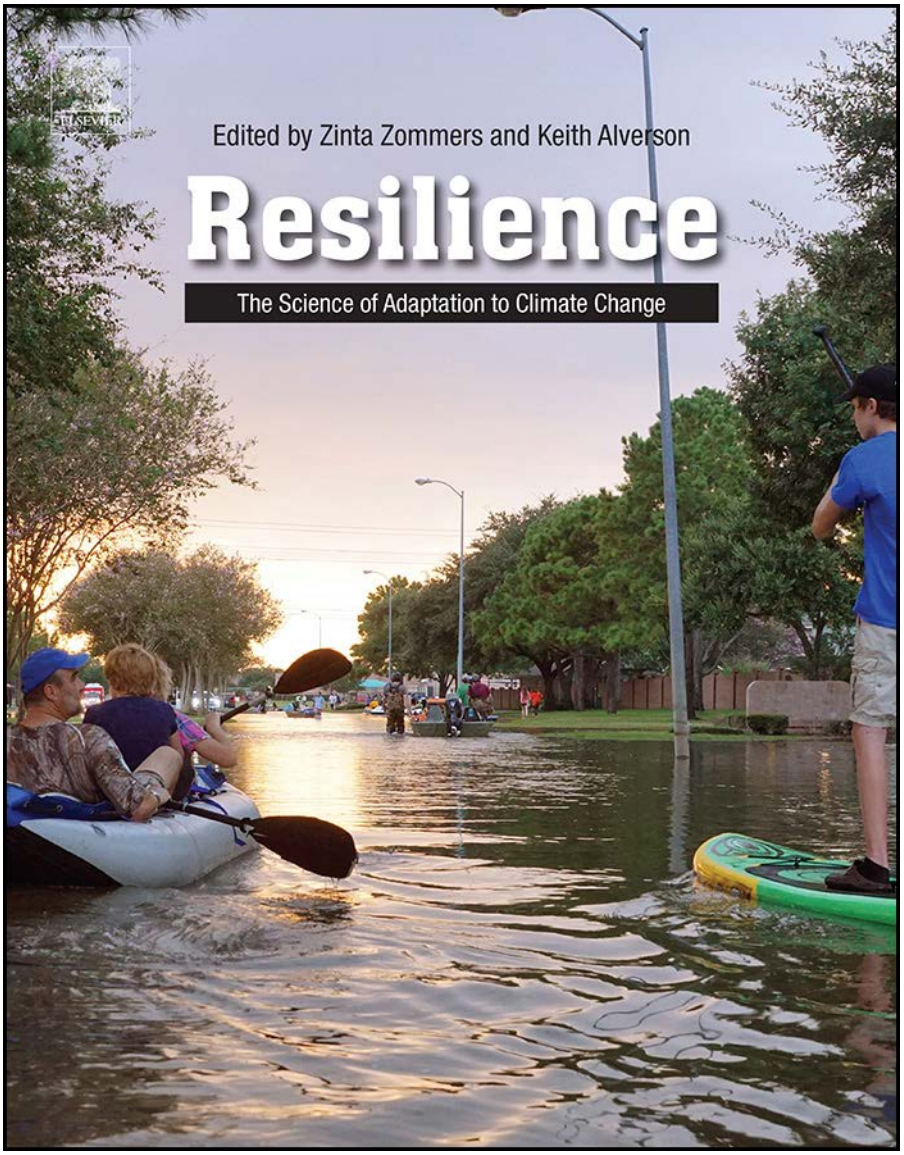

From Saleemul Huq, Yousuf Mahid and Nadine Suliman, Evolution of Climate Change Adaptation Policy and Negotiation. In: Zinta Zommers and Keith Alverson, editors, Resilience. Chennai: Elsevier, 2018, pp. 63-76.
ISBN: 978-0-12-811891-7

Chapter 5

Evolution of Climate Change Adaptation Policy and Negotiation

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Chapter Outline

5.1 INTRODUCTION

Climate change, one of the greatest challenges presently facing mankind, is pressing widespread and detrimental effects to both current and future generations. The Intergovernmental Panel on Climate Change (IPCC) has underscored the veracity of current changing weather patterns and the need for immediate and rigorous action. The predictions from scientific communities have endorsed that mitigation efforts alone, even at their most stringent, would be insufficient in responding to expected impacts of climate change over the next few decades, noting the variety of biophysical and socioeconomic repercussions (Helgeson and Ellis, 2015; The Committee on Approaches to Climate Change Adaptation, 2010). This indicates an increasing need for adaptation initiatives and policies in parallel with long-term mitigation action to ensure the security, safety, and sustainable development of all countries. As such, the state of adaptation in the global negotiation platform known as United Nations Framework Convention on Climate Change (UNFCCC) has evolved significantly in the recent years. This current notion portrays adaptation as one of the imperative pillars for upcoming climate change negotiations of the conventions.

5.2 OVERVIEW OF CLIMATE CHANGE ADAPTATION: AN EVOLVING CHALLENGE

The significance of climate change adaptation can be observed from the definition provided by various apex bodies and scientific or policy communities. The definitions may vary slightly but consist of a meaning in a common usage and include grander implications in the global setting of climate change negotiations. The definition of adaptation had been taken into consideration for the first time in the Third Assessment Report of IPCC, which defines it as "Adjustment in

Resilience. DOI: https://doi.org/10.1016/B978-0-12-811891-7.00005-0

natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities" (IPCC, 2001). Another slightly different definition can be observed from the UNFCCC website; "Adaptation refers to adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts. It refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change" (UNFCCC, 2017a). The root cause in acquiring variations in the above-mentioned definitions is the fundamental difference in defining climate change conveyed by the UNFCCC and the IPCC (Levina and Tirpak, 2006). UNDP has defined adaptation as "a process by which strategies to moderate, cope with and take advantage of the consequences of climatic events are enhanced, developed, and implemented" (Mwandingi, 2006). Whereas, UK Climate Impact Programme emphasized adaptation as an outcome rather than only a process and offered additional interpretation (Levina and Tirpak, 2006). All of these seemingly small differences in the definitions present different expectations from different stakeholders and provide significant implications in the orientation of policy and financial matters.

Fundamentally and predominately established, adaptation is considered as local intervention where the response measures in the face of climate change impacts are tailored to local settings (Burton et al., 2006). Although, extracted and observed from the definitions and a significant number of literatures, the idea of climate change adaptation can be conceptualized as multidimensional, encompassing numerous activities in different sectors at various levels. Expert opinions suggest that in order to make adaptation efforts more robust and sustainable, local and sectoral level measures should be guided and supported by national strategies and policies. This can further be facilitated by global policy interference. At this stage, the debate comes into force whereas in many cases, these sectors do not have a direct mandate to respond to climate change itself. This in turn, generates questions revolving around the extent different aspects of adaptation should or can be addressed by the UNFCCC or by other global policy agendas and forums. This dispute limits the understanding of the whole scope of adaptation policy needs. New and emerging issues may come to the forefront which will indicate the requirements of introducing new technologies and reforming policies. This makes adaptation a dynamic and an evolving process. However, there is a prior need for any global agreement and policy orientation to have a clear delineation of the scope of the concept to deal with the evolving challenge. It is very much imperative to agree on such things that will define the scope of adaptation requirement and effective execution of what it encompasses. Following through, UNFCCC, within the process, has identified five general components of climate change adaptation activities as follows, to clearly exhibit this objective (UNFCCC, 2017b):

- Observation of climatic and nonclimatic variables;
- Assessment of climate impacts and vulnerability;
- Planning;
- Implementation; and
- Monitoring and evaluation of adaptation actions.

Besides the convention, in most cases, other global forums and agendas have considered these elements to articulate and convey adaptation policy intervention. The next sections of the chapter will present a brief overview of adaptation policy initiatives undertaken within the umbrella of UNFCCC and other global agendas and multilateral forums. In addition, the sections will highlight the current state of adaptation including major achievements that have been made so far and the gaps that remain in terms of policy interventions.

5.3 CURRENT POLICY AND LEGAL FRAMEWORK FOR CLIMATE CHANGE ADAPTATION UNDER THE UNFCCC

5.3.1 Adoption in the Convention

Since the official launch in 1990, international dialogue has been considering climate change adaptation as one of the key issues to be addressed inclusively (Levina, 2007). After the adoption of UNFCCC in 1992, objectives, principles, several commitments, and financial provisions regarding adaptation have been set within the different articles of the convention (UNFCCC, 1992).

The major objective of the convention, mentioned in Article 2, was to achieve a level of stabilized greenhouse gas concentration in the atmosphere within a fixed time frame so that the ecosystem can adapt naturally to the changing climate. In Article 3.3, one of the key principles was set to formulate such policies and measures to deal with the

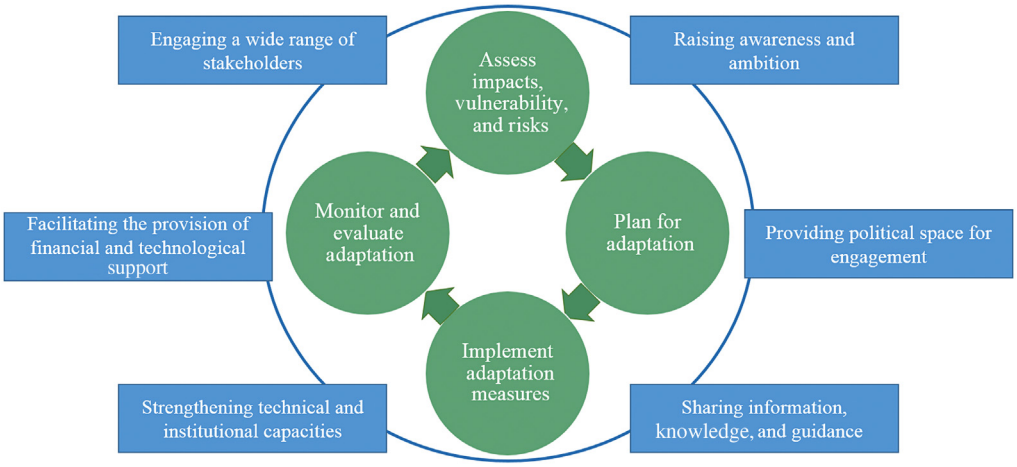

FIGURE 5.1 Role of convention to support adaptation. *UNFCCC, 2013. The State of Adaptation under the United Nations Framework Convention on Climate Change. Retrieved from: http://unfccc.int/files/adaptation/cancun_adaptation_framework/adaptation_committee/application/pdf/ac_2013_report_high_res.pdf.*

irreversible damage and serious threat that should cover the relevant issues related to adaptation and encompass all economic sectors. In addition, the following commitments on adaptation have been made in Article 4 of the convention:

> Article 4.1 (b) highlights that in parallel to addressing anthropogenic emission for mitigating climate change impacts, all Parties shall formulate, implement, and regularly update measures to facilitate adequate adaptation.
> Article 4.1 (e) calls for cooperation among the Parties to get prepared for adaptation in the face of climate change. Moreover, it calls for ensuring protection and rehabilitation of certain areas, in particular areas in Africa, which are more affected by climatic hazards like drought, desertification, etc. It emphasizes the development and elaboration of an integrated plan for the coastal zone management, water resources and agriculture sectors.
> Article 4.1 (f) indicates the necessity of taking climate change adaptation into consideration in formulating social, economic, and environmental policies and actions. In addition, Article 4.1 (g) urges Parties to cooperate in order to conduct scientific, technical, technological, and socioeconomic research and to provide training, education, etc. to raise public awareness.

Moreover, the convention provides guidance on how the activities of adaptation would be supported and facilitated by developed country Parties for the vulnerable countries. In its Article 4.3, the convention directs specific financial obligations and requires that new and additional financial resources, including transfer of technology need to be provided by developed countries to cover the cost incurred by developing countries in implementing adaptation measures. Consecutively, to deal with the adverse effects of climate change, Article 4.4 of the convention obliges developed countries and other developing countries in the Annex-II to ensure assistance for developing countries in meeting the costs of adaptation (Levina, 2007; UNFCCC, 1992). Fig. 5.1 briefly depicts the role of the Convention in supporting adaptation processes.

5.4 CONFERENCE OF PARTIES (COP) AND MAJOR ADAPTATION MILESTONES UNDER THE CONVENTION

This section outlines the key COP decisions (Box 5.1 highlights the different COP that have been organized so far) taken to formulate and mobilize climate change adaptation policy and will briefly present the major thematic adaptation milestones achieved under the UNFCCC.

5.4.1 Impact Observation and Assessment of Risks and Vulnerability

As mentioned earlier, when the convention entered into force in 1994, the initial focus was on biophysical impacts through climate change mitigation; to reduce greenhouse gas emissions. With a view to construct a wide range of long-term planning scenarios, the Parties to the convention carried out global impact assessments, however, these impact assessment models were not sufficient enough in detailing out the national or regional or local level impacts. Following

BOX 5.1 Conference of Parties (COP) List

Meeting	Year	Location
COP 1	1995	Berlin
COP 2	1996	Geneva
COP 3	1997	Kyoto
COP 4	1998	Buenos Aires
COP 5	1999	Bonn
COP 6	2000	The Hague
COP 6	2001	Bonn
COP 7	2001	Marrakech
COP 8	2002	New Delhi
COP 9	2003	Milan
COP 10	2004	Buenos Aires
COP 11	2005	Montreal
COP 12	2006	Nairobi
COP 13	2007	Bali
COP 14	2008	Poznań
COP 15	2009	Copenhagen
COP 16	2010	Cancún
COP 17	2011	Durban
COP 18	2012	Doha
COP 19	2013	Warsaw
COP 20	2014	Lima
COP 21	2015	Paris
COP 22	2016	Marrakech
COP 23	2017	Bonn

through, the Parties looked forward to reporting their vulnerability and adaptation assessment in the National Communication. Going forward, the process of second generation assessments complemented the first generation scenario based assessment and included risk assessment and allowed more refined climate change scenarios for long-term socioeconomic and environmental planning.

At the first COP to the convention in 1995, with its Decision 11/CP.1, the Parties established guidance and defined a three-stage framework for actions on climate change adaptation. Stage-I was designed to conduct studies on possible impacts of climate change and to identify vulnerable countries and policy options for adaptation to deal with the impacts. This stage was envisaged to consider short-term adaptation activities. Stage-II and Stage-III were intended to perform medium- and long-term activities; where Stage-II would focus on the preparation for adaptation including capacity building activities and Stage-III would provide efforts on implementation and entail measures to facilitate adequate adaptation (UNFCCC, 1995; Levina, 2007; Burton et al., 2006).

In 1997, the third COP took place in Kyoto, Japan, where a framework of specific targets was defined and set for the developed countries to cut their greenhouse gas emissions. This is known as the Kyoto Protocol (Shah, 2002). Like the convention, the Kyoto Protocol was envisaged to assist the countries to undertake adaptation initiatives. Article 10 of the Kyoto Protocol, reaffirming the commitments made in the Article 4 of the Convention, urges Parties to facilitate adaptation through formulating and updating national and in some cases regional programme measures. This article also emphasizes adaptation technologies and methods for improving spatial planning to further assist climate change adaptation. In addition, Article 12.8 of the Kyoto Protocol has made a special provision for financing adaptation; "...Parties to this Protocol shall ensure that a share of the proceeds from certified project activities is used to cover administrative expenses as well as to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation" (UNFCCC, 1998). Moreover, in order to strengthen technical and institutional capacity within the convention, Parties in 1999 established the Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention (CGE), which over the years, has produced intense training modules to provide developing countries with hands-on training workshops at the regional level (UNFCCC, 2013).

5.4.2 Moving Towards Planning and Implementation Phase

With the publication of the Third Assessment Report of IPCC in 2001, ample evidence clearly indicated changing weather patterns and the need for adaptation actions along with mitigation. Since then, adaptation issues started receiving increased attention from the global community. The shift of thinking from "do we need to adapt?" to "how do we adapt?" (UNFCCC, 2013) became evident during that time. These circumstances provided impetus to the convention process and climate negotiation in addressing adaptation more seriously and effectively.

The Marrakech Accord, adopted by COP 7 in 2001, is reflected as the landmark for adaptation within the UNFCCC. For the first time, Parties recognized the intrinsic relationship between development and climate change issues (Helgeson and Ellis, 2015) and understood the high degree of vulnerability that developing countries were experiencing due to the climate variability. Following through, under the Decision 5/CP.7, Parties established a separate work programme for the Least Developed Countries (LDC), known as the LDC Work Programme, to address specific and immediate needs in the face of climate change (UNFCCC, 2001) and to increase adaptive capacity of the LDCs (Helgeson and Ellis, 2015). This work programme includes the development and implementation of the National Adaptation Programmes of Action (NAPA) as a mean for LDCs to exhibit the urgent and immediate adaptation needs on a priority basis, and the formation of the Least Developed Countries Expert Group (LEG). The Parties, under the Decision 5/CP.7, also established specific funds; Special Climate Change Fund (SCCF) to provide finance in regards to vulnerability and adaptation and Least Developed Countries Fund (LDCF) to support the LDC work programmes particularly to fund the preparation and implementation of NAPAs (Levina, 2007; UNFCCC, 2013). Furthermore, with the Decision 10/CP.7, an Adaptation Fund, under the Kyoto Protocol, was established to facilitate developing countries and to finance projects or programmes on climate change adaptation (Levina, 2007).

5.4.3 Exchange of Information and Lessons Learned

As the momentum was building up on the planning and implementation of adaptation, there emerged a need for collecting cross-country evidence including good practices; sharing of information and the lessons learned or experienced throughout the process. At COP 10 in 2004, the Parties concluded the negotiation emphasizing further implementation of Decision 5/CP.7 and with the Decision 1/CP.10 agreed to "The Buenos Aires programme of work on adaptation and response measures" (Levina, 2007; Helgeson and Ellis, 2015). The programme was requested to implement the actions required to deal with the adverse effects of climate change through developing methodologies; reporting in Parties' National Communication the vulnerability assessment and adaptation measures; collecting, sharing, and disseminating the information among the Parties etc. This programme further led to the COP 11 (2005) agreement, under the Decision 2/CP.11, on the adoption of a "5-year programme of work on impacts, vulnerability and adaptation to climate change." In 2006, at COP 12, the work programme got renamed as the "Nairobi work programme (NWP) on impacts, vulnerability and adaptation to climate change" (Levina, 2007). The overall objectives of the NWP have been to assist developing country Parties to better understand and measure vulnerability and adaptation with a view to inform them on practical adaptation actions to avoid the impact. In addition, during the period of 2006–2007, a series of workshops and events helped the developing countries get an opportunity to learn from the exchange of knowledge and good practices. Both the Parties, during that period, observed and pointed out the importance of a coordinated approach to address adaptation issues in the context of sustainable development (UNFCCC, 2013).

5.4.4 Scaling up Implementation Strategies and Coordinating the Evolving Adaptation Agenda

Published in 2007, the Fourth Assessment Report (AR4) of IPCC stressed a wide array of possible adaptation options. It also reaffirmed that more extensive adaptation than earlier was required to reduce the future vulnerability as a result of the greenhouse gas concentration in the atmosphere due to past emissions (IPCC, 2007). Against the backdrop of the fourth assessment report, the Parties adopted the Bali Action Plan at COP 13 in 2007, which established adaptation as one of the four pillars under the UNFCCC (Helgeson and Ellis, 2015). The Bali Road Map propelled a comprehensive process of effective and sustained implementation strategy and established an Ad Hoc Working Group (AWG) on Long-Term Cooperative Action. The implementation of the road map further offered lessons learned for future implementation through long-term inclusive actions (Global Greenhouse Warming, 2010). One of the major learnings was that, as a result of different circumstances and capacities, the nature of adaptation actions should be country driven, gender sensitive, and particularly participatory.

TABLE 5.1 Overview of Technical and Financial Support to Adaptation

	Facilitating the Provision of Financial and Technological Support	Strengthening Technical and Institutional Capacities	
Coordinating and/or Advisory Committees/ Bodies	Technology Executive Committee (TEC)	Standing Committee on Finance (SCF)	Adaptation Committee
			Least Developed Countries Expert Group (LEG)
			Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention (CGE)
Providers of Support	Climate Technology Centre and Network (CTCN)-UNEP	Green Climate Fund (GCF)—GCF Board	
		Adaptation Fund (AF)—AF Board	
		Least Developed Countries Fund (LDCF)-GEF	
		Special Climate Change Fund (SCCF)-GEF	
Exchange of Information		Work Programme on Long-Term Finance	Durban Platform on Capacity-Building

Source: UNFCCC, 2013. The State of Adaptation under the United Nations Framework Convention on Climate Change. Retrieved from: http://unfccc.int/files/adaptation/cancun_adaptation_framework/adaptation_committee/application/pdf/ac_2013_report_high_res.pdf.

Following the next 3 years of negotiations, at COP 16 in 2010, Parties highlighted adaptation with the same level of priority as mitigation and adopted the Cancun Adaptation Framework (CAF) with an objective to enhance cooperative actions on adaptation. After gathering lessons learned following the NAPA process and recognizing the need for LDCs to develop medium- and long-term adaptation planning, the National Adaptation Plans (NAPs) preparation was formulated under the CAF. To provide further technical assistance and guidance to the LDC and to advise the COP on adaptation strategy, Parties formed an Adaptation Committee (AC) as a part of the CAF: to strengthen the existing institutional arrangements; to promote synergies between national and international institutions; to disseminate relevant information; and to coordinate the expanding agenda of adaptation under the convention. Additionally, Parties under the CAF adopted a Technology Mechanism consisting of a Technology Executive Committee (TEC) and a Climate Technology Centre and Network (CTCN) (UNFCCC, 2013).

In addition to technical support, a wide range of financial support was introduced and provided to the LDCs in order to implement the NAP and other adaptation actions. With the Decision 1/CP.16 of CAF, Parties established a Standing Committee on Finance (SCF) to assist the convention in regards to relevant issues of climate finance (UNFCCC, 2017c). Moreover, with a view to long-term, scaled-up, new and additional finance, Parties formed the Green Climate Fund (GCF) under the CAF (Decision 1/CP.16) as an operating entity of the financial mechanism of the convention (UNFCCC, 2016). Parties agreed that funding from GCF will be mobilized and channeled to adaptation actions through a separate thematic window. Table 5.1 provides a general overview of the technical and financial support to address the adaptation issue.

Besides adaptation initiatives, CAF introduced a new thematic work programme to address climate change induced loss and damage. Following through on COP 18 in 2012, where Parties acknowledged the need for comprehensive and strategic responses, the convention adopted an institutional arrangement known as Warsaw International Mechanism for Loss and Damage at COP 19 in 2013. The key goals of the initiative are to broaden global dialogues on the topic, to share knowledge and expertise, and to extend financial assistance to poorer countries vulnerable to climate change impacts. Within the loss and damage context, numerous adaptation approaches were rendered that can effectively reduce the risks of climatic impacts (UNFCCC, 2013).

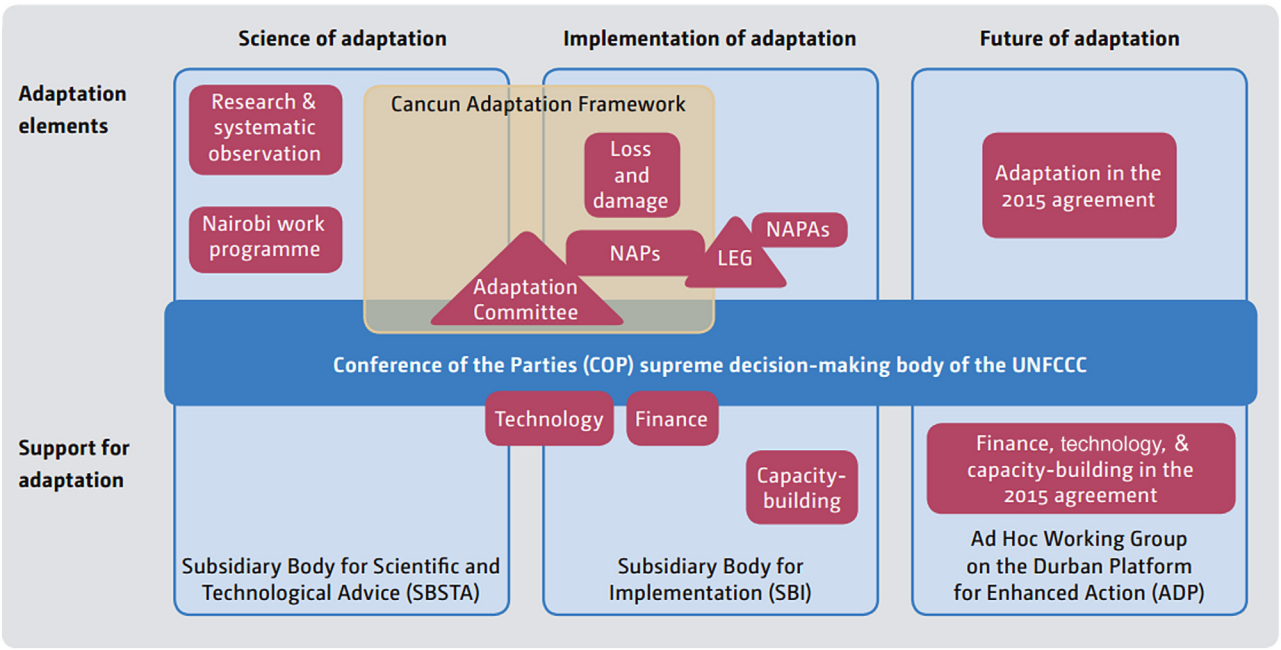

FIGURE 5.2 Overall institutional structure on adaptation under the convention. *UNFCCC, 2013. The State of Adaptation under the United Nations Framework Convention on Climate Change. Retrieved from: http://unfccc.int/files/adaptation/cancun_adaptation_framework/adaptation_committee/application/pdf/ac_2013_report_high_res.pdf.*

5.4.5 The Paris Agreement and Adaptation

The Paris Agreement, bringing all the Parties under a shared cause, was adopted by the convention in 2015 at COP 21 with an aim to strengthen global response to tackle climate change impacts by agreeing to limit global temperature rise well below 2°C, pursuing an offer to set even below 1.5°C (UNFCCC, 2017d). The base of the agreement started building up during the establishment of the Durban Platform at COP 17 in 2011. The platform initiated the need for developing another legally binding instrument that can further mobilize climate change actions. In turn, adopted by 197 countries and ratified by 148 countries to date, this has become the legally binding global climate deal (DAG, 2016).

The Paris Agreement has predominately incorporated adaptation into the intention of the convention in order to effectively deal with the current scenario needs. Article 4.7 of the agreement highlighted mitigation cobenefits as part of adaptation interventions and economic diversification plans. In addition, a global goal has been established on climate change adaptation to ensure sustainable development through strengthening adaptive capacity and reducing the vulnerability of communities. Moreover, the agreement recognizes the "urgent and immediate needs" for the countries that are more vulnerable and conveys adaptation intervention as the "significant" current need to reduce the impacts associated with climate change (UNFCCC, 2015; Oettlé, 2016). Overall institutional structure on adaptation under the Convention is represented at a glance in Fig. 5.2.

5.5 CLIMATE CHANGE ADAPTATION INITIATIVES IN OTHER INTERNATIONAL FORUMS

This section briefly covers adaptation initiatives directly or indirectly undertaken over the years in global forums other than the UNFCCC. This will also present the overview of the different funding provisions available to assist those initiatives.

5.5.1 The Sendai Framework for Disaster Risk Reduction 2015–30, Hyogo Framework for Action 2005–15, and International Strategy for Disaster Risk Reduction

The expression "disaster risk reduction" functions as one of the main tools of adaptation to climate change. In formulating climate change strategies, adaptation acts as one of the subsets within disaster risk reduction. Similarly, disaster risk

BOX 5.2 The Relationship of Disaster Risk Reduction, Resilience and Climate Change Adaptation

Adaptation, which has multiple descriptions, definitions, and explanations, is the runner up in the course of climate change responses on a global scale as it is interdisciplinary and addresses the vulnerability of a system in the long term and on a global scale (Klein, 2014; Cannon and Müller-Mahn, 2010; Thomalla et al., 2006). Due to its diverse nature, adaptation can be linked to several climate change-related concepts/actions such as resilience as well as disaster-risk reduction. Adaptation mainly refers to any means of modifying/adjusting ecological, social, or economic systems in the face of climate-related stresses, potential environmental risks or disasters (Adger et al., 2009, 2005). Adaptive capacity of a system is a determining factor of its resilience and is commonly defined as the ability to "cope" with ill-effects of climatic changes and extreme weather events (or environmental disasters) (Adger et al., 2009, 2005; Gallopín, 2006). Resilience addresses the bigger picture and focuses on cross-scale dynamics involved in socioeconomic characteristics of world systems as well as climate change, poverty, inequality, etc. (Brown, 2016). Disaster-risk reduction relies on engineering and natural science approaches to risk management, with a focus on event, exposure, and technological solutions. It has mainly been a short-term approach but is increasingly long term with an emphasis on preparedness and awareness on a local–community scale (Thomalla et al., 2006).

Although it remains highly theoretical, disaster-risk reduction has been found to optimize adaptation action, which in turn has been seen to enhance the adaptive capacity of a system, and hence its resilience (Adger et al., 2009, 2005; Thomalla et al., 2006). As each of these networks/concepts are extremely complex, broad, and with separate aims and applications, research is yet to clearly and empirically report on the (potential) relationship between adaptation, resilience, and disaster-risk reduction (Thomalla et al., 2006). There has been little or no data reporting on the ability of adaptation to enhance a system's resilience and/or the impact of disaster-risk reduction on enhancing adaptation activities (Thomalla et al., 2006). Examining the theoretical basis for the links between all three concepts, it is logical that advanced technological solutions for monitoring/predicting climatic changes would enable a community/system to properly adapt to expected impacts (Thomalla et al., 2006). Furthermore, the better adapted a system is to potential climatic changes and their biophysical and socioeconomic impacts, the more resilient it is and the more able it is to regenerate itself while maintaining service provisions in a transformative and sustainable manner (Cannon and Müller-Mahn, 2010; Adger et al., 2009; Leach, 2008; Folke, 2006; Walker et al., 2004; Folke et al., 2002).

reduction strategies always depict sectoral measures and cooperate with other interests with a view to ensure improved adaptive capacity of those sectors. The relationship among disaster risk reduction, resilience, and adaptation has been illustrated briefly in Box 5.2.

The Sendai Framework for Disaster Risk Reduction highlighted the synergies between these two terms. In paragraph 47d, the framework embeds the implementation strategy and instructs that disaster risk reduction measures are to be incorporated into all development assistance programmes relevant to any sector including "poverty reduction, sustainable development, natural resource management, environment, urban development and adaptation to climate change" (Kelman, 2015). This statement helps move forward disaster risk reduction strategy incorporating different relevant sectors and accounting the veracity of the synergies. The Hyogo Framework for Action, with no exception, also represents a similar connotation. The mid-term review (2010–11) of the Hyogo Framework was directed towards a wide-range of dialogue to bring adaptation and disaster risk reduction onto one platform to reduce the impacts of extreme climatic events (UNISDR, n.d.). Furthermore, International Strategy for Disaster Reduction (ISDR), established in 2000 by the UN General Assembly, carries out such activities that are highly relevant to the works of UNFCCC and in some cases; both share the same agenda in managing disastrous climatic events (Levina, 2007).

5.5.2 Convention on Biological Diversity (CBD)

One of the major adaptation options would be the conservation and the sustainable use of biodiversity resources. Adopted in 1992, the Convention on Biological Diversity (CBD) with an objective to conserve biodiversity and to ensure equitable usage of the resources has successfully incorporated climate change adaptation issues within its work programme. Parties to the Convention have called for enhancing provision to integrate the issue furthermore. This clearly provides an opportunity to identify synergies between the UNFCCC and CBD to take mutually beneficial implementing activities regarding climate change adaptation. Although many initiatives have been taken by the Parties of the CBD to enhance synergies between these two Conventions, the synergies have not yet been able to see light due to the lack of understanding and coordination among national and international agencies and agreements (Levina, 2007; Helgeson and Ellis, 2015).

5.5.3 United Nations Convention to Combat Desertification

With an aim to combat desertification and to mitigate adverse effects in the drought prone areas/countries, the legally binding international agreement United Nations Convention to Combat Desertification (UNCCD) was established in 1994. Due to the dynamics of and nexus among land, biodiversity, and climate change, the UNCCD works closely with other two Rio Conventions, CBD and UNFCCC (UNCCD, 2017). Unlike the CBD, the UNCCD mentioned this collaborative approach in Article 8 of the convention in order to safeguard the sustainable use of natural resources and to derive maximum benefits when addressing climate change adaptation issues attributed through each agreement (Levina, 2007; Helgeson and Ellis, 2015).

5.5.4 European Climate Adaptation Platform

The partnership between the European Commission and the European Environment Agency, known as the European Climate Adaptation Platform (CLIMATE-ADAPT), has been developed to support particularly the European Countries in adapting to climate change (UNCCD Knowledge Hub, 2017). This platform helps Europe understand the adaptation initiatives taken by other countries to develop their own adaptation strategy. Also, this platform provides an opportunity for research communities and practitioners to share relevant adaptation information experienced across Europe (European Commission, n.d.).

Moreover, there are available funding provisions for climate change adaptation outside of UNFCCC as well. In order to facilitate adaptation activities which do not fall under the UNFCCC, the following funds have been set up, which can be framed as non-UNFCCC Adaptation Funds (Syrovátka, n.d.).

- MDG Achievement Fund (Environment and climate change thematic window)—UNDP Spain
- Cool Earth Partnership—Japan
- Global Climate Change Alliance—European Commission
- International Climate Initiative—Germany
- Climate Change and Development—Adapting by Reducing Vulnerability—UNEP-UNDP Denmark
- Africa Adaptation Programme—UNDP Japan
- Pilot Program for Climate Resilience—World Bank
- Global Facility for Disaster Reduction and Recovery—World Bank
- Agriculture Smallholder Adaptation (ASAP)

5.6 NATIONAL LEVEL PROGRESS ON ADAPTATION POLICY INITIATIVES

One of the main global initiatives to prioritize adaptation was the NAPA. The NAPA, as mentioned earlier, is an initiative led by the UNFCCC developed to urge and enable LDCs to assess and evaluate urgent climate change adaptation actions needed locally to reduce vulnerability and prevent high future costs of potential damage (UNFCCC, 2008). Each of the LDCs was assigned the task of developing its own NAPA and submitting it to the UNFCCC for publishing on a public database. Such an initiative was deemed beneficial in several aspects: the decentralization of developing contextual plans of action; the creation of a public platform for knowledge sharing and collaboration between stakeholders; and the identification of vulnerable sectors for efficient project development. More importantly, the NAPAs are envisaged to act as frameworks/lists of adaptation projects, a prerequisite for LDCs to be able to apply for the LDC Fund (McGray, 2014).

Most LDCs successfully submitted their NAPA to the UNFCCC secretariat, and analysts and researchers alike claimed they hold immense potential to spearheading and streamlining global adaptation efforts (UNFCCC, 2008). One of the main elements identified by most, if not all, NAPAs is capacity building and education. The wide focus by many LDCs on education as one of the top priority sectors for climate change adaptation and the inclusion of education and capacity building in projects was seen to resonate with adaptation goals and long term objectives.

Different from the NAPAs, another initiative led by Parties to the UNFCCC in 2011 (COP 17) in Durban, the NAP pertained to additional aspects of adaptation (McGray, 2014; Kissinger and Namgyel, 2013). Described as more inclusive, the NAP process, as compared to the NAPA, addressed medium- and long-term adaptation planning. While NAPA was mandatory for LDCs to be able to access the LDC fund, other developing countries were also invited to prepare and submit their NAP (Kissinger and Namgyel, 2013). The NAP process can be considered to complement NAPAs (for LDCs) as it further facilitates the inclusion of adaptation into existing frameworks of action. The objectives of NAP, as set during COP 17, are as follows (UNFCCC, 2011):

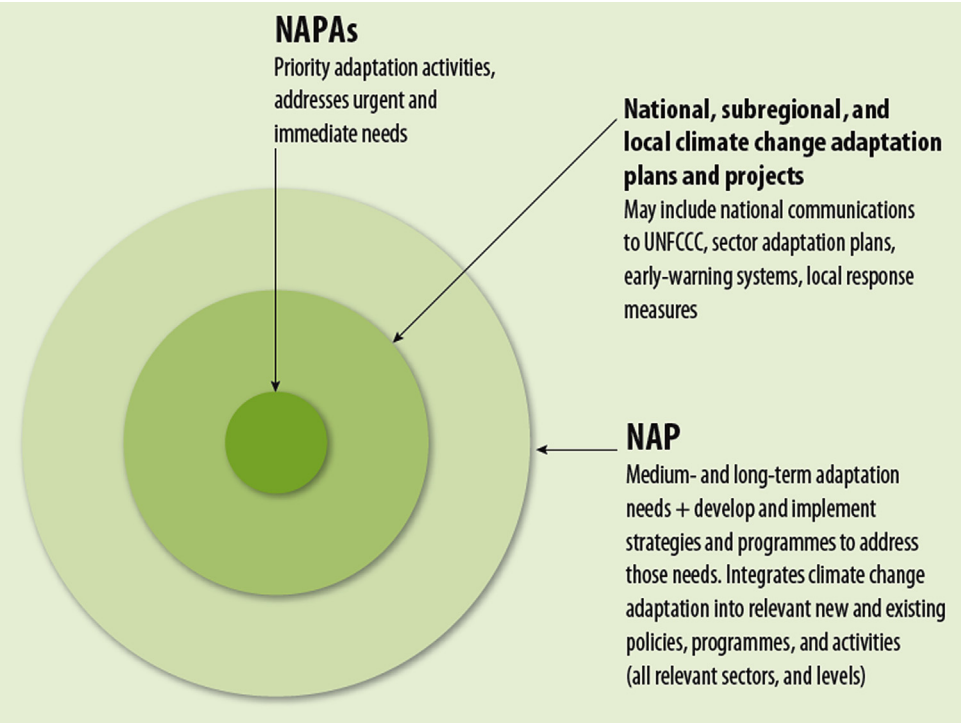

FIGURE 5.3 National adaptation action and the link between NAPA and NAP. *Kissinger, G., Namgyel, T., 2013. NAPAs and NAPs in Least Developed Countries. Retrieved from: https://ldcclimate.files.wordpress.com/2013/12/ldcp13_napas-and-naps.pdf.*

1. "reduce vulnerability to the impacts of climate change, by building adaptive capacity and resilience"; and
2. "facilitate 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"

As mentioned earlier, NAPA and NAP are two distinct initiatives in the adaptation response arena; however, they can be seen as complimentary, building off each other for efficient and effective action (see Fig. 5.3). Linking both initiatives allows for synergies and reduces duplication of efforts, enabling strengthened and sustainable adaptation on local and national scales.

In line with country-driven initiatives, we can find that the NAPAs and NAPs were just the starting point for national level adaptation action where many LDCs and developing countries conducted further adaptation action. Bangladesh as an example has pioneered in mainstreaming adaptation in national policies as the country identified specific key adaptation policies and further developed an inclusive climate change strategy and action plan (MoEF, 2015).

5.7 MAJOR GAPS AND THE WAY FORWARD

The Paris Agreement in Article 6 on Adaptation agreed to work towards a Global Goal on Adaptation (GGA). Also in Article 13 on measurement and transparency it included the need to include adaptation. Hence the current work on implementing Article 6 on Adaptation as well as the Adaptation parts of Article 13 are being actively discussed amongst both the research as well as policy-making communities; that needs to materialize. Article 11 of the Paris Agreement highlights the need to develop in-country systems for sustained capacity building of all citizen's to enable them to tackle climate change.

Despite the immense emphasis on adaptation at global, regional, national, and local levels, major gaps remain impeding the way for effective and sustainable implementation. Unlike mitigation, adaptation still has a long way to go in terms of its mainstreaming in policy, planning, and implementation. Researchers, scientists, and critics may claim that the reasons behind the status of adaptation in global action on climate change include its wide scope. However, the initiatives mentioned earlier and the conceptual work that has been done on adaptation so far has allowed it to gain momentum and build a strong foundation based on contextual and empirical evidence. In order to advance and progress adaptation action, gaps must be strategically identified and analyzed with a focus on solutions and future plans.

Harnessing the power of adaptation lies in the North and the South committing to global goals and initiatives as well as supporting work on the national and local levels.

Financial demands of adaptation along with fund allocation are major obstacles to adaptation activities, specifically in developing countries and LDCs (Thompson, 2011). The costly nature of adaptation to climate change, despite its significance to the economic and social stability of a country, impedes its prioritization in developing countries' strategies and plans of action. The initiatives, forums, and agreements mentioned earlier have been ratified by several developed nations and plans were made for adaptation funds to be granted, yet there hasn't been much follow through. This is often the case where developed nations have no incentive due to their individual economic and social priorities (Thompson, 2011). Commitments were made and continue to be made year after year, however, financial support given does not match any of the pledges and it is estimated that around only half of the declared amounts are actually granted.

To battle one side of this obstacle and prevent any delays in implementation, many LDCs have delved into investigating potential "no regret" options or adaptation solutions at low cost to support their medium- and long-term adaptation plans (Kissinger and Namgyel, 2013). Countries that are exploring "no regret" options include Nepal and Bangladesh. Nepal is focusing on urgent and immediate needs of vulnerable groups and supporting local level adaptation which can be community-based (Kissinger and Namgyel, 2013). Bangladesh has also invested greatly in community-based disaster response systems and managed to drastically reduce the number of casualties during natural disasters such as floods and cyclones; two phenomena which have been increasingly prevalent in the country. Some low cost, community-based adaptation methods include early warning systems which rely on existing infrastructure, such as mosques loudspeakers. This is not to claim that "no regret" options are to replace the necessary funds, yet they do present a short-term solution. Developed nations must step up and lead by example in terms of abiding by the commitments and plans in place to fund and support adaptation efforts.

Climate change impacts are not bound to political or geographical nations' borders; hence, responses need to be as such aligned. Regional collaboration on climate change action and, in particular, adaptation planning and implementation, is an additional weakness to effective adaptation action (Thompson, 2011). National adaptation research and plans, which are gaining most of the attention but still requires strengthening, is important yet is not sufficient on its own. Climate change discussions on a global level have often identified adaptive needs on a national level, such as the NAPAs and NAPs, but little has been conducted to identify regional cooperation needs. This includes budgeting for and allocating funds for regional cooperation on adaptation as well, which has not been done (Thompson, 2011). The adaptation unit of action needs to be redefined to include regional collective action in addition to the national and local which have been dominating all initiatives.

Focusing on national level adaptation efforts, another gap lies in the absence of effective institutionalization and awareness among ministerial decision-makers (Productivity Commission, 2012). Capacity development and institutional reform are required to avoid wasting time and duplicating efforts. Robust institutional arrangements backed up with capacity development may also allow for synergies in adaptation action as potential cross-over between different sectors may emerge; e.g., adaptation and sustainable development/poverty eradication (Ngwadla and El-Bakri, 2016).

An additional gap lies in the lack of fixed indicators to effective adaptation. Metrics to measure the success and/or progress of adaptive measures are yet to be developed and utilized to support the process (Productivity Commission, 2012). Placing flexible guidelines and frameworks which are sensitive to the uncertainty nature of adaptation needs and setting assessment methodologies will allow for cross-country comparisons and global and regional aggregation that are required to match the learning-by-doing attributes of adaptation action. It will also allow for improved budgetary allocation for adaptation measures as it will provide traceable and trackable empirical evidence and well documented experiences.

5.8 CONCLUSION

From the above discussion, it is evident that over the last few decades, numerous adaptation initiatives have taken place in both global and national platforms to address the vulnerability due to climate change. Mainly due to the lack of financial support and inadequate measures of tracking adaptation initiatives, policy- and decision-makers, along with practitioners, face difficulties in adopting adaptation measures on large scales. To ensure such policies are effective and are properly implemented, the promotion and facilitation of multistakeholder collaborations are much needed. Furthermore, new policies and mandates, where needed, will have to be adopted by the policy-makers to address and reduce the existing gaps. It is crucial to start the process where adaptation has already been mainstreamed in daily lives, be it small or large-scale initiatives either referred to as adaptation or otherwise. Many communities in the south are

great harbors of adaptation knowledge, represented through various practices, activities, and traditions. By resorting to capacity development to enhance the quality and the applicability of such knowledge and its creators, response to climate change impacts would thrive beyond current day progress and scenarios post-1.5 degrees could be alleviated.

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