies as part of planning for risk-informed socioeconomic development, in particular that containing global warming within 1.5°C will reduce the impacts significantly compared with 2°C warming.[328] Relevant highlights of IPCC SR1.5 are considered here as an essential context for addressing questions of disaster and climate risk at national policy level.

13.1.3

Intergovernmental Panel on Climate Change Special Report 2018 – Global Warming of 1.5°C

The IPCC SR1.5 highlights that the global climate has already changed relative to the pre-industrial period and that these changes have affected organisms and ecosystems, as well as human systems and well-being.[329] Human activities have already caused approximately 1.0°C of global warming above pre-industrial levels, which has led to multiple observed changes including more extreme weather, frequent heat-waves in most land regions, increased frequency and intensity of heavy precipitation events, increased risk of drought in the Mediterranean region, rising sea levels and diminishing Arctic sea ice. If global warming continues at the current rate of 0.2°C per decade, the surface of the planet will warm by 1.5°C above pre-industrial levels between 2030 and 2052, provoking further non-linear change with potentially increasingly systemic consequences.

Future climate-related risks to health, livelihoods, food security, water supply, human security and economic growth depend on the rate, peak and duration of warming, but risks to natural and human systems are expected to be lower at 1.5°C than at 2°C of global warming. Future risks at 1.5°C of global warming will depend on the mitigation pathway and on the possible occurrence of a "transient overshoot" (i.e. if the increase goes above 1.5°C but later returns to the 1.5°C level). The impacts on natural and human systems would be greater if mitigation pathways cause such a temporary overshoot above 1.5°C warming and then return to 1.5°C later in the century, as compared with pathways that stabilize at 1.5°C without an overshoot. That is, it is far preferable to ensure that the increase does not ever exceed 1.5°C warming. This would avoid climate change impacts on sustainable development, and support efforts to eradicate poverty and reduce inequalities, if mitigation and adaptation synergies are maximized while trade-offs are minimized.

Some aspects of climate risk most relevant to adaptation strategies at national level – and which also highlight the urgency of integrating climate change mitigation into all development strategies to avoid these risks eventuating in their more extreme forms – are highlighted in Box 13.1.

318 (IPCC 2014)
319 (Kelman 2015)
320 (UNFCCC 1992)
321 (United Nations 2015b)
322 (Alliance of Small Island States 2019)
323 (Thomas, Schleussner and Kumar 2018)
324 (United Nations General Assembly 1988)
325 (IPCC 2014)
326 (IPCC 2012)
327 (IPCC 2018)
328 (Centre for Science and Environment 2018)
329 (IPCC 2018; summary based on input from Wilfran Moufouma-Okia, IPCC)

Box 13.1. IPCC SR1.5 – key climate risks relevant to national adaptation and risk reduction strategies

Extreme hazard events

- Limiting global warming to 1.5°C would limit risks of increases in heavy precipitation events on a global scale and in several regions, and reduce risks associated with water availability and extreme drought.
- Human exposure to increased flooding is projected to be substantially lower at 1.5°C than at 2°C of global warming, although projected changes create regionally differentiated risks.

Human health

- Every extra bit of warming matters for human health, especially because warming of 1.5°C or higher increases the risk associated with long-lasting or irreversible changes.
- Lower risks are projected at 1.5°C than at 2°C for heat-related morbidity and mortality, and for ozone-related mortality if emissions that lead to ozone formation remain high.
- Urban heat islands often amplify the impacts of heat-waves in cities.
- Risks for some vector-borne diseases, such as malaria and dengue fever, are projected to increase with warming from 1.5°C to 2°C, including potential shifts in their geographic range.

Impacts on ecosystems and species important for human food and livelihoods

- Constraining global warming to 1.5°C, rather than to 2°C and higher, is projected to have many benefits for terrestrial and wetland ecosystems and for the preservation of their services to humans.
- Risks for natural and managed ecosystems are higher on drylands than on humid lands.
- If global warming can be limited to 1.5°C, the impacts on biodiversity and ecosystems and on terrestrial, freshwater and coastal ecosystems are projected to be lower than at 2°C of global warming.
- Limiting global warming to 1.5°C is projected to reduce risks to marine biodiversity, fisheries and ecosystems, and their functions and services to humans, as illustrated by recent changes to Arctic sea ice and warm-water coral reef ecosystems.
- Risks of local species losses and, consequently, risks of extinction are much less in a 1.5°C versus a 2°C warmer world.

Agriculture and fisheries

- Limiting global warming to 1.5°C, compared with 2°C, is projected to result in smaller net reductions in yields of maize, rice, wheat and potentially other cereal crops, particularly in sub-Saharan Africa, South-East Asia, and Central and South America.
- Reductions in projected food availability are larger at 2°C than at 1.5°C of global warming in the Sahel, Southern Africa, the Mediterranean, Central Europe and the Amazon.
- Fisheries and aquaculture are important to global food security but are already facing increasing risks from ocean warming and acidification. These risks are projected to increase at 1.5°C of global warming and affect key organisms such as fin fish and oysters, especially at low latitudes.

(Source: IPCC SR1.5 2018)

- Small-scale fisheries in tropical regions, which are acutely dependent on habitat provided by coastal ecosystems such as coral reefs, mangroves, seagrass and kelp forests, are expected to face growing risks at 1.5°C of warming because of loss of habitat.

Regional differences in impacts

- Climate models anticipate robust regional climate differences within global warming. For instance, temperature increases in sub-Saharan Africa are projected to be higher than the global mean temperature increase.
- The differences in the risks among regions are also strongly influenced by local socio-economic conditions. Depending on future socioeconomic conditions, limiting global warming to 1.5°C, compared to 2°C, may reduce the proportion of the world's population exposed to a climate-change-induced increase in water stress by up to 50%, although there is considerable variability among regions. Regions with particularly large benefits could include the Mediterranean and the Caribbean. However, socio-economic drivers are expected to have a greater influence on these risks than the changes in climate.

Small islands

- Small islands are projected to experience multiple interrelated risks at 1.5°C of global warming, which will increase with warming of 2°C and higher levels. Climate hazards at 1.5°C are projected to be lower than those at 2°C.
- Long-term risks of coastal flooding and impacts on populations, infrastructure and assets, freshwater stress, and risks across marine ecosystems and critical sectors are projected to increase at 1.5°C compared with present-day levels and increase further at 2°C, limiting adaptation opportunities and increasing loss and damage.
- Impacts associated with sea-level rise and changes to the salinity of coastal groundwater, increased flooding and damage to infrastructure are projected to be critically important in vulnerable environments, such as small islands, low-lying coasts and deltas, at global warming of 1.5°C and 2°C.
- Projections of increased frequency of the most intense storms at 1.5°C and higher warming levels are a significant cause for concern, making adaptation a matter of survival. In the Caribbean islands for instance, extreme weather linked to tropical storms and hurricanes represent one of the largest risks facing nations. Non-economic damages include detrimental health impacts, forced displacement and destruction of cultural heritages.

Economic growth

- Risks to global aggregated economic growth due to climate change impacts are projected to be lower at 1.5°C than at 2°C by the end of this century.
- The largest reductions in economic growth at 2°C compared to 1.5°C of warming are projected for low- and middle-income countries and regions (the African continent, South-East Asia, Brazil, India and Mexico).
- Countries in the tropics and southern hemisphere subtropics are projected to experience the largest impacts on economic growth due to climate change should global warming increase from 1.5°C to 2°C.

In response to the projected climate risks, the range of climate mitigation and adaptation actions that can be deployed in the short run are well known. These include: low-emission technologies, new infrastructure and energy efficiency measures in buildings, industry and transport; transformation of fiscal structures; reallocation of investments and human resources towards low-emission assets; sustainable land and water management; ecosystem restoration; enhancement of adaptive capacities to climate risks and impacts; DRR; research and development; and mobilization of new, traditional and indigenous knowledge.

Strengthening the capacities for climate action of national and subnational authorities, civil society, the private sector, indigenous peoples and local communities can support the implementation of ambitious actions implied by limiting global warming to 1.5°C. International cooperation can provide an enabling environment for this to be achieved in all countries and for all people, in the context of sustainable development.

It is now clear that human health and welfare, national socioeconomic development in most countries globally, and the global systems of food production and trade are likely to be affected negatively by climate change, even if global warming is contained within 1.5°C above pre-industrial levels. The extent and intensity of climatological hazards is also set to increase, leading to more risk of disasters, even under this most favourable scenario. To an extent, the whole discussion of integrated policy approaches is predicated on the belief that global warming will not exceed 2°C. If it does, the risks to all human systems and societies become incalculable based on present knowledge, and are likely to be catastrophic.

In this sense, effective climate change mitigation is now recognized as the foundation for sustainable development, CCA and DRR. However, the focus of this chapter is on integration of CCA and DRR, and the extent to which they can become part of coherent development policy in practice, based on the immediate short-term needs, and on a degree of optimism that global warming will be contained in the medium to long term.

The landscape for broader climate action is becoming increasingly clear. The following requires further exploration for the purposes of national and local risk governance in the context of this GAR: (a) the range of options and mechanisms for CCA, especially in developing economies and the regions most vulnerable to the effects of climate change and (b) whether there are system efficiencies to be gained by integrating CCA and DRR, and ultimately combining all such risks into planning for risk-informed sustainable development.

13.2

Synergies between climate change adaptation and disaster risk reduction

CCA and DRR efforts share the immediate common aim of building resilience of people, economies and natural resources to the impacts of extreme weather and climate change. But IPCC SR1.5 makes it clearer than ever that climate change may lead to changes in risk levels for non-climate hazards, including impacts on food security and human health due to cascading risks from higher temperatures, warmer seas, sea-level rise and others. As already described in the foregoing chapters of this GAR, the Sendai Framework requires policymakers to contemplate disaster risk from a multi-hazard perspective that includes the traditionally recognized natural hazards that lead to disasters, as well as a range of man-made and mixed hazards, especially the newly included environmental, technological and biological hazards and risks,[330] described in Part I of this GAR.

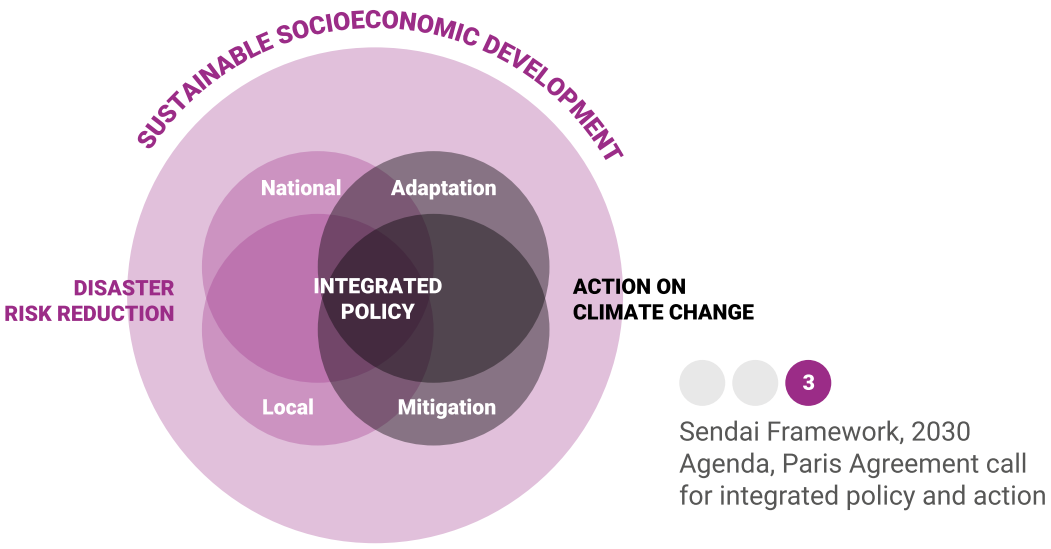
While DRR has a much wider scope than climatological hazards, CCA is also much more related to extreme hydrometeorological hazards and warmer temperatures than DRR. Chapter 2 of this GAR provided significant insights into how multiple risks cascade, and how complex systems generate and respond to shocks in ways that are not linear, making the impacts difficult to predict through traditional hazard-by-hazard monitoring, so that a systems-based approach is needed for effective risk management.

From a policy and governance perspective, climate and disaster risks present a significant degree of uncertainty in estimating potential impacts. This is due to the complex nature of the phenomena, as well as limitations in science and technology to understand projected events and how exposed people and assets will react, due to varied sources and types of vulnerability. However, understanding the commonalities and differences between DRR and CCA in each national context is important for policy coordination, especially if a decision is made to integrate DRR and CCA into one national or local strategy. In some cases, the two are also mainstreamed into risk-informed socioeconomic development planning; it is then essential not to lose sight of the full range of risks that need to be considered, and to include the short-, medium- and long-term timescales required for a systems-based approach.

The question of policy coordination, integration and synergies between CCA and DRR has national and international dimensions. At the national level, governments tend to mandate different departments to deal with the two issues separately, with a few exceptions discussed in the following sections on country experiences. DRR is often assigned to national disaster management agencies, civil protection and response. Given its evolution as an environmental issue, climate change tends to be coordinated through ministries of the environment, in close coordination with finance and planning ministries. Having two departments lead the two agendas separately ensures high cabinet representation, especially in larger countries with more ministries. The downside is that, in some cases, coordination between these activities is limited. The source of financing is also a major factor in the degree of integration of the two issues, with different streams of international financing reinforcing silos at national level due to the funding criteria and compliance requirements.

330 (United Nations 2015a)

Figure 13.1. A systems-based approach to risk reduction: the Sendai Framework, 2030 Agenda and Paris Agreement call for policy integration of development, disaster and climate risk management



(Source: UNDDR 2019)

At the international level, Member States have agreed to different elements in terms of reporting, funding and other mechanisms for their implementation under the Paris Agreement and the Sendai Framework. As at the national level, the two agendas being governed by separate agreements and mechanisms ensure effective international representation. Decisions are in place to promote synergy and coherence in the implementation of the Paris Agreement and the Sendai Framework. The 2030 Agenda provides the common basis for coordinating the implementation of the two, as disasters and climate change have the potential to severely affect development efforts. As discussed in Part II of this GAR, practical coordination for international reporting is in the early stages, and Member States need to address very distinct reporting requirements and funding streams for CCA and DRR. However, new initiatives do exist integrating CCA, climate change mitigation, DRR and sustainable development agendas.

In considering integrated approaches, Member States can also try to avoid some of the perhaps-artificial divisions that occur in international agreements due to the negotiation process and established organizational mandates. For example, one analysis is that the mentions of climate change in the Sendai Framework overemphasizes the hazard dimension of disaster risk, rather emphasizing an all-vulnerabilities and all-resilience approach that includes climate change and development.[331] It may also be helpful in organizing institutional responsibilities at national level to think of CCA as a subset within DRR and climate change mitigation as a subset within sustainable development,[332] even if the choice has been made to establish a separate legal or institutional framework to deal with climate change holistically.

Positive evidence of synergy is already seen in Member States' reports on NDCs under the Paris Agreement. More than 50 countries referenced DRR or DRM as part of their NDC. Colombia and India made explicit references to the Sendai Framework in their NDCs.[333]

13.3

Guidance and mechanisms for integrated climate change adaptation under the United Nations Framework Convention on Climate Change

13.3.1

Evolution of technical guidance on national adaptation plans

At the global level, specific goals and guidance for Member States to conduct CCA comes from UNFCCC, especially the Paris Agreement, as does an increasingly important stream of public international financing for CCA through the UNFCCC financial mechanism, especially the Green Climate Fund (GCF).[334]

UNFCCC has a process to formulate and implement NAPs, which was established in 2010 under the UNFCCC Cancun Adaptation Framework. These types of plans began in 2001 as an initiative only for the least developed countries to formulate NAPAs and thereby access the Least Developed Countries Fund. However, since 2010, there has been a shift to NAPs as a relevant tool for all developed and developing countries.[335] UNFCCC developed initial guidelines for the formulation of NAPs in 2011, which outline four main elements and instruct countries to lay the groundwork and address gaps, develop preparatory elements, establish implementation strategies, and report, monitor and review them on a regular basis.[336]

In 2012, the UNFCCC Least Developed Countries Expert Group developed technical guidelines for the process to formulate and implement NAPs.[337] These are: (a) to reduce vulnerability to the impacts of climate change, by building adaptive capacity and resilience, and (b) to facilitate the integration of CCA in a coherent manner, into relevant new and existing policies, programmes and activities, in particular development planning processes and strategies, within all relevant sectors and at different levels, as appropriate.[338]

DRR is not explicitly mentioned in the initial guidelines for NAPs/NAPAs, and they principally address climate-related hazards, typically drought, floods, sea-level rise and severe storms. However, recent and ongoing efforts by countries to develop NAPs and to undertake broad national and local adaptation planning according to their own needs assessments, provides a clear opportunity for countries to consider multiple risks in development decisions and accelerate the common goal of climate and disaster-resilient development.

Focusing on this opportunity, a supplement to NAP technical guidelines to countries was developed from a disaster risk angle in 2017 specifically dedicated to "promoting synergy with DRR in National Adaptation Plans".[339] In 2018, the UNFCCC Adaptation Committee considered a report from an expert meeting focusing on national adaptation goals/indicators and their relationship with SDGs and the Sendai Framework.[340]

The supplementary guidance aims to provide national authorities in charge of adaptation planning,

331 (Kelman 2015)
332 (Kelman 2015)
333 (UNFCCC 2017)
334 (GCF 2019a)
335 (UNFCCC 2012a)
336 (UNFCCC 2012a)
337 (UNFCCC 2012b)
338 (UNFCCC 2012a)
339 (UNFCCC 2012b)
340 (UNFCCC 2018)

as well as the many actors involved in adaptation, with practical advice on when and how to incorporate DRR aspects in the adaptation planning process. It also aims to give DRM authorities a better understanding of the NAP process, including advice on how they can contribute to and support its development, and to prompt central planning authorities such as ministries of planning and finance on how to use national adaptation planning in shaping resilient development.

13.3.2

Taking the next step – fully integrated development planning

Considering the commonalities in the approaches and requirements of integrating DRR and sustainable resilient development in national CCA strategies such as NAP and NAPA processes, three major actions seem to be most conducive to success. Firstly, establishing a strong governance mechanism that involves all relevant stakeholders across disciplines, which helps avoid ineffective and inefficient action, communication and cooperation. Secondly, developing a central and accessible knowledge management platform and risk assessment system for CCA and DRR with a balanced combination of scientific and local knowledge, good practices, natural and social scientific data, and risk information. And lastly, redesigning funding schemes and mechanisms to support coherent CCA and DRR solutions encourages cooperation and coordination for efficient use of financial resources.[341] The technical expert meeting on adaptation in Bonn, Germany, in 2017 made recommendations to countries to bring DRR and CCA together to ensure sustainable development (Box 13.2).

13.3.3

National Adaptation Plan-Sustainable Development Goals Integrative Framework

To support the formulation of NAPs that integrate well with development planning, the UNFCCC Least Developed Countries Expert Group developed the NAP-SDG Integrative Framework (iFrame) that facilitates integration of different entry points to planning by managing relationships between the entry points and the systems being managed. By focusing on the systems that are key to a country's development, it is possible to map to different drivers (climatic hazards for instance), as well as to sectors or ministries, specific SDGs, different spatial units, development themes or other frameworks such as the Sendai Framework. See Figure 13.2, which shows a sample collection of systems in the middle. These systems become the focus of assessment and subsequent planning and actions to address adaptation goals. The achievement of particular SDGs is ensured by safeguarding that all the necessary systems of governance relevant to that goal are included in the analysis and subsequent action.

NAP-SDG iFrame is being tested in some countries. Early results indicate that this systems approach is effective at focusing on outputs and outcomes that would have the greatest impact on development dividends, while avoiding potential bias introduced when actors promote their interests over those of more essential systems. The approach also helps ensure multiple frameworks are addressed simultaneously. The approach has the potential to manage multiple and overlapping climatic factors or hazards, and should facilitate governance and synergy among different actors and ministries. The systems can be singular, as in the case of nexus approaches, or compound, to represent development themes such as food security, which would invariably include aspects of crop/food production, as well as other aspects of food availability, access and utilization. This approach lends itself to easy design and implementation of integrated models for the system to facilitate assessment of climate impacts and potential losses within a broader

Box 13.2. Opportunities and options for integrating CCA with SDGs and the Sendai Framework, May 2017

Key recommendations:

- While maintaining the autonomy of each of the post-2015 frameworks, improved coherence of action to implement the three frameworks can save money and time, enhance efficiency and further enable adaptation action.
- Both "resilience" and "ecosystems" can act as core concepts for motivating integration. Actors, including State and non-State, operating across multiple sectors and scales ranging from local to global, can facilitate policy coherence, and vulnerable people and communities can benefit from and initiate effective bottom-up, locally driven solutions that contribute to multiple policy outcomes simultaneously.
- Building the capacity for coherence and coordination will help to clarify roles and responsibilities and to encourage partnerships among a wide range of actors.
- The availability of data, including climate and socioeconomic data, and their resolution remain a challenge, especially in Africa. Better data management, more informed policymaking and capacity-building are needed.
- The process to formulate and implement NAPs can effectively support the implementation of enhanced adaptation action and the development of integrated approaches to adaptation, sustainable development and DRR, thanks in part to its demonstrated success as a planning instrument, the resources available for its support, its iterative nature and flexible, nationally driven format.
- Adequate, sustainable support for adaptation efforts from public, private, international and national sources is crucial. Accessing finance and technology development and transfer and capacity-building support is also critical, particularly for developing countries.

(Source: UNFCCC 2017)

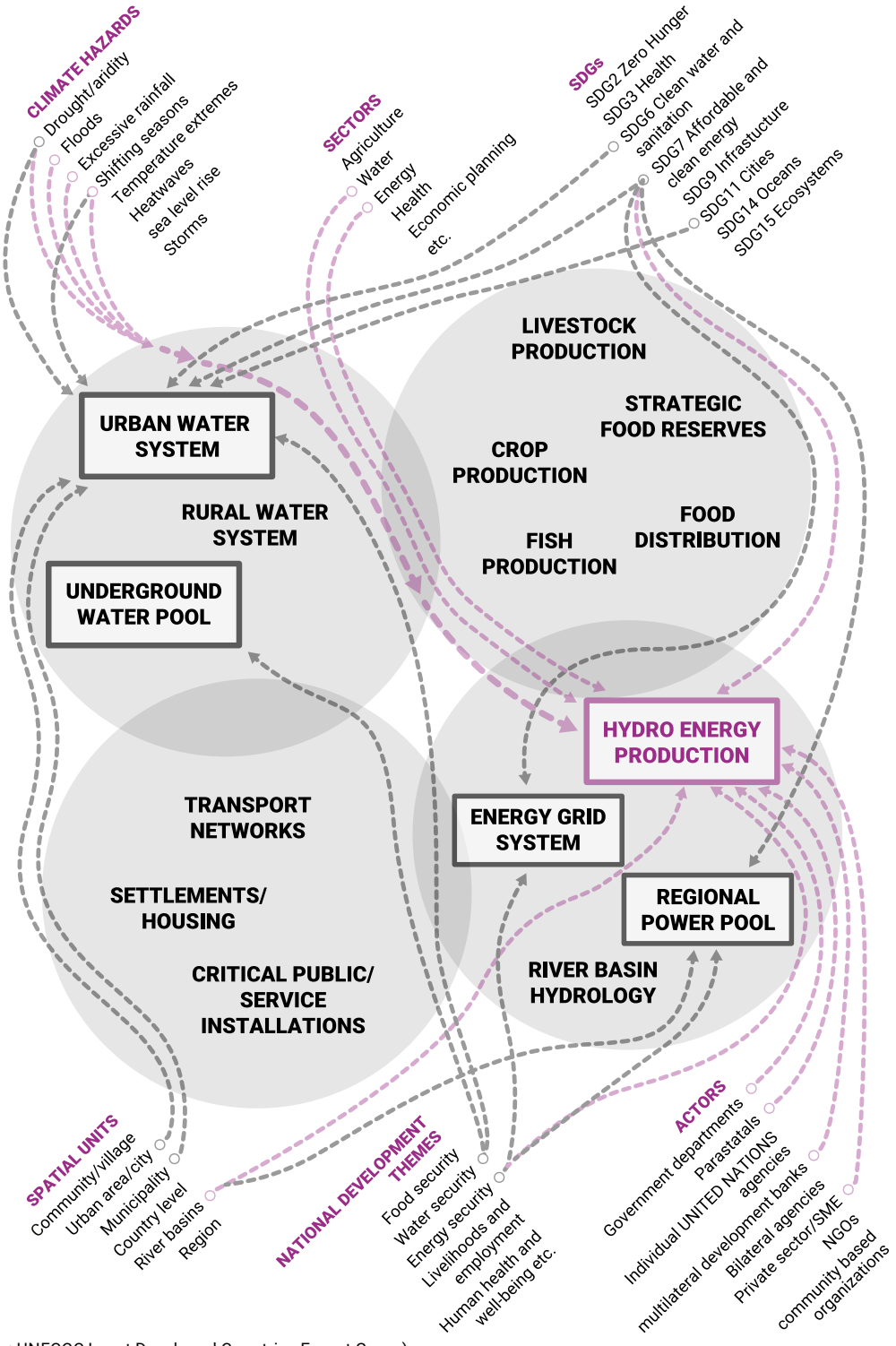
development framework. It also becomes easy to assess impacts of one or multiple interacting climatic drivers or hazards, as it is often the case that countries may be faced with multiple hazards in a given year such as serious drought, flooding, shifting seasons and heat-waves.

The systems at the centre of the iFrame can be defined in a manner that makes sense for the country, and can include value or supply chains, each with an implied scale and models of drivers and interacting parts, and with specific pathways for how climatic or other natural hazards would have an impact. iFrame can be applied to dissolve working in silos and to manage different lenses to adaptation, and should open up completely new horizons and developments in adaptation planning, implementation, monitoring and assessment, and knowledge management.

The World Bank and GFDRR have also developed a methodology that supports countries to integrate

341 (UNISDR 2017a)

Figure 13.2. **Collection of sample national systems showing links to multiple entry point elements including SDGs, as part of NAP-SDG iFrame, being developed by the UNFCCC Least Developed Countries Expert Group**



(Source: UNFCCC Least Developed Countries Expert Group)

climate change and DRM into development planning. The methodology, that has so far been used in Cameroon, Ghana, Malawi and Senegal, acknowledges that developing countries have limited financial resources and financial planning capacities.[342] It supports governments in the prioritization of their investments by considering existing government-led plans such as national development plans, NAPs, NDCs, etc., and by contributing to highlighting areas and sectors where investments can have the largest impact in building resilience while supporting the country's development objectives. The method relies on an evidence-based participatory and iterative process among national and international climate scientists and economists, sectoral institutions, policymakers and civil society.

In addition to questions of process and financing, the content of DRR and adaptation plans is crucial, as are the mechanisms for their implementation. IPCC SR1.5 does not provide a comprehensive discussion of risk and adaptation options for all natural and human systems due to its scope, but it clearly illustrates key risks and adaptation options for ocean ecosystems and sectors. Adaptation options specific to national contexts, if carefully selected together with enabling conditions, will have benefits for sustainable development and poverty reduction with global warming of 1.5°C, although trade-offs are possible. Most adaptation needs will be lower for global warming of 1.5°C compared to 2°C. There is a wide range of adaptation options that can reduce the risks of climate change, though there are sectoral variations. There are also limits to adaptation and adaptive capacity for some human and natural systems at global warming of 1.5°C, with associated losses. Furthermore, if the 1.5°C threshold is breached, the possibilities to adapt will diminish as ecosystem services collapse. Unable to support current economic activity and human populations, migration on a scale never before seen may be triggered from arid and semi-arid regions to low elevation coastal zones, building risk.

Many adaptation initiatives are currently occurring at local levels in response to observed and projected environmental changes as well as social and economic stresses. Recent studies have suggested that some of the climate adaptation actions are not sustainable, lack evaluation frameworks and hold potential for maladaptation. Utilizing indigenous and local knowledge and stakeholder engagement can aid the development of adaptation policies and broader sustainable development, along with more proactive and regionally coherent adaptation plans and actions, and regional cooperation. But sometimes the approach needs to take a wider and more systemic view of risk and adaptation. For example, synergies can be achieved across systemic transitions through several overarching adaptation options in rural and urban areas. Investments in health, social security, risk sharing and spreading are cost-effective adaptation measures with high potential for scaling up. Social protection programmes, including cash and in-kind transfers to protect poor and vulnerable households from the impact of economic shocks, natural hazards and other crises, can also build generic adaptive capacity and reduce vulnerability when combined with a comprehensive climate risk management approach.

DRR and education-based adaptation to climate risks are critical for building adaptive capacity, but may have lower prospects for scaling up than some of the more system-wide adaptation approaches mentioned. As a process for designing, implementing and evaluating strategies, policies and measures to improve the understanding of risk, DRR is a tool that can be integrated with adaptation to reduce vulnerability. However, institutional, technical and financial capacity challenges in front-line agencies often constitute constraints.

The following exploration of national and regional practices in integrated approaches to DRR and CCA therefore aims to identify some of the challenges, synergies found in practice and lessons learned from different approaches.

342 (De Bettencourt et al. 2013)

13.4

Selected country experiences with integrated climate and disaster risk reduction

13.4.1

Enabling legislation and institutions

The International Federation of Red Cross and Red Crescent Societies (IFRC), in collaboration with United Nations organizations and donors, has developed tools to support countries to strengthen their legal and policy frameworks for DRR and CCA. The Checklist on Law and Disaster Risk Reduction is a succinct and easy-to-use assessment tool that, by guiding a research and assessment process, helps countries identify strengths in legal frameworks. These are areas where greater focus is needed on implementation, as well as whether drafting or revision of legislation is necessary. Another relevant tool is the Law and Climate Change Toolkit. This is a global electronic resource designed for use by national governments, international organizations and experts engaged in assisting countries to implement national climate change laws.

To establish a strong governance mechanism, strategies benefit from an enabling legal framework which also applies to integrated DRR and CCA strategies. Recent reviews of DRR laws and regulations in various countries indicate that the integration of DRR and CCA into legal frameworks remains the exception rather than the rule.[343] The trend in the countries reviewed has been to allocate responsibility for the administration of CCA laws to ministries of environment, without requiring them to coordinate with DRM institutions, while DRM institutions are also not required to coordinate with Ministries of Environment. Only more recently have some countries, notably in the Pacific but also other regions, adopted a new model in which CCA and DRR are integrated with development planning and resource management legislation.

Examples of such integrated legal frameworks include Algeria, Mexico and Uruguay. In Algeria, the National Agency on Climate Change, based in the Ministry for the Environment, is responsible for mainstreaming CCA into development planning. However, as Algeria's National Committee on Major Risks, established by law, is mandated to coordinate all activities on major risks, including implementation mechanisms for CCA and DRM institutions, it provides an overarching coordination mechanism. The enabling law for this in Algeria is the 2004 Law on Prevention of Major Risks and Disaster Management. This legal and institutional framework has the potential to achieve a high level of CCA and DRR integration if implemented as planned.[344]

In Mexico, the General Climate Change Law of 2012 is supported by a special national climate change programme and an Inter-Ministerial Commission on Climate Change, which is a cross-sectoral coordination body formed by the heads of 14 federal ministries. In Uruguay, a special decree, the National Response to Climate Change and Variability, was passed in 2009. Implemented by the Ministry of Housing, Spatial Planning and the Environment, its purpose is to coordinate actions among all institutions relevant to achieving risk prevention in the whole territory.

13.4.2

Financing

Financing for adaptation and DRR is a key element for enhancing capacity and ensuring successful implementation. Although many countries have undertaken climate and disaster risk assessments, the systematic integration of these assessments into national financial and fiscal planning processes is still limited. This suggests a need to redesign funding schemes and mechanisms to encourage

cooperation and coordination for efficient use of financial resources.

International public financing of CCA is now also a major resource and influence on national approaches. GCF was set up in 2010 by Parties to UNFCCC as part of the Convention's financial mechanism to increase financial flows from developed countries to developing countries for mitigation and adaptation. It implements the financing provisions of the Paris Agreement (especially Article 9) aimed at keeping climate change well below 2°C by promoting low-emission and climate-resilient development, at the same time taking into account the needs of countries that are particularly vulnerable to climate change impacts.[345] It is the most significant source of public international financing for national adaptation planning (through a range of instruments such as grants, concessional debt financing, equity and guarantees), with $5 billion already committed by early 2019 and over 100 country mitigation and/or adaptation projects under way through accredited partners.[346]

Many of the GCF adaptation projects integrate components that would often be seen as DRR or sustainable development. This indicates the extent of policy coherence or integrated risk governance that is already being made possible under this mechanism. Projects are explicitly documented in relation to the SDGs that they help to implement. The criteria include safeguards for indigenous peoples, gender mainstreaming and environmental and social safeguards. For example, a project just commenced in Namibia is on building resilience of communities living in landscapes threatened under climate change through an ecosystems-based adaptation approach (Project SAP006). It serves GCF results areas (health, food and water security; livelihoods of people and communities; and ecosystems and ecosystem services) as well as SDG 13 on climate action; SDG 14 on life below water; and SDG 15 on life on land.[347] In DRR terminology, this project is also about drought resilience. It is hoped that this clear move towards integrated risk governance by GCF will encourage integrated project proposals from countries where disaster and climate risk have significant overlaps, either generally or in specific regions or sectors.

13.4.3

Risk information

An integrated CCA/DRR policy, strategy or plan needs to be complemented by adequate, accessible and understandable risk information. Ideally, this is an available resource during the policy development stage, to help formulate objectives and goals, but joint risk assessments and ongoing information sharing are key elements of integrated strategies.

A study in Vanuatu identified a well-developed DRR operational governance structure comprising many government levels and non-governmental actors working together to implement top-down and bottom-up DRR strategies that contemplate CCA elements. Stakeholders in Vanuatu accept local and scientific risk knowledge to inform DRR policies, although scientific knowledge is still precedent for the development of formal instruments to reduce disaster risk.[348]

Several good practices in the United Kingdom of Great Britain and Northern Ireland have been identified. These include strong support for the assessment of flood and climate risk through the Adaptation Reporting Powers under the Climate Change Act, which encouraged key infrastructure institutions to consider the impacts of hazards such as flood and climate change on their business and the provision of key services. Additionally, the government encourages use of ecosystem-based

343 (IFRC and UNDP 2014b); (Picard 2018)
344 (UNISDR 2013c)
345 (GCF 2019a)
346 (GCF 2019a)
347 (GCF 2019b)
348 (Jackson, Witt and McNamara 2019)

approaches (e.g. sustainable urban drainage) and infrastructure that has the flexibility to be adapted in the future (e.g. the flood defence walls implemented in Morpeth, north-east England, which have been constructed so that they can be modified easily if required in the future).[349]

A Regional Initiative for the Assessment of the Impact of Climate Change on Water Resources and Socio-Economic Vulnerability in the Arab Region (RICCAR) assesses the impacts of climate change on freshwater resources in the Arab region and their implications for socioeconomic and environmental vulnerability. It does so through the application of scientific methods and consultative processes involving communities in CCA and DRR. The initiative prepares an integrated assessment that links climate change impact assessment outputs to inform an integrated vulnerability assessment to climate change impacts, such as changes in temperature, precipitation and run-off, drought or flooding due to shifting rainfall patterns and extreme weather events.[350] The RICCAR example shows that joint assessments and knowledge development involving two otherwise siloed communities of experts can help build a common understanding of risk, which is the precondition for planning and budgeting.

13.4.4

National adaptation plans

Although NAPs are developed by many countries, the focus for UNFCCC monitoring is on developing countries, and it maintains a public database of these, NAP Central. As at 31 March 2019, 13 NAPs from developing country Parties were developed and submitted on NAP Central between 2015 and 2018, namely Brazil, Burkina Faso, Cameroon, Chile, Colombia, Ethiopia, Fiji, Kenya, Saint Lucia, Sri Lanka, State of Palestine, Sudan and Togo.[351] All of these include aspects of DRR, providing scope for increased coherence between DRR and broader adaptation during the implementation of NAPs.

When evaluating the latest developing country examples of NAPs, which seem to have great potential for integration with DRR, a survey was conducted that showcases the following country experiences.

Case study: Rwanda national adaptation plan

Rwanda integrates DRR into its NAP. Its NDC under the Paris Agreement lists early warning and community-based DRR as adaptation measures, and a guiding principle of the National Disaster Management Policy is to mainstream climate change into DRR.

The two thematic areas are managed through the Ministry of Disasters and Refugees, in charge of DRR, and the Ministry of Environment, through the Rwanda Environment Management Authority, in charge of CCA. These institutions are key partners in DRR and CCA, and have adopted a multidisciplinary and multisectoral approach. The National Disaster Management Policy provides that all public institutions in Rwanda should be involved in disaster management, and it allocated necessary resources to ensure that disaster management is fully incorporated and mainstreamed into plans.

Rwanda's vulnerability to disasters and climate change is rooted in the reliance of most of its population on rain-fed subsistence farming practised on steep topography. Given the livelihood dependence on weather conditions, it is critical that climate change is mainstreamed to help guide interventions aimed at reducing vulnerability to potentially adverse impacts. The policy commits to ensuring that climate change is mainstreamed into all activities related to

disaster management using the East African Community regional climate change policy and the Rwanda Green Growth and Climate resilience strategy as a point of reference.

One of the 14 programmes of action in Rwanda's National Green Growth and Climate Resilience Strategy is dedicated to DRR from a health perspective and is entitled Disaster Management and Disease Prevention. The programme enables risk assessments, vulnerability mapping and vector-borne disease surveillance; the establishment of an integrated EWS, and disaster response plans; the incorporation of disaster and disease considerations into land-use, building and infrastructure regulations; and the employment of community-based DRR programmes designed around local environmental and economic conditions, to mobilize local capacity in emergency response and to reduce locally specific hazards.

The example of Rwanda shows that strong political leadership, based on the scientific evidence that livelihoods are affected by disaster risk and climate change, led to the development of a comprehensive governance framework and the integration of DRR and CCA at different policy levels. As climate change and disaster management are classified as cross-cutting issues in the top national economic development documents, all sector plans are required to include interventions for these issues as budget allocation follows the same guidelines. However, the main hindering factor in implementation remains limited human and financial resources, which make it difficult to move from information exchange and coordination to coordinated action.

The Rwanda case illustrates the strong links between disaster and climate risk in an agrarian economy, and the potential for cascading risk to human health, to which it has responded with an integrated approach including multi-hazard risk assessments and institutional partnerships.

The example from the State of Palestine demonstrates a complex interaction among natural hazards, pressures of population growth and agriculture, fragile ecosystems, water scarcity and regional politics, requiring the systems-based approach it has taken towards assessing and managing disaster and climate risks to development.

349 (Clegg et al. 2019)
350 (United Nations Economic and Social Commission for Western Asia 2017)
351 (UNFCCC 2019)

Case study: State of Palestine national adaptation plan

The State of Palestine is highly vulnerable to earthquakes, floods, landslides, drought and desertification, rapidly declining groundwater resources and seawater intrusion. Water shortage is compounded by overexploitation of water resources and transboundary restrictions. Recent drought events and high population growth have added pressure to its capacity to adapt. Pollution and environmental problems are also exacerbated by restrictions in access to and control over natural resources, such as fresh water and agricultural lands, which are key drivers for overgrazing, deforestation, soil erosion, land degradation and desertification. Environmental degradation of the coastal zone and solid waste disposal are becoming serious concerns in the Gaza Strip. These risks adversely affect the economy, society, environment, health and other sectors. After assessing them holistically, the State of Palestine is making a shift from disaster management to risk management following a 2017 Ministerial Decree.

From the climate adaptation angle, the comprehensive assessment for the 2016 NAP identified a wide range of "highly vulnerable" issues in relation to water, agriculture and food that also affect the vulnerability of other sectors.[352] The NAP assessment revealed that the complex political environment has implications on the State of Palestine's adaptive capacities in relation to many sectors, which compound and aggravate climate vulnerabilities. Consultations with the Environmental Quality Authority were then initiated to support the development of strategies for better embedding ecosystem-based DRR and CCA into policies to protect and manage the ecosystem and natural resource base of the country.

Two national committees provide platforms for coordination among government agencies and other actors: the National Platform for Disaster Risk Reduction, chaired by the Prime Minister's Office, and the National Committee for Climate Change, chaired by the Environment Quality Authority, which is also establishing a General Directorate for Climate Change and Disaster Risk Reduction.

The institutional and legal framework of the DRM system has been set by a national team of governmental agencies, advised by an international advisory team, and there is a draft DRM law with the Prime Minister's Office. The DRM framework forms part of the Disaster Management Policy that is included in the 2017–2022 National Policy Agenda. Preparations for a risk analysis study and the development of a national DRM strategy were under way at the time of writing, with plans to develop a risk map during 2019.

Exploring what ecosystem services can contribute to CCA and DRR, the State of Palestine is developing a coherent set of policies, and there is ongoing work to establish units for CCA and DRR in the institutional set-up of the main relevant Palestinian institutions. Progress has been possible due to the existing political will and commitment. CCA, NAPs and the ecosystem–DRR–CCA nexus are well established in national policies, strategies and plans.

Hindering factors are restrictions on the control of natural resources, a lack of financial resources and environmental education, low-level awareness of climate change risk and difficulty in implementation of integrated development programmes, especially in mobile Bedouin Communities. There are also issues of overlapping mandates among different Palestinian institutions, different sources of traditional knowledge and culture, and limited data availability.

Case study: Chad national adaptation plan

The Chadian NAP includes a project on Community-Based Management of Climate Risks in Chad. By 2021, it aims to ensure that farms, fishing communities and small producers, notably youth and women in targeted regions, use sustainable production systems that allow them to meet their needs, bring food to market and adopt a living environment that is more resilient to climate change and other environmental challenges.

As a Sahelian country, Chad suffers the adverse effects of climate change on all areas of activity of the population, particularly in rural communities. In recent years, there have been many extreme events (e.g. floods, drought and wildfires), as well as increasing land degradation. The limited capacity of local populations to adapt to climate risks is the context for the project, which proposes ways to strengthen the capacities of local communities to adapt to climate change, as well as to develop financial mechanisms for adaptation.

The lead institution is the Ministry of Agriculture, which will integrate outcomes into its plans and policies and will influence the debate on climate risk management in Chad. However, the Ministry of Environment, Water and Fisheries, the Ministry of Civil Aviation and National Meteorology, the Directorate for the Fight against Climate Change, the Microfinance private institution and civil society are also closely involved.

An interesting feature of the project is the focus on gender, strengthening women's involvement in the CCA system. The project will provide women with regular access to information and credit for production. As women play a vital role in community-based production systems, this initiative will involve women in the implementation of all the project deliverables, ranging from access to information, to credit and microinsurance. The design of training modules on climate risk management will enable women to benefit from current knowledge on CCA and risk management.

The promotion of financial risk transfer mechanisms to help rural households minimize losses and provide safety nets against climate shocks contributes to providing a more comprehensive approach to DRR and CCA integration.

The approach in Chad sees a national policy that is focused on community resilience and capacity-building for the disaster and climate risks that affect rural households directly, by recognizing and supporting the role of women in these communities as leaders and primary producers.

352 (State of Palestine 2016)

Case study: Philippines national adaptation plan

The Philippine Disaster Risk Reduction and Management Act and its institutional system is often cited as a positive example of a strong emphasis on risk reduction in a developing country that faces extraordinary levels of natural hazards – hydrometeorological and geological. Less well known is the Philippine Climate Change Act, which aims to mainstream climate action into all government ministries through the advocacy and technical support of the Climate Change Commission. These laws refer to each other in ensuring synergies and coherence on CCA and DRR, and both also include gender equality provisions and representation of women's organizations.

The National Economic and Development Authority has led the development of the Guidelines on Mainstreaming Disaster Risk Reduction in Development Planning. The results of assessments based on the guidelines are used to enhance all aspects of the planning process: visioning, analysis of the planning environment, and derivation of development potential and challenges; translation into corresponding goals, objectives and targets; and specification of the appropriate strategies and programmes, projects and activities.

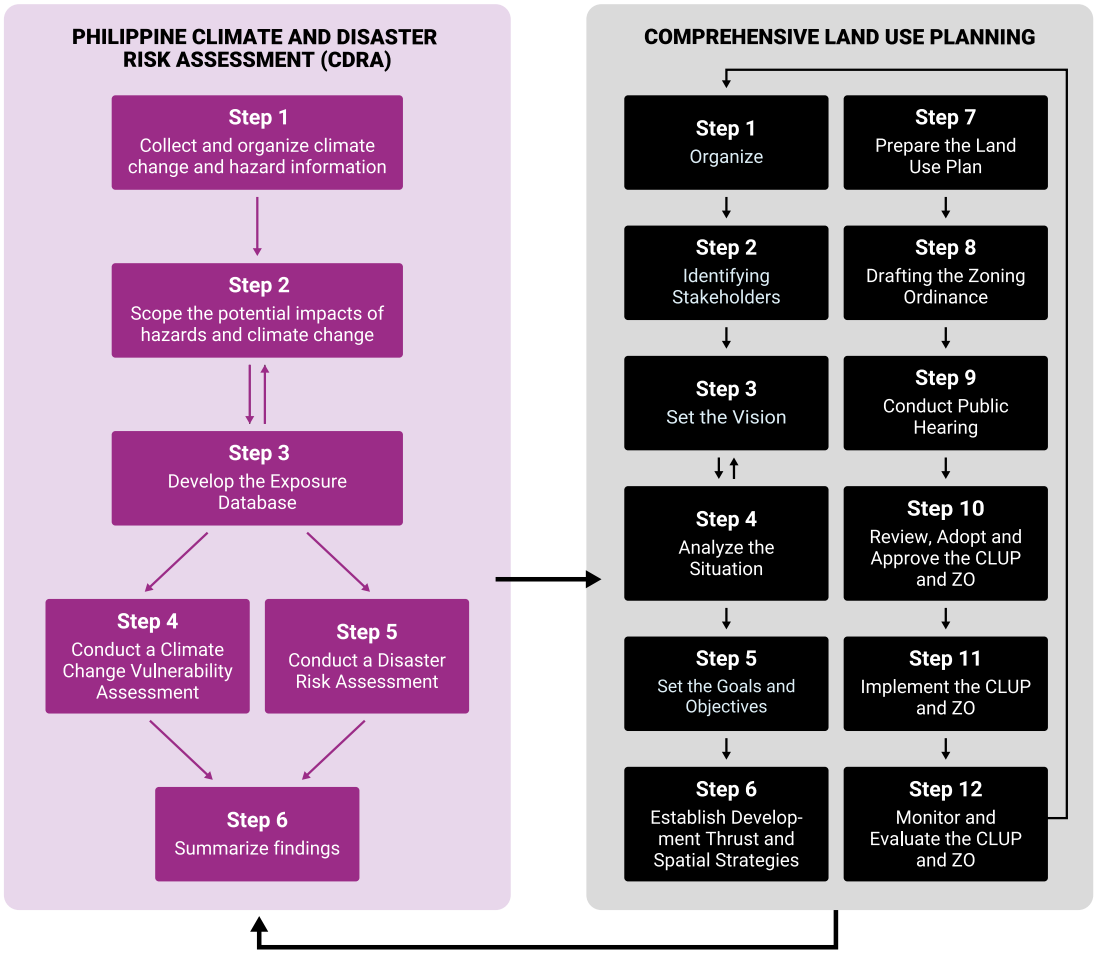
Features of the combined approach include mainstreaming of CCA and DRR into comprehensive land-use plans prepared by each local government unit, as part of the building-back-better approach. These plans define the land use of a particular administrative area and are one of the important entry points for mainstreaming CCA and DRR.

In 2015, the Supplemental Guidelines on Mainstreaming Climate and Disaster Risks in the Comprehensive Land Use Plan was developed by the Housing and Land Use Board with the Climate Change Commission, adding the integration of climate change considerations as part of risk assessment. These guidelines help local governments formulate climate and disaster risk-sensitive comprehensive land-use plans and zoning ordinances that guide allocation and regulation of land use so that exposure and vulnerability – of the population, infrastructure, economic activities and environment – to natural hazards and climate change can be minimized or even prevented. The resulting improvements in land-use planning and zoning processes will strengthen the ability of local governments to achieve their Sustainable Development Objectives given the challenges posed by climate change and natural hazards.

The example from the Philippines shows how integration of DRR and CCA can be successful from national, to sectoral, to local levels, including an integration of knowledge management and data provision. Strong political will, in part due to an extremely high-risk environment, has accelerated the process, and a solid governance framework involving all relevant actors has supported practical action and implementation.

353 (De Bettencourt et al. 2013)

Figure 13.3. Mainstreaming framework of climate and disaster risk assessment into comprehensive land-use planning in the Philippines



(Source: Policy Development Group, Housing and Land Use Regulatory Board, Philippines 2014)

13.4.5

Other integrated strategies and plans

Well-defined national legislation can set the preconditions for successful integration of DRR and CCA, and establish a coordination mechanism, but defining and coordinating institutional arrangements for climate- and disaster-resilient development often remains difficult. This can be due to institutional resistance, given that different institutions have historically driven climate change and DRM agendas with separate financial sources.[353] Emerging experience indicates that to have effective convening power, the relevant agency should be located at the highest possible level of government. Indeed, as climate and disaster risk affect multiple sectors, the lead agency needs to have a strong convening power of decision makers from multiple agencies and levels of government, as well as the private sector and civil society.

Case study: Mexico

Mexico has the General Law on Climate Change 2012, and the Special Climate Change Program 2014–2018, which is a planning instrument to establish climate adaptation and mitigation priorities.[354] Through these mandates, DRR has been integrated into the formulation of the NAP and NDC of Mexico for the period 2020–2030.[355] It has also been integrated into CCA strategies and plans through two programmes: the National Program Against Hydraulic Contingencies and the National Program Against Drought. These programmes are implemented by multiple institutions, coordinated by the Inter-Ministerial Commission for Attention of Droughts and Floods.

In Mexico, the actions selected to integrate DRR into adaptation plans include:

- Implementation of water reserves for environmental needs and to meet future water supply demand
- Development of algorithms for better measurement of the extent and distribution of water reserves in complex basins
- Drought EWS
- Establishment of risk reduction measures for the agricultural sector, including drought scenarios
- Fluvial restoration measures and hydrological-agroforestry restoration of watersheds
- Measures to improve drainage of linear infrastructures
- Flood prediction measures
- Insurance promotion
- Improvement of the hydrometeorological monitoring network, which reports in real time, and implementation of numerical flooding and drought models

Some conducive or hindering factors in the development and implementation of DRR-informed adaptation strategies or plans can be derived from the Mexico case. The strong political support of the federal government ensured that a strong governance mechanism for CCA with risk reduction components could be established. The use and availability of integrated flood and drought management concepts and modelling data allowed substantive development and integration. However, capacity gaps, such as the lack of sufficiently trained personnel and low numbers of monitoring stations, related to budget and financing, represented hindering factors as insufficient communication among participating institutions.

The Mexico example shows that strong political will, based on an understanding of risk, can result in the establishment of an efficient governance mechanism, which can overcome capacity gaps and limited budget.

In addition to NAPs, which are tailored to the UNFCCC reporting structure and GCF, Member States of all levels of incomes and types of economic development are addressing climate and disaster risk as part of integrated national and local policy and planning processes. For example, in Costa Rica, the National Disaster Risk Management Policy and the National Adaptation Policy adopted in 2017 were formulated with the participation of communities of practice and shared responsibilities in implementation. In Mozambique, as described in Chapter 11, the Disaster Risk Reduction Master Plan (2017–2030) is aligned with the Climate Change Adaptation and Mitigation National Strategy, as well as with other policy instruments. In both these cases, common mechanisms and

indicators have been articulated for the strategies or plans.

In Africa, Namibia has taken steps to integrate DRR with CCA priorities through the National Strategy for Mainstreaming Disaster Risk Reduction and Climate Change Adaptation (2017–2021). Several other countries' strategies and plans establish links among DRR, climate change, health, environment or other developmental goals through the involvement of competent ministries or coordination mechanisms. However, such formulations appear to be too generic to lead to concrete joint or complementary action and implementation. A study on Kenya points out that the roles of country governments and the National Drought Management Agency in support of resilience are complementary, but that there is little evidence to suggest they are working together in practice.[356]

Chapter 11 of this GAR observed that Chapter 4 of Mozambique's Master Plan for Disaster Risk Reduction 2017–2030, establishes the National Juridical Context and Public Policies, which articulates linkages with the country's National Development Plan, the National Agenda 2025: Visão Estratégica de Nação, the National Climate Change Mitigation and Adaptation Strategy 2013–2025, and the Sustainable Development Objectives. The plan contains actions reinforcing resilience that range from the development of educational approaches integrating risk reduction and CCA (Action 1.1.3), to the creation of mechanisms to ensure that all projects and programmes relating to poverty reduction, agriculture and rural development take into account access to water, environmental considerations and contributions to the sustainable use of water (Action 2.3.1).[357] At the time of writing, Mozambique was reeling from the passage of Cyclone Idai, which made landfall on 14 March, 2019. It flooded an area estimated at approximately 520 km^2 with wind speeds of approximately 160 km/h, and caused extensive storm damage that was particularly severe in the city of Beira. Preliminary estimates cited at least 600 killed, more than 1.5 million people affected and hundreds of thousands of hectares of crops damaged. A post-disaster needs assessment was initiated on the 16 April. Hazards of the magnitude of Idai test the resilience and capacity to cope of any country. However, in due course, ex post evaluations of the root causes of loss and damage may indicate achievable opportunities for reducing risk.

In 2011, Nepal developed a National Framework on Local Adaptation Plans for Action, in addition to its NAPA.[358] Implementation has been a challenge, but recently, several government, non-government and international institutions have been focusing on activities related to climate adaptation for enhancing the adaptation capacity of the most vulnerable. Water, health, sanitation, agriculture, biodiversity, food security and nutrition have been identified as the most vulnerable sectors to climate impacts, and are taken as priorities for providing support to local vulnerable people.[359] Others have focused on the concept of climate-smart villages and an integrated approach to local level resilience.

Brazil directly referenced the Sendai Framework in its NAP.[360] The Netherlands has developed a long-term planning vision for water management that considers climate change scenarios and has developed integrated safety and adaptation policies to handle risk. Other countries (e.g. France, Spain and the United Kingdom of Great Britain and Northern Ireland) have collaborated with the private sector to install insurance and risk financing mechanisms based on public–private partnerships, while others such as Switzerland have enabled vertical collaboration with local governments by setting up a multi-level risk governance system.

354 (Mexico, Ministry of the Environment and Natural Resources 2014)
355 (Mexico 2016)
356 (Omoyo Nyandiko and Omondi Rakama 2019)
357 (Information provided to UNDP by Government of Mozambique 2017)
358 (Nepal, Ministry of Environment 2010); (Nepal, Ministry of Forests and Environment 2018)
359 (Dhakal, Wagley and Karki 2018)
360 (Brazil, Ministry of Environment 2016); (Urrutia Vásquez et al. 2017)

13.5

Pacific region approach to integrated climate, disaster and development policy

13.5.1

Regional approach to support integration – Framework for Resilient Development in the Pacific

As noted in section 10.1 on regional approaches and in section 11.5 in relation to policy coherence, the Pacific region is leading the way, at regional and country levels, in integrating reduction of climate and disaster risk with development planning in FRDP.[361]

Although it is not prescriptive, FRDP suggests priority actions to be used as appropriate by different multi-stakeholder groups, at regional and national levels, in sectors or other groupings as appropriate.[362] Its implementation was also supported by the Pacific Resilience Partnership established by Pacific leaders in 2017 for an initial trial period of two years. The partnership works to strengthen coordination and collaboration, working with a multi-stakeholder task force, a support unit, technical working groups and Pacific resilience meetings.

13.5.2

Pacific countries

Given the importance of climate-related disasters to the Pacific Islands, many countries of the region have developed JNAPs, action plans that consider DRM and CCA, since 2010. This process began well before the 2016 FRDP, which evolved at the regional level from national practice.

JNAPs normally reflect a recognition of the relationship among development, disaster and climate risk and the role of environmental management in development and risk management.[363] The Cook Islands, the Marshall Islands, Niue and Tonga represent some of the countries that have developed and published their JNAPs, while Vanuatu has chosen an alternative route through national legislation and institutional restructuring to integrate DRR and CCA.

There are two broad approaches followed by Pacific Island countries regarding JNAPs and NAPs. One set of countries works on formulating NAPs explicitly, with proposals and/or plans under way to access the GCF NAP formulation funding (e.g. Fiji, Tuvalu and Vanuatu). Another set of countries characterize their JNAPs as their NAPs (Cook Islands, Kiribati, Marshall Islands, Nauru, Niue, Palau and Tonga). The second group of countries is planning to use the GCF NAP formulation funding to revise or update CCA components of their JNAPs to ensure full coverage of the features of NAPs.

One country, Samoa, is applying its national development strategy as the overarching plan for development planning, climate change, DRR, SDGs, etc., all in one, with no separate plans for the different issues. Implementation of activities is coordinated through the country's medium-term expenditure framework.[364]

The Cook Islands launched its second plan, JNAP2, in 2016, covering the period 2016–2020. This JNAP2 has nine sectoral strategies to ensure a safe, resilient and sustainable future. It aims at strengthening climate and disaster resilience to protect lives, livelihoods, economic, infrastructural, cultural and environmental assets in the Cook Islands in a collaborative, sectoral approach. The Paris Agreement and Sendai Framework are mentioned in the foreword, and there is a mapping of how both have informed JNAP.[365]

Honiara beach debris
(Source: UNDDR)

The Kiribati Joint Implementation Plan (KJIP) is being updated to complement the National Disaster Risk Management Plan and the National Framework for Climate Change and Climate Change Adaptation.[366] Among other things, the KJIP revision responds to the gender equality policy imperative set out in the Paris Agreement.

The Marshall Islands is updating its JNAP 2014–2018. It has set the adoption of SDGs, the Paris Agreement (together with NDCs and NAPs) and the Sendai Framework as the national policy context and guiding principles for updating its JNAP. The country plans to align its National Framework for Resilience Reform with its NAP to ensure appropriate relevance to funding.

Vanuatu has integrated CCA and DRR institutions and policy development processes.[367] The National Advisory Board on Climate Change and Disaster Risk Reduction is jointly directed by the Vanuatu Meteorological and Geohazards Department and NDMO, and operates as Vanuatu's principle policy, knowledge and coordination hub for all matters concerning climate change and DRR. This was set up before the new law that formalizes integration.[368]

361 (SPC 2016)
362 (SPC 2016)
363 (Secretariat of the Pacific Regional Environment Programme 2013)
364 (Samoa 2016)
365 (Cook Islands 2016)
366 (Kiribati, Office of Te Beretitenti 2013); (Kiribati 2012)
367 (Vanuatu 2015); (Jackson, Witt and McNamara 2019); (UNDP 2019q)
368 (Vanuatu 2017)

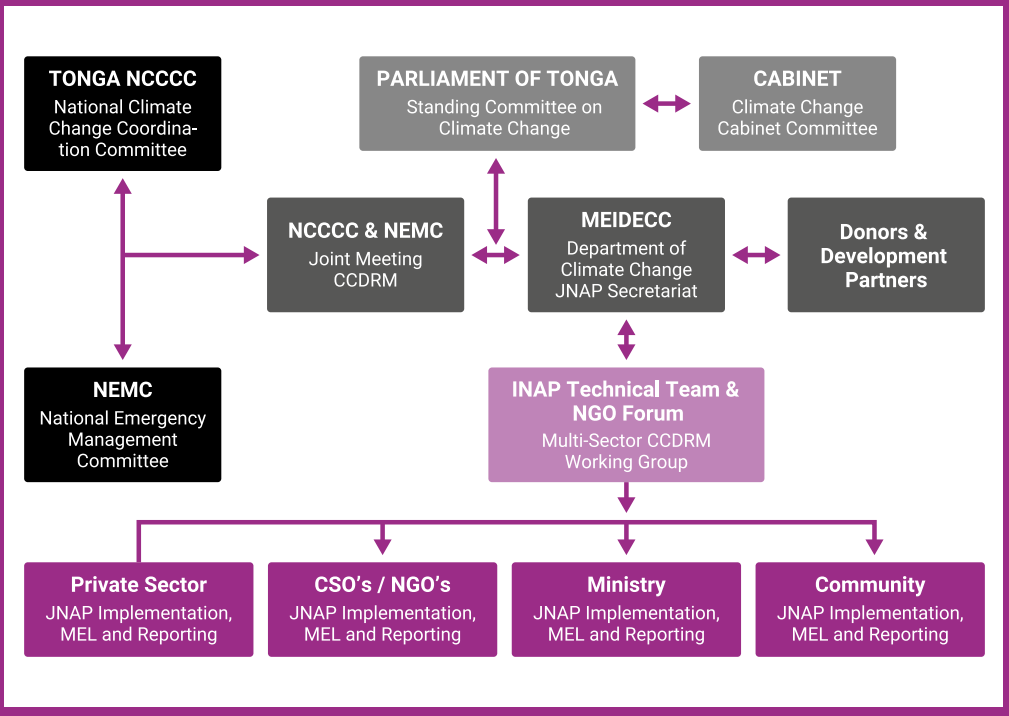
Case study: Tonga

Tonga was the first country in the region to develop its JNAP 2010–2015. This was conceived when Tonga was considering developing its Disaster Risk Management Action Plan under HFA, in conjunction with the regional DRM framework that was in place, the Pacific Disaster Risk Reduction and Disaster Management Framework for Action. At the same time, Tonga was developing its NAPA for climate change under UNFCCC and the Pacific Islands Framework for Action on Climate Change. An integrated approach to CCA and DRR made sense given community vulnerabilities and risk profiles of the archipelago, and was also the most efficient approach for capacity-constrained governments.

The experience of Tonga, together with other countries in the Pacific, helped prepare the way for the 2016 FRDP.

The approval of the Tonga Climate Change Policy in January 2016 triggered the review of JNAP 1 on climate change and DRM (2010–2015), and a second JNAP to 2028 was approved in May 2018.[369] The second JNAP process also had clear roles for relevant stakeholders, led by the Department of Climate Change at the Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications, with support of a JNAP task force.

Figure 13.4. Institutional arrangements for Tonga JNAP version 2



(Source: Tonga 2018)

JNAP is recognized as the summary of the country's priorities regarding disaster risk and climate risk management. A high-profile document for the government and NGOs and partners, JNAPs are referred to by implementing ministries and NGOs refer to in their project proposals – notably for projects related to climate change – reflecting the efficacy of this governance mechanism. The establishment of robust governance arrangements and approaches to integration, with dedicated technical resources are key success factors in Tonga. A three-person JNAP Secretariat, for which human and financial resources have been made available, provides a focal point for activities identified for the JNAP Technical Committee, and is acknowledged as critical in the successful coordination of JNAP in Tonga. While enduring external support by development partners is recognized as having been essential to ensure implementation, these resources may not be sustainable in the long term.

The Tonga case study demonstrates that policy and institutional integration is possible where there is a high degree of overlap between disaster and climate risk and obvious connections to national development. It also demonstrates that integration can be an efficient solution for a small government, when backed by strong governmental commitment to JNAP priorities thereby attracting long-term resource commitments from development partners.

13.6

Conclusions

Coordinated national policymaking for climate change adaptation and disaster risk reduction

Coordination can be achieved most effectively at the national level during the production of strategies and plans in support of development. CCA and DRR are both sufficiently flexible concepts to enable countries to develop and implement plans and strategies based on national circumstances and needs.

How countries report and produce plans in response to different multilateral agreements is a different issue; at times, such requirements can militate against integration. The international context also includes coordination of support that comes under the different umbrellas based on the special requirements of each source.

369 (Tonga 2018)

Coordinated national technical assessments and solutions for the full spectrum of risk

Risk assessments for climate change and disasters are often carried out by different teams, and are supported and guided by different agreements and bodies internationally. It must be recognized that although disaster and climate risk have significant overlap, there are also substantial aspects in which they do not coincide, and this is an important challenge for integrated risk governance at national and local levels. However, in the realm of hydrometeorological risk for example, a suite of applicable tools are available including those that address adaptation/risk reduction, either planned or contingent, and management of extremes and disaster losses. A country could choose to coordinate these aspects of CCA/DRR assessments, provided the assessments cover the dimensions and timescales relevant to each type of risk, from the present through to the medium and long terms.

However, as set out in Part I of this GAR, in fully integrated approaches under the Sendai Framework, assessments and solutions must also consider risk from non-climate-related natural and man-made hazards and risks (especially geophysical and biological, technological and environmental), as well as cascading and systemic risks, including possible amplifying effects of climate change.

Integrated and coordinated activities – minimizing complexity and avoiding duplication

Many organizations have prepared supplementary materials to NAP technical guidelines, to offer advice on how to promote synergy with other frameworks. A supplement that covers DRR issues is under development by UNDDR and UNFCCC in close collaboration with the Least Developed Countries Expert Group on Adaptation. It will provide options for countries to better coordinate their efforts at the national level when addressing DRR and CCA through NAPs.

There are other global frameworks and multilateral agreements that also entail actions which address CCA and DRR. For example, the NUA and regional frameworks – such as Africa 2063 – have areas of work that can be better integrated at the national level. A broader integrating framework, such as the NAP-SDG iFrame being developed by the UNFCCC Least Developed Countries Expert Group, may be suitable to support formulation and implementation of adaptation plans.

Global attempts to create synergies are commonly successful when coordination at regional, national and local levels is assured by a strong lead institution with a robust coordination mandate. As DRR and CCA are issues that affect many sectors, isolated action is rarely successful, and real coherence can take place only if silos are broken at the level where implementation occurs.

Integration of disaster risk reduction and climate change adaptation into financial and budgetary instruments and frameworks

Many of the country cases cited illustrate the importance of adequate capacities and resources for implementation. While a strong governance mechanism and accessible risk information are imperative for implementation, risk reduction remains aspirational unless it is translated into a budgetary process. Instead of perpetuating institutional competition for separate resource streams, financial instruments need to be made available that operate at the nexus between DRR and CCA and provide comprehensive financial resources. Financing mechanisms still need to be adjusted to this paradigm.

Overall, the approach of integrating DRR into CCA plans seems to be most successful where hydrometeorological disaster risks are most prominent, and the impact of climate change is felt most keenly. Integrated approaches may not be the right fit for all countries, but the potential for accelerating implementation is significant, when there is political will.