

**More Effective and More Efficient:
Seeking Synergies with Disaster Risk Reduction in National
Climate Adaptation Plan (NAP) Process**

Final Draft

Table of Content

Preface.....	2
List of Figures	5
List of Boxes.....	5
List of Tables.....	5
Overview.....	6
Introduction.....	7
Rationale for CCA-DRR Coherence.....	7
Obstacles for CCA-DRR Coherence	12
About this Guide	13
Background.....	16
About the NAPS	16
About the National DRR Strategies.....	16
Fundamental Commonalities.....	19
Pathways to Build Connection and Coherence	22
Building capacities for the NAP process	22
Building the risk governance system	22
Understanding climate change impact and risk.....	25
Developing financing strategies.....	30
Selecting adaptation measures.....	33
Implementing, monitoring and evaluation.....	37
Checklist for Ensuring the NAP is in Coherence with DRR	39
Element A. Lay the Groundwork and Address Gaps	39
Element B. Preparatory elements.....	40
Element C. Implementation strategies	41
Element D. Reporting, monitoring and review	42
Final Note	42
Bibliographical References.....	44
Annex I – Available Resources.....	46

Final Draft

Acknowledgements

This guidance note is the product of literature reviews, discussions and contributions from diverse stakeholders including the participants to a consultation workshop that took place in November 2017 in Bonn, Germany.

This guidance note has been developed by Sahar Safaie (Sage on Earth Consulting)

Substantive contributions have been provided by Imen Meliane (UNDP), Luna Abuswaireh (UNISDR), and Angelika Planitz (UNDP).

In depth review and inputs have been provided by Bart Wijs (CARE Nederland), Fleur Monasso (IFRC Climate Centre), Cees Van Guchte (Deltares), and Stephan Baas (FAO).

Valuable guidance and direction have been provided by David Stevens (UNISDR) and Paul Desanker (UNFCCC).

Final Draft

Abbreviations and Acronyms

CCA	Climate Change Adaptation
CBA	Cost-benefit analysis
COP	Conference of the Parties EU European Union
CAPRA	Central America Probabilistic Risk Assessment
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
FAO	Food and Agriculture Organization
FEMA	Federal Emergency Management Agency
FONDEN	Fideicomiso Fondo de Desastres Naturales
HFA	Hyogo Framework for Action
IFRC	International Federation of Red Cross and Red Crescent Societies
IPCC	Intergovernmental Panel on Climate Change
LDCs	Least developed countries
LEG	Least Developed Countries Expert Group
NAP	National adaptation plan
SDG	Sustainable Development Goals
SFM	Sendai Framework Monitoring
SRX	Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation
UNFCCC	United Nations Framework Convention on Climate Change
UNDP	United Nations Development Programme
UNDESA	United Nations Department of Economic and Social Affairs
UNISDR	United Nations Office for Disaster Risk Reduction

Final Draft

List of Figures

Figure 1: Common and un-common hazards that are the focus of CCA and DRR

Figure 2: The common ground of Climate Change adaptation, Sustainable Development Goals, and Disaster Risk Reduction

Figure 3: The shift from managing disasters to managing risks requires policies and investments to prevent creation of new risk, reducing existing risk, and managing residual risk with short and long term time scale

Figure 4: Four elements of an Early Warning System (EWS)

Figure 5. Ecosystem-based approaches to adaptation and disaster risk reduction (EbA & Eco-DRR)

List of Boxes

Box 1. Definition of Climate Change Adaptation and Disaster Risk Reduction

Box 2. Calls for building resilience through integrated approaches in 2030 SDG, The Paris Agreement, and the Sendai Framework for DRR

Box 3. Opportunities and options for integrating climate change adaptation with the Sustainable Development Goals and the Sendai Framework for Disaster Risk Reduction 2015–2030, May 2017

Box 4. Achieving the goal of the Sendai Framework requires a comprehensive road map

Box 5. 10 key elements of National and Local DRR Strategies based on Sendai Framework

Box 6. Strategy for Climate and Disaster Resilient Development in the Pacific (SRDP)

Box 7. Integration of CCA and DRR in legislative framework

Box 8. The UNISDR-led Global Risk Assessment

Box 9. Understanding climate change and disaster risk impact in the Arab Region

Box 10. Words into Action Guideline on National Disaster Risk Assessment

Box 11. About national damage and loss databases

Box 12. Scoping financial needs and available sources for CCA and DRR: Learning lessons and utilizing tools available for assessing climate financing

Box 13. Incentivizing leading investments in flood plains around Bangkok

Box 14. Incentivizing vulnerability reduction in insurance schemes in United States

Box 15. Mexico's Fund for Natural Disasters (FONDEN)

Box 16. The Dutch Delta Programme as an example of a long-term programmatic approach

Box 17. Evaluating and complementing existing Early Warning Systems (EWS) to serve variety of hazards

Box 18. Ecosystem-based adaptation measures: providing co-benefits for CCA, DRR, and Development

Box 19. SDG Targets and indicators that are common to Sendai Framework at global level require integrated monitoring of CCA and DRR progress

List of Tables

Table 1: The key concepts and terms in DRR and CCA

Overview

This guidance note is a supplementary material to the National Adaptation Plan (NAP) Technical Guidelines^{1 2}. It provides key concepts, real world examples and practical recommendations to create synergies and coherence with disaster risk reduction (DRR) in the NAP process and to integrate DRR and climate change adaptation (CCA) into development plans. The figure below provides an overview of key benefits, commonalities, obstacles, and the pathways for creating coherence with DRR through the process of developing and implementing a NAP.

Key Benefits of CCA-DRR Coherence in Policy and Practice

- More effective policies and investments in CCA and DRR including integration of the two in development plans and policies
- More efficient use of capacities and financial resources
- Advancing technical knowledge and expertise in assessing, understanding, and managing risk both climate and non-climate risk
- Enhanced disaster preparedness and response planning

Commonalities

- Risk and uncertainty is the focus
- Risk components (hazards, exposure, vulnerabilities, capacities, and risk drivers) should be understood in order to design effective measures
- Risk governance is the main enabling element for achieving goals

Roots of Existing Separation

- Lack of clear understanding on the focus and approaches of the each other
- Difference in the origins of where they started and how they have advanced
- Difference in the institutional mechanisms for leading, coordinating, and implementing
- Difference in the streams and level of financing available at national and international level
- Difference in the spatial scale of impact and time horizon of measures

Pathways to Coherence

- Building capacities for policy process
- Building the risk governance system
- Understanding climate change impacts and disaster risks
- Developing financing strategies for investments and financing residual risk
- Selecting the adaptation and risk management measures
- Implementing, monitoring and evaluation

¹ Find the Technical Guidelines for the NAP process at: <http://www4.unfccc.int/nap/Guidelines/Pages/Technical-guidelines.aspx>

² Find the other supplementary material to the NAP technical guideline at:
<http://www4.unfccc.int/nap/Guidelines/Pages/Supplements.aspx>

Introduction

Rationale for CCA-DRR Coherence

The impacts of climate change are already being felt in many regions of the globe and they pose new significant challenges to achieving sustainable development. Climate change is already impacting the nature of weather-related hazards, leading to more frequent and intense extreme events. It is expected to further exacerbate both slow-onset events and extreme weather events in the coming decades leading to loss and damages that can potentially erase development gains in various sectors, dragging millions of people further back into poverty and increase the number of humanitarian crises.³ **Building resilience of people, economies, and natural resources to the impacts of slow-onset and extreme weather and climate events is the common ground between climate change adaptation efforts and disaster risk reduction efforts.**

Climate change impact and disaster risk are the result of interaction between hazards and the exposed assets with their vulnerabilities and coping capacities. Weather and climate related hazards, both slow onset and extreme events, are the common hazards between the two while disaster risk also includes additional geological, environmental, biological, and technological hazards⁴ (see Figure 1). Climate change also has an impact on exposure and vulnerabilities, which would lead to a change to risk levels even for non-climate hazards⁵. The process of developing policies and investing in climate change adaptation (CCA) and disaster risk reduction (DRR) have similar approaches, common challenges, and complementary advantages for governance, financing, information and data analysis, capacity development, and monitoring.

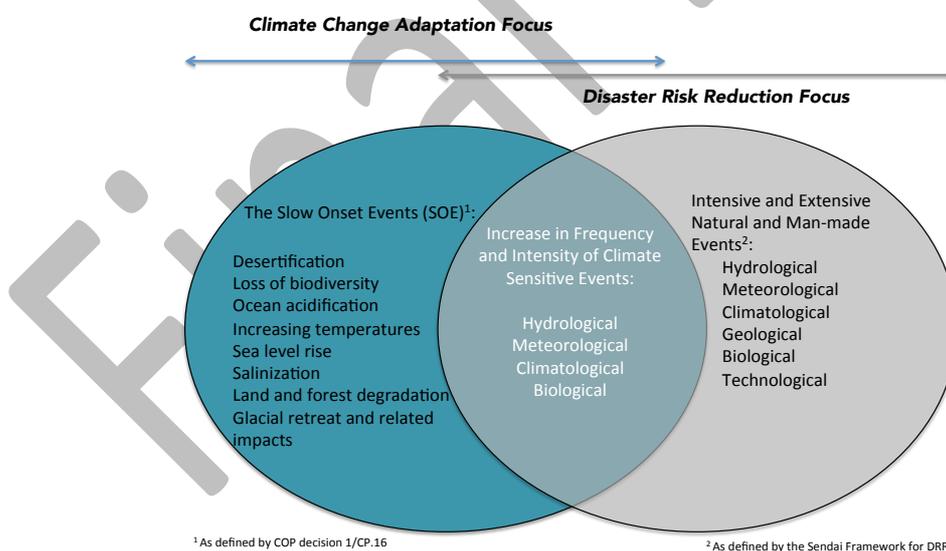


Figure 1: Common and un-common hazards that are the focus of CCA and DRR

Source: Author, 2018

³ IPCC-SREX and IPCC Fifth Assessment Report

⁴ The Sendai Framework for Disaster Risk Reduction (2015-2030), Paragraph 15., page 11

⁵ For example migration from coastal areas due to sea level rise and settling in hilly zones susceptible to landslides would lead to increase in landslide risk

Box 1. Definition of Climate Change Adaptation and Disaster Risk Reduction

Climate Change Adaptation: The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects. (IPCC Working Group II Fifth Assessment Report (AR5), IPCC, 2014a).

Disaster Risk Reduction: Disaster risk reduction is aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development. (Report of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction, UNISDR, 2016)

Box 1 provides the definition of CCA and DRR. Two international agreements have set goals and guidance for nations to conduct CCA and DRR. The Paris Agreement established a global goal of ‘enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change’. The Sendai Framework for Disaster Risk Reduction 2015-2030 aims to strengthen resilience and reduce disaster risk through addressing exposure and vulnerability to natural and man-made hazards⁶. Resilience building is the shared foundation of the Paris Agreement and the Sendai Framework for DRR⁷ as well as the 2030 Agenda for Sustainable Development (SDG 2030). Coherent and mutually reinforcing efforts to implementing these international agreements are among the most sensible approaches for strengthening the resilience of communities and nations. Together they urge the following:

- Attention to all risks that communities are facing around the world,
- Call for engagement and contribution from the whole of society, and
- Guide public and private investments towards greater resilience in all sectors.

Reducing vulnerabilities and enhancing resilience is the common ground of these three international (Figure 2).

⁶ United Nations System. 2017. UN System Strategic Approach on Climate Change Action.

⁷ The Sendai Framework for Disaster Risk Reduction 2015-2030 is a voluntary, non-binding agreement that was adopted by member states on March 18, 2015 and endorsed by the UN General Assembly on May 15, 2015.

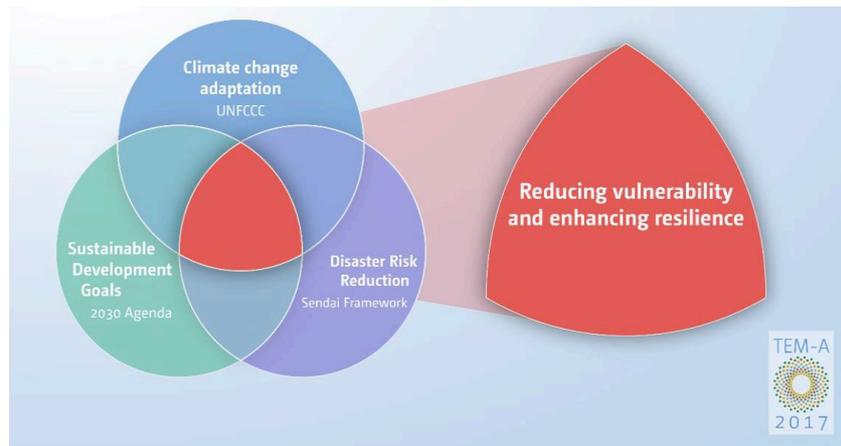


Figure 2: The common ground of Climate Change adaptation, Sustainable Development Goals, and Disaster Risk Reduction

Source: UNFCCC Technical Paper, FCCC/TP/2017/3

The question of coordination, integration and synergies between climate change adaptation (CCA) and disaster risk reduction (DRR) has been on the forefront of many international discussions in the recent years with progressive attention and interest conceptually and in practice at national and sub-national levels. Box 2. provides an over view of how the SDG2030, the Paris Agreement, and the Sendai Framework for DRR are calling for integration of climate change adaptation and disaster risk reduction and coherence with sustainable development planning and investments. Other international mechanisms and fora that have called for integration and cohesion between CCA and DRR include:

- UNFCCC Decision 2/CP.19 Warsaw international mechanism for loss and damage associated with climate change impacts (2013)
- UNFCCC Decision 3/CP.18 Approaches to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change to enhance adaptive capacity (2012)
- Rio +20 (2012)
- UNFCCC - Cancun Adaptation Framework (2010)
- UNFCCC - Bali Action Plan (2007)
- Hyogo Framework for Action (2005)
- World Summit on Sustainable Development (2002)

Box 2. Calls for building resilience through integrated approaches in 2030 SDG, The Paris Agreement, and the Sendai Framework for DRR

Transforming our world: the 2030 Agenda for Sustainable Development (2015)

This Agenda is a plan of action for people, planet and prosperity. It also seeks to strengthen universal peace in larger freedom. The 17 Sustainable Development Goals and 169 targets will stimulate action over the next fifteen years in areas of critical importance for humanity and the planet

Achievement of many of the sustainable development goals would require attention to potential negative impacts from various hazards and long term impacts of climate change. Below are few of the goals that would benefit more directly from incorporating disaster risk management and climate change adaptation into planning and investments.

Goal 1. End poverty in all its forms everywhere

1.5 By 2030 build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate related extreme events and other economic, social and environmental shocks and disasters.

Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture

2.4 By 2030 ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.

Goal 3. Ensure healthy lives and promote well being for all at all ages

3.9 By 2030 substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

3.d Strengthen the capacity of all countries in particular developing countries, for early warning, risk reduction and management of national and global health risks

Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

9.A Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States

Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable.

11.5 By 2030 significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water related disasters, with a focus on promoting the poor and people in vulnerable situations

Goal 13. Take urgent action to combat climate change and its impacts

13.1 Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries

13.2 Integrate climate change measures into national policies, strategies and planning

13.3 Improve education, awareness raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning Systemic issues

17.4 Enhance policy coherence for sustainable development

For monitoring progress in achievement of Goals 1, 11 and 13 governments have adopted the same indicators that were agreed through the Open-Ended Intergovernmental Expert Working Group on Indicators and Terminology for Disaster Risk Reduction. The Sendai Framework

Monitoring instrument and the national databases used to measure progress in disaster risk reduction can also be drawn on to track progress in relevant aspects of climate change adaptation and the New Urban Agenda.

Box 2. Continued. Calls for building resilience through integrated approaches in 2030 SDG, The Paris Agreement, and the Sendai Framework for DRR

The Paris Agreement (2015)

The agreement sets out a global action plan to put the world on track to avoid dangerous climate change by limiting global warming to well below 2°C. In parallel to mitigation provisions, collective, long-term adaptation goals are included in the Agreement, and countries must report on their adaptation goals focus on enhancing adaptive capacity, increasing resilience, and limiting vulnerability.

Para 3. Parties should enhance understanding, action and support, including through the Warsaw International Mechanism, as appropriate, on a cooperative and facilitative basis with respect to loss and damage associated with the adverse effects of climate change.

Para 4. Accordingly, areas of cooperation and facilitation to enhance understanding, action and support may include:

- (a) Early warning systems;
- (b) Emergency preparedness;
- (c) Slow onset events;
- (d) Events that may involve irreversible and permanent loss and damage;
- (e) Comprehensive risk assessment and management;
- (f) Risk insurance facilities, climate risk pooling and other insurance solutions;
- (g) Non-economic losses; and
- (h) Resilience of communities, livelihoods and ecosystems.

Sendai Framework for Disaster Risk Reduction (2015)

Expected outcome: Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience.

*Scope and Purpose: “aims to guide the **multi-hazard management of disaster risk** in development at all levels as well as within and across all sectors”*

Para 15. The framework will apply “to the risk of small-scale and large-scale, frequent and infrequent, sudden and slow-onset disasters”.

Para 13. Addressing **climate change as one of the drivers of disaster risk**, while respecting the mandate of the United Nations Framework Convention on Climate Change, represents an opportunity to reduce disaster risk in a meaningful and coherent manner throughout the interrelated intergovernmental processes.

Para 25. (b) Promote the conduct of **comprehensive surveys on multi-hazard disaster risks** and the development of regional disaster risk assessments and maps, **including climate change scenarios**;

A considerable body of work of academic and policy-focused natures has been produced with useful analyses that identify links, similarities and differences between CCA, DRR, and development. Annex I provides non-exhaustive list of resources on this topic. In summary, potential key benefits of enhancing coherence and synergies between CCA and DRR are⁸:

- More effective policies and investments in CCA and DRR including integration of the two in development plans and policies
- More efficient use of capacities and financial resources

⁸ “Climate Change Adaptation and Disaster Risk Reduction in Europe; Enhancing coherence of the knowledge base, policies and practices”, EEA Report No 15/2017, 2017

- Advancing technical knowledge and expertise in assessing, understanding, and managing risk both climate and non-climate risk
- Enhanced disaster preparedness and response planning

Obstacles for CCA-DRR Coherence

While it is widely recognized that climate and disaster resilience should form an integral part of national strategies and development programs, progress to integrate both into comprehensive risk management strategies and development plans has been slow and more in the format of stand alone projects and far less as national or local overarching development strategy and planning. Analyses of these early experiences show that it remains a major challenge to reconcile the policy arenas of DRR and CCA as well as climate change mitigation, economic growth and sustainable development⁹.

The main root causes for the current separation between CCA and DRR practice are:

- The perception that the focus is different: There is a perception in the CCA community that DRR is only focused on disaster preparedness and response planning in short and mid term. The DRR practice has slowly evolved and with the Sendai Framework for DRR it now officially focuses on disaster risk management with short, mid and long term view. This includes ensuring new development is risk informed and is not producing new risk in the long term.
- Different origins: DRR originated in disaster response which means the concepts have grown out of historical, cultural, and practical experiences mostly bottom-up direction. CCA has originated and grown within scientific bodies and started with a top-down approach.
- Different institutional mechanisms: Today in most countries the national civil defence or national disaster (risk) management agency under the Ministry of Interior, Ministry of Defence or in some occasions Ministry of Development is mandated to lead DRR while Ministry of Environment is usually leading CCA efforts at national level. While the coordination mechanisms for DRR and CCA include representatives from a wide range of agencies, the individuals representing them normally come from different parts of the same organizations.
- Different streams for financing: There is more funding available for CCA through national budgets and international channels. Most of DRR funds are still focused on humanitarian efforts and there is a lack of funding for preventive measures. CCA is funded mostly by environmental departments and DRR is funded through humanitarian budgets. There is a lack of funding to support CCA-DRR integration, although it would over time lead to more efficient use of funds.
- Different spatial scale and time horizon: Disaster risk usually has a local spatial scale and the risk management requires short, mid and long term view. Climate change impact has larger spatial scale usually at regional, national, and global scale and the adaptation measures have mid and long term view.

The ongoing efforts by countries to undertake adaptation planning and to develop National Adaptation Plans (NAPs) including CCA, as well as development or updating National Disaster Risk

⁹ SEI (Stockholm Environment Institute). 2014. Climate change and Disaster Risk Reduction. Background Paper prepared for the 2015 Global Assessment Report on Disaster Risk Reduction. Geneva, Switzerland: UNISDR.

Reduction Strategies provide a unique opportunity for countries to take a systematic approach to accelerate the common goal of achieving climate and disaster resilient in development.

About this Guide

The present guidance note focuses particularly on the opportunities that National Adaptation Plan (NAP) process provides to the national authorities and stakeholders for creating synergies and effective connections with disaster risk reduction efforts. This guidance note should be used in conjunction with the NAPs guideline¹⁰ as it uses the four Elements outlined in that guideline as the basis while avoiding duplication of content. The elements in NAP guideline also correspond to the main steps in any other adaptation planning processes undertaken by non-LDCs countries to date. This makes the recommendations in this guidance note also relevant for integration of DRR in adaptation efforts in any country.

The guidance note is meant to provide readers with insights on the common elements between CCA and DRR as well as practical advice and some real-life examples on when and how to integrate disaster risk reduction aspects in the adaptation planning process. The document also provides complementary references and resources for further readings.

In May 2017 the technical expert meeting of UNFCCC was focused on discussing the key opportunities and options for integrating CCA with SDG and Sendai Framework. The list of the opportunities and options identified in that meeting (see Box 3) is an excellent summary of the key issues that are elaborated in this guidance note.

¹⁰ "NATIONAL ADAPTATION PLANS", Technical guidelines for the national adaptation plan process, LDC Expert Group, UNFCCC, December 2012

Box 3. Opportunities and options for integrating climate change adaptation with the Sustainable Development Goals and the Sendai Framework for Disaster Risk Reduction 2015–2030, May 2017

Technical expert meeting on adaptation which took place on 16-17 May 2017 in Bonn, Germany in conjunction with the forty-sixth sessions of subsidiary bodies focused on exploring opportunities and options for integration adaptation with SDGs and the Sendai Framework. The following are the key recommendations.

- Integrating adaptation with the SDGs and the Sendai Framework can be very beneficial for building resilience comprehensively across societies. 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.
- There are many opportunities to support further policy integration between adaptation, sustainable development and disaster risk reduction, owing in part to the common themes, scopes and objectives of the three global agendas. Both "resilience" and "ecosystems" can act as core concepts for motivating such 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.
- Unprecedented levels of coordination and coherence will be needed. Building the capacity for it 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 also 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 disaster risk reduction, thanks in part to its demonstrated success as a planning instrument, the resources available for its support, and its iterative nature and flexible, nationally driven format.
- Adequate, sustainable support for adaptation efforts from sources public, private, international and national alike is crucial. Accessing finance and technology development and transfer and capacity building support is also critical, particularly for developing countries.

Source: Technical Paper by UNFCCC Secretariat, 2017

The Audience

This guidance note is meant for the national authorities leading the process of developing or updating the NAP as well as all actors and stakeholders contributing to development of the NAP especially in the least developed countries (LDCs). Such individuals are already familiar with LEG NAPs guideline and are seeking additional inputs for integrating NAPs process with existing and ongoing DRR work.

The document can also be used by disaster risk management authorities to better understand the NAP process and synergies with DRR strategy design and therefore provide support and contribute to its development. This guidance also outlines some considerations that can be taken by more planning authorities (e.g. ministries of planning, finance, etc.) in national planning processes to comprehensively address climate and disaster risks within development planning and effectively shape resilient development.

The Structure

With the aim to further facilitate the use of this guidance note, the document includes both conceptual content and practical instructions under three main sections:

- **Background:** This section provides information about the NAP and DRR strategy objectives and processes. Insight on the commonalities of CCA and DRR is also included.
- **Pathways to Build Connection and Coherence:** This section lists and elaborates on the key items that can be used as pathways for connecting with DRR
- **A checklist for ensuring the NAP is in coherence with DRR:** This section aims at providing a practical and flexible instruction by listing the questions to be considered under each of the four Elements of NAPs Guideline

Annex I presents a list of resources for further reading and research.

Final Draft

Background

Two key international frameworks, the Paris Agreement and the Sendai Framework, agreed by member states in 2015 provide guidance and directions for NAPs and DRR Strategies. The goal of both of these frameworks is focused on reducing vulnerabilities and building long term resilience in view of achieving sustainable development goals.

About the NAPS

The National Adaptation Plan (NAP) process helps countries develop comprehensive medium and long term climate adaptation plan. In 2010, Parties to the UNFCCC established the NAP process under the Cancun Adaptation Framework and in 2012, a UNFCCC experts group developed a detailed set of NAP technical guidelines to assist developing countries, especially the least developed countries (LDCs), with adaptation planning. The guideline outlines four flexible planning elements:

- Element A. Lay the Groundwork and Address Gaps
- Element B. Preparatory Elements
- Element C. Implementation Strategies
- Element D. Reporting, Monitoring, and Review

NAP process aims to integrate climate change considerations into development planning and has the following agreed objectives:

- (a) To reduce vulnerability to the impacts of climate change, by building adaptive capacity and resilience;
- (b) To facilitate the integration of climate change adaptation, 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;

There is an emphasis on the NAP being a “process” as it requires an integrated approach that is customized to the country context and an iterative process to adjust course as needed to meet the medium and long term objectives.

The NAP technical guidelines are meant to be used with flexibility as the NAP process is a flexible process that builds on each country’s existing adaptation activities and helps integrate climate change into national decision-making.

About the National DRR Strategies¹¹

The National DRR Strategy is a road map outlining how various sectors and stakeholders in public and private will work together to reduce disaster risk in short, mid and long term. It is very

¹¹ Based on the Sendai Framework for DRR; Issue Brief of Global Platform Plenary 1, 2017; and UNISDR Words into Action Guideline on Developing National DRR Strategy, (consultation draft), 2018

important to note that disaster risk reduction is not only about managing disasters and emergencies (short and mid term view) but it is also about managing disaster risk (mid and long term view). The Sendai Framework for DRR has set one Target (E) to increase number of National and Local DRR Strategies by 2020 (see Box 4 and Box 5).

Box 4. Achieving the goal of the Sendai Framework requires a comprehensive road map

The Sendai Framework marks a crucial shift from managing disasters to managing risk. It also establishes resilience-building as a shared vision of the 2030 Agenda. Specifically, the Sendai Framework calls for strong political leadership, commitment, and involvement of all stakeholders at all levels to pursue a goal to:

“prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience”. Pursuit of such a comprehensive goal, requires a strategic approach and a well-defined plan to ensure efforts are coordinated, while still being inclusive of whole-of-society, and to ensure resources are efficiently used across all sectors and by all stakeholders.

DRR strategies and policies should be aligned with the Sendai Framework goal, targets, and priorities for action.

The Seven Targets of Sendai Framework:

The targets focus on substantial reductions in (a) disaster mortality, (b) number of affected people, (c) direct economic losses and (d) reducing damage to critical infrastructure and disruption of basic services. The Sendai Framework also seeks a substantial increase in (e) national and local disaster risk reduction strategies by 2020, (f) enhanced cooperation to developing countries, and (g) a substantial increase in multi-hazard early warning systems, disaster risk information and assessments.

The Four Priorities for Action:

Sendai Framework provides guidance to stakeholders at all levels through four priorities for action:

Priority 1. Understanding disaster risk

Priority 2. Strengthening disaster risk governance to manage disaster risk

Priority 3. Investing in disaster risk reduction for resilience

Priority 4. Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction

Source: UNISDR

Based on the Sendai Framework goal and recommendations, three categories of disaster risk reduction policies, investments and programmes are required to manage risk at short, mid and long term (see Figure 3):



Figure 3: The shift from managing disasters to managing risks requires policies and investments to prevent creation of new risk, reducing existing risk, and managing residual risk with short and long term time scale

Source: Issue Brief of Plenary 1 on National and Local DRR strategies, Global Platform, May 2017

The value of developing national DRR strategy is in its process which would bring all relevant sectors and stakeholders together to discuss and collaborate to understand the existing risk, the potential long term impacts on social and economic growth and plan for actions to reduce risk and build resilience in long term.

Development of a successful national DRR strategy that is implementable requires few fundamental building blocks:

- Strong institutional mechanism and resources to manage the process of developing national DRR strategy
- Understanding the current status of country's disaster risk governance system and having a strategy for enhancing disaster risk governance system
- Understanding risk including drivers of risk and change in potential risk level in future
- An approach for identifying and securing financial resources for implementation
- An approach for developing capacities needed for implementation
- Strong institutional mechanism, as part of country's disaster risk governance system, to monitor implementation

Box 5. 10 key elements of National and Local DRR Strategies based on Sendai Framework

Sendai Framework Guiding Principles and Priorities of Action provide clear recommendations on the approach and requirements of DRR strategies. Drawing from the Sendai Framework, 10 key elements have been outlined as requirements to be covered by national (and local) DRR strategies¹:

- i. Have different timescales, with targets, indicators and time frames
- ii. Have aims at preventing the creation of risk
- iii. Have aims at reducing existing risk
- iv. Have aims at strengthening economic, social, health and environmental resilience
- v. Address the recommendations of Priority 1, Understanding disaster risk: Based on risk knowledge and assessments to identify risks at the local and national levels of the technical, financial and administrative disaster risk management capacity
- vi. Address the recommendations of Priority 2, Strengthening disaster risk governance to manage disaster risk: Mainstream and integrate DRR within and across all sectors with defining roles and responsibilities
- vii. Address the recommendations of Priority 3, Investing in disaster risk reduction for resilience: Guide to allocation of the necessary resources at all levels of administration for the development and the implementation of DRR strategies in all relevant sectors
- viii. Address the recommendations of Priority 4, Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction: Strengthen disaster preparedness for response and integrate DRR response preparedness and development measures to make nations and communities resilient to disasters
- ix. Promote policy coherence relevant to disaster risk reduction such as sustainable development, poverty eradication, and climate change, notably with the SDGs the Paris Agreement
- x. Have mechanisms to follow-up, periodically assess and publicly report on progress.

Source: “Technical Guidance for Monitoring and Reporting on Progress in Achieving the Global Targets of the Sendai Framework for Disaster Risk Reduction”, UNISDR, 2017

Fundamental Commonalities

Climate change adaptation and disaster risk reduction have fundamental similarities in what their focus is (the problem) and the approaches to tackle it (the solutions):

- **Risk is the focus:** Risk, uncertainty, and risk management are the basis of CCA and DRR. Risk is the potential of damage or loss to an asset from a possible event. The CCA and DRR are meant to manage the risk that is faced by the people, economy, and environment from the potential impacts of climate change and hazard events. In both cases, there is a significant amount of uncertainty in estimating the potential impacts due to the complex nature of the events as well as limitations in science and technology to understand the events and how the exposed assets react to such events (various types of vulnerabilities). Both CCA and DRR face the same conceptual and practical challenges faced when managing risk and its inherent uncertainty.
- **Many Risk Components are Common:** Climate change impact and disaster risk are not only created by hazards. But they are product of hazard events interacting with social, physical, economic, and environmental vulnerabilities. As outlined in Figure 1. the common hazards are hydrological, meteorological, and climatological hazards and the uncertain increase in their intensity and frequency. The other common components are the exposed social, economic, and environmental assets and their different types of vulnerabilities as well as the drivers of risk such as inequality and poverty, unplanned and rapid urbanization, weak governance, etc. Both CCA

and DRR require assessment of the risk components and understanding their interactions and interlinkages in order to define effective measures to manage the risk.

- **Risk Governance is the Common Path Towards Resilience:** Both processes aim at integration into development planning and require strong governance system that is backed by legislations, financial resources, and mechanisms to facilitate collaboration and coordination among sectors and stakeholders including representations from the whole of society and strong support from science and technology community and private sector. Both DRR and CCA require mechanisms for effective engagement with all members of the society. This is specially critical to give the required attention to gender-specific capacities and vulnerabilities and the needs of vulnerable groups in the society.

The table below outlines few of the key concepts and terms related to disaster risk reduction and climate change adaptation¹². Seeing the definitions side by side make more clear how similar the focus and approaches are.

Table 1: The key concepts and terms in DRR and CCA

	Disaster Risk Reduction¹³	Climate Change Adaptation^{14 15}
Focus	Disaster risk: The potential loss of life, injury, destroyed or damaged assets which could occur to a system, society or a community in a specific period of time, determined probabilistically as a function of hazard, exposure, vulnerability and capacity.	Climate Change Impact: Effects on natural and human systems caused by a change in the state of climate identified by changes in the mean over an extended period or by climate extremes.
Approach	Risk reduction: Disaster risk reduction is aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contributes to strengthening resilience and therefore to the achievement of sustainable development.	Adaptation: In human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate
Risk	Potential interaction of hazard, exposure, vulnerability and capacity that present the possibility for losses or impacts on a population and elements of a society	The result of the interaction of vulnerability (including capacity), exposure and hazard
Hazard	An event (geophysical, hydrological, climatological, biological, meteorological, technological or human induced) that has the potential to cause losses to human and ecosystems	Natural or human-induced events that have the potential to occur in the future and impact exposed and vulnerable aspects of a system
Exposure	Elements of communities, infrastructure, organisations or systems that are located within the proximity of a hazard, thus potentially subject to damage and loss	Existence of elements of human and ecosystems in places and settings which could be adversely affected by climate change
Vulnerability	The conditions determined by physical, social,	Potential to be adversely affected, including

¹² Adapted and modified from N. Banwell, et. al. , “Commonalities between Disaster and Climate Change Risks for Health: A Theoretical Framework”, 2018

¹³ Recommendations of the Open-ended Intergovernmental Expert Working Group on Indicators and Terminology relating to Disaster Risk Reduction, General Assembly report A/AC.285/CRP.2/Rev.3, November 2016

¹⁴ IPCC, 2012: Glossary of terms. In: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.)]. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change (IPCC). Cambridge University Press, Cambridge, UK, and New York, NY, USA, pp. 555-564

¹⁵ IPCC. 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change; IPCC: Geneva, Switzerland, 2014; Volume 1, p. 151.

	economic and environmental factors or processes, which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards.	factors such as susceptibility, predisposition and capacity
Capacity	The combination of all the strengths, attributes and resources available within an organization, community or society to manage and reduce disaster risks and strengthen resilience.	The combination of all the strengths, attributes, and resources available to an individual, community, society, or organization, which can be used to achieve established goals.

Final Draft

Pathways to Build Connection and Coherence

Based on the commonalities in the focus, challenges, and approaches in the process and implementation of NAPs and DRR policies, this section of the guide provides few key pathways for connecting NAP process to an existing or ongoing DRR work in the country.

Building capacities for the NAP process

Among the key points suggested in the NAP technical guidelines is the identification of the institutional arrangements that are required for an effective coordination of the NAP process. Similarly, the capacities required for developing DRR strategies are the following:

- Administrative capacities to coordinate and manage the processes
- Technical capacities in the form of expertise and tools to assess impacts and risks and design effective measures
- Financial capacities to fund the processes

In building required capacities for NAPs process, reaching out to DRR community to learn from and/or utilize existing capacities, which can lead to better use of limited human and financial resources

Low capacity is a common challenge faced in developing and implementing NAPs and DRR strategies, especially in low income countries and building capacity is a resource intensive process. In preparation for NAP process, all stakeholders and actors should connect to DRR counterparts to benefit from existing experience and capacities. One cost effective mechanism is to build a common knowledge platforms for sharing experience, expertise, and tools in CCA and DRR.

Building the risk governance system

Addressing climate and disaster resilience in the development planning and investments requires a holistic risk governance approach that would involve all relevant sectors and facilitate the consideration of both current and future risks into development planning processes across sectors.

A high level political vision, political will and commitment are essential to transition towards resilient development

Most countries that are prone to climate-related disasters (e.g. Pacific and Caribbean island countries, the Philippines...) have a deep conviction about the need to consider climate risks in development planning and the necessity for integration between CCA and DRR. This often translated in a strong political vision for a common goal of climate and disaster resilient development. Conviction can effectively lead to necessary actions, especially when backed by high-level political will. Having this goal clearly articulated in high-level policy documents such as laws, policies or strategic plans at national levels is helpful in providing a strong reference for the planning process. This also helps ensuring continuity in countries with political instability (see Box 6).

Box 6. Strategy for Climate and Disaster Resilient Development in the Pacific (SRDP)

The Pacific is the first region in the world to fully integrate climate change and disaster risk management into a single overarching regional policy framework. Recognizing the clear overlaps between CC adaptation and Disaster Risk Management (DRM), and the similar tools and resources required to monitor, analyze and address climate and disaster risks, most Pacific nations have started taking concrete steps to manage these risks in a more integrated manner.

In 2011, the Pacific region decided to develop a single integrated regional strategy and developed a road map. The Strategy for Climate and Disaster Resilient Development in the Pacific (SRDP) is one of the main outcomes of the road map and was finalized and approved in 2015 after few years of political and technical commitment and collaboration among national governments and many entities at regional and national level. SRDP succeeded the existing separate regional frameworks on DRM and CC which both ended in 2015.

Among many other key guidance and provisions, the strategy recognizes that social and economic sectors (such as health, education, water and sanitation, social assistance, energy, agriculture, fisheries, tourism, environment and infrastructure) have a key role to play in implementing resilience building solutions to deliver tangible results for communities.

See deliverables of the road map here: <http://gsd.spc.int/frdp/>.

Find SRDP document here: <http://www.pacificdisaster.net/dox/SRDP.pdf>

Source: UNDP

Creating regulatory frameworks to promote an integrated approach for mainstreaming DRR/CCA in development across all sectors is advisable

Regulatory frameworks create more clarity on the roles and actions that actors should undertake at different governance levels and sectors in order to achieve DRR/CCA goals and objectives in national or sectoral planning. This normally requires outlining specific policy objectives for mainstreaming followed up by the creation of appropriate legislation to aid implementation (See Box 7).

Final

Box 7. Integration of CCA and DRR in legislative framework

An IFRC/UNDP review of DRR laws and regulation in various countries indicates that the integration of DRR and CCA in the legal framework remains the exception rather than the rule. The trend in the countries reviewed by the report has been to allocate responsibility for the administration of CCA laws to ministries of the environment, without requiring them to coordinate with DRM institutions, while the DRM institutions are also not required to coordinate with ministries of the environment. However, more recently, few countries are adopting a new model where both CCA and DRR are integrated with development planning and resource management legislations.

The report recommends that legal frameworks consider:

- Clarifying and specifying institutional mandates,
- Allocating dedicated resources,
- Facilitating the participation of communities, civil society and vulnerable groups,
- Establishing the responsibility and accountability of relevant actors.

Algeria, Mexico and Uruguay present 3 useful examples of integrated legal frameworks. In Algeria, the National Agency on Climate Change, based in the Ministry for the Environment, is responsible for mainstreaming CCA into development planning.

However, since the National Committee on Major Risks, established by the DRM law, is mandated to coordinate all activities on major risks, including implementation mechanisms for the HFA, CCA and DRM institutions, it provides an overarching coordination mechanism. This legal and institutional framework has the potential to achieve a high level of CCA and DRR integration if implemented as planned.

In Mexico, the new General Climate Change Law of 2012 is supported by a special national climate change programme and an Inter-Ministerial Commission on Climate Change, a cross- sectoral coordination body formed by the heads of 13 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 between all institutions relevant to achieving risk prevention in the whole territory.

Source UNDP & IFRC multi-country report: <http://www.undp.org/content/undp/en/home/librarypage/crisis-prevention-and-recovery/effective-law---regulation-for-disaster-risk-reduction.html>

Strong institutional arrangements and coordination mechanisms are needed between CCA and DRR horizontally across sectors and vertically at national, local and community level

Defining and coordinating institutional arrangements for climate and disaster resilient development is arguably the single most important part of the process and perhaps the most difficult to achieve. This is often due to institutional resistance given that different institutions have historically driven climate change and disaster risk management agendas with separate financial sources and are often weaker than other sectoral ministries, such as Agriculture, Transport and Energy.¹⁶

In most countries the coordination mechanisms for CCA, DRR¹⁷ and development planning are established separately under leadership of different institutions and with very low level of overlapping members across them. Such set ups do not tackle the silo approach and the disconnect between the CCA, DRR, and development efforts.

As both climate change and disasters affect multiple sectors, design of the coordination mechanism is the foundation for connecting CCA and DRR and integrating them into development planning. Depending on the context of the country, the functioning modality might either be one coordination mechanism for both DRR and CCA or two fully interlinked mechanisms with lead agency/s that have

¹⁶ World Bank. 2013. Building Resilience: Integrating climate and disaster risk into development. Lessons learned from World Bank Group experience. The World Bank, Washington DC.

¹⁷ A national level coordination, usually called "National platform for disaster risk reduction" has been established in more than 80 countries

a strong convening power across multiple agencies and levels of government, as well as the private sector, academia and civil society¹⁸. Emerging experience indicates that in order to have effective convening power, the leading agency should be located at the highest possible level of government.

Several countries, such as Kiribati, Samoa, Gambia, Indonesia, and Zambia have moved in this direction by establishing lead coordinating agencies under Finance and Planning Ministries, or Offices of the President or Prime Minister. Indonesia has mobilized its central planning agency BAPPENAS to play a key role in the integration of CCA, DRR and resilience with development planning. In addition, there is currently a multi-stakeholder initiative to develop a convergence framework for DRR and CCA that is looking at various aspects of integration.

There is more integration between CCA and DRR at local and community level where the linkages and overlays between the CCA and DRR are most evident. The local level planning provides an opportunity for synergies in planning and implementation.

Efforts to address coordination and institutional arrangements represent an important upfront investment for countries, and one that may take considerable time. Experience so far has shown that investing in designing an integrated, multi-stakeholder and multi-sectoral approach generally results in stronger buy-in from relevant stakeholders and is likely to be more sustainable over the long term.

Fostering partnerships with institutional incentives and creating a shared value for resilience will ultimately lead to the sustainability of implementation

Implementation of NAP with its DRR integrated measures is the job of a wide range of actors across public and private sector and the whole of society. The adaptation planning process should consider how to create enabling environments to foster partnerships between government, academia, civil society and private sector and incentives for the implementation of synergetic DRR and CCA measures.

The process of resilience-building can provide an opportunity for private organisations to create shared value by integrating risk reduction policies and practices into their businesses as part of their Business Continuity planning and Enterprise Risk Management that help to secure its operating ability during times of shock, increase its productivity and resilience and contribute to generating economic, social or environmental benefits. This requires an enabling policy environment involving stakeholders in public and private sector including business regulatory bodies.

Academia and civil society have their unique role and critical capacities and expertise for DRR and CCA which should be utilized through effective partnerships.

Understanding climate change impact and risk

Understanding disaster and climate risk is the foundation for planning and investment in managing the risk. CCA and DRR require comprehensive information on all dimensions of climate change impact and disaster risk including hazard events, exposed assets (people, buildings and critical

¹⁸ World Bank. 2013. Building Resilience: Integrating climate and disaster risk into development. Lessons from World Bank Group experience. The World Bank, Washington DC.

infrastructure, environment, cultural heritage), various vulnerabilities and capacities. In NAP process, Element A requires stocktaking of available information on climate change impact and Element B requires analysing current climate change scenarios and assessing climate vulnerabilities and identifying adaptation options. When establishing the knowledge base for initiating adaptation planning, the relevant authorities can largely benefit from also accounting for and drawing on available data and information within the disaster risk reduction community in the country.

Following are few other broad recommendations for connecting DRR and CCA through the common need for risk information.

Box 8. The UNISDR-led Global Risk Assessment

Since 2011, UNISDR has spearheaded a multi-hazard Global Risk Assessment in partnership with leading scientific and technical organizations, with the aim of providing comparable open-access disaster risk metrics across countries and hazard categories and with a relatively coarse resolution as a means of raising risk awareness.

The 2015 UNISDR-led assessment, probabilistic hazard models have been developed for earthquake, tropical cyclone wind and storm surge, tsunami and river flooding worldwide, for volcanic ash in the Asia-Pacific region and for drought in parts of Africa.

A global exposure model for the built environment has been developed at a 1kmx1km resolution along coastlines and 5kmx5km elsewhere. Appropriate vulnerability functions have been used on the basis of expert knowledge in each region. Recently, the models integrated the impact of climate change on wind hazard in the Caribbean and on drought in Africa. The open-source multi-hazard risk platform CAPRA is used to calculate risk.

Coming up in 2019, UNISDR is working with a wide range of experts in risk assessment to design and deliver Global Risk Assessment Framework (GRAF) to be able to support decision-makers with actionable insights to enable risk-informed sustainable development. This goal would be achieved by increasing the multi-science foundation of risk assessments in an inclusive, open collaborative, building on existing processes and data to the greatest extent possible, to provide decision-makers with access to tools and scenarios at all scales (spatial and temporal) to better understand systems impacts and consequences to prevent risk creation, manage and reduce existing risk, and mobilize finance and investment

Source: UNISDR

Developing a central and accessible data-sharing and knowledge management platform to serve the needs of different actors for both DRR and CCA

In most countries, numerous studies and risk assessments are available across sectors both on disaster risk and climate change impact. These assessments are often conducted in an adhoc manner not benefitting from existing data and analysis. The information is usually scattered, not easily accessible, and not always used in decision making. The data hosted by CCA and DRR communities are overlapping and complementary and their integration would provide a comprehensive analysis of current and future risks. The NAP process should promote the development of data sharing and knowledge management platforms that enable sharing, maintaining, analyzing and managing data. This can help inform and serve the needs of different stakeholders working on resilience building¹⁹.

¹⁹ See a module on data management from Words into Action guidelines on national disaster risk assessment: [http://www.unisdr.org/files/52828_fdatamanagement\[1\].pdf](http://www.unisdr.org/files/52828_fdatamanagement[1].pdf)

Risk assessments are extensive investments requiring significant financial, technical, and management resources. Just as climate change impact and disaster risk have many common components as a phenomenon, risk assessments conducted to serve DRR and CCA would require many common datasets, use many similar tools and analysis methodologies, and engage with common stakeholders throughout the process and at the final stage to use the results. The disaster community has decades of extensive experience in identifying and understanding hazards, quantifying and modelling exposure and vulnerability of people and assets, communicating the risks to governments, communities, and individuals and informing decisions to reduce it. Such experiences provide important lessons learned and best practices that should be taken into consideration in adaptation planning.

Aligning the important terminology and develop standardised methods and criteria for risk assessment

Until recently the climate and disaster communities used different definitions and concepts in their assessment of risks. The IPCC SREX report and more recently the 5th Assessment report of the IPCC have made significant changes to their definition of risk and its components (hazard, exposure and vulnerability) that better matches the ones used by the disaster community (see Open-ended International Expert Working Group report on indicators and terminology²⁰). This is a critical step that will certainly contribute to a significant improvement of integration of assessment of climate and disaster risks and would facilitate interaction and collaboration among CCA and DRR scientists and practitioners.

Investing in multi-hazard and climate change impact risk assessments to meet the end-users need

In reality, countries, communities, or citizens would rarely face risks from only one hazard and one type of vulnerability. Adaptation and risk management measures should be designed in the context of multi-hazard and multi-risks. The NAP guidelines suggest integrating climate change adaptation in development planning processes in step B 5. In the context of CCA and DRR this would mean to start with understanding development priorities, current stressors, and vulnerabilities, and then bringing climate impacts and disaster risk over relevant timescales to understand the interaction between current and future risks and climatic and non-climatic hazards.^{21,22}

A risk assessment with a multi-hazard approach that considers the interaction of climate and non climate related hazards and various vulnerabilities (i.e. socio-economic vulnerabilities of different groups of the society) would allow setting priorities and design measures that have co-benefits in managing more than one risk without negative impacts on other risks. Although in recent years, there has been good progress at regional level in facilitating technical exchange and conducting multi-hazard and multi vulnerability assessment (see example in Box 9), there is less progress at national level in LDCs.

Multi-hazard and risks assessments are relatively new field that is rapidly evolving with an attempt to account for the interactions of risk elements within complex systems. The NAP process can further advance this area by framing multi-hazard risk assessments and facilitating the interaction between climate change and disaster risk information users as well as the experts on both sides

²⁰ "Report of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction", A/71/644, December 2016

²¹ IEG (The Independent Evaluation Group). 2013. Adapting to Climate Change: Assessing the World Bank Group Experience, Phase III

²² USAID. 2013. Climate Resilient Development – A framework for understanding and addressing climate change.

who would interact to develop methodologies and tools for meeting the users needs²³.

Box 9. Understanding climate change and disaster risk impact in the Arab Region

The Regional Initiative for the Assessment of the Impact of Climate Change on Water Resources and Socio-Economic Vulnerability in the Arab Region (RICCAR) aims to assess the impacts of climate change on freshwater resources in the Arab region and their implications for socio-economic and environmental vulnerability. It does so through the application of scientific methods and consultative processes involving both CCA and DRR communities.

The initiative seeks to prepare 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 runoff, droughts or flooding due to shifting rainfall patterns and extreme weather events.

The integrated vulnerability assessment of the Arab region combines climate impact assessment modelling outputs with geospatially referenced statistical data to generate integrated maps that are designed to:

- Foster the mainstreaming of climate change issues into sectoral planning as well as regional and national policy integration;
- Improve policy-making and provide a planning tool;
- Provide capacity-building to responsible institutions; and
- Raise awareness of intermediate groups.

A particular feature of this vulnerability assessment methodology is that it was developed through a consultative and participatory process with experts from the Arab region through the convening of annual Expert Group Meetings (EGMs) and the establishment of a Vulnerability Assessment Working Group (VA-WG). The VA-WG is comprised of 15 members representing Arab Governments as well as League of Arab States, United Nations and expert organisations serving the Arab region. The working group was assisted by a technical advisory team supported by GIZ and comprised of experts from Adelphi (Germany) and EURAC research (Italy).

Read more at: <https://www.unescwa.org/climate-change-water-resources-arab-region-riccar>

²³ "Towards the Development of an Adapted Multi-hazard Risk Assessment Framework for the West Sudanian Savanna Zone", UNU-EHS Publication Series No. 11. July 2015.

Box 10. Words into Action Guideline on National Disaster Risk Assessment

In 2016, the United Nations Office for Disaster Risk Reduction (UNISDR) commissioned the development of guidelines which was developed as the result of the collaboration between over 100 leading experts from national authorities, international organizations, non-governmental organizations, academia, research institutes and private-sector entities. The Guidelines are intended to:

(a) Motivate and guide countries in establishing a national system for understanding disaster and climate risk that is integrated with policy development mechanisms and would act as the central repository of all publicly available risk information.

This national system would lead the implementation and updates of national disaster risk assessment for use in disaster risk management, including for risk-informed disaster risk reduction strategies, climate change adaptation and development plans;

(b) Encourage taking a holistic approach in risk assessments that would provide an understanding of the many different dimensions of risk (hazards, exposures, vulnerabilities, capacities). The assessments would include diverse types of direct and indirect impacts of disaster – physical, social, economic, environmental and institutional. They would also provide information on the underlying drivers of risk – climate change, poverty, inequality, weak governance and unchecked urban expansion. Results from such risk assessment can serve various policies and investments in DRR, CCA and development.

The guidelines introduce 10 enabling elements to conduct successful risk assessments with a process that is integrated in policy and investment planning.

Source: UNISDR Words into Action Guidelines on National Disaster Risk Assessment, 2017:
<http://www.unisdr.org/we/inform/publications/52828>

Understanding the evolving nature of risk and estimate the future risk

Risk is not static and risk assessments need to account for spatial and temporal changes in hazard, exposure, and vulnerability. This is an area where disaster risk assessment has been evolving rapidly to incorporate changes in exposure and vulnerabilities and with more uncertainty under climate change. However climate is not the only driver of change, development patterns can drastically alter future risk by increasing or decreasing exposure and vulnerability (e.g. through rapid and unplanned urbanization). The main data sets that enable assessing and quantifying current risk are the same as those required to determine the impacts of adverse events in the future, it is therefore critical for both the disaster and climate change communities to continue investing in fundamental data and innovation that consider not only climate scenarios, but also data on social, economic and ecological assets that impact vulnerability. Collecting and analyzing risk information for current and long term climate scenarios is becoming a priority for various stakeholders from the local communities, national agencies, private sector and international organizations as well as academic and research institutions which often have extensive and pioneering experiences in this field. This provides new opportunities for all these actors to cooperate and partner across DRR and CCA to share information for building resilience.

Making use of existing national and international disaster loss and damage databases

In particular the disaster loss and damage databases established by many countries to track quantifiable impacts of hazard events over time can be of great use in generating the information and knowledge necessary for risk estimation and informing climate change adaptation and disaster risk reduction processes. Although it is important to note that in most countries the existing data on

extreme events does not specify the portion of impact that has been caused due to climate change. This gaps needs to be addressed in the damage and loss database in order to be useful for climate change adaptation policy design.

Box 11. About national damage and loss databases

Disaster databases record losses and damages across a number of parameters typically including deaths, economic losses, and physical damages and losses in each affected sector (housing, infrastructure, etc.). The geographic area affected and the types of hazard are also recorded. Over time, the accumulated data provides information on cumulative loss and damage, its geographic and possibly demographic distribution, the priority hazards, the types of loss and damage that occur, and temporal trends.

This is particularly important as the majority of damage and losses since 1990 have been associated with extensive events (frequent and low impact) in those countries with consistent data sets. Data systems that consider and monitor extensive risks are essential to inform adaptation, DRR and development planning given that increases in extensive risk directly threaten efforts to reduce poverty and to achieve the Sustainable Development Goals.

Using sex and age disaggregated data and gender analysis in developing local and national development and risk reduction plans is particularly important to ensure gender analysis is core component in development, CCA and DRR planning and programming.

Today more than 90 countries around the world have national or local historical disaster loss and damage. It is important to point out that loss and damage databases are important tools required for monitoring and measuring progress in disaster risk reduction and climate change adaption. Many more countries are in the process of establishing their national databases as part of getting ready for monitoring and reporting on the Sendai Framework implementation.

There are a number of global and regional disaster risk databases and information systems that can support the NAP process as well as guidelines for establishing damage and loss databases. These are outlined in Annex I.

Source: UNISDR

Indonesia disaster loss database

The development of a disaster loss database for Indonesia gained momentum when the National Disaster Management Agency (BNPB) was formally established in January 2008. Since then, the 'Safer Communities through Disaster Risk Reduction in Development Programme' supported by UNDP has accelerated the implementation of the database and the Disaster Data and Information of Indonesia (DiBi) was launched by the head of BNPB in July 2008 with data from 2002-2006.

The Government of Indonesia and UNDP customized the database system to respond to the government needs and requirements and embarked on collecting and validating historical disaster data from the past 30 years. The database is one of the main data sets being used to guide the on-going process for developing national DRR and CCA plans as well as for monitoring the impact on poverty at the community level.

A visual public platform has been created to share this data with all stakeholders:

<http://dibi.bnpb.go.id/bnpb/>

Source: UNDP

Developing financing strategies

Until recently, the financing of adaptation and DRR in developing countries has been largely reliant on international aid. In recent years, countries are waking up to the need of integrating financial needs for resilience in national budgets. Ministries of finance are increasingly involved in adaptation and disaster risk reduction planning and thinking about the needs for financing resilience. Awareness is increasing that the success of integration of climate and disaster risk in development planning will ultimately rely on predictable long term financing and shaping public and private investments in

development practices to increase climate resilience. Therefore, the involvement of financial actors from the national level as well as the main international donors operating in the country from the start of the planning process is essential. The NAP process can be an opportunity to begin shaping multi-sectoral resilience investment plans, and identifying opportunities for leveraging finance between CCA and DRR in order to scale up resilience programming. This should be done in cooperation with development partners.

Conducting joint assessment of the current financial policies and institutional arrangements and defining incentives for resilience building

Conducting joint assessments allow identifying common financial gaps and opportunities and more efficient financing of DRR and CCA. Many countries have undertaken assessments of both their CCA and DRR policies, as well as institutional and financial arrangement. Box 12 shows an example from Bangladesh.

Box 12. Scoping financial needs and available sources for CCA and DRR: Learning lessons and utilizing tools available for assessing climate financing

There has been more efforts and experiences gain in assessing fiscal framework for responding to climate change across sectors and between public and private sources at national and local level. There are lessons to learn, tools to use, and efforts to utilize for assessing finances for DRR. One strong set of tools are CPEIR.

Climate Public Expenditure and Institutional Reviews (CPEIR) are helpful tools for analyzing the linkages between national climate change policies; the institutional structures through which the policies are channelled and the resource allocation processes whereby public funding is made available for the implementation of relevant projects, programmes and policies.

Bangladesh carried a CPEIR to review budgets and expenditure on climate change over a three-year period from 2008/09 to 2011/12. The analysis focused primarily on the government budget reviewing the overall allocation of resources, the mechanisms delivering climate finance, the financing of climate spending, the main agencies involved, their processes and the nature of the budgets delivered.

The Bangladesh CPEIR highlighted that large elements of the climate response in the country relate to adaptation strategies that are by several ministries ranging from infrastructure to social protection programmes as well as a strong link to DRR. It also highlights that adaptation expenditures often contribute to more than one single outcome. Indeed, the purpose of adaptation activities will contribute to a number of outcomes including disaster risk reduction and broader development resilience.

Source: <https://www.climatefinance-developmenteffectiveness.org/>

Many of the financial risk management instruments (particularly insurance) focus on providing liquidity after a disaster and less so on ex ante and incentivizing risk management measures. Many national risk-financing strategies still reflect a vision of disasters as exogenous shocks rather than of risk as an endogenous characteristic of investment flows. As such, the cost of risk financing is likely to grow except in countries that are making major investments in risk reduction.

Perverse incentives induce counterproductive behaviours, which can lead to the increase or emergence of risks, either by fostering overly risk-prone behaviours or by discouraging risk prevention. Positive incentives are also needed to encourage good behaviours. Those include subsidies and fiscal benefits to avoid exposure and reduce vulnerability.

Box 13, 14, 15 provide information on three experiences at national level in incentivizing risk reduction through financial mechanisms.

Box 13. Incentivizing leading investments in flood plains around Bangkok

Thailand's powerful Board of Investment (BOI) encouraged investment in three promotional zones. Sectoral incentives through BOI-identified priority projects and privileges provided by the Industrial Authority of Thailand (IEAT). Although privileges offered in Zone 1, the areas surrounding Bangkok, were lower than those offered in regions further inland, they were still substantial, including corporate tax exemption for 3 years and a 50 percent reduction on import duty for machinery. Although this policy was successful in attracting FDI, it led to massive increases in flood exposure. Much of the investment took place in former rice paddies located in floodplains of the provinces, which paved the way for the 2011 Chao Phraya flood disaster.

Source: UNISDR (2013) *From Shared Risk to Shared Value –The Business Case for Disaster Risk Reduction. Global Assessment Report on Disaster Risk Reduction*

Box 14. Incentivizing vulnerability reduction in insurance schemes in United States

Subsidizing insurance can provide a perverse incentive to managing risk. In the United States, FEMA had previously subsidized home insurance in hurricane prone coastal areas because private insurance costs were considered too high, despite them being based on actuarial risk assessments. Following Superstorm Sandy in 2012, FEMA developed a new system that provides subsidies for home owners to implement measures that reduce their risk.

Source: IFRC & UNDP. 2014. *Effective law and regulation for disaster risk reduction: a multi country report*. New York

Box 15. Mexico's Fund for Natural Disasters (FONDEN)

FONDEN is Mexico's Fund for Natural Disasters. It was established in the late 1990s as a mechanism to support the rapid rehabilitation of federal and state infrastructure affected by disasters. It can support the rehabilitation and reconstruction of:

- (i) public infrastructure at the three levels of government (federal, state and municipal);
- (ii) low-income housing; and
- (iii) certain components of the natural environment (e.g., forestry, protected natural areas, rivers and lagoons).

FONDEN has two complementary budget accounts, the original FONDEN Program for Reconstruction and the Fund for Disaster Prevention (FOPREDEN) that was designed in recognition of the need to promote stronger ex-ante disaster risk management. This highlights a shift in focus of the efforts and funding by the Mexican Government from ex-post response to ex-ante prevention. Despite that, resources for prevention remain significantly less than those for reconstruction.

FONDEN is funded through the Federal Expenditure Budget, at a legally-required amount of no less than 0.4% of the annual federal budget or about US\$800 million (available to FONDEN, FOPREDEN and the Agricultural Fund for Natural Disasters).

The FOPREDEN Program for Prevention funds activities related to risk assessment, risk reduction and capacity building on disaster risk reduction. It promotes informed decision making about investment in DRR by requiring states to complete a risk assessment (including the development of a risk atlas) before being eligible for financing for risk mitigation projects.

FONDEN is continuously evolving to integrate lessons learned, with modifications by the Mexican Government in order to enhance its efficiency and effectiveness and move toward a comprehensive DRM framework.

Source: *The World Bank 2012: FONDEN, Mexico's Natural Disaster Fund—A Review*

Selecting adaptation measures

Selection of adaptation measures is another important pathway for connecting with DRR. Given the high degree of overlap between in CCA and DRR measures, a close coordination between the NAP and DRR processes can avoid duplications and enhance effectiveness and financial efficiencies.

Conducting joint exercise with DRR stakeholders to identify overlaps and complementarity between adaptation and DRR measures

The identification, review and appraisal of adaptation options should be undertaken jointly with DRR stakeholders. The joint evaluation and appraisal of adaptation options by CCA, DRM and other development agencies should identify complementarity, sequencing and/or combination of measures to achieve comprehensive risk management. This area in particular requires a strong coordination with development planners, authorities and stakeholders at the local and municipal level, which are normally in charge of implementing both CCA and DRR measures. Their engagement helps to better inform the national processes and provides opportunities for integration and.

Often, the risk reduction measures used in DRR coincide with climate change adaptation measures, particularly at the local level. DRR agencies can help identify appropriate adaptation measures, inform if these measures are already being implemented or planned, and advise on their suitability for the specific context, particularly to ensure the measures would not exacerbate risk of another hazard. See Box 16 for an example of CCA-DRR integrated policy and investment in Netherlands.

Box 16. The Dutch Delta Programme as an example of a long-term programmatic approach

The Delta Programme is a nation-wide Dutch programme aimed at keeping the Netherlands a safe and attractive place to live and work, for present and future generations. The Delta Programme explicitly links disaster risk reduction (related to flood risk management) and climate change and capitalizes on the synergies between both.

The Delta Programme has introduced new risk based standards in flood protection policy. These new standards are based on three risk indicators:

- 1) Individual risk: The probability of mortality as a result of a flood. This standard was introduced to be aligned with other disasters (e.g. chemical or nuclear accidents).
- 2) Economic risk: Prevent major economic damage to a level for which total societal costs are minimized.
- 3) Societal risk: Prevent failure of vulnerable functions with national scale consequences.

In its flood protection strategy the Delta Programme is promoting multi-layer safety policies and measures in which an optimal mix is proposed between prevention, sustainable spatial planning and crisis management. These elements are closely related to the terms prevention, preparedness and response of the disaster management cycle.

A key element in planning is the so-called 'Adaptive Delta Management' (ADM). This is a new planning approach¹, defined as *“a smart way of taking account of uncertainties and dependencies in decision-making on Delta Management with a view to reducing the risk of overspending or underinvestment”*. ADM starts out from short-term measures, which are linked to long-term perspectives. Short-term measures must be logical in the long-term: they are useful, do not obstruct long-term measures, or are even necessary to keep long-term options open.

A second key feature of the Delta Programme is its organizational structure, which aims at horizontal integration between the responsible ministries and vertical integration with lower level authorities like water boards, provinces and municipalities and the so called 'Safety regions' (in which emergency organizations cooperate)¹.

A third key element is that the Delta Programme was given a firm legal basis in the 'Delta Act on Flood Risk Management and Freshwater Supplies' (in short: Delta Act). This act also anchors the funding of the Delta Programme. The Delta Fund ensures that sufficient financial resources are dedicated to the objectives of the Delta Programme.

Lastly, the Delta Programme actively promotes the collection, sharing and use of data and knowledge. It has set up a knowledge portal to inform municipalities and provinces¹. It involves universities, knowledge institutes and implementation agencies closely. The models for impact and risk assessment and for evaluation of new flood risk management plans are shared by DRR and CCA communities. For instance there is a public data base with risk assessment data and inundation model results¹ that is valuable input for crisis managers making evacuation plans and water managers planning for long term investments.

Further reading:

<https://english.deltacommissaris.nl/delta-programme/contents/what-is-the-delta-programme/adaptive-deltamanagement>

<https://english.nctv.nl/>

<http://ruimtelijkeadaptatie.nl/english/>

www.lizard.net

Source: Deltares

Avoiding mal-adaptation, inefficient use of resources and unintentional creation of new risk through sharing of information between CCA and DRR

CCA measures that do not take non-climatic hazards into account could result in increasing risk or inefficient use of resources. For example, building a sea-wall to provide protection against storm surges and sea-level rise does not necessarily take into account tsunamis or land subsidence, which could result in exacerbating the impacts of storm surges and coastal flooding (e.g. trapping flood waters behind the sea wall). See Box 17 on various elements of early warning systems and importance of having multi-hazard approach for EWS.

Box 17. Evaluating and complementing existing Early Warning Systems (EWS) to serve variety of hazards

Effective early warning system would require four elements:

1. Risk knowledge (systematically collect data on hazard, exposure and vulnerability and conduct hazard and risk assessment);
2. Technical hazard monitoring and warning service;
3. Communication and dissemination of warnings and impact/risk information; and
4. Response capability (or early action capability) to build country and community capability to respond for example evacuation capability and emergency planning.

Major advances have been made in hazard monitoring and forecasting and in the development of early warning systems. However, most systems often don't integrate all four elements in order to have an effective EWS.

For example, many early warning systems often prioritize monitoring and forecasting hazards and may omit or underestimate the key importance of exposure and vulnerability in explaining risk levels. Exposure and vulnerabilities (social, physical, and environmental) provide critical information for designing and setting up mechanisms for communication of information and for building capacities for early action and response.

The NAP process should build upon and complement the existing early warning systems taking into account the common elements that would serve multi-hazard early warning system covering both climate and non-climate hazards (for example, use to text messages in communication element).

Specific to risk knowledge element of EWS, climate information systems should integrate complementary information on vulnerability and risk drivers (such as social, economic and environmental drivers such as environmental degradation, poverty and inequality, vulnerable rural livelihoods and weak governance) to effectively inform and trigger action, particularly in the context of slow-onset events and extensive risks.

Early Warning System
Example: Flood

Risk Knowledge	Monitoring and Warning	Dissemination and Communication	Response Capability
Hazard	Rainfall	Radio/TV	Evacuation Center
Elements at Risk	River Level	Telephone	Search & Rescue
Vulnerabilities	Warning Decision	Household Warning	Relief Goods

Figure 4. Four elements of Early Warning Systems
Source: Global Initiative on Disaster Risk Management.

Prioritizing measures that contributes to climate change adaptation, DRR and development objectives in coherent manner

Ranking and prioritizing adaptation options is an important step in this process. The NAP process can benefit from the experiences and tools within the DRR communities to help in selecting and prioritizing adaptation options. In addition, the CCA and DRR stakeholders should agree on a number of criteria to prioritize adaptation and DRR options, chief among them should be providing win-wins and contributing to CCA, DRR and development objectives. When complementary actions are prioritised, progress can be accelerated and duplication can be reduced –and ideally eliminated. See example of ecosystem-based adaptation measures in Box 18.

Box 18. Ecosystem-based adaptation measures: providing co-benefits for CCA, DRR, and Development

Ecosystem-based approaches to adaptation and disaster risk reduction (EbA & Eco-DRR) utilizes ecosystems and biodiversity to integrate climate change adaptation, disaster risk management and development planning to provide benefits for people and nature beyond adaptation and disaster risk reduction within the overall framework of sustainable development.

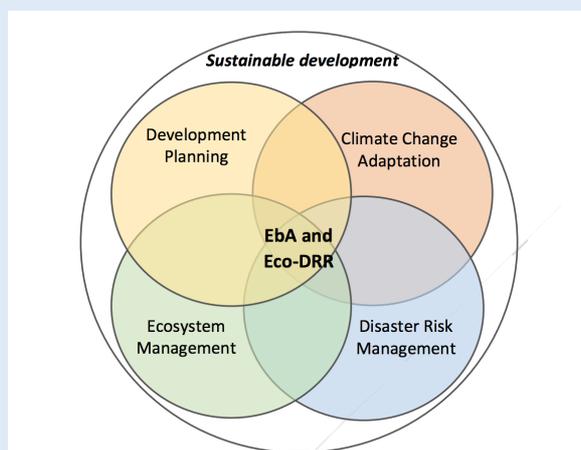


Figure 5. Ecosystem-based approaches to adaptation and disaster risk reduction (EbA & Eco-DRR)
(adapted from Midgley et al., 2012, DEA & SANBI 2017, and Sudmeier and Ash 2009)

Sustainable ecosystem management has the potential to influence all three elements of the disaster or climate risk equation – in terms of regulating and mitigating hazards, controlling exposure and reducing vulnerability. This is extensively documented in a large body of literature and studies from all regions:

- i. Healthy and well-managed ecosystems can act as natural infrastructure that buffers hazard impacts. For example, coral reefs, sea grasses, sand dunes and coastal vegetation such as mangroves and saltmarshes can effectively reduce wave heights and reduce erosion from storms and high tides, while buffering against saltwater intrusion and trapping sediment and organic matter.
- ii. Healthy and well-managed ecosystems also can help reduce the exposure of people and their productive assets to hazards: in drylands, maintaining vegetation cover and agricultural practices such as use of shadow crops, nutrient-enriching plants and vegetation litter increase resilience to drought by conserving soil and retaining moisture.
- iii. Well-managed, healthy ecosystems can reduce vulnerabilities to climate impacts and disasters by supporting livelihoods that are sustainable and resilient to disasters: Ecosystems sustain human livelihoods and provide for basic needs, such as food, shelter and water – before, during and after hazard events.

Investment in sustainable ecosystem management as CCA or DRR strategies provides multiple social, economic and environmental benefits and are often regarded as “no-regret”.

Source: *The role of ecosystems in disaster risk reduction*, ed. Renaud, Fabrice G., Sudmeier-Rieux, Karen and Estrella, Marisol (Tokyo: UNU Press, 2013).

Implementing, monitoring and evaluation

Fostering partnerships and creating a shared value for resilience across sectors will ultimately lead to the sustainability of results

The adaptation planning process should consider how to create enabling environments and incentives to foster partnerships between government, civil society and private sector and incentives for the implementation of synergetic DRR and CCA measures and inclusive approaches with communities. The process of resilience-building can provide an opportunity for academic, public and private organisations to create shared value by integrating risk reduction policies and practices into their businesses that help to secure its operating ability during times of shock, increase its productivity and resilience and contribute to generating economic, social or environmental benefits. This requires an enabling policy environment involving stakeholders across institutions as well as business regulators.

Long term success in implementing climate and disaster resilient development requires long-term monitoring mechanisms that transcends political cycles

Monitoring implementation and progress in risk reduction is challenging and resource intensive but having effective national and local accountability mechanisms for reporting and follow-up with responsible entities is critical to assess progress and adjusting the course of action to manage any obstacles to achieving the results. A CCA-DRR integrated monitoring mechanism is a sensible pathway for connecting the two and to ensure efficient use of resources.

Selection of indicators is one of the first steps for establishing an integrated monitoring system. Capturing the full scope of progress would also require monitoring risk management outputs across all development sectors with respect to whether the underlying risk drivers such as poverty and environmental degradation are being addressed or not.

At the global level, indicators have been approved for monitoring Sendai Framework for DRR and SDGs. Few indicators are common between the two frameworks, which are also covering climate change adaptation aspect. See Box 19 for the list of these indicators.

Design of the monitoring system is the other pathway for linking and integrating NAP monitoring with DRR monitoring. The monitoring mechanisms at national and local level need to be empowered with²⁴:

- Political ownership at the highest level of the country or sub-national government
- Legislative or policy mandate to oversee public and private stakeholder's actions
- Engagement, coordination, and consultation capacities through a multi-stakeholder mechanism and common understanding and acceptance of roles and responsibilities in monitoring and reporting on CCA and DRR progress across all governmental entities and stakeholders evaluating and tracking adaptation and risk management impacts including how the measures impact development²⁵.
- Innovative methods to have two way communication and feedback mechanisms from civil society and general public
- Information management mechanism to collect data and reports, consolidate and analyze, and prepare reports for local to national to global levels.

²⁴ UNISDR, 2017. Issue Brief of Plenary 1 on National and local DRR strategies, Global Platform 2017

²⁵ For example, see Tracking Adaptation and Measuring Development (TAMD) Tool, IIED: <http://www.iied.org/tracking-adaptation-measuring-development>

- The connection and interlinkages with disaster loss data collection systems and national statistics office

Following the recommendations by OIEWG, UNISDR has developed a web-based monitoring system of the Sendai Framework monitoring mechanism. The Sendai Framework Monitoring (SFM) system has been operational since March 2018, which allow Member States to assess their progress in the implementation of the Sendai Framework by using the so-called global indicators endorsed by the General Assembly. The full set of global indicators for Target A through Target E of the Sendai Framework are also used for monitoring of SDGs. Once Member States report data of the common indicators through the online Sendai Framework Monitoring system, UNISDR as a custodian agency of DRR related indicators of SDGs, compile and report them to UNDESA, which can reduce a reporting burden of Member States. In order to enhance monitoring and reporting on progress in implementing the Sendai Framework at local, national, regional and global levels, the SFM system can also accommodate “Custom Targets and Indicators”.

Box 19. SDG Targets and indicators that are common to Sendai Framework at global level require integrated monitoring of CCA and DRR progress

In 2016, United Nations General Assembly approved a set 36 global indicators defined by the Open-ended Intergovernmental Expert Working Group (OIEWG) to monitor progress in achieving the seven global targets of the Sendai Framework for Disaster Risk Reduction 2015-2030. Few of these indicators have been directly adapted by the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs). The common indicators are related to Goal 1, 11 and 13 with clear text that would monitor building resilience to climate change impact and disaster risk.

Goal 1. End poverty in all its forms everywhere

Target: 1.5: By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters

Indicators:

- 1.5.1 Number of deaths, missing persons and persons affected by disaster per 100,000 people
- 1.5.2 Direct disaster economic loss in relation to global gross domestic product (GDP)
- 1.5.3 Number of countries with national and local disaster risk reduction strategies

Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable

Target 11.b: By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels

Indicators:

- 11.b.1 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030a
- 11.b.2 Number of countries with national and local disaster risk reduction strategies

Goal 13. Take urgent action to combat climate change and its impacts

Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

Indicators:

- 13.1.1 Number of countries with national and local disaster risk reduction strategies
- 13.1.2 Number of deaths, missing persons and persons affected by disaster per 100,000 people

Checklist for Ensuring the NAP is in Coherence with DRR

This section of the guidance note provides a checklist in the form of questions to be considered during each step of NAPs process under the four elements. Similar to the NAPs guideline and its four elements, this checklist also has flexibility to be adjusted for country's need and context.

Element A. Lay the Groundwork and Address Gaps

Step A.1. Initiating and launching the national adaptation plan (NAP) process

- Is there an existing national approach and strategy for the DRR to utilize, learn from, and connect to?
- How can NAP institutional arrangements be designed to facilitate linkages with DRR process?

Step A.2. Stocktaking: identifying available information on climate change impacts, vulnerability and adaptation and assessing gaps and needs of the enabling environment for the NAP process

- What information and resources are available within DRR community on climate and weather related hazard, and socio-economic and ecological assets and vulnerabilities?
- What existing technical and financial resources and capacities in DRR process can be utilized for NAP process?
- Is it possible to create synergies between the outputs of NAP and the DRR strategy process (i.e. in the approach, format, communication, etc.)?
- What is required in the reporting arrangements for NAP to ensure it reaches the DRR actors at early stages of NAP process including a clear message of how CCA and DRR can be mutually reinforcing and efficiently conducted?

Step A.3. Addressing capacity gaps and weaknesses in undertaking the NAP process

- What capacity and capacity building support are available within DRR institutions including civil society, universities and the private sector that can be utilized for NAP process?
- Are there capacity building exercise undertaken within DRR that can help support NAP capacity building?
- Is it possible to include DRR in capacity development efforts for NAP process with a small incremental cost?

Step A.4. Comprehensively and iteratively assessing development needs and climate vulnerabilities

- What are the common objectives of NAP with DRR national strategies and development plans?
- What evaluations are undertaken or planned for considering disaster risk within national development plans and how could those be utilized for NAP?
- What sectors have already considered DRR or resilience building strategies or activities for climate-related hazards and how do those related to NAP objectives?
- Are there existing capacities for mainstreaming DRR within various sectors that can enable integration of CCA into sectors?
- What barriers exist in the risk governance system to improve integration with DRR and how can they be lifted through design and implementation of NAP?
- What are the opportunities for integrations of both CCA and DRR in development planning?

Element B. Preparatory elements

Step B.1 Analysing current climate and future climate change scenarios

- What kind of climate hazard data and analysis is available for DRR that can be utilized?
- What are the climate related hazards and how do they interact within a broader risk context?

Step B.2. Assessing climate vulnerabilities and identifying adaptation options at the sector, subnational and other appropriate levels

- What kind of climate exposure, and vulnerability data and analysis is available in DRR that can be utilized?
- What information is commonly needed for understanding vulnerabilities in both disaster and climate risk and where it can be obtained?
- How to keep abreast of evolving and future risk? What mechanisms are in place to monitor and update changing patterns in exposure and vulnerability?
- What information is available on “extensive disaster risks” (i.e. from national disaster loss database) and how it interacts with “slow onset events”?
- What is the purpose of any new risk assessment and are the end users concerned about disaster risk too? Can risk assessments be designed to serve both purposes with more efficient use of technical and financial resources?
- What existing DRR measures are already serving adaptation purposes?
- Do the adaptation measures identified interact with other non-climatic hazards?

Step B. 3. Reviewing and appraising adaptation options

- How to integrate DRR/CCA goals and objectives into existing development planning?
- How are DRR/CCA activities and financial needs integrated in national budgets?
- Have resilience strategies for DR at local level (cities!) and by sectors been taken into account in an integrative, cross-sector manner, to address synergies as well as trade-offs of interventions (e.g. water, food, energy, health, infrastructure)?
- Have proposed adaptation measures been screened to determine their impacts on disaster risk (negative or positive)?
- What additional benefits does the measures provide in terms of reducing risk, building resilience to disasters and advancing development goals (i.e. managing drivers of risk such as inequality, poverty, weak governance)?

Step B.4. Compiling and communicating national adaptation plans

- Is it possible to create synergies with DRR in the process of aggregating sectoral and sub-national adaptation options into the national adaptation plan?
- How to ensure that resulting NAP is communicated to DRR stakeholders at national and local levels, highlighting the integration and complementarity with DRR and the role they play in contributing to resilience?

Step B.5. Integrating climate change adaptation into national and subnational development and sectoral planning

- What can the existing disaster risk measures within national development plans and sectoral plans be utilized for NAP?
- How can engagement of DRR actors contribute to the feasibility and sustainability of proposed adaptation measures (i.e. conducting a joint appraisal of adaptation options by CCA, DRR and other development actors)?

Element C. Implementation strategies

Step C. 1. Prioritizing climate change adaptation in national planning

- What are the existing criteria within national development planning and within sectors for defining priority actions in the context of risk to people, economy, and environment?
- What are existing disaster risk reduction priorities, including climate risk, within development planning which can be used to add long term climate change adaptation options?

Step C. 2. Developing a (long-term) national adaptation implementation strategy

- How can the implementation of NAP build on and complement existing disaster risk reduction activities?
- What incentives can be used to promote integrated resilience building activities by various stakeholders?
- What partnerships can be fostered between CCA and DRR public and private stakeholders to achieve comprehensive action on resilience?

Step C. 3. Enhancing capacity for planning and implementing adaptation

- How to coordinate government agencies to make sure DRR/CCA implementation is cross-sectorally and vertically coherent?
- How can the institutional and regulatory framework be strengthened to enable CCA and DRR integration?
- What are the lessons learned from DRR community on planning and implementing DRR that can be applicable to adaptation?
- What DRR financing mechanisms exist that can support planning for and implementing resilience-building activities?
- How can implementation process foster the creation of shared values of risk management and enhance public and private sector risk-sensitive investments?
- How can implementation process build on existing city and community level capacities for DRR including to reach to the most vulnerable groups?

Step C. 4. Promoting coordination and synergy at the regional level and with other multilateral environmental agreements

- How can the integration between DRR and CCA be further operationalized regionally?

Element D. Reporting, monitoring and review

Step D.1. Monitoring the NAP process

- What information and metrics should be used to evaluate and monitor effectiveness of integration with DRR and development planning during NAP process?
- What information, metrics, and mechanisms that are being used for monitoring DRR, SDGs and other development processes can be used for monitoring NAP process?
- What information and metrics are used for monitoring effectiveness of engagements and design of measures for building resilience of the most vulnerable groups?

Step D.2. Reviewing the NAP process to assess progress, effectiveness and gaps

- How would CCA-DRR integration progress, effectiveness and gaps can be reviewed and quantified and which information from DRR activities is required?

Step D.3. Iteratively updating the national adaptation plans

- Is there an opportunity to synchronize the time interval of NAP update with national DRR strategy and development planning updates?

Step D.4. Outreach on the NAP process and reporting on progress and effectiveness

- What kind of information on integration with DRR needs to be included in reporting on progress and effectiveness of the NAP process in the national communications?
- What other channels can be used to report internationally on progress on DRR integration to NAP (i.e. Sendai Framework monitoring and reporting to UNISDR)?

Final Note

Integrating climate and disaster risks into development is a process that requires long term vision, political support, and governance capacity. Lessons learned and good practices are emerging on how to best integrate DRR and CCA, particularly in the areas of institutional arrangements, climate and disaster risk assessment, implementation of CCA and DRR measures and social and financial protection. There are many ongoing efforts at global and regional level committed to sharing the countries local and national level experiences and lessons.

Despite progress made, much remains to be done, particularly with regards to the areas that we believe are critical to address in priority in the next few years:

- Capacity building for the process of developing integrated CCA and DRR policies
- Breaking institutional silos by designing a strong governance mechanism to enable the engagement and participation of relevant stakeholders from CCA, DRR and development planning.
- Investing in tackling data challenges and conducting holistic risk assessments that serves CCA, DRR and resilient planning.

- Designing funding schemes and incentivising resilient investments
- Coordinating and monitoring implementation of CCA and DRR integrated into development

The international community has a critical role to play in supporting and strengthening efforts by all stakeholders at local, national, and regional level. It should lead by example promoting, funding and implementing approaches that integrate climate and disaster resilience in broader development strategies. At United Nations organizations, international and regional non-governmental organizations, and donor agencies are committed to support countries achieving coherence between CCA and DRR for sustainable development in policy, planning, and investments.

Final Draft

Bibliographical References

- Banwell, N., et. al. , 2018, “Commonalities between Disaster and Climate Change Risks for Health: A Theoretical Framework”, 2018
- European Environment Agency (EEA), 2017, “Climate Change Adaptation and Disaster Risk Reduction in Europe; Enhancing coherence of the knowledge base, policies and practices”, EEA Report No 15/2017, 2017
- GIZ, 2014, “NAP Align: Recommendations for aligning national adaptation plan processes with development and budget planning”
- GIZ, 2011, “Integrating climate change adaptation into development planning A practice-oriented training based on an OECD Policy Guidance Training Manual”
- IEG (The Independent Evaluation Group), 2013, “Adapting to Climate Change: Assessing the World Bank Group Experience, Phase III”
- IFRC & UNDP, 2014, “Effective law and regulation for disaster risk reduction: a multi country report”. New York.
- Intergovernmental Panel on Climate Change- Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (IPCC-SREX) and IPCC Fifth Assessment Report, 2012
- IPCC, 2012: Glossary of terms. In: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.)]. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change (IPCC). Cambridge University Press, Cambridge, UK, and New York, NY, USA, pp. 555-564
- IPCC. Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change; IPCC: Geneva, Switzerland, 2014; Volume 1, p. 151.
- Mc Vittie, A., et. al., “Ecosystem-based solutions for disaster risk reduction: Lessons from European applications of ecosystem-based adaptation measures”
- Mitchell, T., Van Aalst, M. , Silva Villanueva, P., 2010, “assessing progress on integrating disaster risk reduction and climate change adaptation in development process”
- ODI, 2016, “Resilience across the post-2015 frameworks: Towards Coherence?”
- Renaud, F., Sudmeier-Rieux, K. and Estrella, M, UNU, 2013, “The role of ecosystems in disaster risk reduction”
- Sendai Framework for Disaster Risk Reduction 2015-2030, 2015
- Stockholm Environment Institute (SEI), 2014, “Climate change and Disaster Risk Reduction”- Background Paper prepared for the 2015 Global Assessment Report on Disaster Risk Reduction. Geneva, Switzerland: UNISDR.
- Turnbull, M. Sterret, C. Hilleboe, A. “Toward Resilience: A Guide to Disaster Risk Reduction and Climate Change Adaptation”
- United Nations General Assembly, 2016. Report of the Open-Ended Intergovernmental Expert Working Group on Indicators and Terminology Relating to Disaster Risk Reduction, United Nations General Assembly, Geneva, Switzerland.

UNFCCC, 2012, “NATIONAL ADAPTATION PLANS”, Technical guidelines for the national adaptation plan process, LDC Expert Group

UNFCCC, 2017, “Opportunities and options for integrating climate change adaptation with the Sustainable Development Goals and the Sendai Framework for Disaster Risk Reduction 2015–2030”, Technical paper by the UNFCCC secretariat

UNISDR, 2018, “Words into Action Guideline on Developing National DRR Strategy”, (consultation draft)

UNISDR, 2017, “Words into Action Guideline on National Disaster Risk Assessment

UNISDR, 2017, Issue Brief of Global Platform Plenary 1, 2017, Cancun, Mexico

UNISDR, 2017, “Technical Guidance for Monitoring and Reporting on Progress in Achieving the Global Targets of the Sendai Framework for Disaster Risk Reduction”

UNISDR, 2015, “Making Development Sustainable: The Future of Disaster Risk Management”. Global Assessment Report on Disaster Risk Reduction (GAR15)

UNISDR, 2013, “From Shared Risk to Shared Value –The Business Case for Disaster Risk Reduction”, Global Assessment Report on Disaster Risk Reduction (GAR13)

USAID, 2013, “Climate Resilient Development – A framework for understanding and addressing climate change”

UNDP, UNISDR, GFDRR, 2013, “Disaster Risk Reduction & Climate Change Adaptation in the Pacific”

UNU, 2015, “Towards the Development of an Adapted Multi-hazard Risk Assessment Framework for the West Sudanian Savanna Zone”, UNU-EHS Publication Series No. 11.

World Bank, 2012, “FONDEN, Mexico’s Natural Disaster Fund—A Review”

Annex I – Available Resources

On Coherence of CCA, DRR and Development

- “Opportunities and options for integrating climate change adaptation with the Sustainable Development Goals and the Sendai Framework for Disaster Risk Reduction 2015–2030”, Technical Paper of UNFCCC Secretariat, 2017
https://unfccc.int/sites/default/files/resource/techpaper_adaptation.pdf
- “Climate Change Adaptation and Disaster Risk Reduction in Europe; Enhancing coherence of the knowledge base, policies and practices”, EEA Report No 15/2017, 2017
<https://www.eea.europa.eu/publications/climate-change-adaptation-and-disaster>
- The Routledge Handbook of Disaster Risk Reduction Including Climate Change Adaptation, Routledge, 2017.
<https://www.routledge.com/The-Routledge-Handbook-of-Disaster-Risk-Reduction-Including-Climate-Change/Kelman-Mercer-Gaillard/p/book/9781138924567>
- “A guide to mainstreaming guiding disaster risk reduction and climate change adaptation”, IFRC, 2013.
[http://www.ifrc.org/PageFiles/40786/DRR and CCA Mainstreaming Guide_final_26 Mar_low res.pdf](http://www.ifrc.org/PageFiles/40786/DRR%20and%20CCA%20Mainstreaming%20Guide%20final%2026%20Mar%20low%20res.pdf)
- “Toward Resilience: A Guide to Disaster Risk Reduction and Climate Change Adaptation”, Emergency Capacity Building Project”, Marilise Turnbull, Charlotte L. Sterrett, Amy Hilleboe, 2013
<https://reliefweb.int/sites/reliefweb.int/files/resources/ECB-toward-resilience-Disaster-risk-reduction-Climate-Change-Adaptation-guide-english.pdf>
- Mainstreaming DRR & CCA into Development Process at Local Level, Oxfam and ADPC, 2015
https://www.adpc.net/igo/category/ID791/doc/2015-r74Ypd-ADPC-publication_MainstreamingHandbookSindhWEB.pdf
- Minimum Standards for Local Climate-smart Disaster Risk Reduction, IFRC, 2013
https://www.climatecentre.org/downloads/files/MinimumStandards/MinimumStandardsforclimate-smartDRR_2.0NOV2013.pdf
- Integrating climate change adaptation into development planning A practice-oriented training based on an OECD Policy Guidance Training Manual, 2011
<https://www.oecd.org/dac/environment-development/45856020.pdf>

On Disaster Risk Databases, Risk Assessments, Information Platforms, and Tools

Global and regional databases, risk assessments and information

- Index for Risk Management (INFORM) tool (EU) - INFORM combines 50 different indicators related to the conditions that lead to crises and disasters. INFORM includes data on the area’s human and natural hazard risks, the vulnerability of the communities faced with hazards, and the coping capacity of local infrastructure and institutions. <http://www.inform-index.org/>
- Global Assessment Report (GAR) Atlas Risk Data Platform (UNISDR) - Online tool which shares spatial data information on global risk from natural hazards. It covers tropical cyclones and storm surges,

earthquakes, riverine floods, and tsunamis.
<http://risk.preventionweb.net/capreviewer/main.jsp?tab=0>

- Think Hazard (GFDRR) - An online tool created by GFDRR to enable non-experts to consider natural hazard information in project design. Users can assess the level of river flood, earthquake, drought, cyclone, coastal flood, tsunami, volcano, and landslide hazard. <http://thinkhazard.org/>
- EMDAT (CRED) - Online database that contains essential core data on the occurrence and effects of over 22,000 mass disasters in the world from 1900 to the present day. The database is compiled from various sources, including UN agencies, non-governmental organisations, insurance companies, research institutes and press agencies. <http://www.emdat.be/>
- Global Assessment Report (GAR) disaster loss database (UNISDR) - Online database of detailed disaster loss database for 94 countries. These databases are developed at national level. http://www.desinventar.net/index_www.html
- NatCatSERVICE, maintained by Munich Reinsurance: <https://www.munichre.com/en/reinsurance/business/non-life/natcatservice/index.html>;
- Sigma, maintained by Swiss Reinsurance maintained by Swiss Reinsurance: <http://institute.swissre.com/research/overview/sigma/>(for example: http://media.swissre.com/documents/sigma1_2011_en.pdf)
- The on-line Global disaster identifier (GLIDE) database, maintained by the Asian Disaster Reduction Center (ADRC)<http://www.glidenumbers.net/>

Guidelines and references

- Words into Action guidelines National Disaster Risk Assessment, UNISDR, 2017. <https://www.unisdr.org/we/inform/publications/52828>
- Guidance for Recording and Sharing Disaster Damage and Loss Data, JRC Science and Policy Reports, 2015. <http://publications.jrc.ec.europa.eu/repository/bitstream/JRC95505/lbna27192enn.pdf>
- GFDRR Innovation Lab publications: <https://www.gfdr.org/en/innovation-lab>

On DRR in Sectors or CCA-DRR Integration in Sectors

Agriculture:

- Knowledge tank for agriculture sectors' adaptation to climate change (NAP-Ag Knowledge Tank): <http://www.fao.org/in-action/naps/knowledge-tank/en/>
- The Modelling System for Agricultural Impacts of Climate Change (MOSAICC), an integrated package of models which allows users to assess the impact of climate change on agriculture. <http://www.fao.org/in-action/mosaicc/en/>
- Knowledge Sharing Platform on Resilience (KORE): <http://www.fao.org/in-action/kore/en/>
- FAO, 2017. Module on *Climate resilience: synergies between Disaster Risk Reduction and Climate-Smart Agriculture* in the *second edition Climate-Smart Agriculture Sourcebook*. <http://www.fao.org/3/a-i7994e.pdf>

Environment and Ecosystems

- Advancing implementation of the Sendai Framework for Disaster Risk Reduction (2015-2030) through ecosystem solutions by Partnership for Environment and Disaster Risk <https://www.preventionweb.net/publications/view/49283>

- UNFCCC synthesis report on **Adaptation planning, implementation and evaluation addressing ecosystems and areas such as water resources** coordinated by the “Nairobi work programme on impacts, vulnerability and adaptation to climate change”
<http://unfccc.int/resource/docs/2017/sbsta/eng/03.pdf>

Health

- Towards Improved Linkage of Disaster Risk Reduction and Climate Change Adaptation in Health: A Review, 2018. <http://www.mdpi.com/1660-4601/15/4/793/pdf>

WASH

- Disaster risk reduction and water, sanitation and hygiene- Comprehensive Guidance, CARE Nederland and the Global WASH Cluster led by UNICEF, [http://educationcluster.net/wash/wp-content/uploads/sites/5/2013/09/GWC-Disaster Risk Reduction and WASH1.pdf](http://educationcluster.net/wash/wp-content/uploads/sites/5/2013/09/GWC-Disaster_Risk_Reduction_and_WASH1.pdf)

Education

- Climate change adaptation and disaster risk reduction in the education sector, Resource Manual, UNICEF, 2012
<https://www.unicef.org/cfs/files/UNICEF-ClimateChange-ResourceManual-lores-c.pdf>

Progress at regional level

- “Towards Policy Integration of Disaster Risk, Climate Adaptation, and Development in ASEAN: A Baseline Assessment”, NTS insights, 2017
<https://reliefweb.int/sites/reliefweb.int/files/resources/NTS-insight-Jan2017-Towards-DRR-CCA.pdf>
- Progress on integrating Climate Change Adaptation and Disaster Risk Reduction for sustainable development pathways in South Asia: evidence from six research projects
https://www.researchgate.net/publication/324912304_Progress_on_integrating_Climate_Change_Adaptation_and_Disaster_Risk_Reduction_for_sustainable_development_pathways_in_South_Asia_evidence_from_six_research_projects

Risk Management Knowledge and Capacity Development Platforms

- UNISDR: Words into Action guidelines for DRR: <https://www.preventionweb.net/drr-framework/sendai-framework/wordsintoaction/>
- Adapting to Climate Change: Methods and Tools for Climate Risk Management, Climate Services Center (CSC), Germany, 2014: http://www.climate-service-center.de/imperia/md/content/csc/csc_report17.pdf
- Adaptation Learning Mechanism: <http://www.adaptationlearning.net/>
- Climate risk management in Africa – learning from practice
http://iri.columbia.edu/docs/publications/Climate%20and%20Society%20No1_en.pdf
- UNDP-USAID ADAPT Asia’s Economics of Adaptation Capacity Building Programme: <http://www.undp-alm.org/projects/ecca>
- UNDP Adaptation Learning Mechanism: <http://www.undp-alm.org/>

Institutions with projects, knowledge products, and tools

- Green Climate Fund: <https://www.greencclimate.fund/home>
- IFRC Climate Center: <https://media.ifrc.org/ifrc/what-we-do/reference-centres/climate-centre/>
- World Bank Global Facility on DRR: <https://www.gfdr.org/publications>
- Partners for Resilience: <https://partnersforresilience.nl/en/>
- Stockholm Environment Institute: <http://www.sei-international.org>
- Capacity for Disaster Risk Reduction Initiative (CADRI): <https://www.cadri.net/>

Final Draft