



USAID-CLIMATE ADAPTATION SUPPORT ACTIVITY (CASA)

BANGLADESH ENABLING ENVIRONMENT FOR CLIMATE ACTION NEEDS ASSESSMENT

June 2023

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ACRONYMS

| | |
|----------|--|
| ADB | Asian Development Bank |
| ADP | Annual Development Program |
| AOSED | An Organization for Socio-Economic Development |
| AFOLU | Agriculture, Forestry, and Other Land Use |
| BADC | Bangladesh Agricultural Development Corporation |
| BADGE | Bangladesh Advancing Development and Growth through Energy |
| BAPA | Bangladesh Agro-Processors Association |
| BARC | Bangladesh Agricultural Research Council |
| BARI | Bangladesh Agricultural Research Institute |
| BASA | Bangladesh Association for Social Advancement |
| BCAS | Bangladesh Centre for Advanced Studies |
| BCCSAP | Bangladesh Climate Change Strategy and Action Plan |
| BCCTF | Bangladesh Climate Change Trust Fund |
| BDP 2100 | Bangladesh Delta Plan 2100 |
| BDT | Bangladeshi Taka |
| BEP | BRAC Education Programme |
| BFD | Bangladesh Forest Department |
| BIA | Bangladesh Insurance Association |
| BPDB | Bangladesh Power Development Board |
| BMD | Bangladesh Meteorological Department |
| BRAC | Bangladesh Rural Advancement Committee |
| BRRI | Bangladesh Rice Research Institute |
| C3ER | Centre for Climate Change and Environmental Research |
| CASA | Climate Adaptation Support Activity |

| | |
|--------|--|
| CBO | Community-based Organization |
| CBAP | Capacity Building Action Plan |
| CCA | Climate Change Adaptation |
| CCDB | Christian Commission for Development in Bangladesh |
| CCE | Climate Change Education |
| CCTF | Climate Change Trust Fund |
| CCHPU | Climate Change and Health Promotion Unit |
| ccGAP | Climate Change and Gender Action Plan |
| CEGIS | Centre for Environmental and Geographic Information Services |
| CFF | Climate Fiscal Framework |
| CIAT | International Center for Tropical Agriculture |
| CIMMYT | <i>Centro Internacional de Mejoramiento de Maíz y Trigo</i> (International Maize and Wheat Improvement Center) |
| CNRS | Center for Natural Resource Studies |
| CODEC | Community Development Centre |
| CPD | Centre for Policy Dialogue |
| CPRD | Center for Participatory Research and Development |
| CSA | Climate-Smart Agriculture |
| CSO | Civil Society Organization |
| CTCN | Climate Technology Center and Network |
| DAE | Department of Agricultural Extension |
| DDM | Department of Disaster Management |
| DGHS | Directorate General of Health Services |
| DoE | Department of Environment |
| DRF | Disaster Risk Financing |
| DRM | Disaster Risk Management |
| ECR | Environmental Conservation Rules |

| | |
|---------|---|
| ECSDI | Environment Climate Change and Social Development Initiatives |
| EE&C | Energy Efficiency and Conservation |
| EIA | Environmental Impact Assessment |
| FAO | Food & Agriculture Organization |
| FCDO | Foreign, Commonwealth & Development Office |
| FID | Financial Institutions Division |
| FIT | feed-in-tariff |
| FY | Fiscal Year |
| G2P | Government-to-Person |
| GCF | Green Climate Fund |
| GFDRR | Global Facility for Disaster Reduction and Recovery |
| GG | Green Growth |
| GHG | Greenhouse Gas |
| GIZ | <i>Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH</i> (German Development Agency) |
| GoB | Government of Bangladesh |
| GOTS | Global Organic Textile Standard |
| HIP | Humanitarian Implementation Plan |
| HNAP | Bangladesh Health National Adaptation Plan |
| ICCCAD | International Centre for Climate Change and Development |
| iccdr,b | International Centre for Diarrhoeal Disease Research, Bangladesh |
| ICT | Information and Communications Technology |
| IDCOL | Infrastructure Development Company Limited |
| IDRA | Insurance Development and Regulatory Authority |
| IEDCR | Institute of Epidemiology Disease Control and Research |
| IPCC | Intergovernmental Panel on Climate Change |
| IPD | Institute of Planning and Development |

| | |
|---------|--|
| IRRI | International Rice Research Institute |
| IWM | Institute of Water Modelling |
| IWT | Inland Water Transport Sector |
| JBC | Jiban Bima Corporation |
| JICA | Japan International Cooperation Agency |
| KII | Key Informant Interview |
| km | Kilometer(s) |
| LGD | Local Government Division |
| LGED | Local Government Engineering Department |
| LGI | Local Government Institution |
| LLA | Locally Led Adaptation |
| LoGIC | Local Government Initiative on Climate Change |
| M&E | Monitoring and Evaluation |
| MCPP | Mujib Climate Prosperity Plan |
| MEL | Monitoring, Evaluation, and Learning |
| MFI | Microfinance Institution |
| MoA | Ministry of Agriculture |
| MoDMR | Ministry of Disaster Management and Relief |
| MoEF | Ministry of Environment and Forest |
| MoEFCC | Ministry of Environment, Forest, and Climate Change |
| MoF | Ministry of Finance |
| MoFL | Ministry of Fisheries and Livestock |
| MoLGRDC | Ministry of Local Government, Rural Development and Cooperatives |
| MoPEMR | Ministry of Power, Energy and Mineral Resources |
| MoSW | Ministry of Social Welfare |
| MoWCA | Ministry of Women and Children Affairs |

| | |
|---------|--|
| MoWR | Ministry of Water Resources |
| MoYS | Ministry of Youth and Sports |
| MSMEs | micro-, small-, and medium-sized enterprises |
| Mt CO2e | Metric Tons of Carbon Dioxide Equivalent |
| MW | Megawatts |
| NAAQS | National Ambient Air Quality Standard |
| NAP | National Adaptation Plan |
| NAPA | National Adaptation Programme of Action |
| NARS | National Agricultural Research System |
| NbS | Nature-based Solutions |
| NDA | Nationally Designated Authority |
| NDC | Nationally Determined Contribution |
| NFNSP | National Food and Nutrition Security Policy |
| NFPPoA | National Food Policy Plan of Action |
| NGO | Nongovernmental Organization |
| NiV | Nipah Virus |
| NSDS | National Sustainable Development Strategy |
| NSSP | Bangladesh National Social Security Programme |
| NSSS | National Social Security Strategy |
| NSTS | National Sustainable Transport Strategy |
| PKSF | Palli Karma-Sahayak Foundation |
| PPP | Public-Private Partnership |
| PP2041 | Perspective Plan 2041 |
| PREPARE | President's Emergency Plan for Adaptation and Resilience |
| PSMP | Power System Master Plan |
| REB | Rural Electrification Board |

| | |
|--------|--|
| RMG | Ready-Made Garment |
| RMP | Railway Master Plan |
| SBC | Sadharan Bima Corporation |
| SDG | Sustainable Development Goal |
| SLCP | Short-Lived Climate Pollutant |
| SO | Strategic Objective |
| SOD | Standing Orders on Disaster |
| SRSP | Shock-Responsive Social Protection |
| SREDA | Sustainable and Renewable Energy Development Authority |
| SSNP | Social Safety Net Programs |
| SURE | Scaling Up Renewable Energy |
| TNA | Technology Needs Assessment |
| TNC | Third National Communication |
| TWG | Technical Working Group |
| ULAB | University of Liberal Arts Bangladesh |
| UN | United Nations |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environment Programme |
| UNFCCC | United Nations Framework Convention on Climate Change |
| UNICEF | United Nations Children's Fund |
| UP | Union Parishad |
| USAID | United States Agency for International Development |
| US\$ | United States Dollar |
| WB | World Bank |
| WIBCI | Weather Index-Based Crop Insurance |

EXECUTIVE SUMMARY

Bangladesh is highly vulnerable to climate change, and the Government of Bangladesh (GoB) has taken significant legal, strategic, and financial actions both to respond to the climate challenges it faces and to capitalize on opportunities (Center for Research and Information 2021). With the launch of its new Climate Strategy in 2022, the United States Agency for International Development (USAID) is well positioned to support the GoB in these efforts, including by bolstering the enabling environment to affect long-term, transformative change.

This Needs Assessment was designed to assist USAID/Bangladesh as it identifies opportunities for strategic investment to support transformational systems change. It responds directly to eight research questions (five primary and three secondary) as outlined below and identifies short- and medium-term opportunities for USAID support within each. Key technical areas include the enabling environment for climate action and those related to disaster risk finance, social protection, climate-smart agriculture (CSA), green growth, public health, and education (see Figure 1).

PRIMARY RESEARCH QUESTIONS

1. What are the immediate and medium-term opportunities to strengthen or create an enabling environment and policy framework to shift Bangladesh's journey toward net-zero and climate-resilient pathways based on the USAID Climate Strategy and Bangladesh government's relevant plans and policies?
2. Where and how can USAID provide technical assistance to the GoB to achieve the "transformative targets" as illustrated in the Mujib Prosperity Plan?
3. What are the capacity-strengthening needs of the prime GoB institutions and other key stakeholders regarding climate change planning in Bangladesh? What are the resources locally available to fill capacity gaps? What would be an effective locally led, capacity-strengthening model based on experience to date?
4. What climate technologies can be implemented and scaled in Bangladesh? What are the existing and emerging opportunities for local development of technologies? What are some immediate technology transfer opportunities from the United States and other countries in partnership with the private sector?
5. What policy shifts are needed in the existing financial and economic systems to promote (1) climate smart agriculture; (2) green growth; (3) a shock-responsive social protection system; and (4) disaster risk financing? How to factor in the full cost of climate change within Bangladesh's existing economic system based on existing examples worldwide?

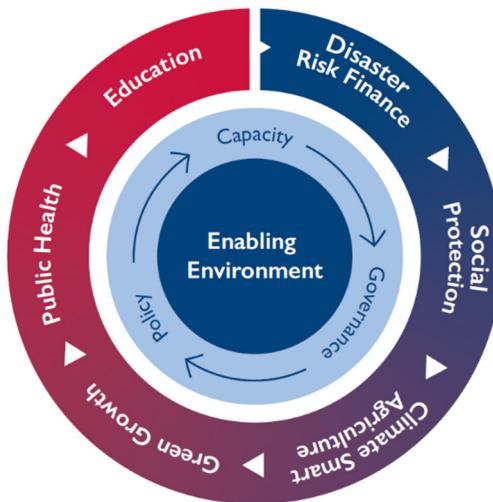


Figure 1. Schematic Diagram of the Assessment

SECONDARY RESEARCH QUESTIONS

6. How can evidence-based environmental governance advocacy efforts in Bangladesh be strengthened? How can the transparency and accountability of the GoB's climate change efforts in Bangladesh be increased? How can USAID support the GoB in making the policy planning and implementation process more inclusive and participatory based on worldwide best practices?
7. How can climate change adaptation and mitigation objectives be integrated within Bangladesh's education curriculum using modern information and communications technology tools? What are the barriers and opportunities for equal access to climate-related education? How can the education system be resilient in the face of frequent shocks like floods and cyclones?
8. How is climate change impacting public health in Bangladesh? How are different social groups impacted? What research gaps exist to identify the relationship between climate change, air pollution, and vector-borne diseases?

FINDINGS

Drawing on the literature review and stakeholder consultations, the report answers each of these questions in turn. It also draws from across the questions to identify three systems that have outsized potential to spur transformational change in Bangladesh, highlighting key leverage points where USAID can most effectively contribute to efforts to foment this change. With respect to **disaster risk management**, this includes improving the quality and accessibility of information, strengthening disaster risk financing, and empowering local communities to engage in preparedness and response efforts that allow them to become more resilient. In the **agricultural sector**, key leverage points include shifting market signals to incentivize climate resilience and low-carbon practices; strengthening social safety nets; and building the capacity of local government institutions to support climate smart agriculture. In Bangladesh's **energy sector**, the report recommends using leverage points to promote green technologies, creating financial incentives for renewable energy and energy efficiency, and supporting the capacity of local governments to drive the energy revolution. Finally, the report identifies opportunities where USAID can support the GoB as it creates the systems and capacity needed to monitor and evaluate progress toward transformational change, as well as the additional finance needed to support it.

SECTION I:

INTRODUCTION & OVERVIEW

INTRODUCTION

Ranked by German Watch's Global Climate Risk Index as the seventh-most climate-vulnerable country in the world, Bangladesh faces serious challenges from climate variability and change (Eckstein et al. 2021). Its low-lying terrain, high population density, and geographic location at the confluence of three deltas make it extremely vulnerable to a range of climate impacts, including sea-level rise, cyclones, droughts, floods, salinity intrusion, and extreme heat. As the climate continues to change, the projected impacts of these hazards are substantial and wide reaching, threatening recent gains in poverty reduction and human development (World Bank Group 2022).

The situation is particularly dire for the roughly one-third of Bangladeshis who live in coastal areas, where population density is typically higher compared to inland areas and where **climate-related disasters** already affect lives, livelihoods, and investment (World Bank Group 2022). In time, the increased frequency and severity of these disasters is likely to displace coastal communities, forcing people to abandon agricultural assets and livelihoods. As these populations seek refuge in urban areas, it will lead to increased rural-urban migration and place additional pressure on already strained resources. By 2050, Bangladesh is expected to have as many as 13.3 million internal migrants whose movements are influenced at least in part by the significant effects of climate change and increasingly frequent extreme weather events (Chowdhury et al. 2020).

Bangladesh's **agricultural sector** is also extremely vulnerable to climate variability and change. Floods, increased groundwater and soil salinity, changing rainfall patterns, extreme heat, and an increased incidence of pests and climate-sensitive diseases are already affecting the production of Bangladesh's main crops—including rice, jute, fruits and vegetables, tea, and sugarcane—as well as fish, poultry, and livestock. In coastal communities, roughly 60 percent of people depend on agriculture for their livelihood (Barua et al. 2021; CCAFS et al. 2017). As climate change makes agricultural production increasingly uncertain, one-third of agricultural gross domestic product nationally may be lost to climate variability and extreme weather events by 2050 (World Bank Group 2022). At the same time, as Bangladesh develops, the agricultural sector (which currently accounts for roughly a quarter of Bangladesh's emissions) will be forced to develop new ways to keep emissions low (MoEFCC 2021).

Likewise, Bangladesh has set its sights on dramatically increasing **access to clean energy**, including in remote areas and for marginalized populations, as a means to drive the country toward its goal of becoming a prosperous and developed country by 2041 (e.g., Mujib Prosperity Plan, Sustainable Development Goal [SDG] 7 (Electricity for All), Rural Electrification Board). Meanwhile, Bangladesh has a rapidly growing population, which has led to higher energy demand for residential, commercial, and industrial purposes. Meeting this growing energy demand while simultaneously reducing greenhouse gas (GHG) emissions, as detailed in its Nationally Determined Contribution (NDC), is a significant challenge (MoEFCC 2021). Increasing access to reliable green energy has the potential to attract international investment; leapfrog inefficient technologies; and generate opportunities for innovation, job creation, and economic growth (Alam 2023a).

CLIMATE CHANGE IN BANGLADESH

CLIMATE AND DISASTERS

Bangladesh has been ranked as the 7th most climate-vulnerable country in the world, due to its low-lying geography and dense population.



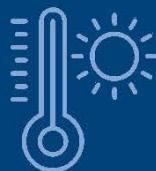
CYCLONES:

Between 1980 and 2020, Bangladesh experienced 147 cyclones, resulting in significant loss of life and property.



FLOODING:

On average, about 20% of the country is flooded each year, affecting millions of people and causing significant damage to homes, crops, and infrastructure.



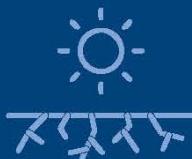
HEATWAVES:

Bangladesh experiences temperatures of more than 35°C on roughly 70 days/year, reflecting a highly heat stressed environment.

Source: World Bank Group, 2022.

CLIMATE AND AGRICULTURE

Extreme climatic events hamper agricultural production. By 2050, climate change could lead to a 10-20% reduction in rice yields.



DROUGHTS:

About 77% of Bangladesh's northwest region is prone to moderate or extreme drought.



SALINITY:

It is estimated that around 1.2 million hectares of agricultural land are affected by salinity intrusion.

Source: Kabir et al. 2021; Anik et al. 2021; Aryal et al. 2020.

CLIMATE AND ENERGY

At just 0.4 percent, Bangladesh's current contribution to global greenhouse gas (GHG) emissions is not significant, though emissions are expected to grow significantly if the country follows a business-as-usual trajectory.



ENERGY SECTOR:

The energy sector accounts for 74% of total of GHG emissions.

Source: World Bank Group, 2022; Nationally Determined Contribution, Government of Bangladesh, 2021

Strong government commitment to climate action

The Government of Bangladesh (GoB) has a long track record of addressing challenges related to climate change proactively. Over the past three decades, the GoB has formulated numerous plans, policies, and programs designed to build resilience and set the context for continued adaptation. Notably, this includes the Bangladesh Climate Change Strategy and Action Plan (BCCSAP), recognized as one of the first comprehensive national strategies for addressing climate change when it was formulated in 2009. More recently, the country has issued several plans designed to provide a long-term vision for the country's development in the context of climate change, including the Bangladesh Delta Plan (2018), the Mujib Climate Prosperity Plan (2021), and the Perspective Plan of Bangladesh 2021-2041. See Annex I for an expanded list of relevant plans and policies.

On the international front, Bangladesh proved itself a leader in this area with its 2005 National Adaptation Programme of Action (NAPA)—one of the first to be submitted to the United Nations Framework Convention on Climate Change (UNFCCC) and widely recognized for its innovative approach to integrating climate change adaptation (CCA) into national development planning. Bangladesh has continued this momentum in recent years, publishing an updated NDC in 2021 that expands mitigation targets to additional sectors. In 2022, the country also released an updated National Adaptation Plan (NAP) of Bangladesh 2023-2050, naming six national adaptation goals and providing a road map for the implementation of inclusive and ecosystem-based adaptation, improved governance, enhanced climate finance, transformative capacity building, and innovation.

As these plans make clear, achieving a net-zero, climate-resilient Bangladesh will require transformational change across a range of vital sectors. Aware of this, the GoB has committed significant financial resources to support climate action; in fact, it currently spends US \$1 billion per year (about six to seven percent of its annual budget) on CCA (MoF 2020). However, the World Bank estimates the country will need about US\$5.7 billion annually to fund climate adaptation by 2050 (World Bank Group 2022). Leveraging the financial and technical support of the wide range of stakeholders—including various government agencies, nongovernmental organizations (NGOs), civil society organizations (CSOs), the private sector, and development partners—will be critical to achieving these goals.

United States Agency for International Development (USAID) Climate Strategy

In 2022, USAID released a new Climate Strategy that reflects the growing urgency of the climate challenge. Building on the previous 2012-2018 Climate Change and Development Strategy, the USAID Climate Strategy 2022-2030 represents a novel attempt to engage all of USAID in galvanizing a whole-of-Agency response to climate change. Through this strategy, USAID has set ambitious, high-level targets across six different aspects of climate action: mitigation, natural and managed ecosystems, adaptation, finance, country support, and critical populations.

These targets are part of an overarching goal to advance equitable and ambitious actions to confront the climate crisis (USAID 2022c). The USAID Climate Strategy 2022-2030 organizes work toward this goal into two primary Strategic Objectives (SOs): targeted direct action (SO1) and transformational systems change (SO2). While SO1 focuses on confronting the most immediate demands of the climate crisis, SO2 takes a systems approach to affect long-term, transformative change. Under the umbrella of this new strategy, USAID Missions have committed to evaluating and adjusting their portfolios to align with both SOs. In this context, USAID/Bangladesh has begun the process of aligning its work with the objectives of USAID Climate Strategy 2022-2030.

An enabling environment for climate action

The transformational change envisioned by SO2 of USAID's Climate Strategy will require more than a few policy tweaks. Rather, systems change involves recognizing that complex problems are often the result of interrelated factors—and that solutions must address these underlying factors to be effective. In this sense, systems change requires a comprehensive, whole-of-government approach to reducing emissions and addressing climate-related risks in all financial and economic decisions.

USAID's SO2 explicitly recognizes this, including through its results framework, which acknowledges a need to shift market signals, improve governance, and work across assistance types. In short, the Climate Strategy makes it clear that achieving systemic change requires building an **enabling environment** that can foster financial and economic shifts to the types of practices, technologies, and behaviors that support net-zero emissions and climate resilience. An “enabling environment” comprises both the formal (e.g., policies, laws, and regulations, as well as the institutions that implement them) and the informal rules that govern human behavior in a society.

With respect to climate action, the enabling environment sets the **policy framework** that incentivizes (or not) climate resilience. It also sets the context in which investments take place, determining where opportunities to promote low emissions and the sustainable use of natural resources are given priority or, conversely, where profligate emissions and environmental degradation are treated as externalities. Because the enabling environment includes the informal social and cultural norms that guide behavior outside of the law, it often determines the balance of power, distribution of resources, and equality of economic opportunity for different social groups. As a result, the country's **institutional capacity** and governance systems heavily shape the enabling environment, including how inclusive, transparent, and accountable they are to the will of the people. **Evidence-based environmental governance** ensures that science informs decisions, which include context for the voices of different groups, including those that have traditionally been marginalized or underrepresented and those most impacted by climate change.

About this study

Acting as USAID's flagship adaptation support project, the Climate Adaptation Support Activity (CASA) supports the USAID Climate Strategy and the President's Emergency Plan for Adaptation and Resilience (PREPARE) initiative. Implementation covers a five-year period, from September 2022 to September 2027.

This study was designed to assist USAID/Bangladesh as it identifies opportunities for strategic investment to support transformational change. Specifically, the study evaluated the enabling environment for climate action in Bangladesh, as well as key sectors essential to achieving net-zero emissions and climate resilience. The study results in the identification of specific leverage points where USAID support can foster the enabling environment for climate action.

A team of Bangladeshi and international researchers conducted this study between March 3 and May 31, 2023. To inform the study, the research team conducted a wide-ranging literature review. In addition, the research team conducted 143 consultations through key informant interviews (KIs) and a series of six in-country workshops that convened GoB representatives; university and research partners; NGOs; foundations, donors, and multilateral entities; private sector actors; and USAID and implementing partner staff (see Annex 2).

RESEARCH TEAM MEMBERS

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This report examines specific research questions proposed by USAID/Bangladesh that span critical sectors and public policy areas essential to achieving the GoB's climate goals (i.e., agriculture, green growth, shock-responsive social protection, disaster risk financing (DRF), climate technology, education, and public health). Based on the scope of work, the report adopts a high-level framework to describe the enabling environment (see Figure 1). This framework focuses on the formal, government-driven aspects of climate action (e.g., policy, capacity, governance). However, the report also touches on issues in the broader environment—such as social and cultural norms and the political economy—as applicable to the analysis and recommendations. Following Scoones et al. (2020), it presents recommendations for enabling, structural, and systemic transformation within these systems.

The report is organized as follows:

Chapter 1 provides an overview of important themes and findings of the report, including highlighting key systems that are prime for transformational change and the leverage points where investment may lead to the kind of positive feedback that can support rapid transformational change.

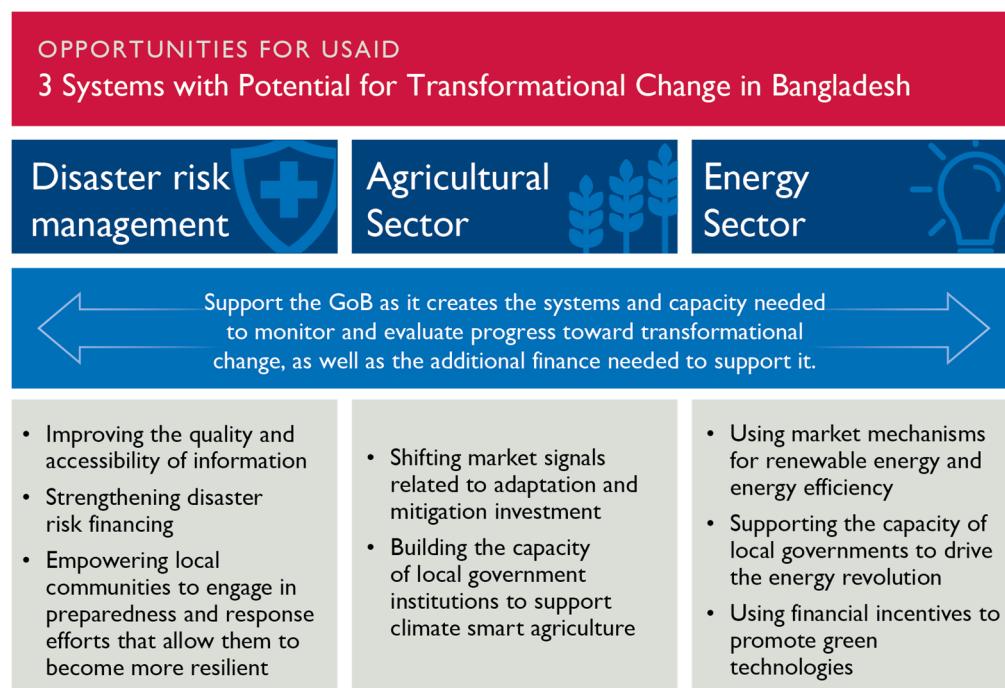
In Section 2, **Chapters 2–4** explore the enabling environment for climate action in Bangladesh, with a particular focus on three key aspects: (1) the policy framework, (2) institutional capacity for climate planning and implementation, and (3) environmental governance. **Chapter 2** reviews existing policies, plans, and priorities and identifies interventions that can fill existing gaps, particularly with respect to the achievement of transformative targets. **Chapter 3** explores existing capacity for climate-related planning and highlights where capacity strengthening may be particularly fruitful. **Chapter 4** reviews the state of evidence-based environmental governance in Bangladesh in, including how climate change planning and implementation can be made more inclusive.

In Section 3, **Chapters 5–8** explore needs and opportunities in several critical sectors. **Chapter 5** explores needed financial and economic shifts to support climate-smart agriculture, green growth, shock-responsive social protection, and disaster risk reduction financing. In Section 4, the final chapters of the report document opportunities to invest in climate-related technology (**Chapter 6**), climate change education (**Chapter 7**), and climate-change-related public health research (**Chapter 8**).

Each chapter responds to a specific research question posed by USAID/Bangladesh in the scope of work and concludes with a table of leverage points and short-term (i.e., within five years) and medium-term (i.e., within 10 years) opportunities for USAID to support systems change. The **Conclusion** summarizes main findings of the report, along with recommendations for USAID.

CHAPTER I: OVERVIEW

Addressing the climate crisis will require both targeted action and transformational change. Under the second objective of USAID Climate Strategy, the Agency commits itself to supporting partner countries, communities, and international organizations as they work to transform systems in ways that strengthen and achieve locally determined goals and promote climate-resilient development. This report contributes to the ongoing discussions on how USAID can support transformational change in Bangladesh. As such, it both answers the specific questions in the scope of work and reaches beyond them: identifying three systems (agriculture, energy, and disaster risk management [DRM]) that have an outsized potential to drive large-scale change in Bangladesh. This overview introduces these three systems, summarizes key leverage points, and synthesizes potential opportunities for USAID investment to impact transformational change to support climate action in Bangladesh.



KEY SYSTEMS AND LEVERAGE POINTS

Many aspects of the way we organize society will necessarily have to change as we work to mitigate and adapt to climate change. This includes global, national, and local structures, regulations, and norms that shape how we produce and use energy; how we get around; how we produce food and manage our water resources; how we gather and disseminate information; and the modes by which we make decisions and privilege certain groups over others. The concept of “leverage points” originates from systems thinking and refers to strategic intervention points within a complex system, where a small change can lead to significant shifts or outcomes (Meadows 1999). Leverage points are areas where focused actions or interventions can have a disproportionate impact on the overall behavior and

functioning of a system. Leverage points often target dynamic relationships where the output of a system affects its own behavior. By understanding and intervening in these relationships and feedback loops, it may be possible to influence the behavior and trajectory of the system. Changes at leverage points can create reinforcing feedback loops that amplify desired changes or create balancing feedback loops that help to stabilize and regulate the system.

Given the urgent, pervasive, and existential challenges posed by climate change, this assessment has used the eight research questions to identify many opportunities to bolster Bangladesh's enabling environment for climate action. With an eye toward focusing institutional and policy support where it can make the biggest impact, this assessment also highlights three systems and associated leverage points for USAID support. The systems are critical both to the current functioning and future development of Bangladesh; transforming them will better safeguard Bangladesh from increasing climate impacts and better prepare it for a low-emissions future as a prosperous nation in line with the ambitious development goals the country has set for itself. Wherever possible, the report aligns discussion of these leverage points with the USAID Climate Strategy's stated interest in shifting market signals, improving governance, and working across assistance types.

A summary of our primary recommendations regarding the transformation of these key systems is below. These recommendations are further elaborated within each chapter and summarized in tables at each chapter's end.



Disaster Risk Management. Bangladesh is extremely vulnerable to climate-related disasters, including floods, cyclones, storm surges, and droughts. Though the country has made tremendous progress in building its capacity to anticipate, prepare for, and respond to climate-related disasters, millions of people remain at risk. Climate change will only exacerbate the situation. Bangladesh's DRM system comprises an interconnected network of social, ecological, and technological components involved in preventing, mitigating, preparing for, responding to, and recovering from disasters in the country. Transforming this system is urgent and critical to mitigating the impacts of these disasters: reducing the lives and assets lost and enhancing the resilience of communities and infrastructure. Limiting the devastating, cyclical impacts of climate-related disasters will put all Bangladeshis on a firmer footing as they pursue their individual and collective social and economic goals. Findings from across this assessment reveal key leverage points that contribute to this effort, along with opportunities for USAID, as described below.

Improve information. While Bangladesh has made significant improvements in generating and disseminating early warning information, continued advances in this regard have the potential to improve preparedness and evacuation. Improved disaster-related and social protection information can also enable evidence-based decision making and support the DRM community to learn from practice. As described at various places in the report, improving the quality and accessibility of data regarding vulnerability, impacts, and social protection can also improve the ability of different organizations to work together to understand and meet the needs of vulnerable populations.

WHAT IS TRANSFORMATION?

Transformation implies fundamental changes to the way that society functions. Historical examples of transformation include the Enlightenment, the Industrial Revolution, and the Internet Revolution, all of which dramatically changed how people interacted with each other—remaking agriculture, technology, medicine as well as institutions, practices, and world views. But while previous transformations occurred without coordination, the nature of the climate challenge requires disparate elements of society to work together to bring about a number of specific shifts quickly that can catalyze the large-scale reduction of GHG emissions (i.e., mitigation) while building resilience in the face of climate variability and change (i.e., adaptation). The scale of these efforts must be ambitious: according to the latest report of the Intergovernmental Panel on Climate Change (IPCC), meeting the goals set out in the Paris Agreement will require transformation in all countries and across all sectors and systems in the relatively near term (Schipper et al. 2022).

Strengthen disaster risk financing. Insurance and other forms of DRF can help provide necessary resources for response and recovery. Having access to funds when disasters occur can safeguard development gains. Importantly, having access to funds when they are needed can also create positive feedback loops, enabling faster recovery, reducing the long-term economic impact of those events, and promoting future investments in risk reduction. In this way, DRF can support transformation by strengthening financial preparedness, enhancing risk assessment and planning, promoting investments in risk reduction measures, facilitating post-disaster recovery, and fostering public-private partnerships (PPPs).

Improve local governance of disaster risk management. Empowering local communities to engage in preparedness and response efforts allows them to become more resilient, developing self-reinforcing cycles of community-based disaster management. When local governance structures are strengthened, they can better assess local risks, develop context-specific strategies, and implement measures to mitigate and respond to disasters. This decentralization of decision-making leads to more effective and tailored DRM at the local level. With a better understanding of local needs, local authorities can also prioritize the allocation of funds, infrastructure development, and essential services based on risk assessments and community feedback. Despite the fact that several donor-funded projects support the decentralization of decision making, in the vast majority of rural areas, disaster-related planning is still a top-down process.



Agriculture. Many of Bangladesh's climate policies emphasize the need for its agriculture sector to advance with respect to both sustainability and climate resilience. The reasons for this are obvious: agriculture is the backbone of Bangladesh's economy and the primary source of livelihood for many people. Agriculture also plays a vital role in ensuring food security and has a significant impact on natural resources, such as land, water, and biodiversity. Transforming the agricultural sector to safeguard food security and agricultural production in the face of climate variability and change is thus a critical goal—and one that must be pursued in ways that keep emissions low. Directing the complex social, ecological, and technological dimensions of Bangladesh's agricultural system toward transformational change is crucial to achieving sustainable agricultural development, enhancing climate resilience, and ensuring food security in Bangladesh.

There are several contexts in which USAID can take advantage of leverage points in Bangladesh's agricultural system to support transformational change. Focusing on particular points that provide immediate benefits to farmers (e.g., in terms of increased productivity, resilience, and income generation) will allow the country to address the immediate challenges faced by the agricultural sector while also creating self-reinforcing cycles of improvement and resilience. In this sense, there are several opportunities where policy support, capacity strengthening, and environmental governance can advance key goals. These are:

Shift market signals. Bangladesh has made impressive strides in building a policy infrastructure to incentivize climate action in the agricultural sector. Several new policies could enhance the environment in which the agricultural community operates, promoting investments that reduce GHG emissions and build climate resilience. These include:

- The use of **resilience bonds**, financial instruments designed to raise funds for projects that aim to enhance resilience to climate change and other environmental risks. They have the potential to impact the transformation of Bangladesh's agricultural sector significantly by attracting investment in climate-resilient agricultural practices and technologies; facilitating investments in infrastructure that can mitigate the impacts of climate change; and driving investment in research and development.

- The creation of an equitable, transparent **carbon market** would have several significant implications for the transformation of the agricultural sector by incentivizing climate-smart agriculture, offering opportunities for emissions offsetting, and generating an additional revenue stream for farmers. This shift toward sustainable and low-carbon agriculture contributes to climate change mitigation efforts, enhances resilience, and supports the long-term sustainability of the sector.
- Policies that promote the **diversification of livelihoods** within the agricultural sector—along with those that promote skill development and create jobs in non-agricultural sectors—can play an important part of a balanced approach to adaptation that considers the importance of agriculture while also supporting those who may seek new opportunities outside of the agricultural sector. These policies have the potential to contribute to transformation by reducing the climate-related financial and livelihood risk faced by members of the agricultural community.
- **Shock-responsive social safety nets**—including targeted cash transfer programs, crop insurance, and/or income support—can mitigate climate-related risks to farmers and increase access to credit and financial services, enabling them to make necessary investments in agricultural operations and creating positive feedback cycles. Depending on how they are designed, these safety nets can encourage farmers to adopt climate-resilient practices. In this sense, improving these safety nets can make a significant contribution to transformation in the agricultural sector.

Improve local governance of the agricultural sector. Bangladesh has a decentralized governance system that empowers local government bodies (e.g., city corporations, municipalities, and union *parishads*) to oversee agricultural activities in their jurisdictions. Improving the capacity of local governance structures to fulfill these roles in the context of climate change can contribute to the transformation of the sector by assuring that agricultural policies and infrastructure can better align with local needs. It can also promote inclusion through participatory decision making, strengthening farmer organizations, and facilitating knowledge sharing.



Energy. Though Bangladesh has significant potential for renewable energy, concentrated efforts are needed to take full advantage of this potential and support the country toward its ambitious goal of becoming a prosperous and developed country by 2041. In this context, transforming Bangladesh's energy system has the potential to improve energy access while also generating opportunities for innovation, job creation, and economic growth. It can also enhance the resilience of energy systems to withstand climate-related hazards and ensure uninterrupted energy supply during and after such events. The most important leverage points in Bangladesh's energy systems rest in the institutional and policy frameworks necessary to support the deployment of renewable energy and the scale-up of clean energy investments.

Shift market signals. Developing and implementing strong policy and regulatory frameworks is crucial to the transformation of Bangladesh's energy sector. This requires setting ambitious renewable energy targets, establishing supportive regulatory mechanisms, providing incentives for renewable energy investments, and ensuring a transparent and stable business environment for clean energy projects. Clear and consistent policies are also important for attracting private investment and creating an enabling environment for renewable energy. Specific policies that can shift market signals toward transformative change in the energy sector include:

- The creation of a domestic **carbon market** that is both equitable and transparent would incentivize low-carbon energy investments, encourage energy efficiency measures, foster renewable energy development, promote technology transfer and innovation, and shift investment patterns toward clean energy. As such, it could have a significant impact on the transformation of the energy sector.

- Policies that promote **grid modernization** can establish mechanisms (e.g., smart grid technologies, advanced metering infrastructure, and grid management systems that enable real-time monitoring and control of electricity flows) for integrating intermittent renewable energy, such as solar and wind, into the grid system. By integrating renewable energy sources more effectively, the grid can accommodate higher shares of clean energy, reducing reliance on fossil fuels and facilitating the transition to a more sustainable and low-carbon energy sector.
- A comprehensive **green growth strategy** can lead to transformation in Bangladesh's energy sector and achieving sustainable and low-carbon development by promoting a coherent vision on renewable energy development, energy efficiency measures, grid modernization, green financing and investment, research and innovation, capacity building, and cross-sectoral integration.

Improve local governance of green energy. Local governments (e.g., Upazila Parishads, city corporations and municipalities, Rural Electrification Boards, etc.) can play a crucial role in supporting the transformation of Bangladesh's energy sector (e.g., by participating in the development and implementation of energy policies at the local level and by playing a key role in planning and developing energy infrastructure, identifying suitable locations for renewable energy installations such as solar or wind farms, and facilitating the necessary land acquisition and permits). Local governments can also provide financial incentives and support mechanisms to promote the adoption of renewable energy technologies (e.g., through property tax exemptions, reduced licensing fees, or grants for renewable energy projects).

Promote appropriate technologies. Renewable energy technologies—particularly solar photovoltaic and wind power—hold a great deal of potential in Bangladesh's energy sector. Nevertheless, Bangladesh cannot rely on a small handful of technologies; rather, transformation will require the deployment of a wide range of technologies and approaches that respond to various economic/financial, political, social, and behavioral factors in different contexts (see Table 15, below). Supporting local development and the transfer of renewable energy technologies (e.g., those related to solar and wind, as well as energy storage technologies, including advanced battery systems) will be crucial to these efforts.

SUPPORTING SYSTEMS CHANGE

As detailed above, this report identifies disaster risk management, agriculture, and energy as systems where climate action has an outsized potential to contribute to lasting transformative change. It also identifies several leverage points within these systems where USAID investments are likely to create positive feedback cycles. At the same time, it is important to recognize that all systems comprise interconnected social, technological, and ecological components. In this sense, efforts to transform any single system will naturally depend on addressing challenges and solutions that transcend that specific system in question.

Indeed, all systems—from health and education to agriculture, energy, and DRM—are both deeply impacted by and contribute to climate change and are central to efforts to mitigate, adapt to, and recover from it. In this sense, efforts to bolster **education and health**, while critical on their own, can also make significant contributions to transforming agriculture, energy, and DRM. In programming for these kinds of changes, it is important to pay particular attention to the compound and interconnected nature of sector-specific climate adaptation hazards, challenges, and solutions and their downstream effects, including linkages, feedbacks, and other dynamics.

It is important to note the role that **monitoring, evaluation, and learning** (MEL) plays in supporting climate action and systems change. Faced with rapid and unprecedented anthropogenic climate change, the whole world—Bangladesh included—is now involved in a loosely coordinated process of learning by doing. The extent to which Bangladesh can improve its ability to generate, organize, analyze, and share useful monitoring and evaluation (M&E) evidence will be important in efforts to assess the effectiveness of its interventions; identify persistent gaps; inform decision making. This evidence will also be important in enhancing accountability and transparency and in supporting adaptive management of climate action over time. In this sense, USAID’s support to build and bolster MEL activities including the development and use of resilience metrics will be critical.

Finally, the importance of **climate finance** to supporting transformational climate action cannot be overstated. As with other developing countries, Bangladesh faces a challenge of raising the funds needed to strengthen institutional capacity, empower local communities, enhance policy coherence, and promote technology transfer and innovation. By establishing dedicated funds, accessing international climate finance, engaging in multilateral partnerships, and integrating climate finance into national planning, the GoB has made significant efforts on this front. USAID’s support in continuing this effort (e.g., by supporting the development of resilience bonds, a carbon market, and improved disaster risk financing) will enable the government to identify and allocate resources from the national budget for climate-related activities.

WHAT IS SYSTEM CHANGE?

A system refers to a collection of interrelated and interdependent components or elements that work together to a common purpose or function. It is characterized by interactions and relationships among components that form a cohesive whole. In this way, “systems change” involves changes in the underlying structures, norms, values, and policies that change how a system operates. It requires identifying the root causes of a problem and developing solutions that address those causes by changing the underlying system that creates and perpetuates the problem. Thinking in terms of systems requires recognizing that complex problems are often the results of interrelated factors, and that solutions must address these underlying factors to be effective. It involves a shift away from a focus on individual behaviors to a more comprehensive approach that considers the larger systems in which those behaviors occur.

SECTION 2:

ENABLING ENVIRONMENT

CHAPTER 2:

CLIMATE POLICIES, PLANS, PRIORITIES

Research question: What are the immediate and medium-term opportunities to strengthen or create an enabling environment and policy framework to shift Bangladesh's journey toward net-zero and climate-resilient pathways based on the USAID Climate Strategy and Bangladesh government's relevant plans and policies?

Research question: Where and how can USAID provide technical assistance to the GoB to achieve the “transformative targets” as illustrated in the *Mujib Prosperity Plan*?

Bangladesh has made impressive strides in creating a policy framework for climate action. Given the enormous scope of the climate challenge, this framework pursues a series of parallel goals, including resilience, adaptation, mitigation, capacity building, and climate finance. Despite these multiple goals, the policy framework demonstrates a reasonable level of coherence, particularly with respect to adaptation, by addressing multiple aspects of climate change and sustainable development. It integrates climate change considerations across various sectors, emphasizing the interconnectedness of climate adaptation with social, economic, and environmental dimensions. The domestic framework also aligns with international commitments, such as the Paris Agreement, which Bangladesh ratified in September 2016 (UN Paris Agreement 2015). It establishes a clear direction for policy development and implementation. There are, nevertheless, opportunities for USAID to support the GoB as it continues to develop its policy framework for climate action.

| OPPORTUNITIES FOR USAID | |
|--|---|
| Climate Policy, Plans, and Priorities  | Transformative Targets  |
| <ul style="list-style-type: none">• Supporting implementation of the NAP• Encouraging development of local adaptation plans• Facilitating development of national strategies for green growth and nature-based solutions• Enhancing climate risk management for financial services• Supporting robust policy framework for the Climate Change Trust Fund | <ul style="list-style-type: none">• Providing technical assistance to the development and implementation of resilience bonds• Providing technical assistance to improve disaster risk finance• Providing technical assistance to achieve renewable energy targets |

POLICY FRAMEWORK

International commitments. Bangladesh has long been active in the UNFCCC process and was the first country to produce a NAPA in 2005. The GoB most recently submitted an updated NDC in 2021 and adopted a NAP 2023-2050 in 2022. Recent international commitments are described in Table I.

TABLE I. BANGLADESH'S INTERNATIONAL COMMITMENTS TO CLIMATE ACTION

| POLICY DOCUMENT | YEAR | DESCRIPTION |
|--|------|--|
| Nationally Determined Contribution (NDC) | 2021 | The NDC articulates conditional and unconditional targets related to four sectors: energy, industrial processes, and product use; agriculture, forestry, and other land use; and waste. In the condition scenario, GHG emissions would be reduced by 27.56 Mt CO ₂ e (6.73 percent) by 2030 below business as usual; in the conditional scenario, GHG emissions would be reduced by 61.9 Mt CO ₂ e (15.12 percent). The total estimated costs of these reductions is US\$176 billion over 10 years (2021-2030). |
| National Adaptation Plan (NAP) 2023-2050 | 2022 | The NAP offers a multilevel, inclusive institutional structure to guide mainstreaming of adaptation planning into development planning, in alignment with the BCCSAP, Bangladesh Delta Plan 2100 (BDP 2100), Mujib Climate Prosperity Plan (MCPP) 2030, Perspective Plan, SDGs, and other development agendas. An appraisal of the cost of the 113 interventions, including 90 high-priority and 23 moderate-priority interventions, defined a total investment of Bangladeshi Taka (BDT) 20,037 billion (US\$230 billion) for 27 years (2023-2050). |

National policy framework. The GoB has actively addressed climate adaptation in domestic policy, with the focus evolving in response to political developments over the last 25 years. For instance, in the 1990s, Bangladesh's climate policy grew out of an initial focus on disaster recovery and response. By 2003, the government had begun to frame the impacts of climate change as inevitable, with policy more explicitly focusing on disaster risk reduction to address mounting climate risks.

In the latter part of that decade, the focus again shifted as major policy documents increasingly referred to the need for CCA to respond not just to disasters but to short-, medium- and long-term climate risks in different sectors. The BCCSAP, adopted in 2009, created an integrated, participatory, cross-sectoral approach and articulated a long-term vision for adaptation. At the time, Bangladesh was one of the first countries in the world to develop and implement a comprehensive national strategy solely focused on climate change. As part of the BCCSAP, Bangladesh developed a low-carbon development strategy, which outlined the country's vision for low-carbon economic growth and identified key sectors and measures to achieve emissions reductions targets.

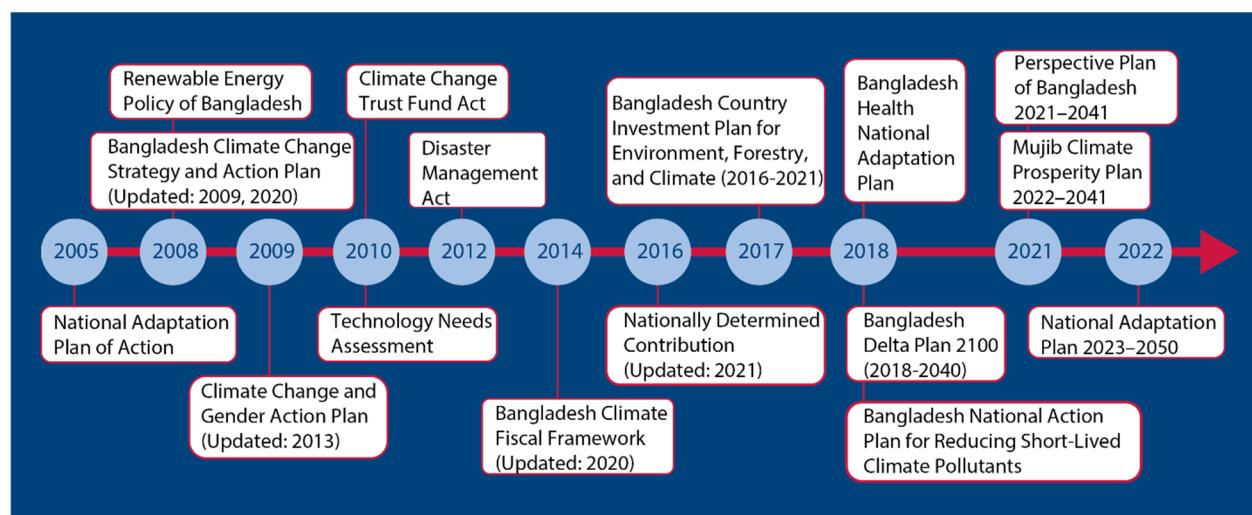


Figure 2. Bangladesh Climate Adaptation Policy Framework Timeline

In 2010, the government issued a National Sustainable Development Strategy, incorporating climate change mitigation as one of its key components. After 2011, the GoB adopted a new paradigm to adaptation, focusing on the mainstreaming of CCA into the development process, mostly in response to inadequate adaptation funding and the country's urgent development needs (Vij et al. 2018). As a result, the GoB incorporated climate planning into a wide array of sectoral plans, including those related to

agriculture, water, infrastructure, housing, health, disasters, and energy. A short list of policies is found in Table 2 below; a fuller list appears in Annex I.

| TABLE 2. NATIONAL CLIMATE-RELATED PLANS AND POLICIES | | |
|---|--|---|
| POLICY DOCUMENT | YEAR | DESCRIPTION |
| Bangladesh Climate Change Strategy and Action Plan (BCCSAP) | 2009 (updated 2022) | Originally drafted in 2008 (updated in 2009 and 2022), the BCCSAP prioritizes adaptation and disaster risk reduction but also addresses low-carbon emission, technology transfer, and the provision of adequate finance. It is built on these pillars: (i) NRM; (ii) food security; (iii) power; (iv) health; (v) social protection; (vi) urban environments; (vii) DRM; (viii) infrastructure; (ix) mitigation; (x) research; and (xi) governance. |
| Climate Change and Gender Action Plan (ccGAP) | 2009 2013 2022 (under review) | The ccGAP intends to mainstream gender in climate change-related policies, strategies, and interventions. The ccGAP supports the BCCSAP, integrating gender considerations into four of its six main pillars: (i) food security, social protection and health; (ii) comprehensive disaster management; (iii) infrastructure; and (iv) mitigation and low carbon development. |
| Bangladesh Delta Plan 2100 (BDP 2100) | 2018 | The BDP 2100 seeks to integrate the medium-term development aspirations of Bangladesh with the longer-term challenge of sustainable management of natural resources. The BDP 2100 proposes goals related to (i) floods and disasters; (ii) water security; (iii) Integrated Water Resource Management (IWRM); (iv) protection of ecosystems; (v) transboundary water management; and (vi) land. |
| Health National Adaptation Plan (HNAP) | 2018 | The goal of the HNAP is to steer the health sector over the next five years and beyond by expanding on existing national health adaptation to climate change efforts and promoting the integration of climate change and health risks into national health policies, planning, programming, and monitoring measures. An updated version is in progress. |
| Mujib Climate Prosperity Plan 2022-2041 (MCPP) | 2021 | The MCPP provides a vision for how Bangladesh can equip vulnerable communities, industry, and the government. The MCPP offers a multi-sectoral investment plan for climate-resilient infrastructure, clean energy, green value chains, and logistics. |
| Perspective Plan of Bangladesh 2021-2041 | 2021 | In this document, the government articulated Vision 2041, which sets out an aim to eliminate extreme poverty and attain the status of an upper-middle-income country by 2031 and high-income country by 2041. |
| Eighth Five-Year Plan 2021-2025 | 2021 | This Eighth Five-Year Plan represents the first phase of the country's Perspective Plan 2041, which aims to bring Bangladesh closer to the goals of attaining upper-middle-income country status, attaining major SDG targets, and eliminating extreme poverty by fiscal year (FY) 2031. It is critical to achieving the outcomes in Vision 2041, BDP 2100, BCCSAP, NAP, NDC, ccGAP, and SDGs. |

Transformative Targets. In recent years, Bangladesh's Delta Plan, Eighth Five-Year Plan, NAP, and MCPP have all referred to "transformation," suggesting a new evolution in the GoB's framework from addressing climate change. In particular, the MCPP establishes several transformative targets which aim to address the root causes of vulnerability to climate change, while mitigating climate change itself by shifting systems away from unsustainable or undesirable trajectories. Following the key systems identified in the overview, areas where USAID is likely to make more of a difference, and associated interventions that USAID can provide to support the achievement of these key priority targets (see Table 4), are identified below.

Accelerated adaptation. The MCPP and the BDP both articulate the goal of developing and using resilience bonds to promote accelerated adaptation and infrastructure. As described in Chapter 5, resilience bonds have the potential to advance adaptation in several contexts, including by contributing to the transformation of the agricultural system by generating finance for climate-resilient infrastructure,

incentivizing the adoption of climate-smart practices, enhancing risk management and insurance, and supporting research and development. In this sense, resilience bonds offer an important leverage point for USAID to support the GoB as it works to accelerate adaptation across many sectors, including agriculture. There are several steps that are useful in creating these bonds – this includes, for instance, identifying and prioritizing specific resilience projects that address climate risks and contribute to the country’s adaptation and mitigation goals. The government will also need to work with financial experts and institutions to structure the resilience bonds, and actively promoting resilience bonds within the domestic and international markets, for instance through a prospectus provides a clear and transparent framework for potential investors by outlining the key features of the project and the resilience bond.

Comprehensive disaster risk financing and management. The MCPP has proposed the development of a system that prioritizes needs-responsive financial protection and supports proactive risk management, risk reduction, and investment for micro-, small-, and medium-sized enterprises (MSMEs). This transformative target sets its sights on a transformed system of DRM and, as such, offers an important leverage point for USAID. Systems change in DRM can lead to strengthened financial resilience, improved preparedness and reduced risk, and a new context for public-private partnerships (PPP) that build local capacity for climate planning and support sustainable development. Technical assistance from USAID in this area, including regarding the regulatory environment that governs disaster risk financing, will be critical.

Maximized renewable energy, energy efficiency, and power and transportation sector resilience. Increasing the share of renewable energy sources—such as solar, wind, and hydropower—reduces dependence on fossil fuels and promotes a sustainable energy transition. Shifting toward renewable energy helps mitigate GHG emissions and reduces air pollution. This transition contributes to the transformation of Bangladesh’s energy sector, making it more sustainable and climate friendly. It also has the potential to expand energy access and affordability, foster job creation, and promote innovation. In this sense, supporting the MCPP targets associated with energy—including the development of a **domestic carbon market**—offers an important leverage point for USAID. Specific actions that can support this are described in Table 4.

GAPS AND OPPORTUNITIES

Bangladesh has made significant and sustained progress on the development policy framework for climate action and, as a result, policy gaps may be less pressing than the need to improve institutional capacity for the efficient implementation of existing policies and programs, addressed in Chapter 3. Nonetheless, the assessment uncovered several areas of opportunity where additional policy and legislation may further unlock the potential for climate action:

NAP Implementation. The NAP identifies 113 interventions, including 90 “high-priority” and 23 “moderate-priority” interventions. There are opportunities to support implementation of these priorities across multiple sectors and to better integrate them with respect to efforts to bolster climate-smart agriculture (CSA), shock-responsive social protection, and disaster risk financing. In addition, the NAP calls for inclusive climate action through the development of a Youth-Led Adaptation Plan and consideration of issues related to gender, disability, age, and other traditionally marginalized groups throughout climate action plans. There is an opportunity to support this through technical assistance across agencies at the national and local levels.

Local Adaptation Plans. The NAP specifically calls out the need to develop adaptation plans at the local level, including a Local-Level Adaptation Program of Action and a City Climate Action Plan. Though the NAP does not clearly define what it means by “local,” the implication is that this should include union-, upazila- and zila-level activities and specifically consider peri-urban areas, poor urban communities, and the potential influx of climate migrants. Implementing these activities is likely to be a

major endeavor that will require capacity strengthening, vulnerability assessments, participatory planning processes, technical guidance and tools, knowledge exchange and coordination, and the establishment of effective systems of monitoring and evaluation (M&E). These local-scale adaptation plans are essential for promoting effective and inclusive adaptation as discussed in Chapter 4.

Green Growth Strategy. As part of the BCCSAP, GoB put forth a Low-Carbon Development Plan in 2009, along with several other policies focused on the promotion of green growth as outlined in Chapter 4. Despite this work, there is an opportunity to develop a stand-alone green growth strategy—perhaps in conjunction with the World Bank’s Sustainable Enterprise Project (World Bank 2023)—to ensure a holistic approach to economic development that promotes sustainable growth and development while reducing the negative impacts of economic activities on the environment. A new strategy could align with international commitments, reflect advancements in technology, and foster enhanced policy coherence.

Climate risk management for financial services. The regulatory framework for climate risk management in Bangladesh’s financial sector remains nascent, which leaves the financial sector exposed to underlying climate vulnerabilities. In 2017, the Bank of Bangladesh introduced Guidelines on Environmental and Social Risk Management for Banks and Financial Institutions in Bangladesh to integrate the assessment and mitigation of environmental risk into credit management. There are, however, opportunities to improve enforcement and integrate climate change considerations (e.g., collecting data and adopting international standards that can inform policies to encourage transparency and reporting, fostering collaboration between financial institutions and climate experts, and developing climate-friendly financial products).

National Policy for NbSs. Several countries have adopted national policies or strategies specifically focused on NbSs to address environmental challenges and promote sustainable development. Bangladesh has embraced NbSs by integrating these solutions into its environmental and development planning and has implemented various initiatives that promote NbSs. Nonetheless, creating a national policy specifically dedicated to NbSs can add significant value in terms of identifying clear and objective targets, mobilizing resources, and fostering a coordinated approach. This could also include the development of a National Agroforestry Policy, which priority interest of the Ministry of Environment, Forest, and Climate Change (MoEFCC) specifically called out in the 2016 National Forestry Policy (GoB MoEF 2016) and the NAP.

Climate Change Trust Fund. Bangladesh’s Climate Change Trust Fund (CCTF) mobilizes and manages domestic resources to finance climate-related activities; it also acts as a catalyst for attracting additional investments. By empowering local communities, the CCTF enables local people to take ownership of climate action. It also supports capacity building, institutional strengthening, and governance reforms related to climate change. Given the important role that the CCTF plays as an engine for climate action in Bangladesh, supporting the evolution of a robust policy framework for the CCTF is an important opportunity for USAID. This framework could better define objectives, priorities, and principles, ensuring that they are strategically aligned with national climate change strategies and plans. Together with efforts to improve output, outcome, and impact monitoring, national policy could also promote a results-based approach to project funding and implementation under the CCTF and ensure accessibility and transparency in the operations of the CCTF (see also Chapter 4).

LEVERAGE POINTS FOR USAID

This chapter has identified several leverage points where USAID could contribute to strengthening or creating an enabling environment and policy framework to shift Bangladesh’s journey toward net-zero and climate-resilient pathways (see Table 3).

There are also several opportunities to provide technical assistance in support of transformative targets, in line with the key priority systems identified in Chapter I (see Table 4, page 21).

TABLE 3. LEVERAGE POINTS FOR USAID: CLIMATE POLICY, PLANS, AND PRIORITIES

| I. SUPPORT THE IMPLEMENTATION OF THE NAP | |
|--|--|
| Short Term | Facilitate inclusive policy making by supporting stakeholder engagement and consultation in the development of Annual Development Programs (ADPs) and forthcoming Ninth Five-Year Plan (FY2026-FY2030), and technical support for agency staff to serve as focal points for inclusive policy making (i.e., representing the unique perspectives of gender, youth, and other disadvantaged groups). Coordinate with GoB agencies involved in climate budget, Planning Commission, and NGO and CSO networks. Leverage the training materials and experience from the German Development Agency's (GIZ) NAP and NDC Support Programme. |
| Med Term | Support the Department of Environment (DoE), in collaboration with the Ministry of Youth and Sports (MoYS), Planning Commission, and Finance Division in the development and funding of a Youth-led Adaptation Plan. Potentially complement funding from BCCTF and encourage inclusion of the MoYS in the climate budget. Promote inclusion through youth leaders and youth-led organizations (e.g., Bangladesh Youth Environmental Initiative, YouthNet Global, and Climate Youth Movement Bangladesh). Integrate insights from Foreign, Commonwealth & Development Office's (FCDO) Bangladesh Climate Change and Environment Programme, which has a strong emphasis on youth and vulnerable populations. |
| 2. PROVIDE TECHNICAL ASSISTANCE FOR LOCAL ADAPTATION PLANS | |
| Short Term | Provide technical assistance to relevant government agencies in integrating NAP intervention into their ADPs. This might include, for instance, integration of CSA principles into the ADPs of the Ministry of Agriculture (MoA), Ministry of Fisheries and Livestock (MoFL), Local Government Division (LGD), and MoEFCC and/or integrating enhanced shock-responsive social protection and disaster risk financing approaches in the ADPs for the relevant operating units of the Ministry of Disaster Management and Relief (MoDMR), the Ministry of Water Resources (MoWR), Bangladesh Water Development Board, MoA, Department of Agricultural Extension (DAE), MoFL, LGD, Ministry of Women and Children Affairs (MoWCA), and MoEFCC. |
| 3. FACILITATE DEVELOPMENT OF A GREEN GROWTH STRATEGY | |
| Short Term | Support GoB training institutes (e.g., Bangladesh Public Administration Training Centre, National Academy for Planning and Development, and the Bangladesh Civil Service Administration Academy) to train relevant GoB staff on green economy concepts, green growth policy formulation, and coordination of cross-sectoral implementation of green growth strategies, with coordination by the Planning Commission and support from MoEFCC and local civil society organizations. |
| Med Term | Support the DoE to identify sector-specific opportunities from local to national level for green growth based on assessments of sectoral policies, stakeholder consultation, and international examples mainstreaming green practices. |
| Med Term | Support the Planning Commission in the collaborative development of a Green Growth Strategy to identify synergies between government agencies and stakeholders, facilitate green growth objectives, and guide the implementation of green growth projects (e.g., Mujib Energy Hubs, Mujib Bongoposagor Independence Giga Array, and Green Exports Program). Key stakeholders include the MoEFCC (power, energy, and mineral resources; transport; shipping; commerce; and industry divisions), the Bangladesh Bank, other banks and financial institutions, laborers, chambers of commerce, and CSOs/NGOs working in green growth and just transition (e.g., Centre for Policy Dialogue [CPD], ActionAid, Christian Commission for Development in Bangladesh [CCDB], Oxfam). |
| 4. ENHANCE CLIMATE RISK MANAGEMENT FOR FINANCIAL SERVICES | |
| Short Term | Support the Ministry of Finance (MoF) in the collection, analysis, and dissemination of data for financial risk assessment to inform sector-wide risk mitigation plans in collaboration with MoEFCC/DoE, LGD, MoA/DAE, MoWR, GED/Planning Commission, Bangladesh Red Crescent Society, Bangladesh Bank/Sustainable Finance Department, United Nations (UN) agencies (United Nations Development Programme [UNDP], UN Women), international NGOs, NGOs, and consulting firms with experience of financial risk assessment. |
| Med Term | Provide MoF with guidance on international frameworks such as the Task Force on Climate-related Financial Disclosures recommendations, reflecting Bangladesh's climate action/finance legacy, challenges, and opportunities identified in BDP2100, draft MCPP, and NAP. |
| 5. SUPPORT THE DEVELOPMENT OF A NATIONAL POLICY FOR NATURE-BASED SOLUTIONS | |

| | |
|--|--|
| | Provide technical assistance to the MoEFCC/Bangladesh Forest Department (BFD) on best practices, case studies, and international experiences in nature-based solutions. Potential support from UNDP, Global Center on Adaptation South Asia, International Centre for Climate Change and Development (ICCCAD), University of Liberal Arts Bangladesh (ULAB), Center for Natural Resource Studies (CNRS), and building upon NbS Bangladesh Portal and NbS Bangladesh Network (nbsbangladesh.info), CCDB's Climate Park, and experience of Gobeshona network in accordance with International Union for Conservation of Nature's Global Standard for NbS and U. Oxford-led guiding principles. |
| Short Term | Support the MoEFCC/BFD and relevant GoB agencies (e.g., BFD, DoE, DAE, LGD, MoC, MoWR) to conduct policy analysis of existing NbS policies and strategies in Bangladesh, potentially with support from NGOs and research institutes such as ICCCAD, ULAB, and CNRS. Leverage experience from, GIZ Sundarbans Management Project, USAID/Protibesh, FCDO Bangladesh Climate Change and Environment Programme. |
| | Facilitate stakeholder engagement and consultation processes to ensure the participation of key stakeholders, including traditionally marginalized groups, in the development of a national NbS policy. In this way the policy recommendations shall reflect the ground reality and expectations from wider stakeholders by engaging Indigenous People, women, youth, and other marginalized populations who contribute to protecting natural ecosystems and resources. National/local NGOs/CSOs can facilitate such processes led by MoEFCC/BFD. |
| 6. SUPPORT ROBUST POLICY FRAMEWORK FOR THE CCTF | |
| Short Term | Work with the MoEFCC to better define objectives, priorities, and principles, ensuring that they are strategically aligned with national climate change strategies and plans. Simplify and streamline the application and approval processes for project funding, enhancing stakeholder engagement and participation, and establishing mechanisms for public disclosure of information related to the CCTF's activities. |
| Med Term | Work with MoEFCC and others to improve output, outcome, and impact monitoring for CCTF and to promote a result-based approach to project funding and implementation (see also Chapter 4). |

TABLE 4. LEVERAGE POINTS FOR USAID: MCPP PRIORITIES/TRANSFORMATIVE TARGETS

| | |
|---|---|
| | I. PROVIDE TECHNICAL ASSISTANCE TO THE DEVELOPMENT AND IMPLEMENTATION OF RESILIENCE BONDS |
| | Conduct financial and market analysis (e.g., market demand assessments, cost-benefit analyses, identifying potential investors) to assess the feasibility and attractiveness of resilience bonds, building on the recent experience of green bond, in association with Bangladesh Bank/Sustainable Finance Department. |
| Short Term | Provide technical assistance (e.g., expertise in financial modeling, risk assessment, project evaluation, bond structuring) to various government organizations and financial institutions to ensure resilience bonds are effectively designed and aligned with global best practices. Bangladesh Bank/ Sustainable Finance Department, in collaboration with relevant research institutes and think tanks can offer this service. |
| | Support the development of taxonomies and common language for understanding adaptation initiatives and their contribution to resilience and adaptation goals (e.g., adaptation/resilience metrics – for more on this, see Chapter 4). Research institutes and think tanks (e.g., ICCCAD, ULAB, Center for Participatory Research and Development [CPRD]) could offer technical support to this exercise and facilitate the dissemination of the outputs among relevant agencies interested in resilience bonds. |
| Medium Term | Support the development and maintenance of prospectus of projects by Bangladesh Bank/Sustainable Finance Department, in collaboration with MoEFCC and Finance Division, that combines phased approach for resilience bonds & use of de-risking tools. UN agencies and international NGOs experienced in managing such databases could join in the effort (e.g., UNDP supported National Designated Authority [NDA] in developing pipeline projects for Green Climate Fund [GCF]). |
| 2. PROVIDE TECHNICAL ASSISTANCE TO IMPROVE DISASTER RISK FINANCE | |
| | Conduct analysis supporting the formulation of regulatory frameworks and advocating for policies that enhance MSME financial protection and productivity particularly in climate vulnerable regions. Small and Medium Enterprise Foundation/Ministry of Commerce, in collaboration with MoEFCC/DoE, can lead on this process (see also Chapter 5). |
| Short Term | Develop risk management strategies and mechanisms for MSMEs, including insurance products tailored to their specific needs. This should be followed by providing training to MSMEs located in disaster-prone areas on financial management, business planning, risk management, and access to finance, etc. Small and Medium Enterprise Foundation/Ministry of Commerce, in collaboration with MoEFCC/DoE and Bangladesh Bank/Krishi Bank, can lead on this process (see also Chapter 5). |

| | |
|--|--|
| Medium term | <p>Collaborate with development partners and national organizations (e.g., MoEFCC/DoE, MoDMR/ Department of Disaster Management [DDM], MoWCA, LGD) to integrate social protection with climate and disaster risk management and adaptation investments. This should build on the recent past experiences and best practices and capitalize on the on-going and forecasted disaster management and adaptation programs. Local government institutions (LGIs) and local NGOs/CSOs can play an important role in framing effective integration given their understanding and connections with the local context (see also Chapter 5).</p> |
| 3. PROVIDE TECHNICAL ASSISTANCE TO ACHIEVE RENEWABLE ENERGY TARGETS | |
| Short Term | <p>Support the identification, preparation, and implementation of renewable energy projects taken up by government agencies (e.g., Power Division, Sustainable and Renewable Energy Development Authority (SREDA), Infrastructure Development Company Limited [IDCOL]) and private entities (see also Chapter 5).</p> |
| Medium Term | <p>Provide technical expertise in energy storage technologies, support research and development, facilitate knowledge exchange, identify suitable storage solutions for renewable energy integration into the grid by working with research groups at universities, NGOs, and with the private sector (see also Chapter 5).</p> <p>Provide administrative and coordination support for the standing up of National Carbon Finance Coordination Hub, proposed in the MCPP, in collaboration with MoEFCC, Bangladesh Forest Department, the MoF (Finance Division and Economic Relations Division, National Board of Revenue) and Power Division of Ministry of Power, Energy and Mineral Resources (see also Chapter 5).</p> <p>Provide technical expertise to achieve renewable energy targets, create conducive policy environments, and design supportive regulatory frameworks that attract investment and promote the deployment of renewable energy technologies. This needs to be done with Bangladesh Energy Regulatory Commission, SREDA, Power Division, and Finance Division (see also Chapter 5).</p> <p>Support the design, structure, and mechanisms of the carbon market, including determining the scope, eligible sectors, and methodologies for carbon credits. Experience of Bangladeshi agencies (e.g., IDCOL, Waste Concern, brick manufacturers using Hybrid Hoffman Kilns technology) that have already received carbon credits would be useful in establishing this mechanism. MoEFCC/DoE need to coordinate the process in collaboration with relevant research institutes, NGOs, and consulting firms (see also Chapter 5).</p> |

CHAPTER 3:

CAPACITY FOR CLIMATE CHANGE PLANNING

Research question: What are the capacity-strengthening needs of the prime GoB institutions and other key stakeholders regarding climate change planning in Bangladesh? What resources are locally available to fill capacity gaps? What would be an effective locally led capacity-strengthening model based on experience to date?

INSTITUTIONAL FRAMEWORK

In addition to the policies discussed in Chapter 2, important components of the enabling environment for climate action are the institutions that facilitate that action. More than 25 national government organizations are now involved in climate change planning, with several GoB stakeholders coordinating those efforts (see Table 5). Bangladesh has made significant progress in strengthening institutional capacity for national-level climate change planning in recent years. This includes establishing a series of dedicated units to address climate change, making significant efforts to reinforce human capacity, and working to mobilize, allocate, and manage financial resources for climate-related activities. It has also worked to create opportunities for coordination and to engage stakeholders including from civil society (e.g., NGOs, community-based organizations [CBOs], foundations), research institutes and universities, and private sector partners.

OPPORTUNITIES FOR USAID

Climate Planning Capacity



- Fostering local leadership for climate planning
- Advancing inclusion in local climate planning processes
- Building institutional capacity and supporting coordination
- Improving local access to climate finance
- Capitalizing on models for locally led capacity strengthening

TABLE 5. KEY GOB STAKEHOLDERS INVOLVED IN CLIMATE CHANGE PLANNING

| STAKEHOLDER ORGANIZATION | ROLE IN CLIMATE PLANNING |
|--|--|
| Ministry of Environment, Forest, and Climate Change (MoEFCC) | Responsible for formulating and implementing policies related to the environment, forestry, and climate change in Bangladesh. Comprised of seven departments, including the DoE, which serves as the technical support units for the UNFCCC and climate-related agreements, and the development of strategies and action plans for addressing climate change in Bangladesh. Includes a Climate Change Unit launched in June 2010 as envisaged in the BCCSAP. As the key institution for the implementation of adaptation and mitigation, the Climate Change Unit is tasked to coordinate with the climate change focal points of other ministries to mainstream climate change into national development planning. |
| Ministry of Disaster Management and Relief (MoDMR) | Responsible for disaster risk reduction and management, including building resilience to the impacts of climate change-induced disasters. Plans for climate change include the Disaster Management Act, 2012, National Disaster Management Policy 2015, the Standing Orders on Disaster 2019, National Plan for Disaster Management 2021-2025, as well as the implementation of early warning systems for cyclones and floods, the promotion of climate-resilient infrastructure, and engaging communities in community-based disaster risk |

TABLE 5. KEY GOB STAKEHOLDERS INVOLVED IN CLIMATE CHANGE PLANNING

| STAKEHOLDER ORGANIZATION | ROLE IN CLIMATE PLANNING |
|---|---|
| | reduction and response. Under the auspices of the MoDMR, disaster management committees have been established at the local level to plan and respond to disasters. |
| Ministry of Local Government, Rural Development, and Cooperatives (MoLGRDC) | Includes the LGD, which is expected to play an important role in local-level planning for community-based CCA and DRM, and the Local Government Engineering Department, responsible for local infrastructure throughout Bangladesh, including ensuring infrastructure plans incorporate CCA. |
| Ministry of Finance (MoF), Economic Relations Division | Responsible for developing and implementing economic policies related to climate change in coordination with other government agencies and international organizations to address climate change issues, including developing strategies for reducing GHG emissions, promoting renewable energy, and building resilience to the impacts of climate change. The MoF created the Climate Change Fiscal Framework to integrate climate change considerations into budgetary processes and fiscal decision making; it administers the Climate Change Trust Fund, following the Climate Change Trust Fund Act of 2010. |
| Ministry of Power, Energy, and Mineral Resources | Responsible for recognizing the vulnerability of the power sector to climate change impacts, the ministry has also focused on developing climate-resilient power infrastructure. The Ministry of Power, Energy, and Mineral Resources has promoted renewable energy sources, such as solar, wind, and hydropower, placing emphasis on energy efficiency initiatives to reduce energy consumption and associated greenhouse gas emissions. |
| Planning Commission | A constitutional body under the Ministry of Planning responsible for formulating and implementing national economic and development plans. It has been involved in the formulation of several national climate change policies and strategies, including the BCCSAP and the NAP. It has also worked to integrate climate change considerations in the Five-Year Plans and the Perspective Plans. It has also been involved in the mobilization and management of climate finance, including through the GCF and Adaptation Fund as well as the development of financing mechanisms. |

POLICY FRAMEWORK

The GoB has identified climate-planning capacity strengthening needs across several of its plans and policies (see Table 6, below).

TABLE 6. PLANS & POLICIES THAT INCORPORATE CAPACITY STRENGTHENING PRIORITIES

| POLICY | YEAR | DESCRIPTION OF CAPACITY STRENGTHENING PRIORITIES |
|---|-------------------------------------|--|
| Local Government (UP) Act | 2009 2010 | Establishes 13 Standing Committees, which bring together local-level elected officials to address, among other issues, the environment. |
| Bangladesh Climate Change Strategy and Action Plan (BCCSAP) | 2009 2022 | Calls for mainstreaming climate change in national, sectoral, and spatial development planning and ensures that impacts on vulnerable groups and women are prioritized in plans. The current draft of the BCCSAP includes recommendations to “build capacity for such decentralized regional planning at appropriate institutions with a coordinating role played by the Planning Commission.” Includes action plans to incorporate gender considerations in all aspects of climate change-related activities and underlines the urgency of undertaking capacity building. |
| Climate Change and Gender Action Plan (ccGAP) | 2009 2013 2022 (under review) | Defines the role of the MoEFCC in mainstreaming gender in climate change-related policies, strategies, and interventions. Includes sectoral-level action plans with specific guidance on gender mainstreaming at local levels. Currently under review. |
| Eighth Five Year Plan (2021-2025) | 2020 | Focuses on incorporating climate change and environment and disaster management into planning and budgeting to achieve sustainable development. Emphasizes appropriate policy and institutional capacity building at all levels of government. |

TABLE 6. PLANS & POLICIES THAT INCORPORATE CAPACITY STRENGTHENING PRIORITIES

| POLICY | YEAR | DESCRIPTION OF CAPACITY STRENGTHENING PRIORITIES |
|--|------|--|
| | | especially with a greater emphasis at the local-government level for better implementation. |
| National Adaptation Plan (NAP) 2023-2050 | 2022 | Notable relevant NAP priorities include: update and reform policies and plans for mainstreaming the CCA; reform local government institutes towards the inclusion of CBOs, women, people with disabilities, and youth in the implementation of locally led adaptation (LLA); and transformative capacity development and knowledge management for integrating CCA into planning processes and climate financing. |
| Mujib Climate Prosperity Plan | 2022 | Recommends local level leadership through establishment of Mujib Locally Led Adaptation Hubs (LLA hubs) and capacity building for locally led CCA in the most vulnerable communities of Bangladesh |

In addition, several recent documents focus on capacity strengthening needs of key organizations. These include:

- Bangladesh Planning Commission, *Training needs and capacity assessment of Bangladesh Planning Commission* (2022). This document identifies priorities for institutional and individual capacity building; includes gaps for General Economics Division officials.
- Ministry of Environment, Forest, and Climate Change. *Report on Knowledge Management Plan for Training on CCA Mainstreaming and Bankable Development Skills for Formulation and Advancement of the NAP* (2022). This document Identifies key knowledge gaps in advancing NAP priorities.
- Ministry of Environment, Forest, and Climate Change. *Report on Updating Capacity Building Action Plan for Training on CCA Mainstreaming and Bankable Development Skills for Formulation and Advancement of the NAP* (2022). This document identifies key capacity gaps in advancing NAP priorities.
- Transparency International Bangladesh. *Governance Challenges of the Department of Environment and Way Forward* (2022). This document identifies capacity gaps related to human resources, infrastructure and logistics, and financial management.

NAP CAPACITY BUILDING ACTION PLAN

While a great deal of work has been done to identify and fill climate-planning capacity needs in Bangladesh, the document most relevant to the present study is MoEFCC's holistic "Report on Updating Capacity Building Action Plan for Training on CCA Mainstreaming and Bankable Development Skills for the Formulation and Advancement of the NAP" which highlights priority needs for climate-related capacity, including its particular focus on transformational change (MoEFCCb 2022). This Capacity Building Action Plan (CBAP) provides important guidance regarding GoB's own capacity-building priorities and how planned activities can complement each other.

Developed with support from the UNDP and GCF, this report considers policy and planning initiatives; past programs and projects; and expert perspective to create a holistic view of institutional capacity for climate planning. It corroborates a general perception that Bangladesh is relatively advanced in terms of climate planning but still identifies several gaps that require sustained attention. The document articulates 10 strategies that, taken together, are designed to foster individual-, institutional-, and systems-level change; it elaborates 51 projects designed to carry out the implementation of the Action Plan. These projects are intended to build on each other, following a staggered implementation plan, with 15 projects to be completed in the near-term (up to three years); 21 in the medium term (approximately five years); and 15 in the long term (approximately 10 years). It provides an important starting point for partners wishing to support GoB in the development of climate-planning capacity.

While the plan articulates the projects with respect to the 10 strategies and three timeframes, several themes run throughout the report. These are:

- **Training and education:** The CBAP emphasizes the need for training and education at multiple levels to strengthen the knowledge and know-how to address climate change. In the **near term**, it focuses on the inclusion of climate change into the syllabi of foundational courses for public services, including recruitment exams of different agencies, and into academic curriculum. In the **medium term**, the strategy articulates the need to build capacity around climate-related education for the public; for instance, related to awareness building and general knowledge as well as the development of “climate champions” in local communities. It also targets specific groups, e.g., creating a youth development program focused on addressing climate change; educating those in climate-vulnerable activities on alternative income generating activities; teaching slum dwellers how to access water, sanitation, and hygiene services; and building knowledge and skills for adaptation in the private sector. The strategy builds on these activities in the **long term**, moving the public from awareness raising to behavior change, more broadly targeting sectoral actors with tailored information, and developing advanced services (e.g., graduate scholarships, debate programs, etc.) for formal institutions of higher learning.
- **Research and the creation of new information:** Evidence-based decision-making and governance is built on a foundation of solid evidence; without this evidence, decisions are more uncertain, and learning is stalled. The CBAP and the NAP both point to research priorities to help strengthen the evidence base for decision making. In the **near term**, the CBAP identifies several research priorities related to CCA in fisheries and the livestock sector, early warning systems, and the development of research infrastructure related to the blue economy. In the **medium term**, research interests focus on building climate resilience with respect to agriculture, ecosystems, and urban environments and on developing state-of-the art tools and techniques for local-level climate change impact assessment and adaptation formulation. In the **long term**, the transformational capacity building strategy focuses on the creation of a model simulation lab, a climate change impact assessment protocol, and better infrastructure to monitor and assess sea level rise and subsidence, along with the creation of a creation of a unified Climate Change Information, Knowledge, and Management Portal to disseminate the information generated.
- **Government coordination:** The CBAP includes a heavy focus on the need to increase interagency coordination to properly address the climate challenge. The **first stage** in this process is to establish a Transformative Capacity Building Cell in the MoEFCC to coordinate and monitor efforts—a process already underway. In the **medium term**, the plan focuses heavily on developing local-level capacity for climate change planning and the capacity of local government agencies to develop policies, procedures, and infrastructures that support the country’s broader climate-related goals. The plan also highlights a need to expand connections with the UNFCCC Climate Change

KEY STRATEGIES FOR CAPACITY STRENGTHENING

Systems level

- Develop transformative capacity building regime
- Enhance coordination, monitoring, evaluation and collaboration
- Encourage transfer of innovative technology

Institution Level

- Enhance capability of public and private sector institutions to understand, plan, develop and implement climate change adaptation
- Promote self-reliance of institutions through enhanced shared learning
- Avoid ad-hoc capacity building initiatives
- Strengthen monitoring and evaluation mechanism of CCA initiative

Individual Level

- Change citizen behavior and building awareness towards proactive adaptation for climate change
- Provide adequate motivation and incentives to develop own skill, transmit knowledge to others and serve the community
- Make transformative behavior and practices inherent to the development of an on elemental level

Adapted from MoEFCC 2022a, Capacity Building Action Plan.

Technology Network, and other regional forums, to strengthen institutional capacity and identify technology transfer priorities. In the **long term**, the goal is to operationalize a Bangladesh Climate Change Knowledge and Technology Network, which can serve both national and international needs, and to create forums for intergovernmental knowledge sharing (seminars, symposiums, etc.) and empowering local governments and communities.

LOCALLY LED ADAPTATION

Taken together, these themes articulated in the CBAP embody a measured approach to support LLA through strengthening the climate planning processes. Indeed, Bangladesh has for decades prioritized local-level approaches to adaptation, focusing on empowering local communities to address climate risks and vulnerabilities and involving union parishads institutions in integrating climate considerations into their development plans, policies, and budget allocations. In addition, the government recently recognized the importance of engaging local stakeholders—including communities, CSOs, and LGIs—in the formulation and implementation of the NAP, creating opportunities for stakeholder and district-level consultations as well as local government involvement.

GAPS AND OPPORTUNITIES

Given the interest that both the GoB and USAID have shown in supporting LLA—as well as the pivotal role that LGIs play in implementing climate change policies—opportunities to build capacity for climate planning at the local level are prioritized. These are:

Fostering local leadership. A multi-donor project implemented by Bangladesh’s Local Government Division of the Ministry of Local Government Rural Development and Cooperative, the Local Government Initiative on Climate Change (LoGIC) project has worked since 2016 to deliver climate finance to the most vulnerable households and the local government institutions in Bangladesh. According to a recent evaluation of the project, Bangladesh’s local governments are not leading in climate planning, but rather responding to national-level line departments (IPE, 2022). Supporting the development of this kind of leadership is crucial to the success of local climate planning.

Advancing inclusion. The NAP has identified a need to “reform local government institutes towards the inclusion of CBOs, women, people with disabilities and youth in the implementation of locally led adaptation” (MoEFCC 2022a). And yet, while there are procedures for community participation in planning, budgeting, and implementation of climate plans, there are several challenges to incorporating marginalized populations that USAID can address (for more information, see Chapter 3). By facilitating inclusive decision-making processes, USAID can ensure that the voices and perspectives of all stakeholders are considered, and local leaders can emerge from within the community.

Building institutional capacity. The capacity to implement climate planning is supported by general institutional capacity, and as such, there is a need to support the institutional frameworks in which local governments operate. Critically, there is also a need to support local governments in strengthening their M&E systems to track the impact of climate finance investments. This can include providing guidance on data collection, analysis, and reporting frameworks. By demonstrating the effectiveness and impact of climate finance investments, local governments can enhance their credibility and attract further funding opportunities.

Annual development planning. At the local level, the primary opportunity to integrate climate considerations into planning is through the ADP process (Rahman and Anny 2017). The ADP lists projects to be implemented during a particular fiscal year. The MoF has called for these plans to be developed through “participatory planning meetings where the local governments gather information to

decide upon policy priorities, revenue collection and expenditure” (GoB 2013). USAID has an opportunity to support this process by building off the lessons learned from the LoGIC project, which strengthened the role of LGIs in the planning process in select vulnerable districts, and expanding the capacity strengthening to encompass CBOs and NGOs at the local level so they can help facilitate involvement of the population—particularly marginalized groups—in the planning process. In this way, the ADPs can reflect the climate-related priorities of these populations and be truly locally led.

Improving access to finance. LGIs primarily rely on block grants (e.g., Local Governance Support Project, Climate Resilience Grants, Community Resilience Funds Grants) from the central government to implement climate planning—but building capacity of LGIs to access these funds, including through training programs on project design, proposal development, financial management, and reporting, would help more people access existing funds.

LOCAL RESOURCES

A range of local resources are available to fill capacity gaps. These include:

- **Training academies.** Existing training institutions, including Rural Development Academy, Bangladesh Academy for Rural Development, National Academy for Planning and Development, Bangladesh Civil Service Administration Academy, and National Agricultural Training Academy (NATA), can be strengthened and supported to provide climate-specific training where needed.
- **Local universities and research institutions.** There are many well regarded public and private universities and research institutions conducting research on climate change, agriculture, water, gender, youth, vulnerability, and other relevant topics in Bangladesh, for example the Bangladesh Centre for Advanced Studies (BCAS), Centre for Climate Change and Environmental Research (C3ER), CCDB, CPRD, ICCCAD, and ULAB.
- **NGOs/CSOs.** Local organizations including Coastal Association for Social Transformation Trust, Practical Action Bangladesh, Bangladesh Environmental Lawyers Association, Oxfam, and many others are already providing valuable support in mobilizing communities, raising awareness, and advocating for climate change action.
- **International organizations.** International organizations (e.g., UN organizations, European Union, Japan International Cooperation Agency [JICA], GIZ, Asian Development Bank [ADB], and the World Bank) provide technical and financial support to the GoB and other stakeholders to reduce capacity gaps. The Urban Climate Change Resilience Trust Fund (a US\$150 million multi-donor trust fund (2013-2021) administered by ADB under the [Urban Financing Partnership Facility](#)) and the Global Partnership for Results-Based Approaches (GPRBA), a global partnership program in the World Bank Group, may provide resources relevant to strengthening local capacity.

MODEL FOR LOCALLY LED CAPACITY STRENGTHENING

In addition to these resources, USAID’s Locally Led Development Initiatives team has developed a range of flexible programs, opportunities, tools, and research that support local ownership and leadership throughout the development process. It provides a range of tools designed to empower local communities in building their own capacity for locally led development.

Importantly, this team works to implement USAID’s Local Capacity Strengthening Policy, which evinces a culture shift toward supporting local actors’ abilities to deliver and sustain development results rather than focusing on local actors’ capacity to qualify for and manage awards. It also articulates a number of principles that should guide the strengthening of local capacity, including that these efforts should be participatory and context specific, that they should adopt a long-term perspective and multi-sectoral

approach, and that they should be guided by regular M&E to assess their effectiveness and identify areas for improvement (USAID 2022a).

A recent example of this type of work in Bangladesh, implemented in conjunction with the Local Works program in Cox's Bazar, partnered with local actors and communities impacted by the refugee influx to rehabilitate natural resources (e.g., coastal and forest ecosystems) and promote alternative and sustainable livelihoods. This program will also strengthen local capacity to co-manage the natural resources (USAID Local Works 2023). It provides a strong model for locally led capacity strengthening and is well integrated with existing priorities of USAID.

Other examples of locally led capacity strengthening models include the Climate Resilience Model of WaterAid and UNDP's LoGIC Project's approach to enhancing the capacity of LGIs, elevating the roles of youth leaders in climate planning, and increasing involvement of vulnerable communities in climate planning (ICCCAD Youth Programme 2023; NAP and NDC Support Programme 2022; IPE 2022; WaterAid 2021). The FCDO-funded Climate Change and Environment Programme is also notable in that it supports political leadership by engaging youth and civil society to build the case for climate action, and by fostering future generations of Bangladeshi climate experts. These programs can be seen as models to build locally led capacity around climate planning. The Community Development Centre (CODEC) also maintains projects on climate change and disaster management (CODEC 2022).

LEVERAGE POINTS FOR USAID

Table 7 below summarizes leverage points for USAID to support improved capacity for local-level climate planning in Bangladesh. In addition to the opportunities outlined below, see Chapter 4 for specific opportunities to improve evidence-based environmental governance, particularly regarding the development and dissemination of information that can be used in strengthening local capacity for climate planning.

TABLE 7. LEVERAGE POINTS FOR USAID: CLIMATE PLANNING CAPACITY

| I. FOSTER LOCAL LEADERSHIP FOR CLIMATE PLANNING | |
|---|---|
| Short Term | Support research institutes (e.g., Bangladesh Institute of Development Studies [BIDS], CPD, CPRD, ICCCAD, C3ER, BCAS, ULAB), GoB agencies (e.g., MoEFCC/DoE, DDM, LGD, Palli Karma-Sahayak Foundation [PKSF]), and local NGOs (e.g., CNRS, CODEC, Shushilan, ActionAid, Friendship, CCDB) to develop and deliver training and awareness raising to LGIs in inclusive and participatory climate planning approaches specific to relevant sectors (e.g., agriculture, water resources management, climate resilient infrastructure) as outlined in relevant GoB policies and priorities. Leverage experience and materials from GIZ's Adaption to Climate Change into the National and Local Development Planning II project. |
| | Support research institutes to provide training and capacity-building workshops, seminars, and technical sessions on climate science, adaptation strategies, mitigation measures, and sustainable development planning to local government officials and other leaders drawing on existing materials (e.g., GIZ, LoGIC, Oxfam). |
| Med Term | Support organization(s) with convening power (e.g., ICCCAD, Oxfam, CARE, UNDP) to facilitate exchange programs and peer-learning opportunities that allow government officials and local leaders to interact with counterparts in other regions, or countries, which have successfully implemented climate-related planning. |
| | 2. ADVANCE INCLUSION IN LOCAL CLIMATE PLANNING PROCESSES Inclusive participatory climate planning approaches: Support research institutes (e.g., BIDS, CPD, CPRD, ICCCAD, ULAB), GoB agencies (e.g., MoEFCC/DoE, DDM, LGD, PKSF), and local NGOs (e.g., CNRS, CODEC, Shushilan, ActionAid, Friendship, CCDB) to develop and deliver training and awareness raising to LGIs in inclusive and participatory climate planning approaches specific to relevant sectors (e.g., agriculture, water resources management, climate resilient infrastructure), as outlined in relevant GoB policies and priorities. Leverage experience and materials from GIZ's Adaption to Climate Change into the National and Local Development Planning II project. |

3. BUILD INSTITUTIONAL CAPACITY AND FOSTER COORDINATION

Collaborate with existing actors (e.g., MoEFCC) to strengthen capacity of dedicated climate change units or departments, enhancing coordination mechanisms, and integrating climate considerations into existing governance structures.

Med Term Support GoB efforts to coordinate national and local level adaptation planning, including the establishment and development of the Transformative Capacity Building Cell in MoEFCC, as proposed in the CBAP.

Support national and local governments in strengthening their monitoring and evaluation systems to track (MoF) and monitor the impact (MoEFCC) of climate finance investments by providing guidance on data collection, analysis, and reporting frameworks.

4. IMPROVE LOCAL ACCESS TO CLIMATE FINANCE

Short Term Support efforts to disseminate information (for instance, through workshops, seminars, online platforms, and knowledge-sharing networks) about climate finance opportunities (which could include, for instance, the LoGIC Program's Performance Based Climate Resilience Grants and Community Resilience Fund) as well as eligibility criteria, and application procedures to local governments in Bangladesh to increase transparency and participation at the local level.

Med Term Facilitate networking opportunities and partnerships between local governments (e.g., city corporations), international climate finance institutions, and other relevant stakeholders. Municipal Association of Bangladesh may offer opportunities for this kind of work.

5. DRAW ON MODELS FOR LOCALLY LED CAPACITY STRENGTHENING

Short Term Catalyze scaling up of Locally Led Adaptation through complimenting the efforts funded under the FCDO-funded Climate Change and Environment Programme, in coordination with the Global Center on Adaptation and Bangladesh Rural Advancement Committee (BRAC), and in alignment with the draft Mujib Climate Prosperity Plan, the Climate Bridge Fund, while incorporating insights gained from USAID the Local Works program.

Med Term Support the scaling up of successful locally led capacity strengthening models, including the Climate Resilience Model of WaterAid, the UNDP's LoGIC Project, and GIZ Climate Resilient and Inclusive Smart Cities's approach to enhancing the capacity of LGIs, elevating the role of youth leaders in climate planning, and increasing involvement of vulnerable communities in climate planning.

Med Term Support CCTF to assess its impacts and disseminate lessons, strengthen their monitoring system to better capture and/or disseminate impacts, including identifying best practices based on the 490 projects they funded since 2010.

CHAPTER 4:

ENVIRONMENTAL GOVERNANCE

Research Question: How to strengthen evidence-based environmental governance advocacy efforts in Bangladesh? How to increase the transparency and accountability of GoB's climate change efforts in Bangladesh? How can USAID support the GoB in making the policy planning and implementation process more inclusive and participatory, based on best practices worldwide?

Effective environmental governance is built on practices that ensure that the design and implementation of climate solutions are governed by processes that are evidence based, inclusive, transparent, and accountable.¹ This chapter examines three key aspects of environmental governance including a **strong evidence base**, meaningful and inclusive **public participation** in policy planning and implementation, and a commitment to **transparency and accountability** for public- and private-sector actors.

OPPORTUNITIES FOR USAID

Environmental Governance



- Strengthening the evidence-base for environmental governance, particularly with respect to: air quality; climate, weather, and water; social protection data
- Enhancing the capacity of marginalized communities to participate in climate planning and implementation
- Improving the quality and use of data in environmental governance of:
 - Air quality
 - Climate, weather and water
 - Adaptation
 - Social protection

RESEARCH, DATA, AND INFORMATION

A strong evidence base for environmental governance is rooted in robust open data, effective information systems, and independent research. While Bangladesh has made progress in collecting and managing environmental data, challenges remain in collecting data—especially in rural areas—and in processing it, sharing it among different government agencies, and making it publicly available. Gaps in high-quality environmental data make it difficult for decision makers to fully understand environmental challenges and to develop evidence-based policies and programs to address those challenges.

¹ Environmental governance can be defined quite broadly to include the entire enabling environment for climate change-related action. For example, the UN defines global environmental governance as “the sum of organizations, policy instruments, financing mechanisms, rules, procedures and norms that regulate the processes of global environmental protection” (Najam et al 2006). For purposes of this assessment, we adopt a narrower definition that focuses on “good governance” (i.e., evidence-based, participatory, inclusive, transparent, and accountable policy planning and implementation for the environment).

GAPS AND OPPORTUNITIES

This assessment identified several areas where the evidence base for environmental governance could be strengthened through improved institutions, data, and information systems.

Independent research institutions. Outside of the government sphere, Bangladesh has a relatively robust ecosystem of organizations that conduct research to inform environmental governance. Academic institutions, research organizations, think tanks, and NGOs in Bangladesh and abroad have undertaken research to better understand the country's vulnerability, resilience, and policy responses to climate change. These organizations are complemented by regional and local-level CBOs and institutions. While a comprehensive list is beyond the scope of this report, an illustrative list is included in the box below.

Nonetheless, investments in climate change-related research have been limited. According to the latest climate budget, Bangladesh has spent on average BDT 6.75 billion (US\$63 million) on climate research in FY2020 and FY2021, with the bulk of the research focused on the agricultural sector. However, the GoB targets spending BDT 9.37 billion (US\$87 million) in the current fiscal year (MoF, 2023). A key step in supporting evidence-based environmental governance in Bangladesh will

be to increase the resources available to independent institutions as they conduct research on key environmental issues, such as climate change, water pollution, and biodiversity loss. There are several research institutions in Bangladesh that could be supported to advance evidence-based decision-making or to support the use, dissemination, and consolidation of existing data (see text box).

ILLUSTRATIVE LIST OF INDEPENDENT RESEARCH INSTITUTIONS

Bangladesh Agricultural Research Institute (BARI); BCAS; Bangladesh Institute of Development Studies; BRAC; Bangladesh University of Engineering and Technology; Centre for Air Pollution Studies; C3ER; Centre for Environmental and Geographic Information Services (CEGIS); Department of Environmental Sciences, Jahangirnagar University; Hydro-bio-geochemistry and Pollution Control Laboratory; ICCCAD; Institute of Water and Flood Management; Shahjalal University of Science & Technology; University of Dhaka.

Data and information. The GoB has established various agencies and initiatives to monitor and address environmental issues, including the DoE, Bangladesh Meteorology Department (BMD), Bangladesh Water Development Board, and BFD. However, there have been concerns about the quality and accessibility of environmental data tracked by these agencies. For example, despite the relative wealth of digitalized climate data held by BMD, insufficient support for database-management and system interoperability has hampered efforts to use the data internally and to process external data requests (Mason et al. 2022).

Meanwhile, the government has advanced with respect to open data (Cole et al 2020; MoP 2022) and data protection (GoB Data Protection Bill 2022). But while data sharing agreements have been signed between individual units in the government, the lack of streamlined and accessible information systems limits the effectiveness of climate policy, planning, and implementation and has negative impacts across a wide range of sectors, including CSA, green growth, shock-responsive social protection, disaster risk financing, and public health. This assessment found that improved capacity for data collection and analysis would be particularly useful in the following areas:

- **Air quality.** Bangladesh has made progress in recent years toward establishing an adequate system to monitor air quality, including establishing National Ambient Air Quality Standards in 2018 and expanding the air quality monitoring network; however, continued investment and improved capacity in this area will be essential to ensure that the country's air quality monitoring system is effective and comprehensive in the years ahead.
- **Climate, weather, and early warning information.** Long-term climate projections, and the downscaling of projection data to national and/or local levels (e.g., coast and haor), need to be

incorporated into strategies to promote systemic shifts in the economy and key sectors, such as agriculture, social protection, and disaster management. They are also critical to improving the day-to-day management of climate-related risk (see Chapter 5).

- **Shock-Responsive Social Protection.** There is the need to establish an integrated, regularly updated beneficiary database to improve data management across different disaster-related activities and social safety net programs, which concerned government agencies can access while strongly guided by a Data Protection Policy to avoid potential misuse (see Chapter 5).

INCLUSIVE PUBLIC PARTICIPATION

In Bangladesh, the power of decision making with respect to climate change policy largely rests with a small number of national-level actors. Several analyses described the context as marked by “elite pluralism” in which power, while somewhat dispersed, largely rests with a few national-level actors. Some describe this decision making and governance of climate issues in Bangladesh as a state of “super-bureaucracy,” finding that the current arrangement is not sufficiently supportive of innovative policymaking, inclusive participation, and collective decision making (Rahman and Tosun 2018).

As such, the state of public participation in environmental decision making in Bangladesh is generally considered to be weak, despite legal provisions that require public consultation and participation in environmental decision-making processes. As a result, those who are most likely to participate in policy making include affluent urban groups, NGOs that represent farming communities, and academics and researchers.

In general, women, youth, the rural poor, and Indigenous groups may face challenges related to participating in the climate change decision-making process due to limited access to information, limited time set aside for public consultation with these groups, limited capacity to engage effectively, and limited influence.

Efforts have been made in recent years to address some of these challenges, including the Environmental Conservation Rules of 1997 (ECR 1997) development of sector-specific guidelines for public consultation (DoE MoEFCC 2021) and the 2010 Environmental Court Act, which establishes specialized courts to adjudicate environmental disputes. The Bangladesh ccGAP also aims to ensure the integration of gender considerations into climate-change-related policies, strategies, and interventions to promote gender equality and facilitate transformational change. Organizations such as the Bangladesh Environmental Lawyers Association and the Forum for Environmental Journalist Association of Bangladesh employ advocacy approaches to influence policy at the national level, while other NGOs help increase public awareness of opportunities to participate in decision making.

In addition, Bangladesh succeeded in engaging over 5,000 members of the public through the Climate Public Expenditure and Institutional Review as part of the development of the NAP. Through this process, the government consulted with CSOs, community groups, and other stakeholders to gather their input on climate change impacts and adaptation needs. Additionally, the government organized several public consultations and workshops to gather feedback from a diverse range of stakeholders, including women, youth, and marginalized communities, in line with the goal of including vulnerable groups who bear the brunt of climate impacts. The government also established a NAP technical working group (TWG) that included representatives from various ministries, CSOs, and academic institutions. This TWG was tasked with providing technical inputs to the NAP development process and ensuring that the plan reflected the perspectives and needs of different sectors and stakeholders.

GAPS AND OPPORTUNITIES

Despite this focus, opportunities remain to enhance the capacity of marginalized communities to participate in climate planning and implementing, particularly by dispersing power to local organizations and creating an operating space for collaboration and coordination (Paloniemi et al. 2015).

Dispersing power to local organizations. Devolving decision making to the local level will give local institutions and communities more direct access to finance and decision-making power over how adaptation actions are defined, prioritized, designed, and implemented, as well as how progress is monitored and how success is evaluated. Such an approach is crucial to enable co-creation of knowledge and evidence with farmers and communities in climate-vulnerable regions, such as that related to CSA and green growth (e.g., on cropping pattern, cost-benefit analysis, and GHG emission) and vulnerability/resilience (with respect to social protection and disaster risk financing).

Creating an operating space for collaboration and coordination. Creating this kind of space would involve establishing an environment where multiple stakeholders can effectively work together, share information, and make decisions based on scientific evidence to address climate-related challenges. The Gobeshona network, as well as the recent launch of Global Center on Adaptation's Global Hub on Locally Led Development, provide examples of this kind of work. There are, however, several communities that are currently underserved in this regard, including the Community of Practice for Transdisciplinary Research and Action in Climate Change and Health (BRAC University); the Asia-Pacific Network for Global Change Research; and the Least Developed Countries Universities Consortium on Climate Change.

Other areas have less formal communities of practice (e.g., resilience in coastal communities, resilience in urban areas, renewable energy) but could benefit from additional attention. As shown by global experience, including in Bangladesh, operating spaces for collaboration and coordination can reduce gaps of knowledge and understanding among the stakeholders involved, guide dialogues based on evidence, increase trust among the concerned entities, and create opportunities for effective bilateral and multilateral cooperation.

TRANSPARENCY AND ACCOUNTABILITY

Transparency and accountability in environmental governance includes procedures for monitoring private-sector activities, such as the use of environmental impact assessments (EIAs), and government commitment to public M&E of its progress toward climate commitments. Bangladesh has made several efforts to bolster transparency and accountability (e.g., the 2009 Right to Information Act; the 2010 Environmental Impact Assessment Guidelines; several measures for public hearing and consultations). There are, however, significant opportunities to improve transparency and accountability with respect to evidence-based environmental governance in Bangladesh.

GAPS AND OPPORTUNITIES

Key gaps related to EIAs and M&E impact the transparency and accountability of GoB's climate change efforts. These include:

Environmental impact assessments. Bangladesh's DoE, a part of the MoEFCC, is responsible for environmental regulation and management. The DoE's main role is to enforce environmental laws and regulations, conduct environmental assessments, and monitor environmental quality. The procedures for conducting EIAs are governed by the Environmental Conservation Rules (ECR) of 1997, which were amended in 2019. The ECR establishes a legal framework for conducting EIAs and outlines the roles and

responsibilities of various stakeholders in the process. Under the ECR, any proposed project or activity that is likely to have a significant impact on the environment, such as industrial projects, construction of infrastructure, or land use changes, is subject to an EIA.

However, the quality and scope of EIAs conducted in Bangladesh have been a subject of concern among various stakeholders, including CSOs and experts in the field (e.g., ILO 2021; Kabir & Momtaz 2013). For instance, there have been criticisms of the quality of the EIAs and the level of compliance with the ECR requirements; concerns are related to insufficient baseline data, limited stakeholder engagement, inadequate assessment of cumulative impacts, and weak enforcement. In recent years, efforts have been made to address some of these concerns, including capacity building for EIA practitioners, greater engagement with stakeholders, and the development of sector-specific guidelines for EIAs. However, further improvements are needed to ensure that EIAs in Bangladesh are conducted according to the legal requirements and that they identify and mitigate potential adverse environmental impacts effectively.

Monitoring and evaluation. M&E is a critical part of evidence-based environmental governance. As elaborated in Chapter 1, it is also a critical part of facilitating learning regarding the effectiveness of climate action. In this context, there are several opportunities to improve monitoring and evaluation of existing climate work that stand to make an enormous contribution to bolstering the environment for climate action in Bangladesh. These include:

- **NAP Implementation.** A 2021 report for the Asia-Pacific Network for Global Change Research highlighted the need to develop a detailed monitoring plan to **track implementation of the NDC and NAP** at the national level (Wijenayake 2021). In response, Bangladesh is working to establish a measurement, reporting, and verification system to maintain transparency in its mitigation efforts and outcomes (MoEFCC 2018). While this is an important example of efforts to build transparency and accountability, there have been calls to further these efforts, especially related to climate finance, air pollution data, the results of EIAs, and monitoring of industries (Transparency International 2022).

To facilitate this, MoEFCC/DoE should establish a “Bangladesh Climate Action Portal” as a repository of the country’s recent-past, ongoing, and future conservation initiatives in line with national plans, existing funding pots, and future financing mechanisms. This portal will track Bangladesh’s progress in climate resilience similar to the SDG Tracker (sdg.gov.bd), make the reporting to the UNFCCC easier, and help donors to prioritize how to allocate climate funds. It would ensure the transparency of other interventions (e.g., carbon markets) and highlight the extent to which those interventions contribute to national priorities. Developing this kind of portal would likely require developing suitable metrics to help decision makers assess progress and success related to the implementation of climate-related projects. It complements with the recommendation in Chapter 2 regarding the need for a NAP Implementation Plan.

- **Resilience Metrics.** In addition to better monitoring progress on implementation, there is also a specific and urgent need to develop **resilience metrics** that can characterize the resilience of climate-vulnerable regions, as well as to measure the efficiency and impact of various adaptation and resilience interventions. As many national and international organizations are interested in and recognize this need, there is an opportunity to support coordination and collaboration among the different actors and stakeholders working on this topic to ensure that metrics are standardized and comparable across different regions and sectors. A coordinated approach is crucial and would enable better tracking of changes in resilience over time and across different contexts. It could also help to identify gaps in knowledge and research, as well as to facilitate the sharing of best practices and lessons learned. Ultimately, coordination around resilience metrics could help to promote more effective and evidence-based decision making around resilience-building interventions, which is crucial in the face of increasingly uncertain and unpredictable climate impacts.

Financial disclosure. Improved financial disclosure could also enhance the GoB's accountability and transparency with respect to evidence-based environmental governance.

- **Track public expenditure on climate change.** The MoEFCC should work with the Finance Division to track and disclose public climate expenditure along with climate annual allocations as parts of a climate budget. Each year before preparation of the coming year's budget, MoEFCC and the Finance Division could organize a public hearing on the current year's climate budget and expenditure which could then feed into the following year's climate budget. These estimations can later be expanded beyond public interventions and include actions by national, international, bilateral, and multilateral agencies. They would allow the people of Bangladesh to have more of a direct say in how climate funds are spent.
- **Financial disclosure of CCTF.** As explained in Chapter 2, the CCTF is a dedicated fund established to support climate change adaptation and mitigation activities in Bangladesh. It has funded 490 projects, worth approximately half a billion United States dollars, since 2010. While the CCTF has developed a system of M&E, there has to date been no hearings to allow the public to understand and comment on how the funds are being dispersed, or the results that are being achieved. Increasing transparency regarding the allocation of these funds, including who is receiving them and how decisions are made is an important component of evidence-based environmental governance.

LEVERAGE POINTS FOR USAID

Table 8 below summarizes leverage points for USAID to support improved environmental governance in Bangladesh with a focus on strengthening the evidence-base, improving participation, and increasing transparency and accountability. In addition to the opportunities outlined below, see Chapter 5 for specific opportunities to improve the evidence base for decision making in the areas of green growth, CSA, and disaster preparedness.

TABLE 8. LEVERAGE POINTS FOR USAID: ENVIRONMENTAL GOVERNANCE

I. STRENGTHEN THE EVIDENCE-BASE FOR ENVIRONMENTAL GOVERNANCE

Support independent research institutions (e.g., International Rice Research Institute [IRRI], WorldFish, International Maize and Wheat Improvement Center [CIMMYT], ICCCAD, agricultural and general universities with agriculture and/or climate change research portfolio, and think tanks: Power and Participation Research Centre, CPD) in conducting new research or consolidating existing research in the areas of Climate-Smart Agriculture, disaster preparedness, green growth, and cross-cutting areas.

Improve capacity and coordination across institutions and geographic areas to establish a comprehensive system for air quality monitoring and planning by engaging universities to cover regional data collection, for example, in Barisal, Chittagong, Dhaka, Khulna, Noakhali, Rajshahi, Rangpur, and Sylhet.

Short Term Support the development of long-term climate projections, the downscaling of projection data, and coordination among relevant agencies (e.g., Flood Forecasting and Warning Centre, BMD, DAE).

Work with BMD to improve early warning information and the use of climate-informed decision support tools, particularly for DRM and agriculture.

Support the establishment of a shared, up-to-date beneficiary database accessible to all government institutions engaged in social protection programs and disaster management (e.g., Ministry of Social Welfare, MoWCA, MoDMR/DDM, Ministry of Chittagong Hill Tracts Affairs, Ministry of Food, Ministry of Labour and Employment, MoEFCC, MoA, MoFL MoWR, Rural Development Cooperative Division, and LGD).

TABLE 8. LEVERAGE POINTS FOR USAID: ENVIRONMENTAL GOVERNANCE

| | |
|--|---|
| Med Term | <p>Support efforts to incorporate evidence and long-term data sets generated from research into decision-making, including policy making, prioritization of investment areas (e.g., Ninth Five Year Plan, institutionalization of the NAP, the NDC, and in sector specific policies related to renewable energy, disaster risk management, etc.) by giving the coordination responsibility to respective ministries/divisions (e.g., MoEFCC/DoE, Power Division, Finance Division, Planning Commission, DDM) who can then engage other appropriate research institutes, think tanks, NGOs/CSOs and their networks, CBOs, LGIs, and local communities.</p> |
| 2. ENHANCE THE CAPACITY OF MARGINALIZED COMMUNITIES TO PARTICIPATE IN CLIMATE PLANNING AND IMPLEMENTATION | |
| | <p>Support local CSOs in their efforts to increase awareness and participation of marginalized communities in climate planning through training on advocacy, data analysis, and communication skills to participate in environmental decision-making in Bangladesh, building on the efforts of prior public consultations, such as the process for the Climate Public Expenditure and Institutional Review.</p> |
| Short Term | <p>Strengthen existing Communities of Practice (e.g., Gobeshona Communities of Practice, NbS Bangladesh Community of Practice, Community of Practice for Transdisciplinary Research and Action in Climate Change and Health (BRAC University); Energy and Environment Technical Working Group; Child Protection Cluster, Education Cluster, GVB Cluster, Displacement Management Cluster; Water, Sanitation, and Hygiene Cluster to facilitate cross-sectoral coordination and ensure the voices of marginalized communities are reflected in these groups. Consider the creation of new Communities of Practice (e.g., coastal resilience, etc.)</p> |
| 3. INCREASE THE TRANSPARENCY AND ACCOUNTABILITY OF GOB'S CLIMATE ACTIONS | |
| | <p>Work with the DoE to strengthen its capacity to address evolving areas, enforce EIA requirements, including increased community consultation, stronger EIA analysis, and publication of EIA reports.</p> |
| Short Term | <p>Support relevant government agencies (e.g., the 25 GoB agencies involved in climate action referenced in the Climate Budget) to develop a M&E system for implementation of the NAP and NDC. This could include output metric, performance metrics (see below), and measures of the economic costs and benefits of adaptation strategies and actions.</p> |
| | <p>In conjunction with the item above, facilitate collaboration in the development of resilience metrics, including working with stakeholders already defining resilience metrics (e.g., ICCCAD, BCAS, CEGIS, Institute of Water and Flood Management, ULAB, and Practical Action) to support standardization and knowledge-sharing.</p> |
| | <p>Support efforts for public hearings to increase transparency regarding allocation of climate budget (e.g., how the funds are spent in relation to vulnerability/climate risk maps of Bangladesh), how decisions are made on which projects are funded, for example, by the CCTF</p> |

SECTION 3:

ECONOMIC & FINANCIAL SHIFTS

CHAPTER 5:

ECONOMIC & FINANCIAL SYSTEM SHIFTS

Research Question: What policy shifts are needed in the existing financial and economic systems to promote: (1) Climate-Smart Agriculture; (2) Green Growth; (3) a Shock-Responsive Social Protection System; and (4) Disaster Risk Financing? How to factor in the full cost of climate change for different social groups within Bangladesh's existing economic system based on existing examples worldwide?

Achieving systems change requires building an enabling environment for the financial and economic shifts that lead key sectors away from behaviors with negative externalities to practices, technologies, and behaviors that support climate resilience and low emissions (see text box). Among other priorities, GoB climate plans identify CSA, green growth (GG), shock-responsive social protection (SRSP), and disaster risk financing (DRF) as key pathways to achieving a climate-resilient low-emissions Bangladesh. However, transforming these systems will require shifts in the current financial and economic systems to align government budgets, spending priorities, financial incentives, and sectoral policy with climate adaptation and mitigation goals. This chapter evaluates the current state of CSA, GG, SRSP, and DRF and identifies opportunities to facilitate the economic and financial shifts in these key sectors in support of systems transformation.

FINANCIAL & ECONOMIC SHIFTS

An **economic shift** refers to a significant change in the underlying structure or dynamics of an economy, which can impact the long-term growth and development of that economy. Examples of economic shifts might include changes in demographics, technology, and industry structure, which can affect the way businesses operate, consumers behave, and resources are allocated. A **financial shift** refers to a significant change in the financial markets or financial sector, which can impact the short-term performance and stability of the economy. Examples of financial shifts might include changes in interest rates, exchange rates, or credit availability, which can affect the cost of borrowing, investment decisions, and the overall level of economic activity. While economic and financial shifts can both have important implications for an economy, the time horizon and impact of these shifts can be quite different. Economic shifts tend to have longer-term implications for an economy, while financial shifts can have more immediate effects on economic growth and stability.

CLIMATE-SMART AGRICULTURE

Agriculture production is Bangladesh's main source of both food security and employment. Nearly half of all Bangladeshi workers and two-thirds of workers in rural areas are employed in agriculture directly. About 87 percent of the nation's rural households rely on agriculture for at least part of their income (CCAFS et al. 2017). In Bangladesh, agriculture already faces several climate-related risks, including salinity intrusion, sea level rise, mean temperature increase, rainfall variability, and extreme weather events; these are likely to increase as climate change progresses. The GoB and partners have shown substantial commitment to supporting farmers to adopt CSA practices, with the goal of increasing productivity, enhancing resilience, and reducing GHGs (CCAFS et al. 2017).

KEY POLICIES

Numerous policies and plans promote CSA in Bangladesh, including the National Agriculture Policy and the National Food Policy Plan of Action 2017–2022. Many of Bangladesh’s recent climate plans also incorporate CSA, including the BCCSAP, the MCPP, and the NAP.

GAPS AND OPPORTUNITIES

Despite these efforts, several opportunities exist to support economic and financial shifts in support of CSA and to reduce food loss and waste.

Climate-Smart Technologies. CSA technologies suffer from relatively low adoption rates in Bangladesh due to the limited availability of credit/incentives, unfavorable extension staff-to-farmer ratios for the dissemination of new technologies and practices, limited implementation of novel financing mechanisms, inefficient supply chains, inaccessible markets, and inefficient agricultural innovation systems (CCAFS et al. 2017). While opportunities to develop technologies within Bangladesh or transfer them from abroad are discussed in Chapter 6 of this report, additional opportunities include:

- **Climate services.** Despite recent gains, Bangladesh has a limited capacity to generate and disseminate weather and climate information (Mason et al. 2022). Given the important role that climate services can play in supporting CSA by providing timely and accurate weather information and climate projections, there is a need to improve the quality and coverage of climate services to better support CSA. This need resonates with recommendations in Chapter 4 regarding the development of climate, weather, and early warning, tailored for specific actors and contexts; economic shifts that might support the development of such services include creating value chains, service providers, and platforms that connect climate service providers with farmers and agricultural stakeholders. Financial incentives, such as subsidies or grants, could also be provided to support the initial establishment and operation of these markets, ensuring the affordability and accessibility of climate services for farmers.
- **Subsidies and policy environment.** As early as 2009, the BCCSAP acknowledged that existing policies, regulations, and subsidies may be detrimental to the environment and promoted the need to develop climate-friendly policies and regulations. An opportunity remains to conduct a comprehensive study to assess the role that policies and subsidies on fossil fuels, fertilizers, and other agricultural inputs play to support the goals of CSA to understand impact and update policies and plans in response. This kind of study would be extremely useful in informing decisions regarding how financial shifts could better support the uptake of CSA principles and strategies.

Training and extension. The successful adoption of CSA requires not just the financial means to purchase related equipment but also the technical expertise to apply it properly. In addition, expanding access to training and extension will further support an economic shift toward CSA by increasing productivity, efficiency, resilience, market opportunities, and access to finance. In this sense, supporting training and extension is an important step in supporting economic shifts toward CSA in Bangladesh.

Carbon market. Developing a carbon market provides a financial incentive for reducing GHG, encouraging farmers and other agricultural actors to adopt practices that reduce emissions or increase carbon sequestration. These practices could include CSA techniques, such as agroforestry, conservation agriculture, and improved livestock management. By participating in an equitable, transparent carbon

OPPORTUNITIES FOR USAID

Climate-Smart Agriculture

- Supporting the scaling and adoption of climate-smart technologies
- Bolstering training and extension for small-scale farmers
- Facilitating the development of a carbon market
- Facilitating investments and supply chain innovations to reduce food loss and waste

market, farmers and other agricultural actors could earn revenue by generating carbon credits, which could then be sold to companies or organizations looking to offset their own emissions. This revenue could help offset the costs of adopting climate-smart agricultural practices, making them more economically viable. Additionally, carbon markets could help to promote sustainable agriculture by encouraging the adoption of practices that reduce GHG emissions and increase resilience to climate change. It is key to ensure integrity, equity, and transparency in carbon markets and to encourage carbon markets to support the objectives of Nationally Determined Contributions and National Adaptation Plans. Opportunities to support the development of an equitable, transparent carbon market are also described as part of the transformative targets discussion in Chapter 2.

Food loss and waste. While climate smart agriculture is focused on increasing sustainable production, efforts to reduce food loss and waste benefit the climate, food security, and overall sustainability of the food system. The United Nations Environment Programme's (UNEP's) recent Food Waste Index found that Bangladeshi households waste roughly 65 kilograms/person/year (United Nations Environment Programme 2021). According to the Food and Agriculture Organization of the United Nations, Bangladesh experiences an estimated 25–30 percent loss of food in post-harvest and pre-consumption. This loss occurs mainly due to poor storage and transport conditions, lack of proper market linkages, and inadequate processing and packaging facilities (FAO and Wageningen 2021). Several shifts could usefully support efforts to reduce food loss and waste in Bangladesh. These include:

- **Supply chains.** A well-integrated supply chain helps to improve communication and coordination among stakeholders, including farmers, processors, distributors, and retailers. This shift, in turn, leads to better planning and management of the entire food value chain, including improved inventory management, more efficient transportation, and reduced product spoilage. Opportunities exist to support economic shifts associated with a better-integrated supply chain, including improving infrastructure, coordination, standardization, and market access.
- **Investment and financing.** Investment and financing opportunities incentivize the reduction of food loss and waste. Financial incentives, such as tax incentives or subsidies for businesses that invest in food processing and storage, can help reduce post-harvest losses. In addition, Bangladesh has stated an intention to explore PPPs to promote investment in infrastructure and technology to reduce food loss and waste, as discussed in Chapter 6. Financial shifts that can support this transition include investment incentives; risk mitigation mechanisms; blended finance approaches; and access to long-term financing, among others.

LEVERAGE POINTS FOR USAID

Literature reviews, KIIs, and stakeholder workshops provided insight into ways USAID could support CSA. Key opportunities for USAID are highlighted in Table 9 below.

| TABLE 9. LEVERAGE POINTS FOR USAID RELATED TO AGRICULTURE | |
|---|---|
| | I. SUPPORT THE SCALING AND ADOPTION OF CLIMATE-SMART TECHNOLOGIES |
| Short Term | <p>Work with the MoA, Department of Agricultural Extension (DAE), Bangladesh Agricultural Development Corporation (BADC), and/or agriculture research institutes and universities to conduct a study that assesses the role subsidies play in the goals of CSA and support the alignment of policies and plans in responses. This study would involve, for instance, assessing distributional impacts of subsidies on different populations and on adaptation and mitigation goals.</p> |
| | <p>Support the design, structure, and mechanisms of the carbon market, including determining the scope, eligible sectors, and methodologies for carbon credits, by engaging agencies that already received carbon credits (e.g., IDCOL, brick kiln companies, and Waste Concern).</p> |

TABLE 9. LEVERAGE POINTS FOR USAID RELATED TO AGRICULTURE

Support the development of climate services by building capacity to generate and disseminate weather and climate information. Specific actions include working with BMD to enhance meteorological infrastructure; expand the network of weather stations. Engage NGOs/research organizations (e.g., ICCCAD, CIMMYT, DAE), which have worked in this space and build on the experience of recent projects, (e.g., formation of Bangladesh Academy of Climate Service coordinated by ICCCAD and Bangladesh Weather and Climate Services Regional Project of WB).

Improve the tailoring and dissemination of agricultural climate services by working with MoA and DAE to organize capacity building and training programs that enhance skills of experts to interpret and communicate climate information to varied members of the agricultural community and offer clear recommendations regarding the use of that information. This process should build on the experience of recent climate services projects.

Support the development and use of weather and climate-informed decision support tools, including crop suitability tools and pest and disease monitoring tools, that MoA and DAE can use to guide recommendations and policies.

Develop programs to expand access to training and extension on climate-smart technologies. Among different actions, this may include supporting Climate Technology Park of CCDB to develop new programs or International Center for Tropical Agriculture (CIAT) in the development of food system transformation hubs. Leverage experience from USAID's Feed the Future Bangladesh Horticulture, Fruits, and Non-Food Crops Activity and Integrated Pest Management Activity and the WB National Agricultural Technology Program.

Support public and private financial and microfinance institutions to increase access to credit and financial services for smallholder farmers by conducting research that can support the development of tailored financial products and promoting financial literacy among farmers and other agricultural stakeholders with active facilitation from Bangladesh Bank's Sustainable Finance Department.

Follow recommendations from Bangladesh USAID Agricultural Value Chain project and continue to support organizations (e.g., IRRI, CIMMYT, BARI, Grameen Krishi, etc.) in bolstering the development of climate-smart agricultural value chains by strengthening market linkages, improving post-harvest infrastructure, and promoting value-added processing and marketing activities for climate smart agriculture activities.

Med Term Support business incubation centers and innovation hubs that focus on CSA technologies facilitated/coordinated by BADC and DAE of MoA. These platforms can provide startups and entrepreneurs with technical assistance, mentoring, access to laboratory facilities, and networking opportunities.

Support the establishment of platforms and networks that facilitate dialogue, matchmaking, and joint projects between the public and private sectors to foster investment, technology transfer, and scalability of CSA technologies. This could be coordinated by BARC involving concerned NARS, agricultural universities and INGOs (International Rice Research Institute [IRRI], WorldFish, CIMMYT, World Vision, CARE).

Partner with financial institutions, impact investors, and development banks to provide seed funding, risk guarantees, or concessional loans that mobilize additional private sector resources for CSA technology projects, which can help de-risk investments and make them more attractive to private investors.

2. FACILITATE INVESTMENTS AND INNOVATION TO REDUCE FOOD LOSS AND WASTE

Support follow-on from USAID's Bangladesh Agricultural Infrastructure Development Program, focusing on improved supply chain infrastructure, including better roads, cold storage facilities, and packaging facilities.

Short Term Collaborate with IDCOL, Bangladesh Agro-Processors Association (BAPA), and Infrastructure Investment Facilitation Corporation in the organization of training, workshops, and knowledge sharing initiatives aimed at enhancing the skills and knowledge of farmers, transporters, packers, processors, and other supply chain actors, particularly regarding cold-chain management, post-harvest handling, quality control, and packaging techniques.

Support Bangladesh Frozen Food Exporters Association and BAPA as they encourage the standardization of agricultural products through uniform packaging and labeling, which improves traceability and makes it easier to identify and address quality issues.

Med Term Support the development and implementation of financial incentives to reduce food loss and waste, including tax incentives or subsidies, by engaging research institutes with experience working in taxation landscape. Support the Ministry of Food by providing technical expertise, conducting policy analysis, supporting the formulation of strategies and action plans to align national policies with international best practices and standards, facilitating harmonization, and streamlining regulatory frameworks related to food loss and waste reduction.

Support the development of PPPs and technology development/transfer as discussed in Chapter 6.

GREEN GROWTH

Bangladesh's contribution to global GHG emissions is not significant at just 0.4 percent, but with its large population and fast economic growth, GHG emissions are expected to increase substantially (World Bank Group 2022). In this context, the country has shown increasing interest in pursuing GG. An approach to economic development that promotes sustainable development while reducing impacts on the environment, GG promises to increase productivity, reduce GHG emissions, and promote social equity—though since these priorities will frequently not align, proponents of GG may seek synergies and acknowledge tradeoffs in some cases.

KEY POLICIES

The GoB has made significant progress in creating a policy and institutional framework to support GG (Baniya et al. 2021; Khan 2017). Key policies and plans in support of GG include the BCCSAP; the National Sustainable Development Strategy; the Bangladesh Delta Plan 2100; the Mujib Prosperity Plan; and the Nationally Determined Contribution (see Table 10). Several other sector-specific policies (e.g., related to renewable energy, the ready-made garment [RMG] industry, and transport) are also noted in the Gaps and Opportunities section.

OPPORTUNITIES FOR USAID

Green Growth

- Providing technical assistance to achieve renewable energy targets, including through:
 - Financial incentives
 - Regulatory frameworks
 - Public-private partnerships
- Fostering sustainable practices in the Ready-Made Garment industry, including through regulatory frameworks, dialogues, and certification schemes
- Supporting the design and implementation of regulations to limit the GHG-intensity of transportation

TABLE 10. KEY PLANS AND POLICIES RELATED TO GREEN GROWTH

| POLICY DOCUMENT | YEAR | DESCRIPTION |
|---|---------------------|--|
| Bangladesh Climate Change Strategy and Action Plan (BCCSAP) | 2009 (updated 2022) | Focuses on achieving economic and social well-being through a pro-poor climate change strategy. Incorporates sustainable development and GG strategies. |
| National Sustainable Development Strategy (NSDS) | 2010 | Sets forth a vision for a prosperous enlightened Bangladesh, including sustainable development and GG strategies. |
| Bangladesh Delta Plan 2100 (BDP 2100) | 2018 | A comprehensive development plan that focuses on economic growth (eradicate poverty 2030, upper middle-income by 2030, prosperous country by 2041) and incorporates sustainable development and GG strategies. |
| Nationally Determined Contributions (NDC) | 2021 | Articulates conditional and unconditional targets under the Paris Agreement. Promises significant GHG reductions under both its unconditional (i.e., 27.56 Mt CO2e, or 6.73 percent) and conditional scenario (i.e., 89.47 Mt CO2e, or 21.85 percent) below business as usual by 2030. |
| Mujib Climate Prosperity Plan 2022–2041 (MCPP) | 2021 | The MCPP 2022–2041 adopts several pathways to facilitate GG by encouraging just transition for the large labor force, transforming energy and transport sectors, and supporting NbSs. |

GAPS AND OPPORTUNITIES

Despite Bangladesh's progress towards GG, limited financial resources, weak enforcement of environmental laws, and a lack of awareness within both the public and private sectors limit progress. Several sector-specific opportunities exist to advance GG with respect to renewable energy, the RMG industry, and transportation.

Renewable energy. As of 2023, Bangladesh's Power Division reports that electricity is available for all, up from 20 percent in 2000 (Bangladesh Power Division 2023). Gas accounts for the majority of the country's electricity production, though wind, hydropower, and solar photovoltaic (PV) shares are growing (SURE 2021). According to the Bangladesh Power Development Board, in June of 2023, renewable energy sources accounted for 2.85 percent of electricity generation in Bangladesh (BPDB 2023). This is significantly lower than the global average of 28 percent, indicating that there is significant room for growth in the country's renewable energy sector. However, it is worth noting that Bangladesh has made progress on this front in recent years, with renewable energy capacity increasing from 442 MW in 2015 to 689 MW in 2023, primarily driven by solar energy installations (BPBD 2023).

In 2016, Ministry of Power, Energy, and Mineral Resources' (MoPEMR's) Power Division updated its Power System Master Plan (PSMP) 2016–2041, which includes a target to generate 10 percent of the country's electricity from renewable sources by 2020; 20 percent by 2025; and 40 percent by 2041—acknowledging that energy demand itself will continue to increase (MoPEMR Power Division 2016). To achieve this goal, the PSMP estimates the country will need to bring 60,000 MW of new capacity online by 2041. The GoB has established various policies that set targets intended to drive up installed generation capacity from clean energy to accommodate this (IEA 2020). The government is also actively seeking investments from both domestic and foreign sources to support the development of renewable energy projects in the country (SURE 2021). Several financial and economic shifts can support this work.

- **Regulatory framework.** While the government's interest in promoting renewable energy is clear, the policies and regulations related to the issue are less so. There are a number of fragmented and inconsistent policies that result in stakeholders facing significant investment barriers (Karim et al. 2019). To address this issue, there is an opportunity to simplify the regulatory framework that governs renewable energy by consolidating and streamlining regulations, establishing clear standards and guidelines, and simplifying the permitting process.
- **Financial incentives.** The power and energy sector in Bangladesh remains the biggest recipient of government subsidies, which increased from 52.9 percent of the total subsidies in FY2016–2017 to 79.8 percent in FY2021–2022 (Moazzem and Preoty 2022). Increased incentives and subsidies to renewable energy producers, including tax breaks, feed-in tariffs, and grants, can help reduce the cost of renewable energy (Karim et al. 2019). The government should also explore the creation of policies that can increase the renewable energy purchase obligation of electricity companies and increase the trade of renewable energy across Bangladesh, Bhutan, India, and Nepal (BADGE 2023).
- **Access to finance.** Under current conditions, subsidies are not sufficient to achieve the renewable energy transition. There are opportunities to improve access to finance for renewable energy projects through financing mechanisms (e.g., green bonds, venture capital); operational expenditure and Super Energy Service Company models (Alam 2023); or by providing guarantees to de-risk renewable energy investments, particularly in the early stages of project development (Rose and Joshi 2021; UNDP and ETH Zurich 2018). Other opportunities include the development of renewable energy certifications (REC) and of an equitable, transparent carbon market, described below.
- **Supportive Infrastructure.** Bangladesh will also need new infrastructure to support the transition to renewable energy—including grid infrastructure, automatic generation control mechanisms, and

energy storage. As the adoption of renewable energy increases, the country's grid infrastructure will need to be modernized to accommodate the variable nature of renewable energy sources (Rose and Joshi 2021). Likewise, energy storage is critical for renewable energy systems to provide reliable and consistent power.

- **Public-private partnerships.** Opportunities exist to attract private sector actors to the Bangladesh renewable energy market, build trust and confidence between the government and private sector partners, and ultimately lead to more successful PPPs for renewable energy (Awan and Nawaz 2022; Khan 2017).

Ready-Made Garment Industry. The RMG industry, which accounts for more than 80 percent of the country's exports, is one of the largest and most important sectors of Bangladesh's economy. It is also a major employer in Bangladesh, providing jobs to over four million workers, the majority of whom are women. Notably, the RMG industry remained resilient even during the COVID-19 pandemic and is thus a backbone of Bangladesh's economy (Rahman 2021; Sarkar et al. 2020).

The RMG industry is, however, the source of significant environmental degradation. The production of garments requires large amounts of energy and water, and the use of chemicals in dyeing and finishing can lead to water pollution and other environmental problems. This industry contributes to the depletion of non-renewable resources and to climate change (ILO, 2023). As a result, the RMG industry in Bangladesh is estimated to be responsible for around five percent of the country's total GHG emissions (MoEFCC 2021).

To address these impacts, the GoB and industry stakeholders have begun to promote sustainable practices, including water conservation, the use of sustainable materials, improved waste management and renewable energy, the adoption of more energy-efficient technologies, and the implementation of cleaner production methods. As a result, Bangladesh now has more green garment factories than any other country in the world—although the share that these factories maintain within the country's apparel exports remains low (Berg et al. 2021). Efforts to green the industry are important for ensuring the RMG industry can contribute to Bangladesh's economy while also minimizing its environmental footprint (Sarkar et al. 2020). Unfortunately, a number of bottlenecks impede progress on these fronts. Several shifts could better support the use of sustainable practices in the RMG industry, including:

- **Regulatory support.** There is an opportunity to provide regulatory support for sustainable practices, especially new environmental regulations that meet or exceed the environmental standards of the European Union to ensure a space in that market (Berg et al. 2021). Specific opportunities include implementing carbon pricing mechanisms and green building codes, introducing energy efficiency standards for industrial processes and equipment, setting renewable energy targets for the RMG industry, and introducing regulations related to waste reduction and recycling.
- **Social dialogue and advocacy.** Continuing to support social dialogue and advocacy as well as GoB engagement with related efforts presents an opportunity to drive GG in the RMG industry. Following a series of tragedies, including the 2012 Tazreen factory fire and the 2013 Rana Plaza factory collapse, Bangladesh's RMG sector is a frontrunner in transparency regarding factory safety due to initiatives launched in the aftermath of the disasters. Similar advocacy efforts have taken place with respect to sustainability and can continue to be bolstered.
- **Certification.** Certification programs can be developed to promote the use of sustainable practices and provide assurance to buyers that products are produced in an environmentally friendly manner. By providing those producers who meet requirements with access to an improved market, these schemes may even raise additional funds for technology or related investments. Supporting efforts like the Global Organic Textile Standard (GOTS), Green Factory Certification by the Green Bangladesh Green Building Council, Bluesign, and the Global Recycled Standard will be important to the green growth of the RMG industry.

Transportation. According to Bangladesh's Third National Communication (TNC), the country's transportation sector accounts for 16 percent of its GHG emissions (forecast for approximately 9 percent in 2030 in the updated NDC). Within the transport sector, road transport (e.g., passenger cars, buses, freight trucks) accounts for nearly 90 percent of emissions. Road transport also accounts for roughly 80 percent of passenger and freight movement (Ministry of Environment, Forest, and Climate Change 2018). The TNC notes that despite efforts to improve fuel quality and promote the use of cleaner vehicles, emissions from the transport sector continue to increase due to the rapid growth in vehicle ownership and use.

Compared to neighboring countries in South Asia, Bangladesh's transportation sector is somewhat underdeveloped (e.g., 10.3 kilometers [km]) of paved road per 1,000 people, compared to 27.7 km in India and 17.6 km in Pakistan; 9.4 registered vehicles per 1,000 people in Bangladesh compared to 22.5 in India and 17.5 in Pakistan) (World Bank 2023). In addition to this lack of infrastructure, Bangladesh faces limited access to fuel-efficient and low-emission vehicles and a high level of congestion and pollution in urban areas. At the same time, Bangladesh's transportation sector plays a crucial role in facilitating economic growth and social development, providing access to markets, employment, and services.

Bangladesh has made several efforts to foster green growth in the transport sector. Several of these efforts have been aimed at reducing the country's dependence on road transport, including the 2013 Railway Master Plan and the Padma Multipurpose Bridge Project (inaugurated in 2022), which involved the construction of a road-rail bridge that provided an alternative transport route to the existing road network (Padma Multipurpose Bridge Project 2023). In 2016, with support from the World Bank, the government also launched the First Regional Waterway Transport Program Development Project to modernize the country's inland water transport sector (IWT) with the goal of providing a low-carbon alternative to road transport (World Bank 2016).

The country has also made efforts to make road transport less GHG-intensive, including the Bus Rapid Transit (BRT) currently under construction in Dhaka, which is intended as a high-capacity bus-based transit system providing fast and reliable transportation and ultimately reducing GHGs and improving air quality. Likewise, the GoB is working to create a favorable environment for the adoption of low-emission vehicles, for instance, including measures to promote the use of low-emission vehicles in the Automobile Industry Development Policy (2021) and the Electric Motor Vehicle Registration and Operation Guideline 2023 (under review), which include measures to develop charging infrastructure and promote the use of electric vehicles in public transport.

Despite this progress, the country will need to continue to develop IWT, promoting railways, and encouraging public transportation as part of its journey toward a more modern, less GHG-intensive transportation system. Several financial and economic shifts may support these goals, including implementing fuel taxes; introducing congestion charges; providing financial incentives for low-carbon transport; and introducing road-use charges.

LEVERAGE POINTS FOR USAID

Literature reviews, KIIs, and stakeholder workshops provided insight into ways USAID could support DRF. Key opportunities for USAID are highlighted in Table 11 below.

TABLE II. LEVERAGE POINTS FOR USAID: GREEN GROWTH

| I. PROVIDE TECHNICAL ASSISTANCE TO REDUCE BARRIERS TO AND ENCOURAGE INVESTMENT IN RENEWABLE ENERGY | |
|--|--|
| Support the MoPEMR as it continues to develop clear standards and guidelines for renewable energy projects (e.g., technical and environmental standards and guidelines for interconnection and grid integration), building upon work of GIZ's Policy Advisory for Promotion of Renewable Energy and Energy Efficiency Project, the World Bank's Sustainable Energy Financing Program, and additional work by BCCRF, GPOBA, Rural Electrification and Renewable Energy Development Project (REREDP) I and II, Scaling Up Renewable Energy Program (SREP), and the Public-Private Infrastructure Development Facility (PPIDF) of the Asian Development Bank. | |
| Short Term | Support PPPs for renewable energy by supporting the GoB in developing a pipeline of energy projects and developing a transparent bidding process. |
| | Promote technology transfer and innovation by facilitating partnerships between Bangladeshi and international institutions, promoting knowledge exchange, and supporting research and development initiatives for renewable energy technologies suitable for Bangladesh's context. |
| | Support awareness campaigns, stakeholder consultations, and public engagement initiatives to increase awareness about the benefits of renewable energy and build consensus among key stakeholders. |
| | Facilitate the development of energy-storage technologies in collaboration with other donor-funded efforts (e.g., the WB-funded Electricity Distribution Modernization Program). |
| | Support the establishment and build the capacity of a single regulatory body that oversees all aspects of the renewable energy sector in collaboration with other donor-funded efforts (e.g., the JICA-funded Integrated Energy and Power Master Plan Formulation Project). |
| Med Term | Support the development of robust data and information systems to facilitate evidence-based decision-making in the renewable energy sector through improving data collection, analysis, and dissemination on renewable energy potential, resource mapping, grid integration, and energy demand projections. |
| | Analyze approaches and support simplification of the permitting process (e.g., reducing the number of permits required, establishing clear timelines for permit review, streamlining the application process). |
| | Support the design and implementation of financial incentives to cover the development of land, import of raw materials and equipment, and development and distribution of energy. |
| 2. SUPPORT SUSTAINABLE ENVIRONMENTAL REGULATIONS IN THE READY-MADE GARMENT INDUSTRY | |
| Build capacity of the GoB to improve the implementation of existing environmental regulations and to help factories comply with environmental regulations. | |
| Short Term | Pilot or scale certification programs (e.g., the Circular Fashion Partnership, GOTS). |
| | Support GoB engagement with social dialogue and advocacy organizations, projects, and alliances (e.g., the Accord on Fire and Building Safety in Bangladesh, the Alliance for Bangladesh Worker Safety, RMG Sustainability Council, Sweden Textile Water Initiative, Partnership for Cleaner Textile (PaCT), the UN Alliance for Sustainable Fashion (linked to the SDGs), and the UN Fashion Charter for Climate Action (linked to the Paris Agreement)). |
| Med Term | Support the development of new environmental regulations including carbon pricing mechanisms to incentivize a reduction in GHG emissions, green building codes to ensure that new factors are constructed to high environmental standards, mandatory energy efficiency standards, renewable energy targets for the RMG industry, and regulations to encourage waste reduction and recycling. |
| 3. SUPPORT THE DESIGN AND IMPLEMENTATION OF REGULATIONS TO REDUCE GHG EMISSIONS RELATED TO TRANSPORTATION | |
| Short Term | Support the Ministry of Road, Transport, and Highways in implementation of policies and plans in support of reduced dependence on road transport and lower GHG emissions (e.g., National Sustainable Transport Strategy, Railway Master Plan, Inland Water Transport Development Project, Bus Rapid Transit System, National Energy Policy, and the Low Carbon Transport Fund). Complement activities under GIZ's Transition to E-mobility Project. |

TABLE II. LEVERAGE POINTS FOR USAID: GREEN GROWTH

| | |
|----------|---|
| | Support the design and implementation of fuel taxes, congestion charges, financial incentives, and road user charges; provide technical support to assess feasibility of these opportunities, which are new to Bangladesh. |
| Med Term | Support the development and implementation of sustainable urban transport systems, for instance by advocating for the expansion and improvement of public transportation infrastructure, such as bus rapid transit systems, cycle lanes, and pedestrian-friendly infrastructure. |
| Med Term | Support the collection and analysis of data related to transportation sector emissions, travel patterns, and fuel consumption, for instance by strengthening data collection mechanisms and building the capacity of relevant institutions to effectively manage and analyze transportation-related data. |
| | Assist in the promotion of cleaner and more efficient fuels and technologies in the transportation sector, supporting the introduction of cleaner fuels such as low-sulfur diesel and biofuels and the adoption of cleaner vehicle technologies, such as hybrid vehicles. |
| | Promote renewable energy in rail systems by supporting pilot projects to demonstrate the viability and benefits of integrating renewable energy into rail systems. Provide technical assistance and capacity building support to rail operators and relevant government agencies in adopting and managing renewable energy systems. Facilitate partnerships and knowledge exchange between Bangladeshi and international institutions to promote technology transfer and innovation in renewable energy for rail systems. |

SHOCK-RESPONSIVE SOCIAL PROTECTION

Social protection is a fiscal policy instrument that can be used to help smooth economic consumption even in the face of significant shocks, reduce poverty and inequality, and spur growth. Social protection is a critical tool in CCA, with some social protection instruments designed to support protective and preventive climate-related coping strategies, while others develop adaptive and transformational capacity. In addition, when social protection is designed to respond to sudden shocks, including climate-related disasters, it is an important component of disaster risk management.

KEY POLICIES

Bangladesh has long prioritized social protection, embedding it in the constitution in 1972 and continuing to pay significant attention to the issue in recent years. There is currently a strong commitment from the GoB and its partners to strengthen social protection systems. These systems are built out of a patchwork of 130 programs and implemented by 27 government agencies. According to the World Bank, the country spent a total of BDT 743 billion (USD 6.9 billion) on social protection in FY19–20 (World Bank 2021). Key policies in Bangladesh that develop Bangladesh's social protection system including the National Social Security Strategy (2015, 2020) and the Social Protection Strategy (2021). Social protection is also highlighted in the Eighth Five-Year Plan, the MCPP, and the NAP.

OPPORTUNITIES FOR USAID

Shock-responsive Social Protection



- Expanding the coverage, targeting and gender-responsiveness of social protection
- Supporting digital service delivery, particularly for cash-based social protection programs
- Building the M&E infrastructure necessary to improve learning about shock-responsive social protection

GAPS AND OPPORTUNITIES

Despite the prioritization of social protection, millions of Bangladeshis—especially informal workers, urban slum dwellers, women, children, and people with disabilities—are underserved by the current system (Coirolo et al. 2013; Hasan 2017; Hebbar et al. 2021; S. S. Khan and Khan 2021). Acknowledging that government allocations to social protection in Bangladesh are in line with that of other similar countries in the region, the World Bank attributes gaps to issues of planning, design, programming, and delivery (Coirolo et al. 2013; Hasan 2017; Hebbar et al. 2021; S. S. Khan and Khan 2021; World Bank 2021). While Bangladesh has given significant attention to social protection, this assessment identified several areas where economic and financial shifts may improve the shock-responsiveness of the system.

Coverage. Bangladesh has significantly expanded its coverage of social protection programs in the last few decades but urban dwellers, those in the informal economy, women, children, and people with disabilities remain underserved, particularly in the wake of storms, droughts, and floods. There are opportunities to use financial shifts to expand through increased funding and support to:

- **Improve targeting.** Though most social protection programs in Bangladesh use a combination of geographic and poverty targeting, it has been shown that their targeting effectiveness is relatively weak—with inclusion and exclusion errors as high as 51 percent (World Bank 2021). Improved targeting would help expand coverage of social protection programs.
- **Increase gender responsiveness.** In Bangladesh, as in many other places, women are more vulnerable to climate variability and change than men. Acknowledging this, Bangladesh has made several strides to build gender responsiveness into its social protection system and to help women cope with climate shocks. Nevertheless, there is an opportunity to be more responsive to the needs of women in social protection policies.
- **Better serve urban areas.** A recent government report found that 85 percent of the country's social protection funding was spent in rural areas even though nearly 40 percent of the country's population currently resides in urban areas (Hasan 2017). Since this number is only expected to grow, better serving the vulnerable urban population is a further opportunity to expand social protection.

Data. Data is an essential component of any social protection system since it helps to identify the individuals and groups that may be served by a system by providing information on their socioeconomic status, demographics, and living conditions. Data can also help characterize and forecast the scale of resources that may be needed to respond to climate events. Improvements in the quality and accessibility of data will increase the capacity of Bangladesh's social protection system to be shock responsive and better inform relevant policies and plans. Financial shifts would be needed to support the improvement of data resources; improved data may also foment economic shifts, for instance as improved targeted supports human capital development, macroeconomic stability, and economic stability. At present, there are ad hoc agreements regarding data sharing between institutions, which could be improved through the development of a social protection registry.

Delivery. Across its social protection system, Bangladesh has experimented with both in-kind and cash-based transfers. Cash transfers are generally considered more climate sensitive because they provide households with greater flexibility and autonomy to respond to changing climate risks and shocks. In addition, a transition to the digital delivery of social security cash transfers is expected to save millions of citizen hours, millions of visits, and billions of takas in expenses a year (Winstaley 2019). While the transition to more cash-based social protection programs is already underway within the government-to-person (G2P) payment system, several recent documents, including National Digital Payments Roadmap (Massally et al. 2022b) and Consultative Group to Assist the Poor's (CGAP's) Future of G2P Payment (Baur-Yazbeck and Roest 2019), identify opportunities to advance the program. These include

increasing digital financial literacy for participants, simplifying the enrollment process, ensuring payment security, improving payment infrastructure, strengthening data systems, and facilitating interoperability (Aziz and Naima, 2021; Massally et al. 2022a).

Monitoring and evaluation. M&E of social protection programs is critical to ensuring they are reaching and benefiting vulnerable populations effectively and assisting adequately in the aftermath of climate-related shocks. This requires a robust M&E system, with indicators that measure the impact of the programs on beneficiaries' well-being and resilience to climate change. The Bangladesh National Social Security Programme (NSSP) currently runs an M&E committee, which has produced a set of indicators and is in the process of developing a dashboard to display progress against them. Support to M&E will help assess social protection programs and inform policy decisions and planning (Aleksandrova 2020; Coirolo et al. 2013; S. S. Khan and Khan 2021).

LEVERAGE POINTS FOR USAID

Literature reviews, KIIs, and stakeholder workshops provided insight into ways USAID could support shifts in shock-responsive social protection. Key opportunities for USAID to bolster economic and financial shifts are highlighted in Table 12 below.

| TABLE 12. LEVERAGE POINTS FOR USAID: SHOCK-RESPONSIVE SOCIAL PROTECTION | |
|---|--|
| I. EXPAND SOCIAL PROTECTION COVERAGE | |
| Short Term | <p>Support the Ministry of Social Welfare in the identification of better targeting methods in line with specific program objectives and help customize methods in support of the implementation of social protection for key target populations.</p> |
| Short Term | <p>Conduct context-specific gender-analysis-based planning. Support programs and build capacity to increase women's participation in decision-making regarding the provision and targeting of social protection schemes (e.g., Vulnerable Group Development, Employment Generation Programme for the Poorest, and Food for Work/Cash for Work).</p> |
| 2. SUPPORT BETTER-QUALITY AND MORE ACCESSIBLE SOCIAL PROTECTION DATA | |
| Short Term | <p>Support Ministry of Social Welfare, MoWCA, MoYS, MoDMR/DDM, Ministry of Chittagong Hill Tracts Affairs, Ministry of Food, Ministry of Labour and Employment, MoEFCC, MoA, Ministry of Fisheries and Livestock, MoWR, Rural Development Cooperative Division, LGD, Bangladesh Bureau of Statistics (BBS), and Prime Minister's Office (PMO) efforts and improve capacity, coordination and address social protection data gaps in the following areas: (a) digitization of data collection and reporting, (b) conducting gender-sensitive vulnerability assessments; and (c) data sharing.</p> |
| Med Term | <p>Support the MoDMR and Statistics and Informatics Division (SID) in the development and establishment of a unified social protection system including a unified database of relevant demographic vulnerability and hazard and risk data and a social protection information system that links to other GoB systems (e.g., early warning).</p> |
| Med Term | <p>This could merge different DRF-related activities under the SSNP (Social Safety Net Programs), which can be accessed by all concerned govt. agencies with appropriate data protection/security mechanisms. The data should be collected and/or managed by Bangladesh Bureau of Statistics, Department of Disaster Management, Department of Social Welfare, and/or Local Government Division, strongly guided by a data protection policy to avoid potential misuse.</p> |
| Med Term | <p>This database should be updated annually/quarterly/real-time to capture the dynamic nature of the vulnerable communities (due to displacement/migration) by engaging local actors/volunteers/youth. Data use capacity of local stakeholders, NGOs, and CSOs should be mapped out, and necessary capacity development initiatives should be undertaken to build on the database.</p> |
| 3. SUPPORT THE TRANSITION TO CASH-BASED SOCIAL PROTECTION PROGRAMS TO IMPROVE DELIVERY | |
| Short Term | <p>Support the G2P payment system and the efforts of Digital Bangladesh, the National Financial Inclusion Strategy, and the Electronic Know your Customer (E-KYC) Guidelines to transition to more cash-based social protection programs.</p> |

TABLE 12. LEVERAGE POINTS FOR USAID: SHOCK-RESPONSIVE SOCIAL PROTECTION**4. BUILD CAPACITY TO MONITOR AND EVALUATE SOCIAL PROTECTION PROGRAMS**

| | |
|------------|--|
| Short Term | Support and build the capacity of the NSSP to conduct research and evaluations. Host and support knowledge-sharing and learning events and coordinate efforts to strengthen data systems and program design. |
|------------|--|

DISASTER RISK FINANCING

As climate change affects Bangladesh, innovative financial solutions will increasingly be needed to build climate resilience and enable impacted individuals to rebuild their livelihood strategies immediately after a shock. A comprehensive approach to DRM requires a range of financing tools and mechanisms to ensure that citizens and the government have access to the resources needed to prepare for, respond to, and recover from disasters.

KEY POLICIES

Bangladesh is generally regarded as a model for other countries with respect to DRM. It has a long history of developing plans and policies that guide disaster risk planning, preparedness, and response, including the Disaster Management Act (2012), which has been supported by National Disaster Management Plans (2010–2015; 2016–2020; 2021–2025), the National Disaster Management Policy (2015), the Disaster Management Regulatory Framework (2015), and the Standing Orders on Disaster 2019. In addition, recent climate policies including the Bangladesh Delta Plan, the MCPP and the National Adaptation Plan highlight the need to advance with respect to disaster risk management.

**OPPORTUNITIES
FOR USAID****Disaster Risk
Finance**

- Improving the regulations that govern the microinsurance industry
- Scaling weather-based index insurance

Bangladesh employs a layered approach to disaster risk financing, which uses different financial instruments that complement risk transfer and risk reduction instruments as a means of bridging financial gaps. Specifics on Bangladesh's layered approach are included in Table 13 below.

TABLE 13. BANGLADESH'S LAYERED DISASTER RISK FINANCING APPROACH

| APPROACH | DESCRIPTION |
|----------------------------|--|
| Domestic disaster reserves | These are resources that a government mobilizes from its own budget or through borrowing from domestic sources to address the immediate and short-term needs of disaster-affected populations. The budgetary system in Bangladesh includes several funds dedicated to building resilience (e.g., Climate Change Trust Fund; Disaster Risk Reduction Fund; and PKSF, which administers the Climate Resilience Fund) and providing relief after disaster strikes (e.g., Emergency Fund for Disaster Management; Fund for Unforeseen Incidents; Bangladesh Bank Disaster Management and Corporate Social Responsibility Fund; Disaster Recovery Trust Fund) |
| Contingent credit | The GoB has established several forms of contingent credit arrangements to provide financial support in the event of a natural disaster or other emergencies. These include contingent lines of credit from the International Monetary Fund from the World Bank (e.g., the Emergency Multi-Sectoral Project for Cyclone and Flooding), the ADB (e.g., the Emergency Assistance for Disaster Response and Rehabilitation Project), and the Islamic Development Bank. In 2016, Bangladesh also established a Catastrophe Deferred Drawdown Option (Cat DDO) with the World Bank, which allows Bangladesh to access financing in the event of a natural disaster without having to pay interest until the funds are drawn down. |
| Insurance & reinsurance | The GoB has property and asset insurance policies to cover losses from floods, earthquakes, and other natural disasters. The government has also purchased agricultural insurance policies to protect farmers against crop losses and established a public insurance scheme called the Weather Index-Based Crop Insurance Scheme (WIBCI). The public has access to insurance through two state-owned |

TABLE I3. BANGLADESH'S LAYERED DISASTER RISK FINANCING APPROACH

| APPROACH | DESCRIPTION |
|--|--|
| | corporations and several private general insurance companies, though because of challenges related to awareness, affordability, perception, and distribution, penetration is very low. In addition, a meso-level index-based flood insurance is being piloted in Sirajganj area by the Swiss Agency for Development and Cooperation, Oxfam, Pragati General Insurance, PKSF, Manab Mukti Sangstha, and Swiss Re. |
| Catastrophe bonds insurance-linked securities | The GoB has purchased disaster risk insurance in the form of catastrophe bonds to transfer the financial risk of natural disasters. In 2017, Bangladesh became the first country in the world to issue a catastrophe bond, known as the "IBRD CAR 111-112" bond, which provides coverage against losses from earthquakes and tropical cyclones. The catastrophe bond was issued by the World Bank's International Bank for Reconstruction and Development (IBRD), and it is backed by a pool of insurance policies purchased by the GoB. |
| International donor assistance | In addition, Bangladesh accesses funding to support disaster preparedness, early action, and response from a variety of international donors, as illustrated in Figure 3. This includes the Least Developed Country Fund, Adaptation Fund, GCF, Global Facility for Disaster Reduction and Recovery (GFDRR), Central Emergency Response Fund, Disaster Relief Emergency Fund, the UNDP's Emergency Development Response to Crisis and Recovery (EDRCR), and Humanitarian Implementation Plan (HIP), among others. |

GAPS AND OPPORTUNITIES

Despite significant efforts to advance DRM, it is still in the early stages of initiating risk financing approaches for catastrophic events like cyclones, storm surges, and floods. As such, there are several opportunities to improve this layered approach, particularly within the insurance sector. In Bangladesh, the insurance sector consists of two state-owned corporations (the Sadharan Bima Corporation [SBC] for general insurance and Jiban Bima Corporation [JBC] for life insurance) as well as approximately 30 private life and 40 private general insurance companies. Overall, the country's insurance sector has witnessed slow growth. Most general insurance companies provide health and flood insurance, though policyholders are largely found among the upper and middle class, leaving most of the population without access to formal insurance service. Shifts that can help to address these challenges include:

Microinsurance regulation. Microinsurance was first introduced in Bangladesh by an NGO called Ganoshasthya Kendra in 1978. Currently, there are three types of organizations offering microinsurance services: NGO-microfinance institutions (MFIs), private insurance companies, and SBC and JBC. The microinsurance agency is regulated by the Insurance Development and Regulatory Authority (IDRA), established in 2011. In 2018, IDRA issued guidelines for the development of microinsurance products, hoping to promote innovation and increase access to insurance among low-income households. Among other things, these guidelines defined microinsurance; allowed both insurance companies and MFIs to offer microinsurance products; provided guidelines for a range of products, including life insurance, health insurance, accident insurance, and livestock insurance; stipulated that microinsurance premiums should be affordable and proportionate to the risks covered; and required insurance providers to settle claims promptly (ADB 2015). There are opportunities to support and further these efforts including:

- **Evaluation.** There is a need for standardized metrics to evaluate the effectiveness of microinsurance products in reducing the vulnerability of low-income households to climate-related risks. This would help to create a more transparent and accountable microinsurance market, which could encourage greater participation by both insurers and insured parties;
- **Innovation.** Reducing regulatory barriers to product development and allowing insurance companies to experiment with new products in a controlled environment will encourage the expansion of insurance product availability; and

- **Risk Analysis.** Improving the risk analysis performed by the insurance sector is critical for enhancing the resilience of Bangladesh to natural disasters and climate change impacts. There are several policy shifts that can improve the risk modelling and analysis performed by the microinsurance sector including improving the quality and availability of data, supporting the development of risk models, encouraging research and development, and providing training and education.

Index insurance. To date, there have been several pilot activities on index insurance in Bangladesh. This includes WIBCI supported by the ADB in partnership with GoB and SBC in 2014, Weather Index-Based Agriculture Insurance introduced by the Green Delta Insurance Company in 2015, and Flood Index-Based Crop Insurance for Haor launched by SBC in 2020. As pilot activities, these schemes faced similar challenges related to product design, limited access to weather data; lack of actuaries, crop scientists, and meteorologists in Bangladesh; and the limits of farmer knowledge, trust, and ability to pay (Akter et al. 2017; Al-Maruf et al. 2021; Hill et al. 2019; Malik and Amarnath 2021). Several shifts would better support the scaling of index insurance, including strengthening infrastructure required for weather monitoring, data collection, and dissemination; engaging farmers and raising awareness about the benefits of insurance products; providing subsidies; collaborating with insurers to develop or improve insurance products; and supporting research and development.

LEVERAGE POINTS FOR USAID

Literature reviews, KIIs, and stakeholder workshops provided insight into ways USAID could support disaster risk financing. Key leverage points and associated opportunities are highlighted in Table I4 below.

TABLE I4. LEVERAGE POINTS FOR USAID: DISASTER RISK FINANCING

| I. SUPPORT IMPROVED MICROINSURANCE REGULATION | |
|--|--|
| Short Term | Strengthen microinsurance through: (a) support to IDRA and other stakeholders in developing standard metrics for evaluating the effectiveness of microinsurance products, (b) developing data collection systems to increase access to data for micro-insurers, and (c) developing risk models that assess the probability and potential impact of natural disasters (e.g., training for insurance professionals in the use of risk models, data analysis techniques). This should be led by Bangladesh Insurance Association (BIA) and the Financial Institutions Division (FID) of MoF, in association with insurance companies, NGOs/CSOs, research institutes, think tanks, LGIs, and local communities. |
| Med Term | Analyze, provide recommendations, and support policy interventions to reduce regulatory barriers to product development (e.g., digital platforms to make insurance more accessible, offering tax breaks or subsidies for new insurance products that address climate risk) coordinated by BIA/FID of MoF with support from relevant research institutes and think tanks. |
| 2. SUPPORT THE DEVELOPMENT AND SCALING OF INSURANCE PRODUCTS | |
| Short Term | Support improved infrastructure for index insurance (e.g., weather stations, remote sensing technologies, data analysis software) by engaging BMD, in collaboration with BIA/FID of MoF and relevant micro insurers (e.g., SBC, JBC, Green Delta). |
| Med Term | Design, develop, and support the implementation of farmer training programs, public awareness campaigns, and other outreach activities to build awareness and help insurance companies better understand farmers' needs (e.g., target crops). This should be done coordinating with BIA/FID, in collaboration with insurers, NGOs, and LGIs. |
| Med Term | Analyze, provide recommendations, and support policy interventions to reduce regulatory barriers to product development (e.g., digital platforms to make insurance more accessible, offering tax breaks or subsidies for new insurance products that address climate risk) by working with BIA/FID, Bangladesh Bank, public and private insurance companies, and research institutes/NGOs specialized in insurance. |
| Support the development of new insurance products or the improvement of existing products through PPPs that encourage collaboration between GoB and insurance companies. | |

TABLE 14. LEVERAGE POINTS FOR USAID: DISASTER RISK FINANCING

Support the design and implementation of subsidies to make insurance products more affordable, increase demand, and make products more attractive to insurers. This should be done by engaging research organizations, NGOs, or consulting firms with experience of subsidies/insurance and in collaboration with the BIA/FID, insurance companies, LGIs, local NGOs, and local communities (including women, youth, and marginalized people).

COSTS OF CLIMATE CHANGE

This chapter has explored the financial and economic shifts needed to promote shock-responsive social protection, disaster risk financing, GG, and CSA. In each case, it is important to base decisions on how to focus and target these shifts on an adequate understanding of the potential costs of climate change for different social groups. Several approaches and tools based on world-wide best practices can be used to understand the costs of climate change on different populations, including:

- **Vulnerability and risk assessments.** This method evaluates the vulnerability and risks faced by different populations based on their exposure to current and future climate-related hazards, their sensitivity to those, and their capacity to adapt;
- **Cost of adapting to climate change.** This method calculates the cost of adapting to climate change, such as building sea walls or improving irrigation systems, and considers the expected level of climate change and the current level of development in the affected area;
- **Costs of inaction.** These studies estimate the economic, social, and environmental costs of not taking action to mitigate or adapt to the impacts of climate change. They typically focus on the potential costs of damages caused by climate change impacts, such as crop failures, property damage, loss of biodiversity, and health impacts, as well as the potential economic costs associated with disruptions to economic activity and infrastructure; and
- **Social cost of carbon.** This method attempts to quantify the economic damages caused by each ton of carbon dioxide emissions, considering factors such as the impact on agriculture, human health, and infrastructure.

A variety of methods can be used to apply each approach. Many, if not all, of these methods are improved by participatory assessments, which facilitate working directly with affected communities to understand their experiences and perspectives on the impacts of climate change. This approach can provide valuable insights into the social and cultural impacts of climate change, as well as the effectiveness of different adaptation strategies. Leverage points and opportunities for USAID relate to ensuring that activities, programs, plans, and policies are inclusive as discussed in this chapter and throughout this assessment.

SECTION 4:

TECHNOLOGY, PUBLIC HEALTH, & EDUCATION

CHAPTER 6:

CLIMATE TECHNOLOGY

Research Question: What climate technologies can be implemented and scaled in Bangladesh? What are the existing and emerging opportunities for local development of technologies? What are some immediate technology transfer opportunities from the United States and other countries in partnership with the private sector?

The term “climate technology” describes hard, soft, and organizational interventions that directly mitigate or remove emissions; help people adapt to the impacts of climate change; and/or enhance our understanding of climate variability and change. Climate technologies have long been recognized as a critical part of our response to climate change (UNFCCC 1992). As a country that is highly vulnerable to climate change, Bangladesh faces a range of challenges that will benefit from the widespread adoption of climate technology.

As such, the country has engaged in the transfer and development of climate-related technologies for years, focusing mainly on adaptation measures, but more recently including mitigation measures as well.

OPPORTUNITIES FOR USAID

Climate Technology



- Supporting climate resilient housing, climate-smart agriculture, water management and clean energy
- Fostering local development of existing technologies
- Facilitating the transfer of technologies from the developed world and through South-South cooperation
- Building public private partnerships that engage technology companies, renewable energy firms, and start-ups

KEY POLICIES

In general, countries’ technological capabilities hinge on public and private actors engaging in coordination and technology stakeholders having the capacities needed to catalyze finance for climate technology development and transfer into their national socioeconomic contexts. Key policy milestones in Bangladesh in support of climate technology include its 2012 Technology Needs Assessment (TNA), a country-driven process leading to the identification, prioritization, and diffusion of environmentally sound technologies for mitigation and adaptation to climate change. The results of the TNA and associated Technology Action Plans are included in Bangladesh’s NAP and NDC. In addition, the MoEFCC maintains a short list of priority technology projects; items from this list are incorporated into this chapter.

LOCAL DEVELOPMENT OF CLIMATE TECHNOLOGIES

Bangladesh has a robust research and development sector and has been actively focused on the domestic development and implementation of technologies to address climate change impacts and build resilience. Some examples of technologies that were locally developed in Bangladesh are illustrated in Table 15.

TABLE 15. EXAMPLES OF LOCAL TECHNOLOGY DEVELOPMENT IN BANGLADESH

| TECHNOLOGY | ACTORS INVOLVED | DESCRIPTION |
|--|--|---|
| Solar Home Systems | IDCOL, Grameen Shakti, the Rural Electrification Board (REB), PKSF, BRAC, CARE Bangladesh, Practical Action, Local Governance Support Project, Ministry of Disaster Management and Relief, and numerous NGOs | Provide clean and reliable electricity to off-grid and remote areas. |
| Improved Cookstoves | Grameen Shakti, Practical Action, Department of Youth Development, and numerous other NGOs | Reduce indoor air pollution and carbon emissions associated with traditional biomass-based cooking methods. |
| Cyclone Shelters | Cyclone Preparedness Program, BRAC, Save the Children, CARE Bangladesh, Oxfam, UNDP, United Nations Children's Fund (UNICEF), and World Food Programme | Supports resilience to tropical cyclones and disaster risk reduction. |
| Climate-Tolerant Crop Varieties (Salinity, Drought, Flood, etc.) | Bangladesh Rice Research Institute (BRRI), BARI, International Maize and Wheat Improvement Center (CIMMYT), and the MoA | Varieties that can withstand the increasing salinity of soil and water due to climate change impacts. |
| Biochar Technology | Bangladesh Biochar Research Center, MoA, MoEFC, DAE | Converts agricultural waste into a form of charcoal and can be used as a soil amendment. |
| Electric Vehicles | IDCOL, Bangladesh Power Development Board (BPDB), Bangladesh Road Transport Authority, SREDA, Grameen Shakti, private sector companies | Low-emission alternatives to traditional gasoline-powered vehicles. |
| Biofertilizers | Bangladesh Agricultural Development Corporation, BARI, private sector companies | Alternative to chemical fertilizer made from locally available materials. |

TRANSFER OF CLIMATE TECHNOLOGIES

Bangladesh has a successful history of transferring technologies over the last 20 years. Before 2000, technology transfer related to climate change revolved around capacity building, knowledge sharing, and international collaborations. International organizations, bilateral partners, and NGOs provided technical assistance, training, and support to build the country's capacity to understand, assess, and respond to climate change impacts.

Starting in the 2000s, there was an increasing focus on technology transfer for climate resilience. Technologies related to agriculture, water management, disaster risk reduction, and early warning systems were prioritized to address challenges, such as flooding, salinity intrusion, and cyclone impacts. These included technologies for drought-resistant crops, climate-resilient housing, water pumps, embankments, and cyclone shelters. Information and communications technology (ICT) has also been promoted in Bangladesh to support climate-related technology transfer, particularly in the areas of early warning systems, weather monitoring, and disaster management. ICT-based solutions, such as mobile apps, sensor networks, and remote sensing technologies, have been utilized to improve weather forecasting, flood forecasting, and communication of climate-related information to vulnerable communities. The use of ICT continues to hold interest in Bangladesh and complements other work in the country, including Digital Bangladesh, Smart Bangladesh, and a2i. It is also relevant to improving equal access to climate change education (CCE), as discussed in Chapter 6.

More recently, Bangladesh has placed a growing emphasis on technology transfer related to renewable energy. Technologies such as solar panels, biogas systems, and improved cookstoves have been

promoted to enhance access to clean and sustainable energy sources, particularly in rural areas. These technologies can potentially reduce reliance on fossil fuels, increase energy security, and mitigate climate change impacts.

PUBLIC-PRIVATE PARTNERSHIPS

While the public sector plays a key role in developing and supporting the enabling environment for climate technologies, the private sector shows a growing interest in collaborating with different partners to promote early deployment to create new markets through technology provision, financial support, and regulations to overcome barriers to deployment. Thus, in recent years, there has been a growing recognition of the importance of PPPs for climate-related technology transfer in Bangladesh. PPPs have been established to facilitate collaboration between the government, private sector, and other stakeholders in identifying, developing, implementing, and scaling climate-resilient technologies. PPPs have already been used to successfully introduce and commercialize climate technology in Bangladesh as illustrated by the “Solar Home System Program.” This program was initiated by the IDCOL, a government-owned financial institution, in collaboration with private sector partners and USAID’s “Promoting Energy-efficient Cold Storage in Bangladesh” project.

Examples of structures designed to support the development of these kinds of PPPs include the following:

- **Bangladesh Investment Climate Fund:** Supported by the International Finance Corporation and focuses on attracting private investments in renewable energy, energy efficiency, and climate-resilient infrastructure.
- **Bangladesh Climate Innovation Centre:** Offered by BetterStories with Support from the World Bank, this center aims to support about 20 companies per year by offering a customized suite of business-support services, including coaching, training, market linkages, and investment facilitation.
- **Climate Technology Center and Network (CTCN) Projects:** The CTCN, with a national designated entity in Bangladesh, has supported various PPP projects for climate technology transfer and deployment.

GAPS AND OPPORTUNITIES

This assessment identified several opportunities to advance climate technology in Bangladesh, either by supporting local institutions in technology development or supporting international technology transfer. These include technologies related to water and agriculture, energy, and shelter.

Climate-resilient housing. One specific opportunity to invest in a local climate technology in Bangladesh is to support the further development of low-cost, climate-resilient housing technologies. Bangladesh is vulnerable to climate change impacts, including cyclones, floods, and sea-level rise, which often result in extensive damage to housing and infrastructure. Developing affordable, durable, and climate-resilient housing technologies can help mitigate the impacts of climate change on vulnerable communities and ensure that they have safe and secure shelter. Priority technology development opportunities include scaling wind-resistant designs for homes and introducing raised housing options.

Climate-smart agriculture. Investing in the local development and international transfer of climate-resilient agricultural technologies can help smallholder farmers adapt to changing climatic conditions, increase their agricultural productivity, and enhance their resilience to climate risks. Priority and immediate technology development and transfer opportunities include the development of a climate-

smart rice cultivation system that improves water management and increases yields, promoting sunflower production and processing technologies that help adapt to a saline environment, promoting integrated soil nutrient management to improve adaptation to soil salinity, and supporting disaster risk reduction and CCA in the aquaculture and livestock sector.

Water management. Bangladesh experiences a range of water-related challenges, including those related to flooding, water scarcity, water quality, agriculture, and ecosystem preservation. In addition, Bangladesh is one of the country's most vulnerable to the impacts of climate change, including sea-level rise, increased frequency and intensity of floods and cyclones, and salinization of freshwater sources. As such, effective water management practices, such as building resilient infrastructure, developing early warning systems, and implementing CCA measures are crucial to cope with the adverse impacts of climate change and ensure sustainable development in the country. There are opportunities for both local development and international transfer of related technologies. Priority and immediate technology transfer opportunities include technologies to improve flood forecasting and community information dissemination and technologies to monitor and assess climate change impact on geo-morphology (sea-level rise/fall, salinity, sedimentation, etc.).

Clean energy. The development of energy resources is crucial for poverty alleviation, economic growth, and energy security. In this context, developing renewable energy resources, such as solar, wind, hydro, and biomass can both bolster development goals while also contributing to efforts by reducing GHG emissions and promoting a transition to a low-carbon economy. As a signatory to international climate agreements, Bangladesh is committed to reducing its carbon footprint, and developing renewable energy can help the country achieve its climate targets. There are opportunities for both local development and international transfer of clean energy technologies, which include introducing technologies to support CSA and GG as discussed in Chapter 4, such as mini-solar cold storage to reduce food loss and waste and scaling-up the use and availability of electric vehicles.

LEVERAGE POINTS FOR USAID

Literature reviews, KIIs, and stakeholder workshops provided insight into ways USAID could support the development, transfer, adoption, and scaling of priority climate technologies. These leverage points and associated opportunities for USAID are highlighted in Table 16.

| TABLE 16. LEVERAGE POINTS FOR USAID: CLIMATE TECHNOLOGIES | |
|---|---|
| I. SUPPORT CLIMATE-RESILIENT HOUSING TECHNOLOGIES | |
| Short Term | Support the scaling of existing climate-resilient housing technology through public and private sector pathways, including working with existing actors (e.g., Grameen Shakti, Green Delta Housing, Habitat for Humanity Bangladesh), and leveraging the experience of the GCF-funded Climate Resilient Infrastructure Mainstreaming, implemented by KfW. |
| | Provide technical assistance to PKSF for saline water purification technology at household level and low-cost durable housing technology for coastal areas of Bangladesh. |
| | Support research and development of climate-resilient housing technologies in collaboration with local partners (e.g., C3ER, BRAC University). |
| Med Term | Support and fund the development of PPPs between local entrepreneurs, researchers, and international investors to further the research, transfer, or domestic development of climate-resilient housing technologies for both rural and urban areas. |

TABLE 16. LEVERAGE POINTS FOR USAID: CLIMATE TECHNOLOGIES**2. SUPPORT CSA TECHNOLOGIES**

| | |
|------------|--|
| | Identify Bangladesh's high priority needs for domestic and international technology development or transfer related to CSA by involving BARC and its NARS, MoA/DAE, concerned experts of agricultural universities across the country, and ongoing and forthcoming climate-related projects of USAID, WB, FAO, WorldFish, IRRI, CIMMYT, the GoB, and the private sector. |
| Short Term | Provide technical assistance to Rural Development Academy, Bogura in the development of a climate-smart rice cultivation system using biodegradable films for saving irrigation water and increasing yields. |
| | Provide technical support to BRAC to develop sunflower processing and market systems for saline environments. |
| | Support the scaling of existing CSA technologies through public and private sector pathways, including working with existing actors (e.g., Grameen Krishi, iFarmer, Friendship, Practical Action, IRRI, BARI, BRRI, CIMMYT, World Fish, ACI Agribusiness, and PRAN Agro Limited). |

Med Term Support and fund the development of PPPs between local entrepreneurs, researchers, and international investors to further the research, transfer, or domestic development of CSA technologies.

3. SUPPORT WATER MANAGEMENT TECHNOLOGIES

Short Term Support Bangladesh Flood Forecasting and Warning Centre/Water Development Board in identifying, implementing, and scaling existing water management technologies related to flood forecasting (e.g., improved modeling and notification) and climate change impact on geo-morphology (e.g., improved monitoring and modelling).

4. SUPPORT CLEAN ENERGY TECHNOLOGIES

Short Term Support the scaling of existing solar-powered cold storage technologies, including those working domestically (e.g., Pacific Solar & Renewable Energy Ltd.) and internationally (e.g., ColdHubs, CoolBot).

Med Term Conduct research and support policy that can establish a comprehensive and transparent feed-in tariff (FIT) mechanism that promotes the generation of renewable energy by guaranteeing a fixed payment rate for electricity generated from renewable sources. This needs to be coordinated by BERC and SREDA in association with experienced research institutes/consulting firms, Power Division, MoEFCC/DoE, Finance Division, and Bangladesh Bank, and in consultation with the private sector working in the renewable energy sector.

Support the production of biogas and organic fertilizer through dry fermentation of municipal waste in collaboration with local actors (e.g., Bangladesh Bandhu Foundation, Waste Concern), support biomass gasification and power generation.

CHAPTER 7:

EDUCATION & CLIMATE CHANGE

Research Question: How can climate change adaptation and mitigation objectives be integrated within Bangladesh's education curriculum utilizing modern ICT tools? What are the barriers and opportunities for equal access to climate-related education? How can the education system be resilient in the face of frequent shocks like floods and cyclones?

The urgent need for climate education has moved to the forefront of global awareness. In 1992, climate negotiators recognized the importance of education, focusing Articles 4 and 6 of the UNFCCC around CCE, training, and public awareness to mitigate the impacts of climate change and ensure a sustainable future (UNFCCC 1992). More recently, the UNFCCC has grouped work on UNFCCC Articles 6 and 12 of the Paris Agreement under the rubric of Action for Climate Empowerment, which includes a focus on education and training, public awareness, public participation, access to information, and international cooperation and collaboration on climate education, empowerment, and capacity building.

OPPORTUNITIES
FOR USAID

Climate and
Education

- Improving the quality of, and teachers' access to, climate change curriculum materials
- Building schools' capacity to use early warning information
- Fostering partnerships that can support the climate resilience of the education system

The GoB has also recognized the need for climate education and has worked to integrate it into relevant plans, policies, and curriculum. This includes a focus on the role of ICT in the education sector and actions to support the resilience of the education system itself. However, barriers remain to equal access to climate education in the country.

KEY POLICIES

Bangladesh has integrated climate change into a variety of plans and policies related to climate change and/or the education sector. This includes the NAP (2023–2050), where there is a recognition of the need to incorporate CCE into the national curriculum for primary, secondary, and higher secondary education. The NAP also calls for the development of training programs for educators to enhance their knowledge and skills in teaching about climate change, for capacity-building of communities to understand the impacts of climate change and take appropriate actions to adapt and mitigate, and for collaboration with various stakeholders to support CCE and awareness-raising efforts. Other plans and policies that address climate change and/or the education sector includes:

- National Education Policy (2010), which focuses on increasing access and quality of education overall, increasing social awareness about the environment, and building skills to tackle climate change and its impacts.

- Education Sector Plan (2020) notes that the impacts of climate change, along with the heightened vulnerability of Bangladesh, necessitates an increased focus on disaster management and risk-reduction based education. The Plan includes multiple objectives aligned with the SDGs up to 2030.
- National Curriculum Framework (2020) includes Environment and Climate Change as one of ten learning areas for pre-primary, primary, and secondary levels.

GAPS AND OPPORTUNITIES

Bangladesh has made significant progress in improving access to education; however, this assessment identified gaps and opportunities to further equity and access. This includes leveraging ICT tools to further CCE and supporting the resilience of the education system itself.

BARRIERS FOR EQUAL ACCESS TO CLIMATE EDUCATION IN BANGLADESH

Barriers remain to equal access to climate change education in Bangladesh, including general access difficulties and those barriers specific to climate education.

General barriers to education. Several fundamental barriers to education persist in Bangladesh, which restrict equal access to general education and consequently limit students' ability to access climate education. When students struggle to attend classes, it not only affects their ability to acquire information but also limits their access to climate education. Barriers to education include poverty, with many families lacking the financial resources to send their children to school; geographic location, where schools can be far away from students' homes and difficult to access; and limited infrastructure and resources, with schools lacking basic facilities and trained teachers. Discrimination widely affects education in Bangladesh, which includes gender discrimination, with girls having less access to education than boys due to traditional gender roles and societal norms (USAID 2022b), and discrimination against children with disabilities, with schools lacking accessibility features for children with physical disabilities and specialized teachers and resources for children with special needs (C3ER BRAC University 2022).

Barriers specific to climate education. Barriers also exist that are more specific to climate education. These include:

- **Teacher capacity.** Because a teacher's perception and understanding of climate change can impact how information is presented to students, teacher capacity is a barrier to climate education. Several studies have evaluated Bangladeshi teachers' understanding of climate change. While these studies found that teachers are familiar with the meaning of the words "climate change" and generally agree that climate change is important, there are varying levels of understanding of its cause and impact (Chowdhury et al. 2021; Masum et al. 2011).
- **Accessibility of information.** The accessibility of climate information within Bangladesh's national curriculum presents another barrier to climate education. While CCE has been integrated into some other subjects in Bangladesh, it is still primarily discussed within the realm of science and agricultural studies (Kagawa 2022; Mbah, Shingruf, and Molthan-Hill 2022). Further integration into other subjects, including looking at social dimensions, can make climate change information more accessible to a wider range of individuals. Studies have found that focusing on personally relevant and meaningful information and using active and engaging teaching methods, including ICT, can help improve the accessibility of climate information (Kagawa 2022).
- **Financing.** Limited resources for teacher training and curriculum development present a challenge in overcoming barriers specific to climate education. Indeed, the current strict eligibility

requirements of multilateral climate finance means that it is easier to obtain climate financing for education where it is possible to show a direct link, such as climate-proofing education infrastructure. It is more challenging to obtain funding for projects with less direct links, such as including climate adaptation in curriculum and training (Fossberg 2022).

THE USE OF ICT TOOLS IN CLIMATE EDUCATION

The use of ICT in the education sector presents new opportunities in Bangladesh, especially since there is just one primary language of instruction. In 2013, the Ministry of Education and the UN Educational, Scientific, and Cultural Organization developed an “ICT in Education Master Plan – 2021–2021” with the goal of ensuring education for all, improving the standard of education, producing a more skilled workforce, and eliminating the “digital divide” in the education system. The GoB, NGOs (e.g., the BRAC and Grameen Bank), and other donors supported ICT-enabled education, including smartphone-enabled teacher training programs and computer-aided learning (PricewaterhouseCoopers 2010). Additionally, many international ICT resources support climate education—videos, apps, data-exploration tools, games, and learning hubs. There are opportunities to integrate Bangladesh’s CCA and mitigation objectives into the education curriculum using ICT tools and to further LLA and capacity-building priorities, as discussed in Chapter 3. These opportunities include:

- **Helping students understand climate change.** Stakeholders recognize that Bangladesh’s predominantly rote-learning approaches and lack of interactive and participatory education practices limit students’ ability to fully understand climate change and think proactively about adaptive and mitigative responses (Kagawa 2022). Diversifying learning practices through ICT, including integrating videos, games, and web-based learning, can improve technical knowledge on climate change (Lee et al. 2021).
- **Helping students visualize climate change.** The use of ICT presents an opportunity for students to investigate the visible consequences of climate change in their communities. Teachers have used mapping and data visualization resources, like Google Earth, to explore climate change (including disaster/weather events and temperature changes) in classrooms to deepen understanding of the topic (Fauville, Lantz-Andersson, and Säljö 2014). This exercise can help students explore personal responsibility to adapt to and mitigate climate change in response to visible changes in their everyday life (Shohel et al. 2021).
- **Helping students communicate about climate change.** Once students better understand climate change impact, ICT can allow students to communicate adaptation and mitigation ideals and ideas through assignments related to internet-based information campaigns and scenario planning (Shohel et al. 2021). Another example of the use of ICT includes Friendship’s Inter-School Connectivity Project, which brings Friendship school students from the river island areas and French students together to discuss climate change and share knowledge and experience (Chaudhury 2022).

Despite significant enthusiasm and opportunities that ICT encourages in climate education, it can be difficult to enable full use of these tools. Barriers to ICT tool usage include a lack of proper infrastructure (e.g., computers, affordable internet services), language, and online content barriers (Bakaul 2018; PricewaterhouseCoopers 2010). Overcoming these will be a long-term effort.

CLIMATE RESILIENCE OF THE EDUCATION SYSTEM

Climate change poses several risks to the Bangladeshi education system. For instance, Bangladesh is vulnerable to natural disasters, such as floods, cyclones, and landslides—natural disasters exacerbated by climate change. They can damage schools and disrupt the education system, leading to lost instructional time and reduced educational outcomes. They can also cause damage to infrastructure (e.g., buildings,

roads, bridges), which makes it difficult or impossible for students and teachers to access schools, consequently detracting from learning experiences and instructional ability, respectively.

Climate change also increases the incidence of diseases and health risks, which can affect educational outcomes. For example, flooding and water contamination can lead to the spread of waterborne diseases as discussed in Chapter 8, which might cause students to miss school and may reduce their ability to concentrate and learn. In addition, changes in agricultural productivity and income levels can affect the ability of families to pay for education, contributing to higher rates of school dropouts. The lack of funds or the effects of natural disasters may force families to relocate in search of new opportunities, which leads to lost instructional time and reduced educational outcomes.

The GoB and its partners implemented several methods to improve the climate resilience of the education system, which include:

- **Developing Climate-Smart School Infrastructure:** The government has developed guidelines and standards for constructing climate-smart school infrastructure that is designed to withstand natural disasters, such as floods and cyclones (Fourth Primary Education Development Program 2018). A range of organizations have helped to create floating schools by constructing raised platforms, using flood-resistant building materials, and ensuring proper ventilation and sanitation facilities (Das 2010).
- **Providing Disaster Preparedness Training:** The government has provided disaster preparedness training to teachers and students, including emergency evacuation drills, first-aid training, and basic disaster response training. This helps to ensure that students and teachers are better prepared to respond to natural disasters (Asian Disaster Preparedness Center and United Nations Office for Disaster Risk Reduction 2020).
- **Developing Early Warning Systems:** The government has developed early warning systems for natural disasters, such as floods, cyclones, and landslides. These systems provide timely and accurate information to schools, which can help reduce the impact of disasters on the education system (Davison 2022; Pakhtigian et al. 2022).
- **Building Partnerships:** The government has worked with international organizations and NGOs to build partnerships and develop innovative solutions to improve the climate resilience of the education system. For example, the government has worked with the ADB to develop a project that aims to strengthen the climate resilience of infrastructure, including schools, in flood-prone areas (ADB 2022).

Overall, these actions demonstrate the government's commitment to improving the climate resilience of the education system in Bangladesh. However, further investment and action is needed to ensure that all children have access to safe, high-quality education that is resilient to the impacts of climate change. Local NGOs, including Friendship, have worked on various projects to improve the climate resilience of education systems for children who live in flood-prone areas.

LEVERAGE POINTS FOR USAID

This assessment identified several opportunities for USAID to support equal access to climate education and a more resilient education system in Bangladesh. The research team conducted KIIs that informed the opportunities outlined below in addition to a literature review; it also incorporates recommendations from UNICEF's 2022 report entitled "The Heat is On! Towards a Climate Resilient Education System in Bangladesh" (Kagawa 2022) in Table 17.

TABLE 17. LEVERAGE POINTS FOR USAID: EDUCATION AND CLIMATE CHANGE

| I. PROVIDE TECHNICAL ASSISTANCE TO IMPROVE TEACHER CAPACITY | |
|---|--|
| Short Term | Conduct a teacher education curriculum audit to identify opportunities and gaps related to climate change education, in support of current and upcoming USAID and WB projects, building on recent past projects in this sector and working with government agencies, like National Academy for Educational Management, Government Teachers Training Colleges, Dhaka, University Grants Commission, and NGOs like BRAC Education Programme (BEP) |
| Short Term | Identify opportunities and provide capacity-building support to allow teachers to employ a wider range of active/participatory pedagogies, including ICT. |
| Short Term | Provide capacity-building support for teachers in promoting environmentally sustainable practices at school (e.g., renewable energy, waste management, awareness raising, and advocacy techniques). Build on the experiences of previous projects by development partners and NGOs/CSOs (e.g., BEP, GIZ, Friendship). |
| 2. SUPPORT CLIMATE CHANGE CURRICULUM DEVELOPMENT | |
| Short Term | Inform revised curriculum and textbooks to support improved knowledge, skills, and outcomes related to climate change mitigation and adaptation by building upon the ongoing assessments of curricula supported by different development partners (e.g., WB) in these areas. NGOs' experience could be capitalized on (e.g., BEP). |
| Med Term | Continue to identify and forge cross-curricular and interdisciplinary links between climate change mitigation and adaptation in different subjects as appropriate. |
| Med Term | Support the integration of ICT into relevant curriculum to deepen student understanding of climate change and to provide students with opportunities, arenas, and platforms to take actions toward and play an advocacy role in mitigating climate change impacts. |
| 3. ENHANCE THE CLIMATE RESILIENCE OF THE EDUCATION SYSTEM | |
| Short Term | Develop practical plans and safeguarding guidelines on related topics, including using schools as emergency shelters and education access for children who migrate or are displaced. Support testing of these plans to understand their effectiveness. Ministry of Education, Ministry of Primary and Mass Education, MoDMR/DDM and Local Government Division need to work together by involving LGIs, CBOs, and NGOs/CSOs. |
| Med Term | Build capacity to monitor and assess climate change impact on schools, e.g., by supporting and building the capacity of the Directorate of Primary Education to integrate climate change impact and vulnerability indicators into existing data tools for the Annual Sector Performance Report and other similar surveys. |
| Med Term | Provide technical assistance to relevant GoB ministries (e.g., Ministry of Environment, Forest, and Climate Change; Ministry of Disaster Management and Relief; Ministry of Health and Family Welfare; Ministry of Women and Children Affairs) related to gathering, sharing, and analyzing data on the impact of climate change on children and schools. This could include: (1) monitoring education continuity of children forced to migrate due to climate change impacts; and (2) monitoring lesson time lost due to schools being used for emergency shelters. |

CHAPTER 8:

CLIMATE IMPACTS ON PUBLIC HEALTH

Research Question: How is climate change impacting public health in Bangladesh? How are different social groups impacted? What research gap exists to identify the relationship between climate change, air pollution, and vector-borne diseases?

Public health in Bangladesh is significantly affected by climate change, and marginalized groups—including women, children, and the elderly—bear the brunt of the impact. While there is a large body of research related to the impact of climate change on public health in the country, there is the opportunity to further support research on the relationships between climate change, air pollution, vector-borne diseases, and other less-analyzed topics.

OPPORTUNITIES FOR USAID

Climate and Public Health



- Supporting research that further explores the relationship between climate and vector-borne disease
- Conducting a regional study on air pollution and public health
- Improving knowledge of impacts of climate change on mental health
- Advancing research on the health effects of increased salinity, particularly as they relate to hypertension, nutrition, and pregnancy

KEY POLICIES

The Bangladesh health community recognizes the adverse effects climate change will have on public health and has begun addressing this issue through relevant policies and plans, including the MCPP and the NAP. In 2018, a range of stakeholders in Bangladesh worked with the Ministry of Health to develop a Health National Adaptation Plan, a document that is currently under revision. The policy focus is supported by an active research community exploring links between climate and health.

IMPACT OF CLIMATE CHANGE ON PUBLIC HEALTH

Climate change has a significant impact on public health in Bangladesh. This impact is the result of a variety of climate events, including more extreme weather, rising sea level, and rising temperatures, which affect water quality, food supply, heat levels, air pollution, and vector and zoonotic diseases (Islam and Biswas 2014; Nahian 2023; Rahaman, Rahman, and Rahman 2019). Research shows several connections between climate and health, as explained below.

Vector-borne diseases. Climate change has influenced the distribution and abundance of disease-carrying vectors, such as mosquitoes, leading to an increased risk of vector-borne diseases in Bangladesh.

- **Malaria.** Despite recent advances in controlling the incidences of the disease, malaria remains a significant public health issue in Bangladesh, particularly in the Chittagong Hill Tracts region. There has been considerable research on the relationship between climate and malaria in Bangladesh, showing that changing climatic conditions have expanded the geographic range of mosquitoes that transmit diseases like malaria (Clech et al. 2022; Elahi 2016; Emeto et al. 2020; Kabir et al. 2016). Malaria is of particular concern for communities living in the Chittagong Hill Tracts region, along with seasonal migrants and farm workers.
- **Dengue.** This disease is linked to climate variability, particularly temperature and rainfall. However, more research is needed to fully understand the complex relationship between climate and dengue transmission, including the role of other factors such as urbanization, population growth, and human behavior (Banu et al. 2014; Mamun et al. 2019; Paul et al. 2021; Rahman et al. 2021). Transmission of dengue is often higher in urban and peri-urban areas, among migrants, slum dwellers, and children.
- **Visceral leishmaniasis.** Also known as Kala-azar, this is a neglected tropical disease that is endemic in Bangladesh. While relatively less research exists on the relationship between Kala-azar and climate in Bangladesh compared to other waterborne diseases, there is a clear climate link (Dewan 2016). Kala-azar is endemic in certain areas; it primarily affects rural communities, malnourished populations, and the immunocompromised.

Heat health. It is well established that extreme heat poses a serious health risk, causing many excess deaths each year (Global Heat Health Information Network 2023). A growing body of research indicates that rising temperatures due to climate change have led to an increased risk of heat-related health problems in Bangladesh. Heatwaves have been associated with increased hospitalizations and deaths related to heat stress, dehydration, heat exhaustion, and heatstroke, particularly among vulnerable populations, such as the elderly, children, urbanites, outdoor workers, and those who work in factories (Arrighi, Burkart, and Nissan 2017; Bach et al. 2023; Rahaman, Rahman, and Rahman 2019). Heat is also linked to poor sleep, increased maternal morbidity, newborn morbidity and mortality, and low birth weight.

Waterborne diseases. Climate change has affected water availability and quality in Bangladesh, increasing the risk of waterborne diseases. Flooding results in the contamination of drinking water sources, which can spread diarrheal diseases, such as cholera, typhoid, and dysentery.

- **Cholera** is recognized as seasonal in Bangladesh; as such, there has been significant research on the relationship between climate and cholera. This includes an overview of cholera and climate change (Asadgol et al 2020), predictions of how changing climatic and land-use patterns may alter risk for cholera infection (Kruger, Lorah, and Okamoto 2022), and the relationship between socio-economic and environmental factors and the incidence of cholera (Pakhtigan et al. 2022; Sack et al. 2021; Shackleton et al. 2023). Cholera is of particular concern among displaced peoples, the urban poor, and in flood-prone areas.
- **Typhoid** is a waterborne disease whose incidence has been associated with temperature rise. Multiple climate factors, like increased rainfall, river levels, and temperature have also been shown to increase typhoid distribution in Bangladesh; moreover, dense populations exacerbate the escalation of typhoid cases (Salman et al. 2022). Climate change is likely to increase the impact of typhoid in Bangladesh, particularly among urban slum dwellers, in rural areas with limited infrastructure, and among children and adolescents with developing immune systems.
- **Dysentery** is a waterborne disease caused by the *Shigella* bacteria, and its transmission is strongly influenced by environmental factors, including climate. Climate change can alter

temperature and rainfall patterns, which in turn impact the incidence and transmission of dysentery. Both temperature and rainfall are significant predictors of the disease (Wu et al. 2020; Islam and Biswas 2014); children, rural communities, displaced people and urban slum dwellers are at particular risk.

Zoonotic diseases. Zoonotic diseases are infections that can be transmitted from animals to humans, and many of these diseases are sensitive to changes in the environment. Climate change is expected to have a significant impact on the incidence of zoonotic disease in Bangladesh, particularly through changes in temperature, precipitation, deforestation, and ecological conditions. Two diseases of particular concern are Nipah virus and leptospirosis.

- **Nipah virus** (NiV) is a zoonotic virus found in bats that can be transmitted to humans through infected animals, causing severe respiratory and neurological symptoms. Reports of outbreaks of NiV have been reported since 2001 in Bangladesh; climate and environmental factors are thought to play a role in the transmission dynamics of the virus. Temperature, rainfall, and humidity are all significantly associated with NiV incidence (Rahman et al., 2019). Given its transmission through animals, farm workers and those who own animals are particularly at risk, especially in the Faridpur, Gopalganj, and Tangail regions.
- **Leptospirosis** is a bacterial disease caused by *Leptospira* bacteria that can infect both animals and humans; it can be transmitted to humans through contact with contaminated water, soil, or animals, including rodents, cattle, and dogs. Increases in rainfall and humidity are significantly associated with increased incidence of the disease (Douchet et al. 2022; Romero, Sosa, and Romero 2021). Because it can be passed through water, rice farmers and those in flood-prone areas are at particular risk for leptospirosis, as are sanitation and animal care workers.

The issue of zoonotic disease may be more pressing and complex than is currently understood. At least 10,000 virus species have the ability to infect humans, but, at present, the vast majority are circulating silently in wild mammals (Carlson et al. 2022). Changes in climate and land use, including human pressure on forests and increasing human-wildlife interactions, will lead to opportunities for viral sharing among previously geographically isolated species of wildlife.

Malnutrition. Malnutrition is a significant public health concern in Bangladesh, with a large proportion of the population experiencing chronic undernutrition and other forms of malnutrition. Climate change will likely have indirect impacts on health through changes in food availability and quality, particularly among vulnerable populations such as children and pregnant women. To date, malnutrition trends are gradually increasing in flood-prone areas, mainly because of a shortage of safe drinking water, proper hygiene, and sanitation facilities, especially during the monsoon season (Rahaman, Rahman, and Rahman 2019). Globally, several studies have explored the effects of climate change on plant productivity, but there is still a lack of knowledge on the nutritional dynamics, under climate changes, which can impact crop nutrient uptake, transport, and remobilization; more research is needed in this area (Soares et al 2019).

Mental health. Due to cultural norms, mental health issues, such as depression and anxiety, are largely ignored in Bangladesh and merit better understanding. Climate change-induced disasters (e.g., cyclones, floods, and storm surges), migration and immobility, social tension and conflict, and livelihood loss and economic hardship can significantly impact mental health in affected populations in Bangladesh (Hayward and Ayeb-Karlsson 2021). Research in Bangladesh has found that climate change enhances the possibility of drug and alcohol use, family stress, amplification of previous traumas, and the potential for suicidal ideation (Kabir 2018).

Salinity. In coastal Bangladesh, sources of safe water have been contaminated by salinity intrusion from rising sea levels, cyclone, and storm surges. The average daily sodium intake among coastal populations in Bangladesh is roughly 6.7 grams per day, which is significantly higher than the recommended daily intake of less than 5 grams per day by the World Health Organization (Rasheed et al. 2014). Salinity intrusion is also to aggravate health conditions related to hypertension and pre-eclampsia in pregnancy (Elahi 2016).

- **Hypertension.** Studies have found evidence of a positive association between higher salinity in drinking water and hypertension, a phenomenon that will be exacerbated by ongoing salinity intrusion in soil and water due to climate change and sea level rise. Both prehypertension and hypertension prevalence were found to be higher among coastal communities who were exposed to and consumed slightly to moderately saline water (Nahian 2023).
- **Pregnancy.** In pregnant women, increased salinity in the groundwater has been associated with an increased risk of (pre)eclampsia and hypertension, as well as preterm birth, low birth weight, and stillbirths (Nahian 2023).
- **Disruption of care.** Extreme events, for instance in the form of flood, torrential rain, cyclone, and tropical storm, can cause physical harm and disrupt social services. In Bangladesh, such events can disrupt the provision of health care; they can also reduce people's ability to seek care, by limiting mobility and affecting incomes, which makes it more difficult for people to afford care.

CLIMATE AND AIR POLLUTION

Air pollution is a significant problem in Bangladesh, especially in urban areas. The country's rapid industrialization, increasing number of vehicles, and lack of waste management systems have contributed to poor air quality. Dhaka ranks as the fifth most polluted city in the world (IQAIR 2023). The State of Global Air ranked Bangladesh as the ninth-worst air quality in terms of population-weighted annual average fine particulate matter (of 2.5 micrometers in diameter), also known as PM2.5, exposures in 2019 (State of Global Air 2019).

There is a complicated relationship between climate, air pollution, and health. Air pollution is one factor that causes climate to change, while climate change worsens the quality of breathable air (Raza et al. 2023). This comes from the emission of GHGs, such as CO₂, O₃, and particulate matter from the burning of fossil fuels. Air pollutants and climate variables (temperature, surface pressure, and relative humidity) interact and contribute to climate change. In addition, as the climate warms, extreme weather conditions, such as heat waves and drought, are more frequent, which adversely affect air quality (Orru et al. 2017).

In Bangladesh, air pollution is linked to respiratory disease (e.g., asthma, tuberculosis, chronic obstructive pulmonary disease, and lung cancer), cardiovascular disease, low birth weight, neurological disorders, cancer, and eye irritation, among other things. Research has found that air pollution caused between 78,145–88,229 deaths in Bangladesh in 2019 (Raza et al. 2023). The GoB and other organizations have made efforts to develop action plans and recommendations to address air pollution and related disease, including through the World Bank-funded Clean Air and Sustainable Environment project implemented by the MoEFCC. Targets for reduced air pollution are integrated into relevant GoB policies. The full implementation of the NAP for Reducing Short Lived Climate Pollutants (SLCPs) is expected to reduce black carbon emissions by 40 percent and methane emission by 17 percent in 2030 compared to a business-as-usual scenarios (MoEFCC DoE 2020).

Climate impacts and vulnerabilities are often context specific, gender differentiated, and greatest in poor and marginalized communities (Nahian 2023). A growing field of research illustrates that vulnerable socio-economic groups—and the regions where they reside—may face disproportionate risks of climate change and air pollution.

GAPS AND OPPORTUNITIES

While there has been extensive research on the impact of climate change and air pollution on public health, there are research gaps that, if addressed, could better inform policy and response priorities.

Vector-borne diseases. While research exists on the link between climate and malaria, fewer studies have examined the link between climate and other vector-borne diseases, including kala-azar and dengue. Creating a better understanding of where things stand and how the country can best protect itself from climate and health impacts requires more research.

Air pollution. Despite significant research on the impact of air pollution and health in Bangladesh, there is still a great deal of research needed to fully understand the relationship between climate, air pollution, and public health in Bangladesh. Some key areas where further research would further understanding include:

- **Long-term exposure:** Many studies on air pollution and health in Bangladesh have focused on short-term exposure to pollutants, and assessing the long-term health effects of chronic exposure to air pollution over time needs further research.
- **Indoor air pollution:** While there is evidence that indoor air pollution is a major health risk in Bangladesh, there is still limited research on the sources and health effects of indoor pollutants, particularly in rural areas. Most research that does exist suggests that smoke related to indoor cooking is a key factor.
- **Health burden:** While some research has estimated the overall health burden of air pollution in Bangladesh, further research is needed to better quantify the specific health impacts and economic costs associated with different types and sources of pollutants.
- **Mitigation strategies:** While there is some evidence that interventions, such as improved cookstoves and increased green spaces, can help mitigate the health impacts of air pollution, identifying effective and scalable strategies for reducing exposure to air pollution in Bangladesh needs further research.

Other priority areas (salinity and mental health). Two additional areas that could benefit from increased presence and study include water salinity and mental health. Given the immense and growing impact of aquatic salinity intrusion (which has reduced the availability of freshwater and led to increased incidence of related health effects, as discussed above), continued study of the impact of salinity on health in Bangladesh will help analyze impact. Additionally, the opportunity to advance research on the relationship between climate change and mental health and support the prioritization of this topic within GoB systems and policies.

LEVERAGE POINTS FOR USAID

This assessment identified several leverage points for USAID to support research on the relationship between climate, air pollution, and health as described in Table 18, based on literature analysis, KIIs, and stakeholder workshops.

TABLE 18. LEVERAGE POINTS FOR USAID: CLIMATE IMPACTS ON PUBLIC HEALTH

| I. SUPPORT RESEARCH ON THE RELATIONSHIPS BETWEEN CLIMATE AND VECTOR-BORNE DISEASES | |
|--|--|
| Short Term | Support relevant research institutes, including governmental (e.g., Climate Change and Health Promotion Unit (CCHPU), Bangladesh Medical Research Council, Institute of Epidemiology, Disease Control and Research (IEDCR); vector-borne disease control program, Directorate General of Health Services (DGHS); Bangabandhu Sheikh Mujib Medical University; different medical colleges) and non-governmental (e.g., BRAC James P Grant School of Public Health/ BRAC University, icddr,b WHO) organizations, to conduct research on the relationship between climate and vector-borne diseases, including malaria, dengue, and visceral leishmaniasis (commonly known as Kala-azar). |
| | Strengthen the surveillance system to track vector-borne diseases and provide technical assistance to identify and analyze impact by involving CCHPU, IEDCR, Communicable Disease Control Program, vector-borne disease control program, DGHS; Non-Communicable Disease Control program, DGHS; BMD; WHO; and concerned NGOs/CSOs. |
| 2. SUPPORT A REGIONAL STUDY ON AIR POLLUTION AND HEALTH | |
| Short Term | Work collaboratively with partners to improve research related to air pollution and health with coordination from MoEFCC/DoE, supported by projects and agencies (e.g., Atomic Energy Centre, Bangladesh University of Engineering and Technology, SUST, Center for Atmospheric Pollution Studies; private universities, the World Bank) working in this arena. The results could inform decisions that mitigate the health-related impacts of climate and air pollution. |
| Med Term | Collect panel data on the exposure and health-related outcomes for a range of populations in different contexts. This could build the experience of similar long-term data collection experience in Bangladesh by different agencies in different arenas. |
| 3. ADVANCE RESEARCH ON CLIMATE AND MENTAL HEALTH | |
| Short Term | Support the GoB (e.g., CCHPU, IEDCR, DGHS of Ministry of Health and Family Welfare, Ministry of Social Welfare, MoWCA, MoYS and relevant partners (e.g., SAJIDA Foundation) to prioritize mental health as an essential component of overall health and wellbeing in-line with the Mujib Climate Prosperity Plan. |
| Short Term | Support research to understand the relationships between climate change and mental health and target research toward vulnerable populations involving government and non-governmental research institutions as listed above (Theme 1). The results of this research could inform policy and specific health-related interventions, such as training for health professionals. |
| 4. ADVANCE RESEARCH ON CLIMATE AND SALINITY | |
| Short Term | Support further research on the impact of salinity on health in Bangladesh by engaging relevant departments, centers, and institutions of the universities located on the coast of Bangladesh (e.g., Khulna University, Patuakhali S&T University, Barisal University, Noakhali S&T University, Chittagong University). The results of this research could inform policy and interventions related to water access and quality. |

CONCLUSION

Ranked by GermanWatch's Global Climate Risk Index as the seventh most climate-vulnerable country in the world, Bangladesh faces serious challenges from climate variability and change (Eckstein et al. 2021). The low-lying terrain, high population density, and geographic location make Bangladesh extremely vulnerable to a range of climate impacts. As the climate continues to change, experts project that the impacts of these hazards will be substantial and wide-reaching, threatening recent gains in poverty reduction and human development (World Bank Group 2022).

Responding directly to several specific questions from USAID/Bangladesh, this report has identified many interventions that could support Bangladesh as it continues to improve their ability to enable climate action. This includes interventions related to policy, local capacity, environmental governance, and economic and fiscal shifts, as well as specific interventions designed to generate knowledge or promote practice regarding education, technology, and health.

In addition to identifying a wide range of interventions, the report also makes recommendations regarding how USAID can focus its attention on key systems and specific leverage points that can drive transformational change. These leverage points offer an opportunity for USAID to support and foment large-scale, durable change that can both safeguard Bangladesh from increasing climate impacts and better prepare it for a low-emissions future as a prosperous nation in line with the ambitious development goals the country has set for itself. Consistent with the USAID Climate Strategy 2022–2030, these interventions involve shifting market incentives, improving local governance, and collaborating with a wide range of actors to generate cohesive impact.

Transformational climate action is a critical cornerstone of Bangladesh's effort to transition to a prosperous and developed country by 2041. Deep changes have the potential to significantly enhance Bangladesh's climate resilience, foster economic growth, improve food security, and safeguard public health. Fostering this kind of change will also allow the country to continue to position itself as a global leader in climate resilience and sustainable development. At a time when the world sorely needs climate leaders, proactive measures that drive transformational change can inspire other nations facing similar challenges and contribute to global efforts to combat climate change.

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SECTION 5:

ANNEXES

ANNEX I. CLIMATE POLICIES & PLANS

TABLE I9. BANGLADESH CLIMATE POLICIES & PLANS

| POLICY/PLAN | YEAR | DESCRIPTION |
|---|------------------------------|--|
| Automobile Industry Development Policy | 2021 | The policy emphasizes the rapid adoption and production of eco-friendly electric vehicles in Bangladesh. |
| Bangladesh Climate Change Strategy and Action Plan (BCCSAP) | 2008 2009 2022 (draft) | Drafted in 2008, and adopted in 2009, the BCCSAP prioritizes adaptation and disaster risk reduction but also addresses low carbon emission, technology transfer, and the provision of adequate finance. It is built on 11 pillars: natural resources management; food security; power; health; social protection; urban; disaster risk management; infrastructure; mitigation; research; and governance. It elaborates a six-pillar framework for actions in the face of climate change, including food security, social protection, and health, and prioritizes development of climate change-resilient cropping systems. The plan focuses on achieving economic and social well-being through a pro-poor climate change strategy and incorporates sustainable development and green growth strategies. The BCCSAP calls for mainstreaming climate change in national, sectoral, and spatial development planning and strives to ensure that impacts on vulnerable groups and women are prioritized in plans. The current draft of the BCCSAP includes recommendations to “build capacity for such decentralized regional planning at appropriate institutions with a coordinating role played by the Bangladesh Planning Commission.” The BCCSAP includes a component on education and awareness raising on climate change, with a focus on community-based education and public awareness campaigns. The action plan is currently under revision. |
| Bangladesh Climate Fiscal Framework (CFF) | 2020, 2014 | The Bangladesh CFF was intended to provide guidelines and tools for embedding climate dimension in public financial management. The updated CFF differs from its previous version on several counts. For example, it deals with fiscal policy implications of climate change in a more elaborate way, broadens its remit by the inclusion of the financial sector, highlights the role of the private sector and nongovernmental organizations/civil society organizations in climate finance, brings to the fore the innovative climate financing options, and widens the coverage of transparency and accountability functions. |
| Bangladesh Country Investment Plan for Environment, Forestry, and Climate | 2016 | The goal of the Country Investment Plan is to increase the contribution of the environment, forestry, and climate sectors to national sustainable development through the enhanced provision of ecosystem services, helping to reduce poverty, improving environmental and human health, and advancing resilience to climate change. |
| Bangladesh Delta Plan 2100 (BDP 2100) | 2018 | The BDP 2100 seeks to integrate the medium-term development aspirations of Bangladesh with the longer-term challenge of sustainable management of natural resources. The BDP 2100 proposes goals related to: (1) floods and disasters; (2) water security; (3) integrated water resource management; (4) protection of ecosystems; (5) transboundary water management; and (6) land. This comprehensive development plan focusing on economic growth (eradicate poverty 2030, upper middle-income by 2030, prosperous country by 2041) incorporates sustainable development and green growth strategies. |

TABLE 19. BANGLADESH CLIMATE POLICIES & PLANS

| POLICY/PLAN | YEAR | DESCRIPTION |
|---|------------------------------|--|
| Bangladesh Environmental Statistics Framework, 2016–2030 | 2009 (updated 2022) | The aim of this framework is gather environmental data to monitor sustainable development. The Bangladesh Planning Commission developed it with support from the United Nations Development Programme and the United Nations Poverty-Environment Initiative to strengthen capacity in environmental statistics. |
| Bangladesh National Action Plan for Reducing Short-Lived Climate Pollutants (SLCPs) | 2014 2020 | This plan aims to reduce the adverse impacts of SLCPs such as black carbon, methane, and tropospheric ozone on health, agriculture, and the climate. The action plan seeks to identify the most cost-effective pathways for large-scale implementation of SLCP mitigation measures. |
| Biological Diversity Act | 2007 | In 2017 the Government of Bangladesh (GoB) Ministry of Environment, Forest, and Climate Change passed the Biological Diversity Act to provide for the conservation of biodiversity, the sustainable use of its components, and the fair and equitable sharing of benefits from genetic resources. |
| Bus Rapid Transit System | 2018 | The GoB initiated the Bus Rapid Transit System project with support from the World Bank to provide an efficient and sustainable public transport system for Dhaka. |
| Climate Change and Gender Action Plan (ccGAP) | 2009 2013 2022 (draft) | The ccGAP intends to mainstream gender in climate change-related policies, strategies, and interventions. The ccGAP supports the BCCSAP, integrating gender considerations into four of its six main pillars: (i) food security, social protection, and health; (ii) comprehensive disaster management; (iii) infrastructure; and (iv) mitigation and low carbon development. The plan aims “to mainstream gender concerns into climate change-related policies, strategies, and interventions ensuring access to, participation in, contributions towards and benefits for the diverse group of stakeholders for the sustainable and equitable development of Bangladesh.” The action plan is currently under revision. |
| Climate Change Trust Fund Act | 2010 2018 | The Climate Change Trust Fund Act has the following aims: (a) to develop a necessary action plan to build capacity of the people or groups of people affected by and living in risky areas resulting from climate change and facing long-term risks and upgrade their livelihoods; and (b) to adopt measures for adaptation, mitigation, technology development and transfer, capacity building and funds for those facing adverse effects of climate change (humans, biodiversity, and nature). |
| Disaster Management Act | 2012 2017 | The Disaster Management Act promotes a comprehensive all-hazard, all-risk, all-sector approach, emphasizing risk reduction equally with emergency response. The act also focuses on equitable and sustainable development. |
| Education Sector Plan | 2020 | The Education Sector Plan notes that the impacts of climate change, along with the heightened vulnerability of Bangladesh, necessitate an increased focus on disaster management and risk reduction-based education. The plan includes multiple objectives aligned with the Sustainable Development Goals (SDGs) up to 2030. |

TABLE 19. BANGLADESH CLIMATE POLICIES & PLANS

| POLICY/PLAN | YEAR | DESCRIPTION |
|--|----------------------|--|
| Eighth Five-Year Plan, 2021–2025 | 2020 | This Eighth Five-Year Plan represents the first phase of Bangladesh's Perspective Plan 2041, which aims to bring the country closer to its goal of attaining upper middle-income country status, attaining major SDG targets, and eliminating extreme poverty by Fiscal Year 2031. The plan is critical to achieving the outcomes in Vision 2041, BDP 2100, BCCSAP, National Adaptation Plan (NAP), Nationally Determined Contributions (NDCs), ccGAP, and SDGs. The plan focuses on incorporating climate change and environment and disaster management into planning and budgeting to achieve sustainable development. It also emphasizes appropriate policy and institutional capacity building at all levels of government, especially with an emphasis on the local government level. |
| Electric Vehicle Registration and Operation Policy | 2023 | This policy allows registration of all electric vehicles, including cars, busses, trucks, and motorcycles, in Bangladesh. |
| Environmental Conservation Rules (ECRs) | 1997 2005 2019 | The ECRs establish a legal framework for conducting environmental impact assessments (EIAs) and outline the roles and responsibilities of various stakeholders in the process. Under the ECRs, any proposed project or activity that is likely to have a significant impact on the environment, such as industrial projects, construction of infrastructure, or land use changes, is subject to an EIA. |
| Health National Adaptation Plan (HNAP) | 2018 | The goal of the HNAP is to steer the health sector over the next five years (and beyond) by expanding on existing national health adaptation to include climate change efforts and promote the integration of climate change and health risks into national health policies, planning, programming, and monitoring measures. An updated version of the plan is in progress. Related policies and plans include the Health, Population, and Nutrition Sector Development Plan (2011–2016), developed with funding from the World Bank. This plan recognizes “climate change and health protection” as one of eight key priority interventions. It creates the Climate Change Health and Promotion Unit, which advances this work. In addition, the goal of the Air Pollution (Control) Rules, 2022, is preventing, controlling, and reducing air pollution to protect the environment and public health in the country. |
| Inland Water Transport Development Project | 2020 | With support from the World Bank, this GoB-implemented project promotes the use of inland waterways for cargo transport. |
| Local Government (Union Parishad) Act | 2009 2010 | The Local Government Act establishes standing committees that bring together local-level elected officials to address: (a) finance and establishment; (b) waste management; (c) education, health, family planning, and health security management; (d) urban planning and development; (e) audit and accounts; (f) construction of urban structure and maintenance; (g) water and electricity; (h) social welfare and community centers; (i) ecology development committee; (j) sports and culture; (k) birth-death registration; (l) communication; (m) observation, monitoring, and control of market prices; and (n) calamity management. |

TABLE 19. BANGLADESH CLIMATE POLICIES & PLANS

| POLICY/PLAN | YEAR | DESCRIPTION |
|---|--------------|---|
| Low-Carbon Transport Fund | 2020 | The Bangladesh Climate Change Trust Fund has set up a Low-Carbon Transport Fund to support low-carbon transport initiatives, such as the development of electric vehicle charging infrastructure and the promotion of public transport. |
| Mujib Climate Prosperity Plan (MCPP), 2022–2041 | 2021 | The MCPP provides a vision for how Bangladesh can equip vulnerable communities, industry, and the government. The MCPP offers a multi-sectoral investment plan for climate-resilient infrastructure, clean energy, green value chains, and logistics. The plan identifies climate-resilient agriculture as key to achieving comprehensive climate risk management. The MCPP adopts several pathways to facilitate green growth by encouraging just transition for the large labor force, transforming energy and transport sectors, and supporting nature-based solutions. The MCPP's vision also incorporates relevant health concerns. The plan recommends local-level leadership through establishment of Mujib Locally Led Adaptation Hubs and capacity building for locally led climate change adaptation in the most vulnerable communities of Bangladesh. |
| National Adaptation Plan, (NAP) 2023–2050 | 2022 | The NAP offers a multilevel, inclusive institutional structure to guide mainstreaming of adaptation planning into development planning, in alignment with the BCCSAP, BDP2100, MCPP 2030, Perspective Plan, SDGs, and other development agendas. An appraisal of the cost of the 113 interventions (including 90 high-priority and 23 moderate-priority ones) defined a total investment of BDT 20,037 billion (US \$230 billion) for 27 years (2023–2050). Notable relevant NAP priorities include: updating and reforming policies and plans for mainstreaming climate change adaptation; reforming local government institutes toward the inclusion of community-based organizations, women, people with disabilities, and youth in the implementation of locally led adaptation; and supporting transformative capacity development and knowledge management for integrating climate change adaptation into planning processes and climate financing. |
| National Adaptation Program of Action (NAPA) | 2005 | One of the first to be submitted to the United Nations Framework Convention on Climate Change and widely recognized for its innovative approach to integrating climate change adaptation into national development planning, the NAPA aims to promote sustainable development in Bangladesh, particularly by reducing the adverse impacts of climate change and other disasters and ensuring resilience to disasters linked to climate change. |
| National Agriculture Extension Policy | 2015 | This policy addresses the conditions that hinder the recognition and effective participation of women in decision-making spaces by engendering those spaces, forming women farmer groups, and encouraging women-led small and medium enterprise (SME) development in agri-business. The policy also seeks to develop women's confidence in raising their voices through grassroots-level women farmers' organizations and creating gender awareness in both women and male farmers. |
| National Agriculture Policy | 2009 2018 | In 2018, the GoB Ministry of Agriculture updated the National Agriculture Policy. This document describes the country's ambition to ensure food security and improve socioeconomic conditions by increasing production, productivity, and diversification of crops, farmers' income, nutritious food production, and marketing systems. The document is not directly oriented to climate change, which is mentioned very few times. |

TABLE 19. BANGLADESH CLIMATE POLICIES & PLANS

| POLICY/PLAN | YEAR | DESCRIPTION |
|--|--------------|---|
| National Ambient Air Quality Standards (NAAQS) | 2018 | As a part of its revision of the Environment Conservation Rules in 2005, the GoB set the NAAQS. These standards specify upper limits of pollutants, including carbon monoxide, lead, nitrogen oxides, ground-level ozone, particle pollution, and sulfur oxides. |
| National Curriculum Framework | 2010 2020 | The framework includes environment and climate change as one of ten learning areas for pre-primary, primary, and secondary education levels in Bangladesh. |
| National Education Policy | 2010 2021 | This policy focuses on increasing access and quality of education for Bangladeshi citizens and to increasing “social awareness” about the environment and building skills to tackle climate change and its impacts. |
| National Energy Policy | 2022 | The policy aims to promote the use of renewable energy and energy-efficient technologies in various sectors in Bangladesh, including transportation. It sets a target of generating 10 percent of the country’s energy from renewable sources by 2030. |
| National Environmental Policy | 2018 | In 2018, the GoB created the National Environmental Policy to promote environmental conservation, pollution control, biodiversity conservation, and mitigation of the adverse effects of climate change to ensure sustainable development. This is supported by the Bangladesh Biodiversity Strategy and Action Plan (2016–2021) and the Ecologically Critical Areas Management Rules (2016). |
| National Financial Inclusion Strategy | 2022 | The Financial Inclusion Strategy carves out a path for Bangladesh to promote universal access to financial services. It promotes open bank accounts, access to mobile and digital financial services, financial literacy and consumer protection, and microfinance and SME support. |
| National Food and Nutrition Security Policy (NFNSP) 2 | 2012 | The NFNSP promotes climate resilience as a sub-strategy for achieving Bangladesh’s agricultural goals. The related NFNSP Plan of Action (2021–2030) articulates a path to achieve food and nutrition security-related SDGs by 2030. Climate is heavily referenced throughout. |
| National Food Policy Plan of Action (NFPPoA) (2017–2022) | 2018 | The NFPPoA identifies 26 strategic areas of intervention and priority actions that cover all dimensions of food security, with three core objectives of intervention and priority actions: an adequate and stable supply of safe and nutritious food; increased purchasing power and access to food of the people; and adequate nutrition for all individuals. |
| National Implementation Plan for the Nagoya Protocol on Access and Benefit Sharing (2016–2021) | 2020 | The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is a global agreement that implements the access and benefit-sharing obligations of the Convention on Biological Diversity. It was a 2010 supplementary agreement to the 1992 Convention on Biological Diversity. |

TABLE 19. BANGLADESH CLIMATE POLICIES & PLANS

| POLICY/PLAN | YEAR | DESCRIPTION |
|---|--------------|---|
| National Plan for Disaster Management (2021–2025) | 2021 | The core goals of the Bangladesh National Plan for Disaster Management are to save lives and reduce economic losses in every stage of the disaster cycle. This includes disaster risk reduction, humanitarian response, and emergency recovery management. |
| National Social Security Strategy (NSSS) | 2010 | The NSSS calls for strengthening Bangladesh's social protection system to enhance resilience to climate impacts. |
| National Strategy on Internal Displacement Management | 2010 | With the ultimate vision of making vulnerable communities in Bangladesh resilient to climate change and disasters, this strategy sets out a rights-based framework of climate-induced internally displaced persons in different stages of displacement and during the search for durable solutions. |
| National Sustainable Development Strategy | 2010 2018 | This strategy sets forth a vision for a prosperous enlightened Bangladesh, including sustainable development and green growth strategies. |
| National Sustainable Transport Strategy (NSTS) | 2020 | The NSTS aims to provide a road map for sustainable transport development in the country. The strategy sets out a range of measures to promote low-carbon transportation, including the promotion of public transport, the use of non-motorized transport, and the adoption of clean technologies such as electric vehicles and alternative fuels. |
| Nationally Determined Contributions (NDCs) | 2021 | The NDCs articulate conditional and unconditional targets related to four sectors: energy; industrial processes and product use (IPPU); agriculture, forestry, and other land use (AFOLU); and waste. In the non-conditional scenario, greenhouse gas (GHG) emissions would be reduced by 27.56 million tons of carbon dioxide equivalent (Mt CO ₂ e) (6.73 percent) by 2030 below business as usual. In the conditional scenario, GHG emissions would be reduced by 61.9 Mt CO ₂ e (15.12 percent). The total estimated costs of these reductions are US\$ 176 billion over ten years (2021–2030). |
| Perspective Plan of Bangladesh (2021–2041) | 2021 | In the Prospective Plan, the GoB proposes Vision 2041, which sets out to eliminate extreme poverty and attain the status of upper middle-income country by 2031 and high-income country by 2041. The document sets targets, including the capacity to meet the energy demands of an upper-middle- and high-income economy, ensure sustained and universal energy access, ensure efficient supply of electricity at a globally competitive price, and achieve 100 percent energy security. The Perspective Plan also mentions that Bangladesh's fuel mix should change from excessive reliance on fossil fuel toward a balanced combination of low-cost fuel and renewable energy. |
| Policy Guideline for Enhancement of Private Participation in the Power Sector | 2015 | The Policy Guidelines for Enhancement of Private Participation in the Power Sector support the GoB's objective to augment generation capacity to meet existing power shortage and demand growth in future years. The GoB desires to promote further private participation in the power sector, and these guidelines serve as a base to achieve this goal. The guidelines address commercial power plants; public-private partnerships (PPPs) for old and inefficient power plants; PPPs for |

TABLE 19. BANGLADESH CLIMATE POLICIES & PLANS

| POLICY/PLAN | YEAR | DESCRIPTION |
|---|------|--|
| | | joint venture power plants; wheeling of power; qualification of investors; power purchase, fuel supply, and land lease/transfer by GoB; licensing/approval/clearance; GoB support; and fiscal incentives. |
| Power System Master Plan (PSMP) (2016–2041) | 2016 | The PSMP 2016, sponsored by the Japan International Cooperation Agency, aims to assist Bangladesh in formulating an extensive energy and power development plan up to the year 2041 that covers energy balance, power balance, and tariff strategies. |
| Railway Master Plan (RMP) | 2013 | The RMP is a comprehensive plan that the GoB developed to modernize and expand the country's railway network. |
| Renewable Energy Policy of Bangladesh | 2008 | The Renewable Energy Policy of Bangladesh was passed in 2008. Among other things, this policy created the Sustainable Energy Development Agency as a focal point for sustainable energy development and promotion, “sustainable energy” comprising renewable energy and energy efficiency. Energy development was also a key component of Vision 2041, focusing on the energy fuel mix and the MCPP. Related plans and analysis: (a) Bangladesh Energy Efficiency and Conservation Master Plan (2015–2030); (b) Power System Master Plan (2016); (c) National Solar Energy Roadmap (2021–2041); (d) National Action Plan for Clean Cooking (2020–2030); and (e) MCPP Power Sector Analysis (2021). |
| Scaling Up Renewable Energy Program for Bangladesh | 2021 | The Scaling Up Renewable Energy Program for Bangladesh aims to increase the installed capacity of renewables through piloting and expanding investments in key market segments. The program is estimated to help cut emissions by 377,000 MtCO ₂ e/year. The project will add up to 310 Megawatts in renewable energy generation capacity in Bangladesh and will help mobilize up to US\$ 212 million in private sector participation to meet the growing demand for electricity in the country. |
| Social Protection Strategy | 2021 | This strategy seeks to streamline and strengthen the existing safety net programs with a view to achieving better results from money spent and to broaden the scope of social protection from the narrower safety net concept to include employment policies and social insurance to address the emerging needs of a middle-income Bangladesh. |
| Standing Orders on Disaster (SODs) | 2019 | The SODs aim to inform all concerned about their roles and responsibilities at every stage of disaster risk management. The SODs require each GoB ministry, division, department, and agency to prepare its own detailed work plan to perform its responsibilities and functions efficiently. |
| Sustainable and Renewable Energy Development Authority (SREDA) Act (2012) | 2008 | This act establishes the SREDA to ensure energy security and mitigate risks associated with natural calamities stemming from global warming. SREDA aims to promote renewable energy and energy efficiency by coordinating renewable energy and energy efficiency efforts of the GoB, standardizing and labeling renewable energy and energy efficiency products, piloting new technologies, and taking initiatives for their expansion. The act also creates a conducive environment for the investors, research and development, awareness of renewable energy and energy efficiency, and establishment of links with regional and international organizations. |

TABLE 19. BANGLADESH CLIMATE POLICIES & PLANS

| POLICY/PLAN | YEAR | DESCRIPTION |
|---|------|---|
| SREDA Standard and Labelling (Appliances & Equipment) Regulation (2018) | 2021 | The regulation establishes the rules and procedures for prescribing minimum energy performance standards and labeling appliances and equipment according to their energy efficiency performance. The aim of this regulation is to offer consumers free choices for adopting energy efficiency improvement and cost reduction measures through a market mechanism. This will be overseen by the Bangladesh Standard and Testing Institution. |
| Technology Needs Assessment (TNA) | 2012 | The TNA is a set of country-driven activities leading to the identification, prioritization, and diffusion of environmentally sound technologies for mitigation and adaptation to climate change. The results of the TNA and associated Technology Action Plans are included in Bangladesh's NDCs. |

ANNEX 2. CONSULTED PARTIES

TABLE 20. LIST OF KEY INFORMANT INTERVIEWEES AND FOCUS GROUP PARTICIPANTS CONDUCTED IN APRIL AND MAY 2023

| NAME | ORGANIZATION | TITLE |
|----------------------------|---|--|
| Matt Addison | United States Agency for International Development (USAID) Bangladesh Advancing Development and Growth through Energy (BADGE) | Interim Chief of Party |
| Muhammed MurshedHaider | USAID BADGE | Director of Private Sector Engagement |
| AK Mahmud | USAID BADGE | Director of Regional Trade |
| Alam Hossain Mondal | USAID BADGE | Deputy Chief of Party |
| Md. Abu Bakar Siqqiq | USAID BADGE | Director of Advanced Energy Technologies |
| Ainun Nishat | Centre for Climate Change and Environmental Research (C3ER) Bangladesh Rural Advancement Committee (BRAC) University | Professor Emeritus |
| Tamim Al Hossain | Centre for Environmental and Geographic Information Services (CEGIS) | Associate Specialist |
| Ahmmmed Zulfiqar Rahaman | CEGIS | Junior Specialist |
| Ahmad Kamruzzaman Majumder | Center for Atmospheric Pollution Studies, Stamford University | Founder and Chairman, Center for Atmospheric Pollution Studies |
| Md. Foezullah Talukder | Christian Commission for Development in Bangladesh (CCDB) | Head, Climate Change Program |
| Mirza Shawkat Ali | Climate Bridge Secretariat | Head |
| Kazi Amdadul Hoque | Friendship (nongovernmental organization [NGO]) | Senior Director of Strategic Planning, Head of Climate Action |

TABLE 20. LIST OF KEY INFORMANT INTERVIEWEES AND FOCUS GROUP PARTICIPANTS CONDUCTED IN APRIL AND MAY 2023

| NAME | ORGANIZATION | TITLE |
|---------------------------|--|---|
| Sohel Ahmed | Grameen Shakti | Managing Director |
| Abdul Arif | Grameen Shakti | Project Manager |
| Rubaya Nasrin | Grameen Shakti | Manager, Project Development |
| Golam Rabbani | Grameen Shakti | Assistant Manager |
| Saleemul Huq | International Centre for Climate Change and Development (ICCCAD), Independent University | Director |
| Shahnawaz Whara | Palli Karma-Sahayak Foundation | Deputy Managing Director, Environment and Climate Change |
| Maliha Muzammil | Practical Action | Regional Climate and Resilience Advocacy Manager for South Asia |
| Marcellus Mbah | United Nations Development Programme (UNDP) | Climate Finance Expert and Project Manager, Climate Finance Network |
| Sultana Rebeka Akhter | University of Manchester | Lecturer in Education |
| Miranda Beckman | United States Agency for International Development (USAID)/Bangladesh | Environmental Officer and Climate Integration Lead |
| Kevin Fath | USAID/Bangladesh | Office of Population, Health, and Nutrition |
| Muhammed Khan | USAID/Bangladesh | Agricultural Development Officer |
| Shafiqur Rahman | USAID/Bangladesh | Director, Office of Economic Growth, |
| Syful Karim | USAID/Bangladesh | Project Management Specialist, Humanitarian Assistance Office |
| Swarna Kazi | WaterAid | Program Officer, Engineer |
| Wameq Azfar Raza | World Bank | Senior Disaster Risk Management Specialist |
| Eun Joo Yi | World Bank | Senior Environmental Specialist |
| Fazle Rabbi Sadeque Ahmed | World Bank | Senior Environmental Specialist |

TABLE 2I. PARTICIPANTS IN CLIMATE RESILIENCE CONSULTATIVE WORKSHOPS, MAY 7, 8, 9, 2023, DHAKA, BANGLADESH

| NAME | ORGANIZATION | TITLE |
|--|---|--|
| DAY I: SUNDAY, MAY 7, 2023 – DISASTER RISK FINANCING & SHOCK-RESPONSIVE SOCIAL PROTECTION | | |
| 1. Ms. Afroja Aktar Chowdhury | SEID, Planning Commission | Deputy Chief |
| 2. Mr. Ekhtekhar Islam | Refugee and Migratory Movements Research Unit | Adjunct Research Fellow |
| 3. Mr. Faisal Ahmad | Shushilan Ltd | |
| 4. Mr. Farid Ahmed Sagar | Friendship NGO | General Manager, Climate Action |
| 5. Mr. Khondoker Golam Tawhid | BRAC | Program Head, Disaster Risk Management Program |
| 6. Mr. M. Abdus Salam | Gana Unnayan Kendra | Chief Executive |
| 7. Mr. Md. Ashaduzzaman | Friendship NGO | Coordinator, Climate Action |
| 8. Mr. Md. Foezullah Talukder | CCDB | Head, Climate Change Program |
| 9. Mr. Md. Rafiul Alam Siddiqui | Environment Climate Change and Social Development Initiatives (ECSDI) | Founder and Chief Executive Officer |
| 10. Ms. Moslema Naznin | Economic Relations Division | Joint Secretary |
| 11. Mr. Mrityunjoy Das | CARE Bangladesh | Deputy Director |
| 12. Mr. S.M. Monjur Rashid | BRAC | Program Head, Advocacy for Social Change |
| 13. Mr. Sarder Shafiqul Alam | ICCCAD | Coordinator |
| 14. Mr. Shaikh Muhammed Mehedi Ahsan | Global Center on Adaptation, Dhaka | Country Manager |
| 15. Ms. Shanta Soheli Moyna | Oxfam | Natural Resource Specialist |
| 16. Mr. Sk Ashraful Islam | German Development Agency (GIZ) | Senior Coordinator, Urban Livelihood Planning |

TABLE 2I. PARTICIPANTS IN CLIMATE RESILIENCE CONSULTATIVE WORKSHOPS, MAY 7, 8, 9, 2023, DHAKA, BANGLADESH

| NAME | ORGANIZATION | TITLE |
|----------------------------------|--|-------------------------|
| 17. Mr. Harun-Ur-Rashid | International Federation of Red Cross and Red Crescent Societies | Senior Program Manager |
| 18. Mr. MM Mehedi Hasan | Shushilan | Management Trainee |
| 19. Mr. Md. Shahidul Islam | Uttaran | Project Manager |
| 20. Ms. Lipy Sheth | GIZ | Senior Advisor |
| 21. Mr. Shahadat Shakil | USAID | Environment Specialist |
| 22. Mr. Md. Mehdi Hasan | GIZ | Advisor, Climate Change |
| 23. Mr. Md. Rabiul Alam Siddique | ECSDI | Chief Executive Officer |

DAY I: SUNDAY, MAY 7, 2023 – CLIMATE-SMART AGRICULTURE

| | | |
|-----------------------------------|---|--------------------------|
| 1. Dr. A.R.M. Solaiman | Mawlana Bhashani Science and Technology University | Pro-Vice Chancellor |
| 2. Mr. Bani Amin | Feed the Future Bangladesh Horticulture Activity | Deputy Chief of Party |
| 3. Dr. Hedyatul Islam | SHOUHARDO, CARE | Team Leader, Agriculture |
| 4. Dr. M. Mokhlesur Rahman | Center for Natural Resource Studies (CNRS) | Executive Director |
| 5. Mr. Md Shamsuddoha | Center for Participatory Research and Development | Executive Director |
| 6. Dr. Md. Abdullah Yousuf Akhond | Bangladesh Agriculture Research Institute | Director (Research) |
| 7. Mr. Md. Abid-Ul-Kabir | BRAC | Program Manager |
| 8. Dr. Ranjan Roy | Food and Agriculture Organization of the United Nations | Consultant |
| 9. Dr. Md. Sirazul Islam | International Rice Research Institute | Chief of Party |
| 10. Dr. M. A. Salam | Bangladesh Agriculture University, Mymensingh | Professor |
| 11. Dr. Ibna Rahaman | International Potato Center, Bangladesh | Senior Manager |

TABLE 2I. PARTICIPANTS IN CLIMATE RESILIENCE CONSULTATIVE WORKSHOPS, MAY 7, 8, 9, 2023, DHAKA, BANGLADESH

| NAME | ORGANIZATION | TITLE |
|---|--|---|
| 12. Dr. Samiya Selim | University of Liberal Arts, Bangladesh | Professor |
| 13. Dr. Mohammad Solaiman | Agriculture, Water Resources, and Rural Institutions Division, Planning Commission | Deputy Secretary |
| 14. Mr. Kevin Fath | USAID | Agricultural Development Officer |
| 15. Mr. Mahmudul Hasan | Action Aid Bangladesh | Manager |
| DAY 2: MAY 8, 2023, GREEN GROWTH | | |
| 1. Mr. Arif Mohammad Faisal | UNDP | Program Specialist-Nature, Climate & Energy |
| 2. Mr. Dipal C Barua | Bangladesh Solar and Renewable Energy Association | President |
| 3. Ms. Farhana Chowdhury | Tenka Solar GmbH, Bangladesh and India | Country Manager |
| 4. Mr. Khadem Mahmud Yusuf | Bangladesh Petrochemical Company Ltd | Managing Director and Chief Executive Officer |
| 5. Mr. Rakibul Hasan | Arannayk Foundation | Executive Director |
| 6. Dr. Rumana Sultana | Department of Environmental Science & Management, Independent University, Bangladesh | Assistant Professor |
| 7. Mr. Shadab Sakib Mostafa | Bangladesh Petrochemical Company Limited | Head, Business Unit |
| 8. Mr. Sohel Ahmed | Grameen Shakti | Managing Director |
| 9. Mafrida Rahman | Green Climate Fund | Assistant Vice President |
| 10. Mr. Syed Matiul Ahsan | Royal Danish Embassy | Program Adviser |
| 11. Ms. Shahpar Selim | USAID | Mission Environment Officer |
| 12. Mr. Md. Nehal Azmat | Practical Action | Project Manager |
| 13. Mr. Kazi Ahsan Uddin | USAID | Energy Specialist |
| 14. Mr. M Murshed | USAID BADGE | Director |

TABLE 2I. PARTICIPANTS IN CLIMATE RESILIENCE CONSULTATIVE WORKSHOPS, MAY 7, 8, 9, 2023, DHAKA, BANGLADESH

| NAME | ORGANIZATION | TITLE |
|-------------------------------------|--|-------------------------------|
| 15. Mr. Syed Mohammad Aminur Rahman | Sustainable and Renewable Energy Development Authority | Director (Deputy Secretary) |
| 16. Ms. Halima Jahan | Bright Green Energy Foundation | Research Officer |
| 17. Mr. Md. Sayeedul Islam | USAID | Program Management Specialist |
| 18. Mr. Shahadat Shakil | USAID | Environment Specialist |
| 19. Ms. Nusrat Jahan | Bangladesh Youth Environment Initiative (BYEI) | Communication Assistant |
| 20. Ms. Tanzima Rahman | Bangladesh Youth Environment Initiative (BYEI) | Fellow |

DAY 2: MAY 8, 2023 – CLIMATE AND WATER

| | | |
|-------------------------------|---|--|
| 1. Mr. A.K.M Shirajul Islam | Bangladesh Association for Social Advancement (BASA) | Executive Director |
| 2. Mr. Ali Reza | ESOLVE International | General Manager |
| 3. Ms. Ismat Ara Pervin | Institute of Water Modelling (IWM) | Senior Specialist |
| 4. Ms. Jahanara Begum Shapna | Chandradip Development Society | Executive Director |
| 5. Mr. Kazi Jahangir Kabir | SAINT-Bangladesh | Executive Director |
| 6. Dr. Khandakar Hasan Mahmud | Jahangirnagar University | Professor |
| 7. Ms. Leonora Adhikari | WaterAid | Senior Coordinator, Business Development and Fundraising |
| 8. Dr. Md. Aminul | Water Resources Planning Organization | Principal Scientific Officer (Water Resources) |
| 9. Mr. Md. Mafidul Islam | Support to the Implementation of the Bangladesh Delta Plan 2100 Project | Institutional Specialist |
| 10. Mr. Md. Nurul | Local Government Engineering Department (LGED) | Additional Chief Engineer, Water Resources Unit |
| 11. Mr. Md. Tarikul | IWM | Head, Climate Change Cell |
| 12. Ms. Monowara | DALIT | Coordinator- Communication & Networking |

TABLE 21. PARTICIPANTS IN CLIMATE RESILIENCE CONSULTATIVE WORKSHOPS, MAY 7, 8, 9, 2023, DHAKA, BANGLADESH

| NAME | ORGANIZATION | TITLE |
|---------------------------|--|--|
| 13. Mr. Mrityunjoy | CARE Bangladesh | Deputy Director |
| 14. Mr. S.M. Nazrul Islam | LGED | Senior Engineer |
| 15. Mr. Shamim Arfeen | An Organization for Socio-Economic Development (AOSED) | Executive Director |
| 16. Dr. Anwar Zahid | Bangladesh Water Development Board | Civil Engineer Hydrology |
| 17. Mr. Jahan Shams | Uttaran | Head of Program |
| 18. Ms. Jesmin Molly | Development Organization of the Rural Poor | Monitoring and Evaluation Coordinator |
| 19. Mr. Liton Kumar Dutta | BASA Foundation | General Manager |
| 20. Mr. Sumon Biswas | AOSED | Technical Assistant |
| 21. Mr. Md. Tarikul Islam | IWM | Director and head of Climate Change Cell |
| 22. Michelle Ngirbabul | USAID | Health Officer |

DAY 3, MAY 9 – INCLUSIVE CLIMATE PLANNING AND IMPLEMENTATION

| | | |
|-----------------------------------|---|--|
| 1. Dr. Adil Muhammad Khan | Institute of Planning and Development (IPD) | Professor |
| 2. Dr. Ahmad Kamruzzaman Majumder | Stamford University Bangladesh | Professor, Center for Atmospheric and Pollution Studies, Department of Environmental Science |
| 3. Dr. M. Mokhlesur Rahman | CNRS | Executive Director |
| 4. Ms. Nilufer Ahmed Karim | Faith Bangladesh | Gender Specialist |
| 5. Ms. Roufa Khanum | C3ER | Assistant Director |
| 6. Dr. Saleemul Huq | ICCCAD | Director |
| 7. Dr. Mohammad Assaduzzaman | Sustainable Development Networking Foundation | Senior Policy Advisor |
| 8. Ms. Mukta Akter | Department of Agricultural Extension (DAE) | Upazila Agriculture Officer |

TABLE 2I. PARTICIPANTS IN CLIMATE RESILIENCE CONSULTATIVE WORKSHOPS, MAY 7, 8, 9, 2023, DHAKA, BANGLADESH

| NAME | ORGANIZATION | TITLE |
|---|---|--|
| 9. Mr. Anjan Chandra Mondal | DAE | Additional Deputy Director |
| 10. Mr. KJ Ferdouse | Agriculture Information Service | Press Manager |
| 11. Mr. Md. Mehdi Hasan | GIZ | Advisor, Climate Change |
| 12. Prof. Adil Mohammad Khan | IPD | Executive Director |
| 13. Ms. Sumana Binte Masud | USAID/Democracy, Human Rights, and Governance Office | Project Management Specialist |
| DAY 3, MAY 9, 2023 – COLLECTIVE IMPACT | | |
| 1. Dr. Abe Shantonu | International Fund for Agricultural Development | Program Officer |
| 2. Dr. Dana de la Fontaine | GIZ | Program Coordinator, Adaptation of Urban Areas to Climate Change |
| 3. Mr. Md. Mehdi Hasan | GIZ | Advisor, Climate Change |
| 4. Ms. Florian Höllen | German Embassy | Counsellor |
| 5. Mr. Wameq Azfar Raza | World Bank | Economist |
| 6. Ms. Shirin Sultana Lira | Embassy of Switzerland in Bangladesh | Program Manager, Governance, Climate Change and Environment |
| 7. Ms. Farzana Sultana | Global Affairs Canada | Development Advisor |
| 8. Dr. Atiq Rahman | Bangladesh Centre for Advanced Studies | Executive Director |
| 9. Mr. Md. Anisuzzumam | Japan International Cooperation Agency (JICA) | Senior Program Officer |
| 10. Mr. Daisuke Ito | JICA | Representative |
| 11. Mr. S M Arafat | United Nations Industrial Development Organization | National Expert |
| 12. Ms. Anna Balance | United Kingdom Foreign, Commonwealth, and Development Office Bangladesh Climate & Environment Program | Senior Climate Change Advisor |



BANGLADESH ENABLING ENVIRONMENT FOR CLIMATE ACTION NEEDS ASSESSMENT

USAID-CLIMATE ADAPTATION SUPPORT ACTIVITY (CASA)

