Climate Adaptation and Resilience (CARE) for South Asia Project

Water Sector Brief
Bangladesh

Introduction

The rising threat of climate-related hazards is already being witnessed with increasing severity and frequency of disasters occurring in South Asia.

According to the World Bank, between 1990 and 2019, climate-induced disasters in South Asia affected 1.68 billion people, killed approximately 267,000 and caused over US$127 billion in economic losses.

The region's endeavor to achieve sustainable growth and reduce poverty is often hampered due to the impacts of climate change on people's livelihoods, food security and health. A World Bank study has warned that, without climate change adaptation, 800 million (or 44 percent) people in South Asia will be living in moderate or severe climate hotspots by 2050 which will push millions of people below the poverty line.

The negative effects of extreme weather and climate events also undermine productivity in key economic sectors such as agriculture, transport, energy, and manufacturing, with limited adaptive capacity in these countries causing further constraints on their development prospects.

Overview of climate change in Bangladesh

Bangladesh is one of the most vulnerable countries to climate change due to a combination of geographical and socio-economic factors, including its low-lying delta and coastal areas, high population density, poverty level, and lack of resilient infrastructure. Rural and coastal communities have been exposed to climate-induced extreme events, such as erratic rainfall, flooding, drought, sea-level rise, cyclones and salinity intrusion. Consequently, disasters have exacerbated migration to cities, resulting in unplanned and rapid urbanization in the country.

In response, the Government of Bangladesh has placed high priority on building the country's capacity to mitigate and adapt to climate change. The Ministry of Environment, Forest, and Climate Change, Bangladesh has identified six thematic areas, including agriculture and food security; human wellbeing; water resources; disaster risk management; and infrastructure, to invest in and mobilize climate services through corresponding programs to function within a 'multi-institutional architecture'.

Yet, institutional challenges to climate change adaptation prevail particularly in developing an integrated approach to transform climate change vulnerabilities into adaptation opportunities and mainstream them into development programs at sub-national levels.

Climate change impact on water sector

Owing to the topography of low elevation coastal zones and deltaic region and as a habitat of more than 160 million people, Bangladesh is highly susceptible to different climate-induced hazards. The national adaptation programme of action (NAPA) of Bangladesh identifies water-related climate change impacts such as coastal and riverine flooding and drought in winter (dry season) as the greatest problem faced by Bangladesh (MoEF, 2005).

Research suggests that approximately 90% of total water withdrawal is used for agriculture, followed by household consumption and industrial use (Frenken, 2012). Although agriculture relies heavily on surface water, it has become increasingly dependent on groundwater resources due to the high variability of surface water availability. Furthermore, a large part of Bangladesh's climate vulnerability stems from its high population density and their livelihoods that depend on natural resources and ecological services.

Thus, the country envisages enhanced water security and efficiency of water usage to achieve optimal and integrated use of water resources. Specific initiatives are consolidated into the Bangladesh Delta Plan 2100 where strategies and measures will lead to an adaptive techno-economic plan integrating the interaction of water, land use, ecosystem and climate change with development outcomes.

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The project's overall objective is to contribute to an enabling environment for climate resilience policies and investments in agriculture, transport, water, and policy, planning and finance sectors in South Asia. With a regional outreach, the national-level activities will initially be implemented in Bangladesh, Nepal and Pakistan.

ADPC is implementing the second component of the project which focuses on enhancing policies, standards, and capacities for climate-resilient development in South Asia. It also seeks to promote the transformation of policies, standards and institutional capacities for climate-resilient development across the key sectors.

ADPC will facilitate high-level dialogues, develop climate-resilient guidelines, and promote innovation and adoption of disruptive technology at national and regional levels.

Support to implement climate resilience priorities

The water policy landscape of Bangladesh has evolved over the last four decades from the 20 Year Water Master Plan, developed in 1964, to restructuring the water management systems particularly focused on the decision-making process. The efforts for water management and conservation planning have been integrated into the formation of National Water Policy 1999, National Water Management Plan 2000, and similar other instruments.

However, several obstacles including scarcity of resources present challenges to the implementation of these instruments. The management of water resources has become a pre-eminent necessity in Bangladesh with the evergrowing demand for water and the escalating conflict over its alternative uses over the decades. Thus, to ensure efficient utilization through better management of instruments, the Government of Bangladesh formulated the Bangladesh Delta Plan 2100 in 2018 to address multidimensional challenges and integrate individual sectoral plans.

The BDP's specific goals are directly or indirectly related to adaptive and efficient water resources management. The plan identifies key challenges for water management and governance including increasing water scarcity, institutional capacity, as well as coordination and knowledge gaps.

In terms of the existing Integrated Water Resources Management (IWRM) scenario, the country needs a well-coordinated and collaborative framework as emphasized in the

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Bangladesh delta plan 2100. Furthermore, regional scale cooperative and regulatory guidelines - on the transboundary water resources managed and shared among riparian countries will play a critical role in the availability and access to water in the region.

The project's broader and specific objectives will bring synergy in the country's water and climate policy instruments. The project links specifically to the M&E framework of the BDP 2100; climate informed water accounting to complement the water sector's broader policy; and capacity enhancement of stakeholders to ensure water security for the country.

Support to implement water sector priorities

As part of this endeavor, the project's major activities in Bangladesh are linked with the following:

i. Complement the water sector's broader policy framework to include the climate change models and analytical work to inform water accounting. These interventions plan to examine future water availability and usage optimization for agriculture and other related sectors. Collaboration with existing multi-institutional frameworks and services on water flows, fluxes, stocks, and consumption such as Water Accounting Plus (WA+) will be explored as part of this intervention.

ii. Support the development of the digital M&E policy framework under the Bangladesh Delta Plan 2100. This activity will include a review of the plan to understand the inclusion of climate change impact into the policy interventions and support the development of the macro-level M&E framework to monitor the implementation.

iii. Support the development of regional guidelines to help the government identify gaps and needs in the national or regional level IWRM guidelines, explore the availability of the provisions for climate resilience or adaptation in those policy documents, and formulate selected guidelines or standards with necessary climate adaptation measures.

The activity will take into consideration active participation from government stakeholders to decide on technical support needed to develop guidelines on priority areas which will fulfil the objectives of the Bangladesh delta plan 2100 and other water sector policies and strategies. Scientific papers and policy briefs will be developed as part of this initiative.

iv. Capacity building to increase the understanding of adaptive policy-making, design and solutions for climate-resilience in the water sector. The capacity building efforts will focus on strengthening the capacity of both individuals and institutions including the Bangladesh Water Development Board and Water Resources Planning Organization.

The capacity development will mainly focus on sector-specific policy formation, reform of the existing policy, and monitoring the impacts of adopting climate-smart and resilient approach. Furthermore, there will be Training of Trainers on Digital M&E for the Delta Portal to support the decision-making process. Training needs assessment will be carried out through focused dialogue between ADPC and national and local stakeholders to strengthen capacity development processes.

Expected outcomes

The project's uniqueness lies not only in supporting the government policies on climate change through national and regional dialogues, pilot concepts and capacity enhancement of stakeholders at all levels, but also in mainstreaming the interventions into plans, policies, and investments for a climate resilient future.

Climate informed water accounting will enhance the water and climate sector policies as availability and demand of water will guide planning in agriculture and related sectors that are vulnerable to climate change.

The project's support in the M&E framework of the Bangladesh Delta Plan 2100 will ensure that the activities envisaged under the Plan achieve climate resilience objectives and goals. The capacity development efforts will enable stakeholders to absorb the scientific information generated as part of the technical support and adopt investment strategies to accelerate climate resilient water resources management.

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Water Sector Brief

Nepal

Introduction

The rising threat of climate-related hazards is already being witnessed with increasing severity and frequency of disasters occurring in South Asia.

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The region's endeavor to achieve sustainable growth and reduce poverty is often hampered due to the impacts of climate change on people's livelihoods, food security and health. A World Bank study has warned that, without climate change adaptation, 800 million (or 44 percent) people in South Asia will be living in moderate or severe climate hotspots by 2050 which will push millions of people below the poverty line.

The negative effects of extreme weather and climate events also undermine productivity in key economic sectors such as agriculture, transport, energy, and manufacturing, with limited adaptive capacity in these countries causing further constraints on their development prospects.

Overview of climate change in Nepal

Nepal is highly vulnerable to climate change mainly because of its challenging topography with the altitude ranging from below 100 meters in the south to above 8000 meters in the north and its interaction with the South Asian monsoon, diversity of climate zones, fragile socio-economic conditions, and sensitive ecosystems. In addition, poverty and social disparity as well as people's livelihoods, that are dependent on natural resources, have made Nepal more vulnerable towards the impacts of climate change. Nepal has witnessed a definite increase in its temperature regime. The future climate scenarios also suggest a continuous warming trend until the end of the century for the whole Himalayan region.

Being fully aware of the challenging tasks to build a climate resilient society, the Government of Nepal has undertaken several policies and actions to address climate change and has also been actively participating in global efforts to responding to climate change.

Yet, institutional challenges to climate change adaptation prevail particularly in developing an integrated approach to transform climate change vulnerabilities into adaptation opportunities and mainstream them into development programs at sub-national levels.

Climate change impact on water sector

Nepal is exposed to a wide range of climate risks including water-related hazards triggered by melting glaciers of Himalayan and heavy monsoon rainfall in the foothills. Despite the high annual rainfall, the country still faces considerable challenges in ensuring water security, as a result of the high temporal and spatial variations in water availability as well as the lack of coherence between locations of water availability and water need (Water and Energy Commission Secretariat, 2005). Furthermore, extended dry periods and drought impact both surface and groundwater water availability and accessibility, which is

expected to intensify in the future based on climate change projections.

The United Nations Food and Agricultrue Organization (FAO) estimated that the country's water withdrawal ratios are 98.2 percent for agricultural purposes, 1.5 percent for municipalities and 0.3 percent for industry (FAO, 2011). The above figures indicate that the projected changes in climate patterns will aggravate livelihood vulnerability of the population — currently, over 65 percent of all Nepalese depend on agriculture and forest resources for their subsistence (World Bank 2020).

Therefore, the Government of Nepal envisions efficient and sustainable use of water resources while addressing the current issues in water resources management and mainstreaming climate change adaptation programs in the context of integrated watershed management.

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The project's overall objective is to contribute to an enabling environment for climate resilience policies and investments in agriculture, transport, water, and policy, planning and finance sectors in South Asia. With a regional outreach, the national-level activities will initially be implemented in Bangladesh, Nepal and Pakistan.

ADPC is implementing the second component of the project which focuses on enhancing policies, standards, and capacities for climate-resilien development in South Asia. It also seeks to promote the transformation of policies, standards and institutional capacities for climate-resilient development across the key sectors.

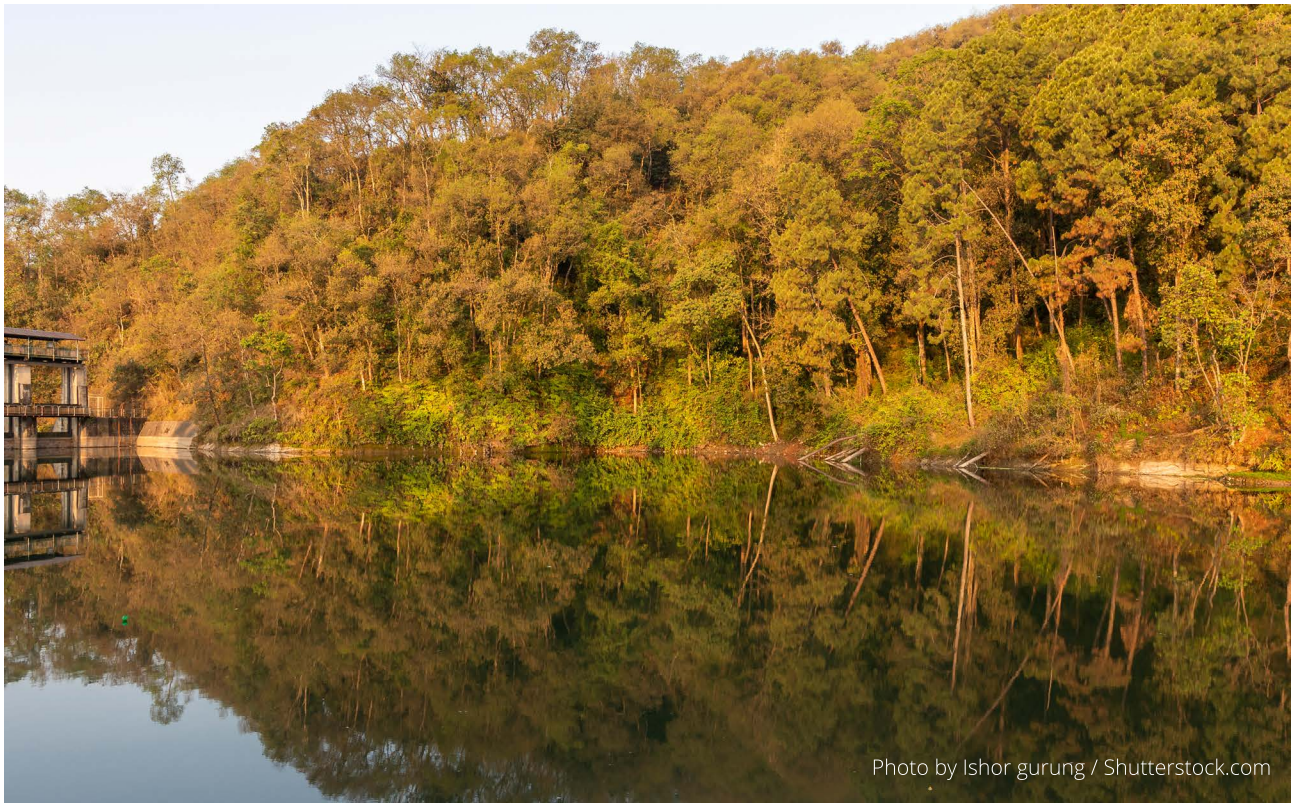
ADPC will facilitate high-level dialogues, develop climate-resilient guidelines, and promote innovation and adoption of disruptive technology at national and regional levels.

Support to implement climate resilience priorities

The country's Water Resources Strategy (WRS) 2002 was the first key strategic document followed by the National Water Plan (NWP) 2005 which was formulated to outline and implement actions needed for the water resources management (WRM). The WRS and NWP focused on access to safe and adequate drinking water and sanitation, an increase in agriculture production, energy security, water transportation for access to the ocean, and mitigating water-induced hazards. Though the government has formulated different policies related to water supply, irrigation, electricity, and disasters, they still lack a guiding mechanism for effective coordination and cooperation among relevant agencies.

Therefore, the government approved the National Water Resources Policy 2020 to contribute to resilient and equitable management of water resources by minimizing water-induced hazards and negative impact on economic, social and environmental aspects. With a long-term vision of utilizing and preserving water resources for the next generation, the new policy also states that the roles and responsibilities of the federal, provincial and local levels will be defined for the development and management of water resources in a coordinated manner.

In addition, the Climate Change Policy 2019 of Nepal envisions a country spared from the adverse impacts of climate change by optimizing economic, social and environmental returns on water resources. The policy aims to ensure strategies and measures will lead to an adaptive techno-economic plan involving the interaction of water, land use, ecosystem, and climate change with development outcomes. Protection of water resources, besides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development and expansion of rainwater harvesting and storage, are envisaged as important contributors to development.

CARE for South Asia project's broader and specific objectives will bring synergies in both the National Water Resources Policy 2020 and Climate Change Policy 2019 with a particular emphasis on developing tailored strategies for water conservation and integrated water resources management.

Support to implement water sector priorities

In the water sector, the project's major activities in Nepal are linked with the following:

i. Support the water harvesting strategy development in the context of the IWRM framework. The activity will include a comprehensive analysis of the national approach on IWRM in Nepal as it is one of the main areas of the recently approved policies on water resources and climate change. It will also identify needs and issues related to water harvesting in Nepal by supporting the government in developing a water harvesting strategy which will cater to both the agriculture and energy sectors of the country. A digital water atlas for Nepal will be developed as part of the initiative.

ii. Conduct workshops and dialogues on water, food, and energy security and develop a policy brief based on the outcome of the workshops and national dialogues with key stakeholders.

iii. Support the development of guidelines through active participation of government stakeholders to decide on technical support in the priority areas e.g. drought management, water demand and supply, and local-level water conservation and management, which will fulfill the objectives of the recently approved Climate Change Policy and Water Resources Policy. Scientific papers and policy briefs will be developed as part of this activity.

iv. Capacity building to increase understanding of climate-resilient adaptive policy making, design and solutions in the water sector. The activity will focus on strengthening

the capacity of organizations in the water and agriculture sectors. In addition, efforts will be put together to ensure effective utilization of climate and hydrometeorological data for planning and investment design of the water sector programs in the context of IWRM. The activity will consist of detailed training needs assessment, development of training modules and setting up of a pool of master trainers for the long-term sustainability of the nationwide training efforts.

Expected outcomes

The project's uniqueness lies not only in supporting the government's policies on climate change through national and regional dialogues, pilot concepts and capacity enhancement of stakeholders at all levels, but also in mainstreaming potential interventions into plans, policies, and investments for a more climate-resilient future.

The water harvesting strategy for Nepal will enable better management of surface and groundwater resources and support in envisaging the integrated approach of water resources management.

The national dialogues will foster communication and understanding across different stakeholders and reach a common ground on policies or instruments that will help towards formulating better interventions to ensure water, food and energy security as well as supporting the development of guidelines to fulfill the objectives of the water and climate change policies of the government.

The capacity development efforts will enable stakeholders to understand the scientific information generated as part of the technical support and adopt investment strategies to accelerate climate-resilient water resources management.

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Water Sector Brief
Pakistan

Introduction

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Overview of climate change in Pakistan

With an economically and culturally diverse population living in different climate zones, topographies, and ecosystems, Pakistan is especially vulnerable to weather and other effects of climate change including, saline water intrusion, erratic rainfall, glacial melting, rising temperatures and drought.

As noted in Pakistan's Initial National Communication on Climate Change, there is a strong need to improve information sharing, education and training, as well as technical and scientific research in order to articulate an effective adaptation plan. In recent years, the country has undertaken policies and actions to address climate change and has also been actively participating in global efforts to respond to climate change.

Yet, institutional challenges to climate change adaptation prevail particularly in developing an integrated approach to transform climate change vulnerabilities into adaptation opportunities and mainstream them into development programs at sub-national levels.

Climate change impact on water sector

Pakistan has the world's fourth-highest rate of water use (amount in cubic meter per unit of GDP) and the most water intensive economy in the world (Baloch, 2018). The country's per capita surface water availability has declined from 5,260 cubic meters in 1951 to around 1,000 cubic meters in 2016. This is likely to further drop to 860 cubic meters by 2025, marking the country's transition from a "water stressed" to a "water scarce" country (MoWR, 2018).

One of the major drivers of water resource depletion is the over exploitation of groundwater resources to fulfill drinking water supply and irrigation needs among others. Notably, the agriculture sector consumes over 90% of available surface water annually (Qureshi and M. Ashraf, 2019).

Moreover, climate change is causing disruption to the natural hydrological process of groundwater recharge as the erratic and unpredictable nature of monsoons have become much frequent. Similarly, rapid population growth, deforestation, and the state of management of water resources have exacerbated the water crisis in Pakistan.

In view of this, the government has opted for a climate resilience-centric approach for adaptation and mitigation activities. CARE for South Asia project aims to support the government's priority actions identified in the country's policies on water resources management and climate change.

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Support to implement climate resilience priorities

Pakistan has formulated three major instruments that guide policy strategies and plans for the water sector, namely the National Climate Change Policy 2012; Pakistan Vision 2025 formulated in 2014; and the National Water Policy 2018.

The National Climate Change Policy 2012 highlights the threat to water, food and energy security of the country due to the projected vulnerabilities of climate change. The policy has formulated an action plan to address the impact of climate change on water resources and enhance water security within the scope of Integrated Water Resources Management (IWRM).

The Pakistan Vision 2025 also envisages water security amongst its seven priority areas which were resonated with the Millennium Development Goals (MDGs) and are compatible with the Sustainable Development Goals (SDGs). The vision documents set five goals to ensure water security for the country which include increased water storage capacity; minimized wastage especially in the agriculture sector; institutional mechanisms to effectively manage all surface and groundwater water; access to a minimum baseline of suitable water to citizens; and effective allocation of water resources.

The National Water Policy 2018 provides an overall policy framework and guideline for a comprehensive plan of action to be undertaken at national and provincial levels. The National Water Policy, in line with the National Climate Change Policy, stresses the importance of groundwater management such as regulation on groundwater withdrawal and capacity enhancement for relevant stakeholders.

The project's broader objectives of contributing to an enabling environment for climate resilient policies and investments and specific objective of enhancing policies, standards, and capacities for climate-resilient development for the water sector will bring synergy in the three policy instruments of Pakistan. The project links specifically to the


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component of surface and groundwater management as well as capacity enhancement of stakeholders to ensure water security in the country.

Support to implement water sector priorities

In the water sector, the project's major activities in Pakistan are linked with the following:

i. Support the development of a groundwater strategy for drought-affected districts of Pakistan in Sindh province with options of scaling up and scaling out. This will include a comprehensive technical review of the IWRM approach in Pakistan; a study on water resources demand and supply in key sectors; comprehensive water resources mapping; techno-economic feasibility options for efficient water conservation and management for climate smart agriculture production systems; and development of platform for a groundwater database and digital atlas.

ii. Conduct consultative workshops and meetings to sensitize climate change issues in water and agriculture in the form of webinars and face to face sessions.

iii. Study the potential for pearl farming to protect the displacement of the local population due to climate change. The activity aims to develop a scientific paper to understand the impact of climate change leading to migration and feasibility of carrying out pearl farming as an alternative livelihood option based on the available resources as well as physiography of the region.

iv. Conduct national and regional dialogue on water sector focusing on the climate change, food, water and energy nexus. A policy brief will be prepared based on the outcome of the dialogues.

v. Capacity building to increase understanding of climate resilience-adaptive policy making, design and solutions in the water sector. The activity will consist of detailed training needs

assessment, development of training modules and setting up of a pool of master trainers for the long-term sustainability of the nationwide training efforts.

Expected outcomes

The project's uniqueness lies not only in supporting the government policies on climate change through national and regional dialogues, pilot concepts and capacity enhancement of stakeholders at all levels, but also in mainstreaming the interventions into plans, policies, and investments for a climate resilient future.

The groundwater strategy will enable better management of groundwater resources and support the formulation of any necessary regulations. The national dialogue will support the development of guidelines to fulfill the objectives of the Vision 2025 of Pakistan and the policies on water and climate change.

The capacity development efforts will enable stakeholders to absorb the scientific information generated as part of technical support and adopt investment strategies to accelerate climate resilient water management.

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