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CLIMATE CHANGE ADAPTATION EFFORTS OF BANGLADESH: AN ASSESSMENT

Abstract

Bangladesh is one of the most vulnerable countries to the effects of climate change. The country is experiencing some of the major impacts of climate change, such as sea level rise, salinity, increased temperature, rainfall variations, flood, drought and cyclone. In response, Climate Change Adaptation (CCA) has been a critical focus of the country. The country has taken a number of policies, programmes and projects to address the issue of CCA. These programmes, policies and plans are supported by institutional mechanisms of relevant ministries. To meet the financial requirement, the Government of Bangladesh (GoB) has established several funds domestically along with seeking fund from international community. This paper assesses the CCA efforts of Bangladesh. It reveals that despite some achievements, there are challenges which include lack of coordination among concerned ministries, loopholes in policies, lack of local level participation, slow pace of implementation along with insufficient funding, lack of adequate monitoring and evaluation, and deficit in transparency and accountability.

1. Introduction

Bangladesh is one of the most vulnerable countries in the world regarding climate change impacts. The 5th Assessment Report of Intergovernmental Panel on Climate Change (IPCC) predicts that about 27 million people in Bangladesh will be at risk due to sea level rise by 2050.¹ At present, Bangladesh is experiencing some of the major effects of climate change, such as sea level rise, increased salinity and temperature, erratic rainfall, prolonged flood and drought, and increased frequency of cyclones. These are affecting many living, especially in the low-lying areas, north-west parts and coastal sides of the country. Due to climate change, Bangladesh is likely to face an annual loss of 2 per cent of Gross Domestic Product (GDP) by 2050 and 9.4 per cent by 2100.² It is projected that yields from rain-fed agriculture in Bangladesh

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¹ "Climate Change 2014 Synthesis Report: Summary for Policy Makers", available at https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf, accessed on 24 December 2015.

² Ministry of Environment and Forests (MOEF), *Intended Nationally Determined Contributions (INDC)*, Dhaka: Government of Bangladesh, 2015.

would be reduced to 50 per cent by 2020;³ therefore, will have adverse effects on food availability. Climate change is considered as a concern for Bangladesh's socio-economic development. Consequently, Climate Change Adaptation (CCA) has been a critical focus of the country's resilience and developmental efforts.

In this backdrop, to address the issue of CCA, the Government of Bangladesh (GoB) has initiated a number of policies, programmes and plan of actions. Of those, National Adaptation Programme of Action (NAPA) in 2005, Bangladesh Climate Change Strategy and Action Plan (BCCSAP) in 2009, upcoming long-term National Adaptation Plan (NAP) and the Seventh Five Year Plan (FYP) 2016-2020 are important. These provide necessary directions and policy framework to integrate the CCA measures with national development plans. To facilitate the integration, necessary institutional framework is being developed, vulnerable zones of the country due to climate change are being identified and adaptation practices in different sectors are being implemented. Besides, local funds are being mobilised and engaging with multiple-level arrangements to receive international funds for implementing CCA programmes is being enhanced.

In this respect, the objective of this paper is to assess the overall CCA efforts of Bangladesh. To attain this objective, this paper reviews literature comprised of books, journals, government documents, documents of various international organisations, newspaper clippings and internet based articles. Besides, it includes data and ideas collected from interviewing experts and officials from the relevant ministries. The paper is divided into five sections. After introduction, the second section deals with conceptual issues about CCA in Bangladesh. The third section covers the existing adaptation efforts. In the fourth section, an assessment has been made. Finally, the fifth section concludes the paper.

2. Climate Change Adaptation in Bangladesh

Adaptation is one of the four components⁴ of addressing climate change issues. CCA is a versatile and iterative process. The term "adaptation" has been used in the climate change community since early 1990s. CCA mainly involves initiatives and measures designed to minimise the vulnerability of natural and human systems against actual or expected climate change effects.⁵ In one of the issues of *Nature* in 2007, it was argued that adapting to climate change effects would be more effective

³ David Braun, "Bangladesh, India Most Threatened by Climate Change, Risk Study Finds", available at http://voices.nationalgeographic.com/2010/10/20/bangladesh_india_at_risk_from_climate_change/, accessed on 25 December 2015.

⁴ According to 'Bali Action Plan', the four components of tackling climate change impacts are mitigation, adaptation, finance, and technology development and transfer.

⁵ Rajib Shaw, Fuad Mallick and Aminul Islam, "Climate Change: Global Perspectives", in Rajib Shaw, Fuad Mallick and Aminul Islam (eds.), *Climate Change Adaption Actions in Bangladesh*, Tokyo: Springer Japan, 2013, p.7.

ways of dealing with global warming than just reducing greenhouse gas emissions. To build resilient societies and foster sustainable development, CCA would be a feasible solution on a gradually warming planet. CCA can be regarded as adjustment in ecological, social or economic systems in response to climate change and their consequences. This term refers to changes in processes, practices or structures to moderate or offset potential damages or to take advantage of opportunities resulting from change in climate.⁶ Again, CCA involves adjustments to enhance the viability of social and economic activities, and reduce their vulnerability to climate, including current variability and extreme events as well as longer-term climate change.⁷

CCA efforts focus on incorporating planning, financing and cost-effective preventive actions into national development processes that are supported by scientific information, integrated climate impact assessments and local climate data.⁸ According to Paris Outcome agreed in the Conference of Parties (COP) 21,

“...adaptation action should follow a country-driven, gender-responsive, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems ... with a view to integrating adaptation into relevant socioeconomic and environmental policies and actions, where appropriate.”⁹

The emphasis of CCA initiatives does vary based on different country context.¹⁰ Bangladesh has taken various CCA efforts that intends to ensuring a consistent, comprehensive and a targeted approach to increase climate resilience and decrease vulnerability of the populace, raising awareness, arranging funding for meeting national adaptation needs, strengthening international recognition to facilitate CCA policies, as well as facilitating incorporation of climate change and CCA into national development.

⁶ *Ibid.*

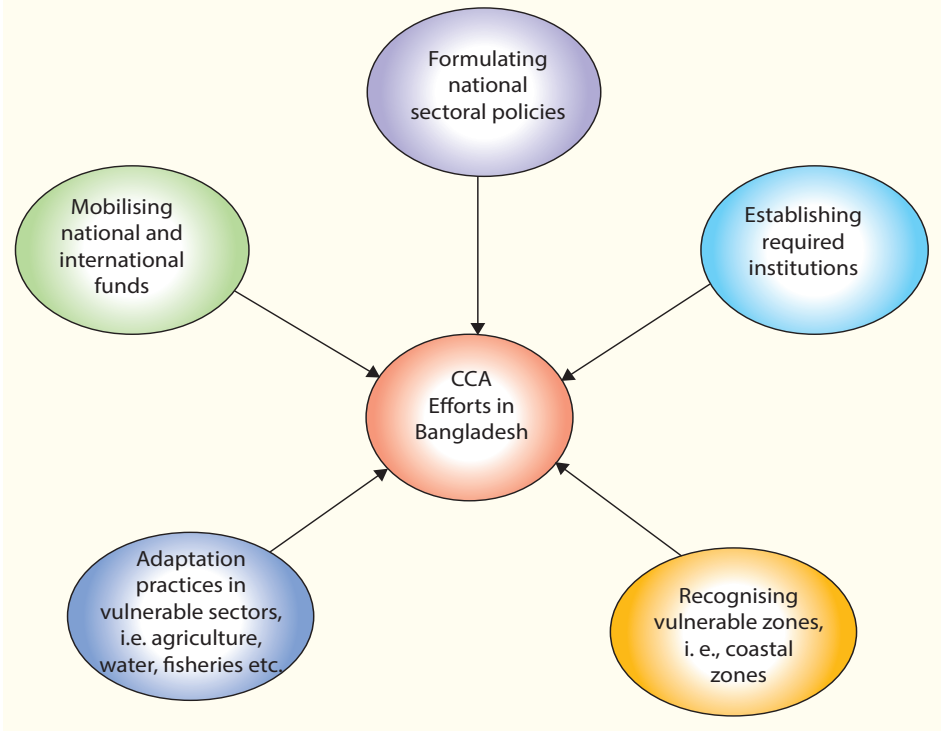
⁷ Barry Smit, Ian Burton, Richard J. T. Klein and J. Wandel, “An Anatomy of Adaptation to Climate Change and Variability”, *Climatic Change*, Netherlands, Vol. 45, 2000, pp. 223-251.

⁸ United Nations Environment Program (UNEP), “Climate Change”, available at http://www.unep.org/pdf/UNEP_Profile/Climate_change.pdf, accessed on 25 December 2015.

⁹ “Draft Paris Outcome”, available at <http://unfccc.int/resource/docs/2015/cop21/eng/da01.pdf>, accessed on 30 December 2015.

¹⁰ Aminul Islam, Rajib Shaw and Fuad Mallick, “Bangladesh Climate Change Strategy and Action Plan”, in Rajib Shaw, Fuad Mallick and Aminul Islam (eds.), *Climate Change Adaption Actions in Bangladesh*, *op. cit.*, p. 108.

Figure 1: CCA Initiatives of Bangladesh



Even though Bangladesh is a highly climate vulnerable country, it emits less than 0.35 per cent of global emissions.¹¹ The main focus of Bangladesh is to increase adaptation to the impacts of climate change.¹² In this regard, the GoB has developed various national and sectoral policies with CCA programmes. For workable and effective adaptation measures, public and private actors (e.g., ministries, institutions, non-government organisations, etc.) are considering incorporation of climate change issues in their planning and budgeting at all levels of decision making.¹³ Again, as a process of dealing with adaptation, focus is also given on the affected regions, economic sectors and needs of the affected people by climate change impacts. It aims to reduce the most significant hazards that the people face. Hence, mostly affected areas have been identified and various adaptation measures in those areas are being practiced for the inclusiveness of the process. In addition, for Bangladesh, financial assistance from both national and international sources is required to

¹¹ Ministry of Environment and Forests (MoEF), 2015, *op. cit.*

¹² Interview with Fazle Rabbi Sadeque Ahmed, Project Coordinator, Community Climate Change Project (CCCP), Palli Karma-Sahayak Foundation (PKSF), on 23 December 2015.

¹³ United Nations Framework Convention on Climate Change (UNFCCC), "Climate Change: Impacts, Vulnerabilities and Adaptation in Developing Countries", available at <https://unfccc.int/resource/docs/publications/impacts.pdf>, accessed on 25 December 2015.

support the adaptation programmes.¹⁴ Therefore, several efforts, such as formulating different national and sectoral policies, establishing required institutions, identifying vulnerable zones, adaptation practices in different sectors, mobilising both national and international funds altogether are addressing CCA in Bangladesh (see Figure 1).

3. Adaptation Efforts

The GoB has taken several initiatives to address the issue of CCA as mentioned above. However, for a comprehensive approach, strengthening institutional arrangements, identifying vulnerable zones, carrying on adaptation practices in various sectors and working on mobilising funds to implement CCA programmes are crucial.

3.1 Formulation of National Policies

To structure CCA efforts, the GoB has formulated several national and sectoral policies. One of the important national policies is NAPA. It involves concerned stakeholders as an integral part of the preparatory process for assessing impacts, vulnerabilities and adaptation measures. NAPA covers a wide range of vulnerability profile and adaptation options in the areas of water, agriculture, fisheries and livestock, biodiversity, forestry and land use, health, food security, natural disaster, industry and infrastructure, coastal vulnerability, gender and local governance policies and institutions. NAPA suggests several adaptation measures (see Table 1) to address the adverse effects of climate change including issues of variability and extreme events based on existing coping mechanisms and practices.

¹⁴ United Nations Population Fund (UNFPA) and Women's Environment and Development Organisation (WEDO), *Financing that Makes a Difference*, UNFPA & WEDO, 2009.

Table 1: Adaptation Measures in NAPA¹⁵

- Coastal afforestation with community participation; providing drinking water to coastal communities to combat enhanced salinity; promoting adaptation to coastal crop agriculture to combat increased salinity;
- Capacity building for integrating climate change in planning, designing of infrastructure, conflict management and land water zoning for water management institutions;
- Information dissemination to vulnerable community for emergency preparedness measures and awareness raising on enhanced climatic disasters;
- Construction of flood shelter, information and assistance centre to cope with enhanced recurrent floods in major floodplains;
- Mainstreaming adaptation to climate change policies and programmes in different sectors (focusing on disaster management, water, agriculture, health and industry);
- Inclusion of climate change issues in curriculum at secondary and tertiary educational institutions;
- Enhancing resilience of urban infrastructure and industries;
- Development of eco-specific adaptive knowledge (including indigenous knowledge) on adaptation to climate variability;
- Promotion of research on drought, flood and saline tolerant varieties of crops;
- Adaptation to agriculture systems in the areas prone to enhanced flash flooding especially in northeast and central region;
- Adaptation to fisheries in the areas prone to enhanced flooding in northeast and central region through adaptive and diversified fish culture practices; promoting adaptation to coastal fisheries through culture of salt-tolerant fish;
- Exploring options for insurance and other emergency preparedness measures to cope with enhanced climatic disasters;

BCCSAP is another important national policy addressing CCA issues. It is formulated in line with Bali Action Plan. BCCSAP is comprised of six pillars and 44 programmes.¹⁶ Five among the six pillars are focused on adaptation measures (see Table 2). It is worth mentioning that Bangladesh was the first country in the world to have such an action plan on climate change.

¹⁵ Ministry of Environment and Forests (MoEF), *National Adaptation Programme of Action (NAPA)*, Dhaka: Government of Bangladesh, 2009.

¹⁶ Ministry of Environment and Forests (MoEF), *Bangladesh Climate Change Strategy and Action Plan 2009*, Dhaka: Government of the People's Republic of Bangladesh, 2009.

Table 2: Six Pillars of BCCSAP¹⁷

Pillars	Objective(s)
Food security, social protection and health	Ensuring protection to the poorest and most vulnerable from climate change by focusing on food security, safe housing, employment and access to basic services
Comprehensive disaster management	Strengthening disaster management systems
Infrastructure	Ensuring well maintained infrastructure to cope with climate change impacts
Research and knowledge management	Predicting the likely scale of impacts on different sectors of the economy and socio-economic groups
Mitigation and low-carbon development	Evolving low carbon development options and their implementation
Capacity building and institutional strengthening	Enhancing the capacity of relevant ministries, agencies, civil society and private sector(s)

Moreover, NAP was agreed to be prepared at COP17 in 2011. It is supposed to be comprehensive in nature and would integrate adaptation into national planning at all levels (including national, sectoral and local level development plans). NAP would no longer be on developing a “plan” but about initiating a “planning process” to integrate adaptation within national development plans.¹⁸ The roadmap for NAP of Bangladesh has been developed by MoEF in April 2015, setting priorities of projects for the short- and medium-term periods. The plan is expected to be finalised by 2016.¹⁹ The 7th FYP recognises the issue of adaptation considerably which is shown in Table 3.

¹⁷ *Ibid.*

¹⁸ Saleemul Huq, “Politics of Climate Change Adaptation Plan”, *The Daily Star*, Dhaka, 14 November 2012.

¹⁹ Interview with Mirza Shawkat Ali, Deputy Director, Climate Change & International Convention, and Focal Point, Climate Change Cell, Department of Environment, Ministry of Environment and Forests., Government of Bangladesh, Dated 21 December 2015.

Table 3: Important Ten Steps for CCA in the 7th FYP²⁰

- Promote a whole-of government approach for climate change readiness
- Enhance understanding, knowledge, capacity and coordination
- Prioritise programmes and projects
- Improve implementation, monitoring and shared learning
- Enhance CCA financing
- Integrate gender sensitivity in project design
- Food security, social protection and health
- Managing hazards and disasters
- Infrastructural functioning and maintenance
- Curbing internal migration and displacement

Not only NAPA, BCCSAP, forthcoming NAP and the 7th FYP, but also the Perspective Plan of Bangladesh for 2010-2021 and National Sustainable Development Strategy (NSDS) 2010-2021 recognise the issue of CCA. The Perspective Plan emphasises adaptation as the main focus to tackle climate change impacts and stresses on appropriate structural and non-structural measures to adapt with climate change impacts. In this plan, emphasis is given on capacity building and mobilisation of the communities affected by extreme climatic events.²¹ The NSDS also recognises adverse impacts of climate change on economic development, life and livelihoods of the poor. It emphasises on strategic elements of CCA, such as coastal char land aforestation, introduction of climate stress tolerant crop varieties and utilisation of climate change funds.²²

3.2 *Establishing Institutional Arrangements*

The institutional and legal frameworks are crucial for the success of CCA actions. The GoB has already set up an institutional approach²³ in this regard. Currently, the MoEF is the key institution where Climate Change Cell (CCC), established in 2004, is working as focal point of all climate change related activities of the GoB. The CCC is trying to establish linkage among the sectoral agencies along with NGOs and to

²⁰ General Economics Division, *Seventh Five Year Plan FY2016 - FY2020*, Dhaka: Planning Commission, Government of Bangladesh, 2015.

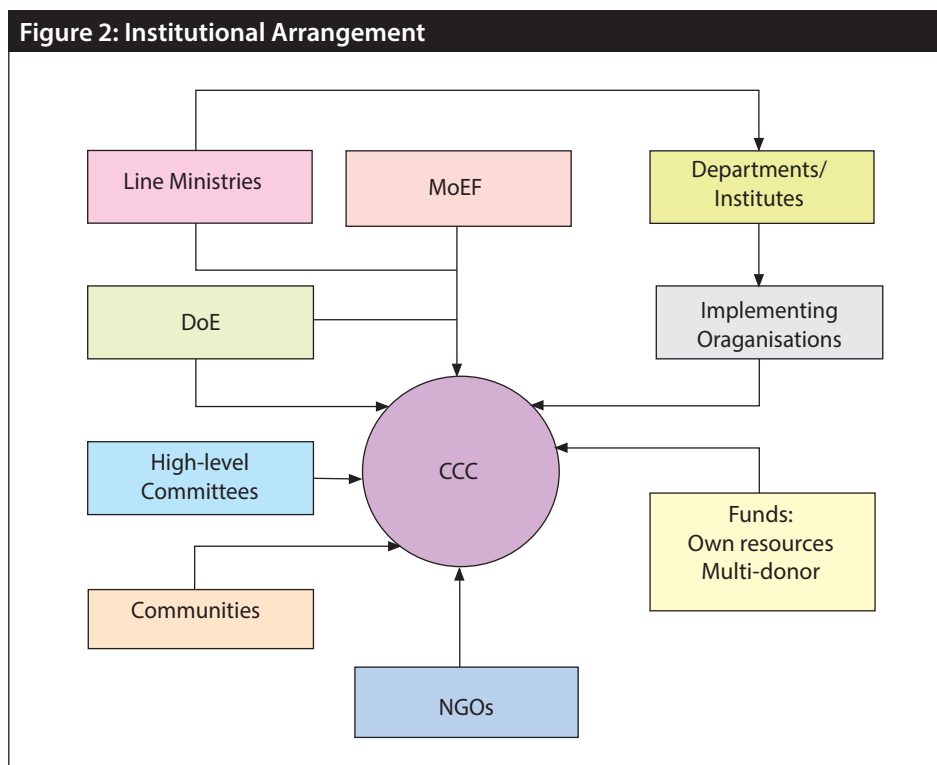
²¹ General Economics Division, *Perspective Plan of Bangladesh (2010-2021)*, Dhaka: Planning Commission, Government of the People's Republic of Bangladesh, 2012.

²² General Economics Division, *National Sustainable Development Strategy (2010-2021)*, Dhaka: Planning Commission, Government of the People's Republic of Bangladesh, 2013.

²³ The approach is to engage the government and non-governmental stakeholders in climate change adaptation process.

prepare a common knowledge based on climate change related issues. To accelerate the functioning of CCC, the Ministry of Planning (MoP) has undertaken several efforts by integrating climate change issues in national development processes. The MoP is addressing CCA issues in designing and planning of all projects under Annual Development Programme (ADP). Besides, as CCA entails multi-sectoral response, the MoEF is integrating climate change issues along with gender, environmental and poverty issues. In 2013, realising the need for coordinated efforts on gender issues in CCA initiatives, the GoB has finalised the Bangladesh Climate Change and Gender Action Plan.²⁴ Therefore, Ministry of Women and Children Affairs (MoWCA) has also been involved in CCA related activities.²⁵

Figure 2: Institutional Arrangement



This figure depicts the synergies between institutions that deal with CCA issues. The CCC under MoEF contributes in coordination and negotiation efforts. It enhances the technical capacity of Department of Environment (DoE) in supporting the government in climate change related policy and programme development like

²⁴ Ministry of Environment and Forests (MoEF), *Bangladesh Climate Change and Gender Action Plan*, Dhaka: Government of the People’s Republic of Bangladesh, 2013.

²⁵ General Economics Division, *Capacity Building Strategy for Climate Mainstreaming: A Strategy for Public Sector Planning Professionals*, Dhaka: Planning Commission, Government of the People’s Republic of Bangladesh, 2014.

BCCSAP and NAPA. The GoB has established different high-level committees on CCA issues. The line ministries, such as MoP and MoWCA help to perform the activities of CCC through various departments/institutes and implementing organisations. Moreover, NGOs are also implementing some projects through donor funds and contributing to mainstreaming through awareness, capacity building and information at community level. Communities are also one of the stakeholders in this process.

Community-based adaptation (CBA) to climate change is widely practiced in Bangladesh since 2002.²⁶ In Bangladesh, this approach mainly encompasses participatory climate change risk assessment, development of CCA plan by assisting the local government, motivation to implement CCA plan by organising awareness campaign, and familiarisation of household level climate change sensitive livelihood adaptation options through school sessions. For instance, the Comprehensive Disaster Management Programme (CDMP) is developed from an assessment of risks at community level through sector and cross sectoral analysis.²⁷ By realising the challenges and impact of climate change, CDMP is designed to create synergies between Disaster Risk Reduction (DRR) and CCA.²⁸ It demonstrates a process that can integrate and address climate change related risks and disasters in a comprehensive manner.²⁹

For institutionalising the implementation of BCCSAP, Climate Change Trust (CCT) (under Climate Change Trust Act, 2010), a technical wing, has been set up in the MoEF so that technical issues are better taken care of and technical support are provided to other stakeholders and national agencies. Bangladesh Climate Change Trust Fund (BCCTF) was constituted by the GoB from domestic resources in fiscal year 2009-10 and Bangladesh Climate Change Resilience Fund (BCCRF), a multi-donor grant fund, was also set up jointly by GoB and its bilateral development partners.³⁰ A person nominated by MoEF representing GoB performs the role of Designated Authority (DA) to liaise with the Adaptation Fund (AF). The DA is supposed to work with a National Implementing Entity (NIE) to seek project specific funds from AF and to help NIE to identify fundable projects and their respective executing agencies. The Economic Resources Division (ERD) of MoP has been identified as the National Designated Authority (NDA) for Bangladesh to deal with the formalities of Green Climate Fund (GCF).

²⁶ Community based adaptation is emerged from community based programmes in climate change sub-sector, disability sectors and poverty reduction sectors. This is largely based on a community based approach to development. See, A. K. M. Mamunur Rashid and Mizan R. Khan, "Community Based Adaptation: Theory and Practice", in Rajib Shaw, Fuad Mallick and Aminul Islam (eds.), *Climate Change Adaption Actions in Bangladesh*, op. cit., p. 342.

²⁷ Bangladesh Center for Advanced Studies, *The Scoping Assessment on Climate Change Adaptation in Bangladesh*, Bangkok: AIT-UNEP RRC. AP, 2010.

²⁸ The integration of DRR and CCA within the national plan and programmes has been recommended in COP13, Bali 2007 as part of the UNFCCC negotiation process.

²⁹ Aminul Islam and Abu Sumon, "Integration of Climate Change Adaptation, Disaster Risk Reduction and Social Protection in Bangladesh: Contemporary Views and Experiences", in Rajib Shaw, Fuad Mallick and Aminul Islam (eds.), *Climate Change Adaption Actions in Bangladesh*, op. cit., p. 84.

³⁰ Mousumi Pervin, "Mainstreaming Climate Change Resilience into Development Planning in Bangladesh", IIED country report, London: IIED, 2013.

3.3 Recognising Vulnerable Zones

Along with formulating national policies and establishing required institutions, it is necessary to identify climate change vulnerable zones for effective implementation of CCA plan. In Bangladesh, climate change vulnerable zones are determined based on hazard exposures, impact on biodiversity and conservation of marine and coastal resources, impact on water and agriculture, impact on life, livelihood and wellbeing of inhabitants of those areas.³¹ The major vulnerable zones in Bangladesh are as follows:

Types of Zones	Districts
Saline-affected coastal zones	Satkhira, Khulna, Jessore, Bagerhat, Patuakhali, Barguna
Flood-affected areas and char lands	Barisal, Cox’s Bazar, Jamalpur, Mymensingh, Bagerhat, Jessore, Khulna, Kurigram, Nilphamari
Drought-affected or rain-scarce areas in north western Bangladesh	Chuadanga, Jessore, Naogaon, Rajshahi, Satkhira, Natore
Cyclone-risk zones	Coastal districts located in the southern area

3.4 Adaptation Practices in Different Sectors

The GoB is also focusing on both structural and sector oriented practices. Climate change has been creating adverse impacts on infrastructures, agriculture, fisheries, and livestock in Bangladesh. These sectors require policies, mechanisms and resource mobilisation for more coherent CCA. Therefore, sectoral plans, policies and initiatives are being developed taking the issue of CCA into consideration (see Table 5).

³¹ A.K.M. Mamunur Rashid, “Climate Change Vulnerability in Bangladesh”, available at <https://www.danchurchaid.org/content/download/77264/642627/version/1/file/Climate+Change+Vulnerability+in+Bangladesh,+2009.pdf>, accessed on 20 December 2015.

³² General Economics Division, Seventh Five Year Plan FY2016 - FY2020, Dhaka: Planning Commission, Government of Bangladesh, 2015.

Table 5: Adaptation Practices in Different Sectors³³

Sectors	Adaptation Practices
Structural Adaptation Practices	<ul style="list-style-type: none"> - Flood shelter, cyclone shelter and school/college/madrasa building, coastal and flood embankment construction - Plinth raising of house in the flood prone and coastal areas - Tree plantation in the floodplains and drought prone areas
Agriculture	<ul style="list-style-type: none"> - Undertaking programmes on agricultural diversification - Bringing changes in cropping pattern considering drought, flood, coastal/salinity and water logging - Familiarising zero tillage, mulching, priming, homestead gardening in the drought prone areas - Introducing floating beds and flood tolerant paddy variety³⁴ in flood-prone areas - Creating water reservoir, drip irrigation and alternative wetting and drying method for irrigation
Fisheries/Aquaculture	<ul style="list-style-type: none"> - Culturing saline water tolerant fish variety - Crab fattening in coastal areas - Raising height of the bank of ponds and its width to protect fishes from the risks of flood and tidal surge
Water	<ul style="list-style-type: none"> - Rainwater harvesting and conservation in community ponds, reservoirs and household tanks - Installation of different water technologies like deep tube-well, deep set pump for the drought, hilly, floodplains and coastal areas, where the ground water level is very low, arsenic contaminated and saline - National Water Management Plan (NWMP) recognises climate change as one of the future factors affecting supply and demand of water - Bangladesh Delta Plan is processing for a long-term climate adaptive water resource management which has a target of 100 years. It will incorporate the knowledge and experiences from all existing studies and sectoral plans including Perspective Plan (2010-2021), NWMP, Haor and Wetland Development Master Plan, and Southern Agriculture Master Plan³⁵

³³ S. M. Alauddin and Khan Ferdousour Rahman, "Vulnerability to Climate Change and Adaptation Practices in Bangladesh", *Journal of State University Bangladesh*, Dhaka, Vol. 4, No. 2, 2013, pp. 25-42.

³⁴ Bangladesh Rice Research Institute (BRRI) at Joydevpur, Gazipur, playing leading role in research and innovation of flood tolerant (Sharna 1 and BRRI 17) and high yielding paddy variety in Bangladesh. It has also innovated several saline tolerant crop varieties for coastal areas.

³⁵ Shamsun N. Ahmed and Aminul Islam, "Equity and Justice Issues for Climate Change Adaptation in Water Resource Sector", in Rajib Shaw, Fuad Mallick and Aminul Islam (eds.), *Climate Change Adaption Actions in Bangladesh*, op. cit., p. 159.

Disaster Management	<ul style="list-style-type: none"> - National Plan for Disaster Management mentions adaptation as a matter of acceptance at the cognitive level of the exposed entity.³⁶ To address adaptation, different safety net programmes are implemented, e.g., Test Relief (TR), Vulnerable Group Feeding (VGF), Vulnerable Group Development (VGD), Food for Work (FFW), etc. Different programmes including institutional feeding, rural infrastructure maintenance, risk reduction, road maintenance and house building grants has also been implemented - The Coastal Zone Policy (2005) incorporates the issue of CCA with disaster risk management
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3.5 Climate Financing for Adaptation

As Bangladesh is one of the most climate vulnerable countries, it requires financial assistance to support the adaptation programme. Climate financing in Bangladesh comes through national, bilateral and multilateral sources.

Bangladesh mobilises domestic funds, takes grants and concessional loans to finance CCA projects. Over the last three decades, Bangladesh has invested over US\$10 billion to make the country more climate resilient and less vulnerable to natural disasters.³⁷ The GoB generally spends around 6 to 7 per cent of its annual combined development and non-development budget on climate sensitive activities.³⁸ Of total spending in CCA, about 17.5 per cent is spent on disaster management.³⁹ The government allocated US\$385 million to BCCTF from fiscal year 2009-2010 to 2014-15.⁴⁰ Most of that fund was allocated for adaptation measures.⁴¹

Bangladesh also seeks technical assistance from bilateral and multilateral donors for adaptation and mitigation purposes. At the international level, the GoB has taken several initiatives to draw international attention and cooperation to address CCA in Bangladesh. In the Bali Action Plan, Bangladesh emphasised on specific interventions within the country to ensure security of food, water, energy and livelihoods. On behalf of the Least Developing Countries (LDCs), Bangladesh highlighted requirement of immediate international support in building resilience to climate change at the United Nations General Assembly (UNGA) in February 2008.⁴² Bangladesh is a founding member of the Climate Vulnerable Forum (CVF). The LDCs including Bangladesh have sought for US\$100 billion each year to be made through the GCF for tackling climate change. The GCF board has decided to allocate half of

³⁶ Disaster Management Bureau, *National Plan for Disaster Management (2010-2015)*, Dhaka: Disaster Management and Relief Division, Government of the People's Republic of Bangladesh, 2010.

³⁷ MoEF, 2015, *op. cit.*

³⁸ General Economics Division, *Public Expenditure for Climate Change: Bangladesh Climate Public Expenditure and Institutional Review*, Dhaka: Planning Commission, Government of the People's Republic of Bangladesh, 2012.

³⁹ *Ibid.*

⁴⁰ Available at <http://www.bcct.gov.bd/index.php/83-home?start=5>, accessed on 23 December 2015.

⁴¹ General Economics Division, 2012, *op. cit.*

⁴² World Bank, *Bangladesh: Strategic Program for Climate Resilience (SPCR)*, Dhaka, 2010.

those funds to adaptation.⁴³ Bangladesh submitted its adaptation target cost (40 billion up to 2030)⁴⁴, and looked for technical and financial support at COP 21.⁴⁵

Bangladesh is seeking assistance from developed countries through its 'Climate Change Network' (CCN) and 'Climate Change Knowledge Network' (CCKN) for adaptation friendly technology transfer. But the degree of satisfaction is low due to difference in technology priorities of countries and Intellectual Property Rights (IPR).⁴⁶ In recent years a number of international agencies and development partners/donors including UKAID/British High Commission/British Council Bangladesh, United Nations Development Programme (UNDP), Danida (Denmark's development cooperation)/Embassy of Denmark, EC-Bangladesh, Japan International Cooperation Agency (JICA), World Bank and Asian Development Bank (ADB) have become active in supporting CCA programmes in Bangladesh.

At regional level, Bangladesh plays an important role to establish an 'Inter-Governmental Expert Group on Climate Change' to develop policy directions for regional cooperation as envisaged in the South Asian Association for Regional Cooperation (SAARC) Plan of Action on Climate Change.⁴⁷

4. An Assessment

An assessment of CCA efforts is necessary to identify how far these actions can address the adaptation issue properly. Bangladesh has taken various CCA efforts to ensure a consistent, wide-ranging approach and to enhance climate resilience, assembling funding for meeting national adaptation needs and incorporating climate change issues into national development agenda.⁴⁸ Climate change response policies are most effective when they are fully integrated within an overall sustainable development strategy and policy. Regarding CCA initiatives in Bangladesh a question arises how far the CCA plans and policies, e.g., BCCSAP, NAPA, etc. come in line with national development plans and different sectoral arrangements (e.g., National Water Policy (NWP), National Water Management Plan (NWMP), National Environmental Management Action Plan (NEMAP), National Land Use Policy (NLUP) and National Forest Policy). As a result, implementation of the action plans or programmes continues to be an isolated initiative. In addition, policy oriented gaps cannot also be ignored.

⁴³ Interview with Shanchita Haque, Senior Director, Economic Affairs, Ministry of Foreign Affairs, Government of the People's Republic of Bangladesh, Dated 19 December 2015.

⁴⁴ MoEF, 2015, *op. cit.*

⁴⁵ Interview with Mr. Md. Mustafizur Rahman, Director General, United Nations, Ministry of Foreign Affairs, Government of the People's Republic of Bangladesh, Dated 19 December 2015.

⁴⁶ Interview with Riaz Hamidullah, Director General, Economic Affairs, Ministry of Foreign Affairs (MoFA), Government of the People's Republic of Bangladesh, Dated 20 December 2015.

⁴⁷ World Bank, *op. cit.*

⁴⁸ Interview with Fazle Rabbi Sadeque Ahmed, *op.cit.*

Among the CCA policies, NAPA is not an all-inclusive, long-term plan but an urgent and immediate response to climate change impacts.⁴⁹ Of the fifteen projects taken by NAPA, only one has received funding under the coastal afforestation programme.⁵⁰ The document was produced through a project led by a steering committee, headed by MoEF and members of other key ministries. The process involved selected vulnerable communities while conducted consultations in the capital and other divisional cities. This document has been seen as an external requirement and did not receive sufficient political attention.⁵¹ Due to lack of planning as well as financing, NAPA has not become a holistic adaptation programme. NAPA is revised in 2009 and aligned with BCCSAP. The later has been prepared through a consultative process involving the GoB, civil society and development partners. However, the participation of vulnerable communities is yet to be taken into adequate consideration. Therefore, BCCSAP can be viewed as a top-down approach. Without the active participation of local people how this action plan would be functionalised is a big concern.⁵² On the other hand, BCCSAP did not fully incorporate many adaptation issues, e.g., biodiversity and ecosystem conservation, adaptation to local level perspective, and knowledge sharing at regional level. However, these are addressed later in Intended Nationally Determined Contributions (INDC), 2015.⁵³ Besides, the slow pace of BCCSAP and other sectoral policies is considered as a setback towards implementing CCA. It is to note that only 41 projects out of 236 BCCSAP-funded projects have been implemented till 2013.⁵⁴

Therefore, BCCSAP can be reevaluated with the participation of relevant ministries, public representatives, and members of parliamentary committee, civil society, NGOs and climate change victims. Moreover, as amalgamating CCA programmes and national (sectoral) development policies is essential, mainstreaming climate change into planning needs to be done at every level. Sectoral ministries related to water management, agriculture, health and others also need to mainstream climate change into their respective sectoral plans. The process of developing CCA measures has to be grounded on certain principles that will integrate the NAPA, BCCSAP, NAP and other sectoral policies into a coherent planning process. The lessons learnt from NAPA and BCCSAP need to be considered for preparing upcoming NAP. The NAP process should be seen as a process of mainstreaming rather than producing a stand-alone plan.⁵⁵

⁴⁹ *Ibid.*

⁵⁰ Nathan Thanki, "Adaptation in Bangladesh: Closer Look at NAPA", available at <http://www.earthinbrackets.org/.../adptation>, accessed on 27 December 2015.

⁵¹ Khurshid Alam, Thomas Tanner, Md. Shamsuddoha, A. K. M. Mamunur Rashid, Moshahida Sultana, Muhammad Jahedul Huq, Sumaiya S. Kabir, and Sifayet Ullah, "Planning 'Exceptionalism?' Political Economy of Climate Resilient Development in Bangladesh", in Rajib Shaw, Fuad Mallick and Aminul Islam (eds.), *Climate Change Adaption Actions in Bangladesh*, op. cit., p. 342.

⁵² Network on Climate Change, Bangladesh (NCC,B), *Implementation of BCCSAP: An Overview on Status, Gaps and Opportunities*, Dhaka: NCC,B Secretariat, 2013.

⁵³ Interview with Mirza Shawkat Ali, op.cit.

⁵⁴ NCC,B, op. cit.

⁵⁵ Oxfam, op. cit., p.25.

Since MoEF is the focal point, it is set up to coordinate the institutional matters. Integrating concerned ministries and institutions even at local level is necessary. Again, Local level institutions cannot adequately address climate change issues with their limited managerial capacity. Though local government is important, among the 44 actions under BCCSAP there is no plan related to capacity development of local government. Government officials, especially at local institutions do not have adequate management skills to respond to various impacts of climate change. Moreover, NGOs can play an important role in implementing CCA programmes at the local level. NGOs are often treated as sub-assistant of government, but not as a co-partner for implementing some selective actions of adaptation plan. There is a coordination gap between the government agencies and NGOs. As a result, sporadic programmes have been taken in small scale by NGOs which lack affiliation of government agencies. However, an initiative was taken by disbursing ten per cent special allocation for the NGOs for implementing the BCCSAP. Still a number of questions were raised on transparency and accountability of NGO selection process. In order to gear up current institutional arrangement and to ensure proper collaboration with multiple stakeholders, institutional revitalisation and strengthening is an immediate necessity.⁵⁶ Prevailing capacity involving technical know-how of officials, financial and coordinating issues need to be examined to make arrangement more functional. The prevailing knowledge gap between central and local government institutions must be fulfilled.

Another key concern is prioritising programmes or projects in different policies as Bangladesh lacks financial resources, institutional capacity and skilled human resources. For example, BCCSAP prioritises projects in broader perspective but without having a tentative log frame. Again, *Sidr* and *Cyclone Aila* were given the highest priority in the 6th Five Year Plan. On the other hand, an estimation of current investment of BCCTF through government agencies shows that the highest investment goes to infrastructure thematic area of BCCSAP. Capacity building and institutional strengthening get the lowest allocation.⁵⁷ So, a priority list and cost of adaptation needs to be created so that it will be aligned with the 7th Five Year Plan and forthcoming NAP. The list of prioritisation can be taken on the basis of “degree of adverse effects of climate change, poverty reduction to enhance adaptive capacity, synergy with other multilateral environmental agreements and cost-effectiveness”.⁵⁸

Furthermore, though Research and Development (R&D) should be prioritised for long term adaptation plan, national policies put little emphasis on this issue. For example, only eight projects have been identified under BCCSAP with an allocation of US\$0.77 million in seven years⁵⁹. Inadequate allocation interrupts in accessing to

⁵⁶ Interview with Mirza Shawkat Ali, *op. cit.*

⁵⁷ “Bangladesh Climate Change Trust Fund”, available at <http://www.bcct.gov.bd/index.php/83-home/147-home-2>, accessed on 20 December 2015.

⁵⁸ *ibid*, p.11.

⁵⁹ NCCB, *op. cit.*

the latest ideas and technologies, generating knowledge and forming data banks regarding CCA.⁶⁰ Budgetary allocation can be enhanced for further developing research and knowledge capacities. Promotion of research on drought, flood and saline tolerant varieties of crops to facilitate adaptation in future needs to be encouraged. In this regard, 'Climate Change Knowledge Management' should be established as a national node for scientific knowledge on climate change vulnerability as well as to share information on technology sharing, scientific data, etc.⁶¹

Not only in R&D but as a whole, lack of funding is also the most important challenge. Till now, BCCTF has acquired roughly US\$385 million from domestic fund to implement the adaptation projects of BCCSAP.⁶² At the initial stage, BCCTF has got US\$89.4 million (2009-10) which is gradually decreasing and now it is only US\$12.8 million (2015-16).⁶³ On the contrary, bilateral and multilateral donors committed to provide approximately US\$186.2 million, but disbursed only US\$130 million up to 2015.⁶⁴ Therefore, gradual declining of national fund and inadequate international fund obstruct the implementation of CCA projects. The most important to CCA is to mobilise required fund. On the one hand, increasing domestic allocation in the BCCTF and BCCRF is essential. On the other hand, functions of BCCTF and BCCRF need to be reassessed in line with the demands of other relevant ministries (e.g., Ministry of Local Government, Rural Development and Co-operatives, etc.), who are assigned to address CCA. Bangladesh's readiness to harness CCA oriented available international support is below par, which needs to be addressed on an urgent basis. The National Implementing Entity (NIE) for both AF and GCF needs to be aware of this issue. Assistance in the form of technology transfer is also essential for Bangladesh. As adaptation friendly technologies are not only expensive but also protected by IPR of developed countries, the acquisition of technologies by countries like Bangladesh need to be supported through diplomatic initiatives, global and bilateral financing and direct access.⁶⁵ Along with funding problem, lack of monitoring and evaluation of projects have been concerns for BCCSAP. So, reevaluation of BCCSAP and other policies should be taken immediately. This approach needs to be "bottom-up". It is important to develop a set of effective indicators of monitoring and evaluation to ensure accountability and transparency while implementing CCA programme. For any large scale programme of action, there should a system of monitoring and evaluation. A robust monitoring and evaluation procedure can ensure transparency as well as accountability of relevant stakeholders.

⁶⁰ Oxfam, *Looking to a Future Climate-Smart Development in Bangladesh: A Critical Review of Bangladesh Climate Change Strategy and Action Plan*, Dhaka: Oxfam, 2013.

⁶¹ *Ibid*, p.7.

⁶² "Bangladesh Climate Change Trust", available at www.bcct.gov.bd, accessed on 23 December 2015.

⁶³ *Ibid*.

⁶⁴ Saleemul Huq, "Politics of Climate Change: The Next Phase in the Global Battle", *The Daily Star*, Dhaka, 21 September 2015.

⁶⁵ Interview with Mirza Shawkat Ali, *op. cit*.

5. Concluding Remarks

Bangladesh is one of the most vulnerable countries to the effects of climate change. Since the country is not a major greenhouse gas emitter, the main focus of Bangladesh is on adaptation to tackle climate change impacts. CCA encompasses various initiatives and measures designed to reduce the vulnerability of natural and human systems due to climate change effects. To address climate change issues, a holistic adaptation plan is needed that incorporates planning, financing and cost-effective preventative actions into national development processes. Formulating different national and sectoral policies, unifying CCA in national development process, setting up of necessary institutions, identifying climate change affected areas, practicing adaptation measures on those areas and mobilising funds for adaptation programmes — these initiatives altogether have addressed CCA efforts in Bangladesh.

The GoB has taken a number of policies, programmes and projects to promote CCA. NAPA covers a wide range of vulnerability profile and adaptation options in the areas of water, coastal areas, natural disaster, health, agriculture, fisheries and livestock, biodiversity, forestry, land use, industry and infrastructure, food security, livelihood, gender and local governance. In addition, BCCSAP covers different adaptation measures under five pillars including food security and social protection, disaster risk management, infrastructure, research and knowledge sharing, and capacity building and institutional strengthening. The 7th Five Year Plan also recognises the issue of adaptation to climate change. After initiating and undergoing through all these efforts, the forthcoming NAP integrates adaptation into national planning at all levels. It is much bigger and long-term planning exercise. These programmes, policies and plans are supported by institutional mechanism, where CCC under MoEF serves as focal point to implement the programmes supported by relevant ministries. Along with initiating national policies and establishing required institutions, various climate change vulnerable zones have been identified across the country and sector wise adaptation measures are practicing in those areas. To support these adaptation programmes, the GoB has established several funds like BCCTF and BCCRF along with seeking fund and technology from international community.

As the magnitude and long-term nature of the climate change threat is increasingly better understood, it becomes clear that simply implementing a set of adaptation projects, although useful, is not going to be sufficient. If long-term resilience to climate change impacts is to be built into the economy and society of the country, CCA needs to be embedded into regular national development planning and actions at all levels and finally, a comprehensive CCA strategy needs to be initiated. Besides, loopholes also remain in existing national policies, sectoral plans, institutional and financial mechanism. One of the most important predicaments is to incorporate CCA programmes in national development plans. Lack of coordination

among concerned ministries and local level institutions is another setback. Again, NGOs are playing important role in addressing climate change issues at local level. While combined efforts of the GoB and NGOs would be more efficient, the later are functioning sporadically. Efficiency suffers in this regard. In addition, policy oriented gaps cannot be overlooked. The NAPA lacks holistic approach and BCCSAP is regarded as top-down approach that ignores community level participation. Another key concern is prioritising programmes or projects in different policies as Bangladesh lacks financial resources, institutional and human capabilities. Although R&D should be prioritised for long-term adaptation strategy, national policies put little emphasis on that matter. Again, funding is also a big concern to implement CCA initiatives. Gradual declining of national fund and inadequate international fund obstruct the implementation of CCA projects.

To address these loopholes, institutional revitalisation and strengthening, engaging all concerned stakeholders, amalgamation of CCA programme and national (sectoral) development policies, and developing research and knowledge skills are essential. Priorities need to be set based on adverse effects of climate change, poverty reduction and cost-effectiveness. Moreover, mobilising required funds, increasing domestic allocation, reassessment of BCCTF and BCCRF in line with the demand of the concerned ministries, enhancing readiness to avail international support and lobbying for technology transfer are some possible options to effectively address CCA efforts in Bangladesh.