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# BANGLADESH CLIMATE PROSPERITY PLAN

| DECADE 2030







# Mujib Climate Prosperity Plan 2022-2041

*Building forward stronger by charting a decade of investment towards realizing robust inclusive socio-economic development that fully integrates resilience and low carbon economic green growth for optimized prosperity and economic partnerships towards 2041*

**Ministry of Environment, Forest and Climate Change  
Government of the People's Republic of Bangladesh**

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# List of Abbreviations

AF	Adaptation Fund
ASP	Adaptive Social Protection
ASPP	Adaptive Social Protection Program
BAU	Business-As-Usual
BCCRF	Bangladesh Climate Change Resilience Fund
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BCCTF	Bangladesh Climate Change Trust Fund
BCSIR	Bangladesh Council of Scientific and Industrial Research
BDP	Bangladesh Delta Plan
BDT	Bangladeshi Taka
BGMEA	Bangladesh Garment Manufacturers and Exporters Association
BIDA	Bangladesh Investment Development Authority
BRT	Bus Rapid Transit
CCF	Contingent Credit Facility for Natural Disaster Emergencies
ccGAP	Bangladesh Climate Change and Gender Action Plan
CDM	Clean Development Mechanism
CDRFI	Climate and Disaster Risk Financing and Insurance
CERC	Contingent Emergency Response Components
CHT	Chattogram Hill Tracts
CIF	Climate Investment Funds
CPM-MH	Crisis Preparedness and Management for Mental Health
CRW	Climate Response Window
CSP	Concentrating Solar Power
CVF	Climate Vulnerable Forum
DDO	Deferred Draw-down Option
DERs	Distributed Energy Resources
DFQF	Duty-free Quota-free
DFS	Digital Financial Services
DRR	Disaster Risk Reduction
ECA	Export Credit Agency
EEV	Energy Efficient Vehicles
ESG	Environmental, Social, and Governance

EU	European Union
G20	Group of Twenty
G2P	Government-to-Person
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIIF	Global Index Insurance Facility
GIS	Geographic Information System
GOB	Government of Bangladesh
HIC	High-Income Country
HVAC	Heating, Ventilation, and Air-conditioning
ICS	Improved Cooking Solutions
ICT	Information and Communication Technology
IDCOL	Infrastructure Development Company Limited
IDRA	Insurance Development and Regulatory Authority
IGP	InsuResilience Global Partnership
ILO	International Labour Organization
IRENA	International Renewable Energy Agency
IRM	Immediate Response Mechanism
IT	Information Technology
LCOE	Levelized Cost of Electricity
LDC	Least Developed Country
LEED	Leadership in Energy and Environmental Design
LGD	Local Government Division
LLA hubs	Locally Led Adaptation Hubs
LNG	Liquefied Natural Gas (also known as Fossil Gas)
LoGIC	Local Government Initiative on Climate Change
MCPP-M	Mujib Climate Prosperity Plan Maximized
MDB	Multilateral Development Banks
MoA	Ministry of Agriculture
MoCom	Ministry of Commerce
MoDMR	Ministry of Disaster Management and Relief
MoEFCC	Ministry of Environment, Forest and Climate Change
MoF	Ministry of Finance

MoHFW	Ministry of Health and Family Welfare
Mol	Ministry of Industries
MoLE	Ministry of Labour and Employment
MoLGRDC	Ministry of Local Government, Rural Development and Co-operatives
MoR	Ministry of Railways
MoRTB	Ministry of Road Transport and Bridges
MoS	Ministry of Shipping
MoWCA	Ministry of Women and Children Affairs
MPEMR	Ministry of Power, Energy and Mineral Resources
MRT	Metro Rail Transits
MSDC	Management Skill Development Center
MSME	Micro-, small- and medium-sized enterprises
MW	Megawatt
NAP	National Adaptation Plan
NBFI	Non-bank Financial Institutions
NDC	Nationally Determined Contribution
NHRDF	National Human Resource Development Fund
NREL	National Renewable Energy Laboratory
NSDA	National Skills Development Authority
NSDC	Bangladesh National Skills Development Council
NTFPs	Non-timber Forest Products
OCAG	Office of the Comptroller and Auditor General
P2G	Person-to-Government
PMO	Prime Minister's Office
PPAs	Power Purchase Agreements
PPCR	Pilot Program for Climate Resilience
PPP	Public Private Partnerships
PPT	Parts Per Trillion
PSF	Private Sector Facility
PWD	Persons with Disability
RCF	Rapid Credit Facility
RD&D	Research, Development, and Deployment
RE	Renewable Energy
RFI	Rapid Financing Instrument
SDGs	Sustainable Development Goals

SEIP	Skills Employment Investment Program
SIF	Sustainable Insurance Facility
SLCPs	Short Lived Climate Pollutants
SME	Small and Medium Enterprise
SPV	Special-purpose Vehicles
SREDA	Sustainable and Renewable Energy Development Authority
T&D	Transmission and Distribution
TOF	Trees outside Forest
TOTS	Training of Trainers
UMIC	Upper Middle Income Country
UN	United Nations
USD	United States Dollar
V20	Vulnerable Twenty Group of Finance Ministers
VCM	Voluntary Carbon Markets
VRP	Vulnerability to Resilience to Prosperity
4IR	4th Industrial Revolution
7FYP	7th Five Year Plan
8FYP	8th Five Year Plan

## Executive Summary

Bangladesh faces increasing catastrophic impacts of climate change that could result in a 6.8% loss in GDP per year by 2030 if business as usual is pursued globally. For this reason, we need to build Bangladesh's resilience to make sure that the threat multiplier of climate change does not affect the country's prosperity. Thus, the Mujib Climate Prosperity Plan (MCPP) includes a number of ambitious new and strengthened adaptation efforts to build resilience in populations and ecosystems through investment this decade to contribute to 2041 outcomes. Minimizing and averting climate-induced losses and damages is also an international financing priority of this Plan. The MCPP was launched under Bangladesh's second tenure as president of the Climate Vulnerable Forum (CVF). It works to counteract climate-induced damage and losses by equipping vulnerable communities, industry, and the government with the Mujib vision supported by optimized financing tools and models that will be key to the new risk management paradigm to bring about resilience and stability, especially for small businesses, vulnerable populations, and the economy.

The MCPP shifts Bangladesh's trajectory from one of vulnerability to resilience to prosperity (VRP). The Plan's principal aims are to secure Bangladesh's prosperity by 2041, launching an economic transformation with actions that:

- Increase growth by maximizing resilience with loss and damage financing through Locally Led Adaptation Hubs, including by increasing gender responsiveness, supporting internally displaced people, strengthening the digital economy, enhancing financial protections, and expanding our green economic partnerships. This work aims to enable us to attain upper middle-income status within a single decade.
- Strengthen employment in a green economy, that is climate-resilient, low-carbon, resource efficient, gender-responsive and socially inclusive for faster job creation, upskilling of the workforce to high quality green tech jobs, and greatly increasing the level of protection in the workplace.
- Promote well-being and traditional living to take advantage of 21<sup>st</sup>-century technologies together with inherently sustainable, traditional lifestyle practices and living. These actions aim to promote physical and psychological well-being, and greatly enhanced mobility for all, while protecting the environment through cleaner air, special health programs and support arrangements.
- Secure our own resilience, energy independence and energy security, and to become a net green energy exporter to the world. With international and other investment support, we hope to reach 30% renewable energy by 2030 and up to 40% by 2041, with grid resilience and modernization. Our flagship energy projects include the Bongoposagor Independence Array, one of the first large-scale hybrid RE-adaptation infrastructure projects that will revitalize a

mangrove green belt to protect our threatened coastlines. As with strategic Energy Hubs, we will convert coal plants into green energy facilities such as hydrogen works.

The MCPP will be achieved within the framework of already-foreseen national planning documents and processes to boost their aims and support robust delivery on the 2030 UN Sustainable Development Agenda for Bangladesh. MCPP envisions to drive investment and have a midterm evaluation of its targets in 2030, with an aim to change the narrative from vulnerability to resilience to prosperity and thus shifting towards sustainable prosperity by 2041. The Plan envisages ambitious, accelerated implementation of the Paris Agreement on Climate Change, especially the delivery of the UNFCCC-agreed USD 100 billion per year for the period 2020 to 2024 towards which the MCPP also serves as the nation's climate resilience strategy and co-benefits from long-term low GHG emissions. The plan is considered a living document and will be updated every 5 years to take into consideration the evolving technology learning rates and access to resources.

The MCPP expects investment opportunities in resilient pathways including energy, water, transport, supply chains and agriculture value chains, to reach USD 90 billion over the next decade.

Optimized financing structures to attract foreign direct investment<sup>1</sup> and mobilize domestic private sector capital include the use of public-private partnerships (PPP) as a key solution to climate investment in coordination with the PPP Authority. The Bangladesh Bank can use different tools to incentivize investment in low-carbon and climate-resilient infrastructure, including preferential refinancing rates, differentiated capital requirements such as a “fossil fuel penalizing factor” commensurate with risk and higher capital requirements for non-low-carbon and non-climate-resilient projects.

Special purpose vehicles for climate resilience can be supported, such as the state-owned enterprises, to better underwrite green off-take agreements. Other alternative financing tools for the delivery of the Plan include special leasing facility windows and de-risking instruments.

The V20's Accelerated Financing Mechanism for the targeted use credit strengthening of national banks includes subordinated debt investment that lowers the cost of capital. Finally, the risk-layering approach in the Climate and Disaster Risk Management and Financing Strategy including the V20's Sustainable Insurance Facility will utilize cost-effective reduction in exposure to climate risks that will integrate investments in risk reduction (adaptation), risk retention (e.g., budgetary allocations for contingency funds for low impact, high-frequency events), risk transfer on and across different levels (e.g., for high impact, low(er) frequency events) and contingency financing.

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<sup>1</sup> Foreign direct investment must be compliant with Bangladesh Bank regulations.

There are significant opportunities for technology-transfer partnerships and building manufacturing capacity in Bangladesh including in areas such as green hydrogen, solar, electric vehicles, modernized power grid and other resilient and quality infrastructure. Partnerships can also be leveraged for green supply chains and value-engineering in agriculture, fisheries, and manufacturing. The regional partnerships in South Asia (including through the South Asian Association for Regional Cooperation), feature connectivity with neighboring countries that can strengthen value-chain/supply-chain integration.

Moreover, the South Asia region can cement regional energy security through least-cost options that are competitive enough to attract global manufacturing, agriculture, fisheries, and services. In addition, there is an opportunity to explore Bangladesh foreign direct investment in member CVF/V20 countries to earn foreign currency overseas. Incremental gains of over USD 50 billion per year would be added to GDP versus business as usual, yielding USD 850 billion over 10 years. Delaying these investments in infrastructure and adaptive capacity would result in costs and losses of at least 4.9% of GDP by 2030, equivalent to at least USD 30 billion per year by 2030.

During the Bangladesh presidency of the CVF and V20, we launch a new 'Climate Prosperity' program for the development and implementation of the strategic economic-climate-SDG investment and cooperation frameworks to advance CVF and V20 ambitions for resilience and prosperity across our economies, commencing with Bangladesh's 'Mujib Climate Prosperity Plan' in honor of the centenary year of Bangladesh's Father of the Nation, Bangabandhu Sheikh Mujibur Rahman, who is not only remembered as a hero for Bangladesh's independence but also as a visionary for the preservation of nature and the environment of Bangladesh. The five-point proposal from the 1st Climate Vulnerables Finance Summit<sup>2</sup> put forward by the CVF Chair, Hon'ble Prime Minister H.E. Sheikh Hasina urges every vulnerable country to actively consider adopting a 'climate prosperity plan' and requests the international community to provide comprehensive support to realize the plans and the developed countries to facilitate green recovery of CVF and V20 countries through dedicated support in reducing the cost of capital and encouraging private sector participation. In a visionary statement delivered at the COP 26, Hon'ble Prime Minister H.E. Sheikh Hasina placed another four-point proposal<sup>3</sup> urging global leaders to work together.

- First, the major emitters must submit ambitious NDCs, and implement those.

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<sup>2</sup> Hasina, S. (2021, July 8). Opening Speech by H.E. Sheikh Hasina, Prime Minister Government of the People's Republic of Bangladesh for the 1st Climate Vulnerable Finance Summit. Vulnerable Twenty Group. Retrieved July 11, 2022, from <https://www.v-20.org/our-voice/statements/chair/speech-by-h-e-sheikh-hasina-prime-minister-government-of-the-peoples-republic-of-bangladesh>

<sup>3</sup> Hasina, S. (2021, November 1). National Statement by H.E. Sheikh Hasina Honorable Prime Minister Government of the People's Republic of Bangladesh for the 26th Session of the Conference of the Parties (COP26), UNFCCC. Retrieved April 27, 2022 from <https://thecvf.org/our-voice/statements/chair/the-statement-of-bangladesh-the-cvf-cop26/>

- Second, developed countries should fulfil their commitments of providing 100 billion dollars annually with a 50:50 balance between adaptation & mitigation.
- Third, the developed countries should disseminate clean and green technology at affordable costs to the most vulnerable countries. The development needs of the CVF countries also need to be considered.
- Fourth, the issue of loss & damage must be addressed, including global sharing of responsibility for climate migrants displaced by sea-level rise, salinity increase, river erosion, floods, and draughts.

Named after symbolic icons of national independence and prosperity of each participating member country, through these plans, CVF-V20 countries will work to catalyze the economic transformation of our member economies facing both similar and unique climate challenges to launch a decade and more of progress propelled by fast-tracked action. Our goal is to improve our key socio-economic growth outcomes – national and disposable income, poverty reduction, investment, jobs, economic stability, trade balance, and other critical socio-economic results – by optimizing core economic and climate responses together. Our plans will form a CVF and V20 contribution to vital change in systems of the global economy. Through economic cooperation, the realization of prosperity plans could represent significant opportunities for investment and trade, technology transfer, and manufacturing partnerships. We strongly believe that the CVF and V20's potential, as green growth engines for the world economy, will be sustainable through our joint efforts.

## Preamble: Vulnerability to Resilience to Prosperity

Hard-fought development gains and increased productivity will continue to be undermined or reversed if the 1.5° Centigrade limit of the Paris Agreement is breached. Episodic climate-induced disasters and losses are only one subset of the threats facing the Bangladeshi people and industry. Other such threats stem from slow-onset effects such as drought, sea-level rise and ocean acidification which may inflict more lasting harm to Bangladesh's economic aspirations.

The Mujib Climate Prosperity Plan (MCP) counteracts climate-induced damage and losses by equipping vulnerable communities, industry, and the government with the Mujib vision supported by optimized financing tools and models that will be key to embracing a new risk management paradigm that would bring about resilience and stability, especially for small businesses, vulnerable populations, and the economy. The MCP leverages the financing of the Eighth Five Year Plan 2020-2025 of Bangladesh, Vision 2041, and Bangladesh Delta Plan 2100 with synergies from the Bangladesh Climate Change Strategy and Action Plan (BCCSAP), National Adaptation Plan 2023-2050 (NAP) and Nationally Determined Contributions (NDCs) submitted in 2021, to unlock a pathway for fast-tracked attainment of the Sustainable Development Goals by 2030 and GDP per capita growth commensurate to upper middle-income status.

The implementation of the MCP's to unlock new private funds could pave the way for Bangladesh's anticipated graduation from least developed country status in 2026. This accomplishment would enable diversified capital sources, including the private sector, blended finance and enhanced economic cooperation, improved market access through competitive positioning globally, export competitiveness and diversification, as well as strengthened financial protection and resilience. Looking forward to 2041, there is scope to consider ambitious financing initiatives including a variety of instruments such as resilience bonds, forecast based financing, among other options.

The Mujib Climate Prosperity Plan shifts Bangladesh's trajectory from one of vulnerability to resilience to prosperity (VRP). This shift must happen in the decade to 2030, yet the MCP also positions Bangladesh strategically into the long-term, with this Plan including perspectives beyond 2040 to mid-century, in alignment with the Climate Vulnerable Forum Vision and the Paris Agreement.

Under the leadership of the Government of Bangladesh as Presidency of the Climate Vulnerable Forum (CVF), the vulnerable nations adopted the 'Dhaka-Glasgow Declaration' outlining their demands for COP26 that urged high emitting countries to keep the 1.5 Centigrade survival limit within reach through annual climate target ambition raising at each COP. In this Declaration, leaders also called for a Delivery Plan from the 1<sup>st</sup> V20 Climate Vulnerables' Finance Summit for the \$500 billion climate

finance commitment from developed states. The urgency of the "Climate Emergency Pact" mandates yearly ambition raising for governments and especially major carbon emitters for every year through to 2025. With the aim to restore confidence in the Paris regime's ability to deliver despite failures in the materialization of climate finance and of parties to the Paris Agreement, the Pact would aim to comply with the Agreement by updating or renewing enhanced NDCs. With the priorities on loss & damage, robust carbon markets, accelerating adaptation, new & improved climate finance and shifting trillions, the Dhaka-Glasgow Declaration also articulates the CVF's priorities in six areas beyond the work of the UNFCCC, including limiting maritime emissions, and oceans protection, support for transition to renewable energy, scaling efforts for protecting people displaced during disasters, and committing resources for a just transition towards low carbon development and promoting green jobs

This is also aligned with the Glasgow Leaders' Declaration On Forests and Land Use, which emphasize on the critical and interdependent roles of forests of all types, biodiversity and sustainable land use in enabling the world to meet its sustainable development goals. The Declaration urges attention to help achieve a balance between anthropogenic greenhouse gas emissions and removal by sinks; to adapt to climate change; and to maintain other ecosystem services. To reflect back on the collective and individual commitments to the UN Framework Convention on Climate Change and the Paris Agreement, the Convention on Biological Diversity, the UN Convention to Combat Desertification, the Sustainable Development Goals – this Declaration for sustainable land use, and to the conservation, protection, sustainable management and restoration of forests, is critical and aligns with the priorities of the MCPP. Glasgow Leaders' Declaration On Forests and Land Use indicates that in order to meet the optimal goals of the global land use, climate, biodiversity and sustainable development goals, both globally and nationally, it will require transformative further action in the interconnected areas of sustainable production and consumption, infrastructure development, trade, finance and investment. As indicated in the MCPP, investment in the realization of locally-led adaptation outcomes will include locally-led nature-based solutions to protect natural resources in communities while improving the state and quality of ecosystems for multiple dimensions of resilience. For example, technologies and tools that help smallholder farmers and producers increase income reduce input costs stemming from premium prices for sustainably produced products. Aligned with that scope, Glasgow Leaders' Declaration On Forests and Land Use aims to support smallholders, indigenous peoples, and local communities – who depend on forests for their livelihoods – to have a key role in their stewardship. This can be coined through six priority areas which includes to conserve forests and other terrestrial ecosystems and accelerate their restoration; facilitate trade and development policies, internationally and domestically, that promote sustainable development; reduce vulnerability, build resilience and enhance rural livelihoods, including through empowering communities, the development of profitable, sustainable agriculture; implement and, if necessary, redesign agricultural policies and programmes to incentivise sustainable agriculture, promote food security, and benefit the environment; reaffirm international financial commitments and significantly increase finance and investment from a wide variety of public and

private sources, while also improving its effectiveness and accessibility, to enable sustainable agriculture, sustainable forest management, forest conservation and restoration and to facilitate the alignment of financial flows with international goals to reverse forest loss and degradation, while ensuring robust policies and systems are in place to accelerate the transition to an economy that is resilient and advances forest, sustainable land use, biodiversity and climate goals .

Equally important to recognize is the world has to share the responsibilities of the climate migrants who have been internally displaced people due to the impacts of climate change like sea-level rise, river erosion, increasing salinity, floods and droughts. 30 million people are at risk to be displaced from the coastal areas in Bangladesh with severe implications on livelihood, habitat, drinking water, and rural economy. Currently, Bangladesh has 6 million climatically displaced people. Matched with the need to safeguard the 1.5°C warming of the Paris Agreement is to upscale adaptation resources, especially through locally-led adaptation hubs as a key program to build resilience.

# SECTION 1. INTRODUCTION

## Background: Underpinned by Green Growth in National Plans

The Mujib Climate Prosperity Plan is built on the foundation of the major national planning document, 8<sup>th</sup> Five Year Plan (8FYP) 2020–2025 of Bangladesh. The 8FYP is critical to achieving the outcomes in the Vision 2041, Bangladesh Delta Plan 2100, Bangladesh Climate Change Strategy and Action Plan, National Adaptation Plan 2023-2050, Nationally Determined Contributions (NDC) 2021, Bangladesh Climate Change and Gender Action Plan (ccGAP) and Sustainable Development Goals (SDGs) by 2030.

Bangladesh foresees an accelerated pace of transformation in the forthcoming decade. There is an unprecedented opportunity to enable green growth through the redesign of power markets and build resilience in industry, education, healthcare, transportation, and communication to ensure more prosperous outcomes with lower power prices, more investment, diversified export base, improved efficiency, and an upskilled workforce.

The existing national plan is called “Bangladesh Climate Change Strategy and Action Plan”. It is focused mainly on eradicating poverty and achieving economic and social well-being for everyone. This will be achieved through a pro-poor climate change strategy, which prioritizes adaptation and disaster risk reduction, and also addresses low carbon emission, technology transfer and the provision of adequate finance. The updated Bangladesh Climate Change Strategy and Action Plan is built on 11 pillars: (1) Natural Resource Management: Water, Bay of Bengal, Biodiversity and Soil; (2) Ensure and Sustain Food and Nutrition Security; (3) Industry and Power; (4) Health; (5) Social Protection and Gender; (6) Regional and Urban Dimensions of Climate Change; (7) Comprehensive Disaster Management; (8) Infrastructure; (9) Low Carbon Development and Mitigation; (10) Research and Knowledge Management; and (11) Governance: Legal, Institutional and Policy Aspects.

Bangladesh will be highlighted as a global benchmark in the MCPP, which will provide a holistic path to prosperity. The strategy will be implemented to optimize resilience and sustainability as well as to ensure Bangladesh's fiscal sustainability. Fighting climate threats and increasing resilience will require a coordinated effort from the entire government and society at large. The whole-of-government model requires participation from not only ministries and departments, but also local government, parliament, and even the security and military institutions, as well as the judiciary. The corporate sector, media, academia, civil society, and organizations for professionals such as engineers, lawyers, doctors, planners, and others are all included in the whole-of-society approach.

The Government of Bangladesh (GOB) commits to rapid growth that is balanced with an emphasis on an equitable distribution of the benefits of growth for all, especially

for vulnerable people. As the GOB accelerates development outcomes, complementary to achieving this is the sustainable use of key natural resources such as land, water, forestry, natural habitat, and the atmosphere to avoid depletion and degradation. Planning principles include: (1) Human Rights-Based Approach; (2) Leave No One Behind; (3) Gender Equality and Women's Empowerment; and (4) Do No Harm. Also, equally important is planetary justice and climate equity where vulnerable countries like Bangladesh are assisted with requisite finance and technology to meet development aspirations.

The 8FYP's core theme is "Promoting Prosperity Fostering Inclusiveness" through a labor-intensive, export-oriented manufacturing-led, agricultural diversification, strengthened cottage, small and medium enterprises, and a modernized services sector, among others. The 8FYP underpins the green growth strategy and investment ambition of the MCPP through:

- Building quality infrastructure that matches that of upper-middle-income economies
- Reducing moderate poverty to 12 percent and extreme poverty to 5 percent by 2025
- Graduating from Least Developed Country (LDC) status by 2026
- Achieving major SDGs targets.

Bangladesh's success in climate prosperity planning and implementation hinges on investment in green growth infrastructure and access, education, health, and poverty reduction. Such spending demands institutional modernization, new sources of funds and innovative financing tools such as credit strengthening to reduce the cost of capital. The MCPP 2022-2041 aims to leverage green financing opportunities until 2030 while expanding the toolkit to other opportunities such as resilience bonds up to 2041. With financing to be leveraged by this decade, 2030 will be considered the medium-target and 2041 as the final target, matching Long-Term Strategies under the Paris Agreement.

The Vision 2041 aims for Bangladesh to reach high-income country (HIC) status with per capita income of over USD 12,500, full engagement with the digital world by 2041 and the complete eradication of extreme poverty. The vision is embedded in the "Perspective Plan of Bangladesh 2021–2041" (PP 2041), a development strategy document laying out policies and programs to achieve these ambitious goals, including in key areas such as:

- Human development through quality education and consequent demographic dividend
- Sustainable agriculture for food security, and rural development
- Industrialization, export diversification, and employment generation
- Sustainable power and energy
- An innovation economy that fosters ICT and scientific research
- Building transport and communication infrastructure for sustained rapid growth
- Managing urban transition

- Ensuring sustainable environments while creating a climate-resilient nation in a dynamic delta and unlocking the potential for a blue economy.

Bangladesh's Delta Plan 2100 (BDP 2100) takes into consideration the unique long-term challenges for development outcomes presented by climate change and natural hazards. The BDP 2100 seeks to integrate the medium- to long-term aspirations of Bangladesh to achieve upper-middle income countries (UMIC) status and eliminate extreme poverty by 2030. From there the goal is a prosperous country beyond 2041 with the longer-term challenge of sustainable management of water, ecology, environment, and land resources in the context of their interaction with natural disasters and climate change.

While the BDP 2100 looks primarily at the delta agenda up to 2050, it also notes that decisions made in the present will have implications beyond 2050. Therefore, the BDP 2100 sets up a long-term vision for the evolution of the Bangladesh Delta by the end of the 21st century and defines short- and medium-term goals as steps to reaching that vision. These goals and their associated strategies, policies, institutions, and investments are dynamic. They can be adapted in response to change in natural events and relevant to paving the pathway to the long-term, sustainable delta vision.

The MCPP 2041 aligns with the long-term plans outlined in the Bangladesh Delta Plan 2100. In terms of long-term integrated techno-economic mega plan, Bangladesh Delta Plan (BDP) is to integrate all delta-related sector plans and policies for the long term and to present actionable interventions with a roadmap for realization. A key priority of the MCPP 2022-2041 includes the development of climate-resilient and nature-based agricultural and fisheries supply and value chains including national disaster risk financing and management to safeguard food and water security. MCPP's long-term vision would be translated into specific goals or targets for its implementation, keeping national priorities and existing policies in the forefront. Similarly, BDP's long term plan to secure the future water resources and mitigate the likely effects of climate change and natural disasters as an integrated, comprehensive and Delta Vision is a parallel effort. This would be done by combining long term development outcomes in terms of economic growth and poverty reduction in the Perspective of 2041 with targets for reducing long term vulnerability from water and climate change related hazards plus targets for environmental conservation. This is proposed in the BDP 2100 approach to the long term goals which proposes three (3) higher level national goals and six (6) BDP 2100 specific goals that contribute to achieving these higher-level goals. According to the BDP, strategies are developed at three levels of which the first includes at national level managing flood risk and freshwater management. Second, it then looks into hotspot levels of Bangladesh including the Coastal Zone (27, 738 sq. km), Barind and Drought Prone Areas (22,848 sq. km), Haor and Flash Flood Areas (16,574 sq. km), Chattogram Hill Tracts (13,295 sq. km), River Systems and Estuaries (35,204 sq. km) and Urban Areas (19,823 sq. km). Finally, BDP would address the cross-cutting issues, including sustainable land use and spatial planning, agriculture, food security and livelihood, trans-boundary water resources

management, dynamic inland water transport, blue economy, renewable energy, and earthquakes.

In the last several decades, Bangladesh's leadership in technical and political dimensions of climate change has been outlined through its national level engagements from relevant ministries. This includes the National Adaptation Programme of Action (NAPA), Bangladesh Climate Change Strategy and Action Plan (BCCSAP), engagements outlining from the Climate Change Trust Act, 2010. The actions oriented with these policies including awareness raising, capacity building, and project implementation in vulnerable regions, with special focus on agriculture and water resources. The MCPP complements the mandates of the BCCSAP to help the vulnerable and poor communities to strengthen their resilience and ability to adapt to climate changes, with a focus on financial capital. As a key operational document on climate change, BCCSAP tries to operationalize sustainability across the following themes: Food Security, social protection and health; comprehensive disaster risk management; infrastructure; research and knowledge management and mitigation and low carbon development and capacity building and institutional strengthening. The MCPP 2022-2041 aims to further complement the efforts of the BCCSAP engaging the concerned ministries, public representative, members of parliamentary committee, civil society etc. to realize the priorities across each of the thematic areas. It takes shared responsibility to implement the climate action plan with the mainstream attention of national development. BCCSAP's target for a new vulnerability map to be developed in the context of climate change vulnerability complements MCPP's proposals for enhancing vulnerability mapping. BCCSAP indicates the need for also demonstrating other livelihood indicators through these mapping e.g. (health, education, communication system, income source etc.) which shows further complementarity and scopes for reevaluation as the plan is revised.

The MCPP contributes to the strengthening of macroeconomic management and the realization of the comprehensive 8FYP including:

- 1) **Rapid rural transformation:** Over the next decade, rapid transformation will take place in rural Bangladesh in terms of ICT, transport and logistics facilities, modernization of agriculture, healthcare, education, infrastructure, financial inclusion, enterprise development, domestic consumption, training, and capacity building. The Government will take measures in promoting modern agricultural practices, providing rural electrification, improving health education services, encouraging the development of micro, small, medium enterprise, and other industries. The MCPP outlines a host of potential projects and investment roadmaps in modernization of agriculture, development, and financial support of micro-, small- and medium-sized enterprises (MSMEs) contributing to financial inclusion, and rural electrification.
- 2) **Boosting investment:** The role of the private sector and public-private partnerships (PPP) will be crucial in achieving the vision outlined in the 8FYP. A significant part of the partnerships will come in the form of investment and

trade by North–South, South–South, regional and international cooperation. These investments are expected to have compounded positive effects in science, technology, and innovation. The MCPP specifies financing structures for all identified projects and programs, and the level and form of international support being sought to realize these.

- 3) **Harnessing the potential of the young workforce and supporting SME development:** A key priority in the 8FYP is to create adequate employment for the growing labor force, provide training and skills that match the market demand (local and global), and encourage enterprise building. The 8FYP also seeks to drive growth in the SME sector through a supportive environment and policy incentives. The MCPP outlines job opportunities to be created through a just transition and modernization of the labor force to better compete in the labor markets of the future including reskilling and upskilling via technical and vocational education and training, as well as improved efficiency via automation. It also outlines measures for needs-responsive financial protection of MSMEs that support proactive risk management, risk reduction, and immediate liquidity needs, as well as enhanced productivity through innovative and alternative financing platforms.
- 4) **Encouraging women’s empowerment:** Promotion of female labor participation across all sectors remains a key priority in the 8FYP. The MCPP also focuses on financial protection of women-led and owned MSMEs and through innovative financial risk management tools such as Sustainable Insurance Finance targeted at industries with higher female participation. Actions outlined across the Plan also contribute to increasing protection and resilience of women from climatic shocks and climate-related crises.
- 5) **Consolidating revenue mobilization:** The 8FYP emphasizes reforming existing tax structures to increase revenue through broadening the tax base. The MCPP encourages a climate finance strategy, optimized structures and certainty in the carbon markets to raise investment and additional revenue opportunities of up to 0.2% of GDP by 2025 and up to 1% of GDP by 2030.
- 6) **Rapid implementation of mega infrastructure:** The 8FYP assigns top priority to mega infrastructure projects such as Metro Rail Transits (MRT), Bus Rapid Transit (BRT), and expressways that improve mobility with increased speed and reliability to accelerate economic activity. Public–private partnerships and multilateral loans can be effective financing tools for such major infrastructure projects. The MCPP outlines quality infrastructure and transportation such as high-speed electric rail and the modernization of urban mobility. It further includes the creation of green and credit-enhanced special purpose vehicles, alternative financing tools to improve the affordability of modernization, and the utilization of a dedicated green capital market, among others.

- 7) **Eradicating poverty, reducing regional disparity and managing urban transformation:** The 8FYP renews emphasis on minimizing regional disparity through social safety nets, scaling up investment in health, education, and physical infrastructure. The strategy for urbanization will focus on decentralized development, improved utilization of land and preserving and improving urban environments, particularly water bodies. The MCPP will accelerate investment in protective infrastructure to strengthen resilience with a special focus on inland and coastal flooding.
- 8) **Promoting modern sustainable agriculture for nutrition for all:** The 8FYP aims to address the issues related to nutrition, food security, food safety, production, sustainability, and impact of climate change through national level interventions and cooperation from development partners. The MCPP outlines the development of climate-resilient agricultural and fisheries supply chains. These would include national disaster risk financing and management to safeguard food and water security by adapting food supply chains to climate change. This will be done through improving access to agro-meteorological services, improving production and management techniques through intensifying and diversifying crop cultivation with inclusion of high-value nutritious crops under rice based cropping system, along the supply chain, and introducing risk transfer schemes for key supply chain actors.
- 9) **Empower marginalized communities:** The 8FYP illustrates Bangladesh's strong progress over the years in terms of eliminating legal barriers and introducing an enabling environment to improve the welfare of persons with disability (PWD) and other vulnerable communities. Included is the implementation of the Constitution which provides equal rights and opportunities to all citizens irrespective of race, religion, caste, creed, or profession. Bangladesh's measures in eliminating all legal and regulatory barriers to inclusion and for building affirmative action in its social development policies to protect social inclusion is an example. The MCPP aims to support locally led adaptation actions for the most disadvantaged communities. Measures that consider the needs and appropriateness of these communities remain a core functional requirement in this track. At a local scale, climate-proof adaptation technologies that draw examples from grounded research with local communities remain key to more equitable, effective, and sustainable adaptation.
- 10) **Ensuring power and energy security:** Power and energy security is a driving force for Bangladesh's future and remains a key priority in the 8FYP. The Government will continue taking major steps to ensure uninterrupted power supply through increased installed generation capacity, an expanded transmission and distribution network, reduced system loss, increased electricity coverage, a greater share of renewable energy, and a cost-effective cross-border energy trade. The MCPP outlines specific measures to position Bangladesh towards a maximized share of renewable energy, energy

efficiency and energy storage infrastructure taking advantage of the deflationary price trajectory of domestic renewable electricity generation and storage. Bangladesh will pursue accelerated grid modernization and ancillary market development in order for the power system to take advantage of rapid technological advancements to improve cost-competitiveness and socio-economic outcomes. This will enable adequate grid investment, reduction of broader infrastructure risks, protection from spiking fossil fuel prices and reduced pricing impacts.

- 11) **Tackling climate change, managing disasters, and protecting the environment:** The 8FYP is the first step in implementing the comprehensive delta management plan, the BDP 2100. Financing for this is to be sourced from global multilateral organizations and entities that work bilaterally. The MCPP identifies anticipatory and comprehensive investments including climate and disaster risk financing and insurance. This will enable a cost-effective investment mix in adaptation measures (soft and hard engineering), risk retention, risk financing instruments such as risk transfer, contingent credit lines, catastrophe bonds and risk management. Residual risk can be reduced through early warning systems and communications, and loss and damage funds or endowment funds.

## The Mujib Vision and Measures

With the advent of the birth centenary of the Father of the Nation, Bangabandhu Sheikh Mujibur Rahman, Bangladesh finds itself at a crossroads. The MCPP echoes the sentiments of the Father of the Nation at the United Nations on 23 September 1974, “Our aim is to achieve self-dependence.” Bangladesh is severely threatened by the constant and increasingly devastating impact of climate change that already significantly curtails the nation’s development. Unchecked, global warming could permanently erode and submerge a significant share of the country’s territory, an affront to the future of the nation itself, and ecosystems integral to the planet. By degree of exposure and density of population, Bangladesh is one of the world’s most climate vulnerable nations.

Bangladesh, however, is also resilient. Despite rapidly accelerating climate impacts and the serious health and economic shocks of the COVID-19 pandemic, Bangladesh continues to chart a robust economic development trajectory and serves as one of the primary engines of the global economy. Yet, Bangladesh, in the vision of the Father of the Nation, can and must further strengthen its resilience to overcome the greater challenges in store ahead. It should chart the swiftest and most sustainable and resilient pathway to prosperity in fulfillment of the independence of Bangladesh as a major 21<sup>st</sup> century leader for the world. The MCPP is launched under Bangladesh’s second tenure as president of the Climate Vulnerable Forum (CVF) in line with whose vision Bangladesh aims to pursue and highlight the possibilities of a more prosperous and sustainable future for all.

While the Nationally Determined Contribution (NDC) orientates climate action around commitments to cut emissions and to take other actions, the MCPP is instead a strategy that explores the possibilities and potential to deliver robust socio-economic development while simultaneously maximizing our climate resilience and various green growth opportunities. It will lay out the funding needs required from international, regional, public and private sources, as well as how the local economy can contribute, if the elements of the MCPP's vision for the future are to actually be realized.

Bangladesh is also ready to chart an ambitious course to a resilient and sustainable future. Her Excellency Sheikh Hasina, the Honorable Prime Minister of Bangladesh has said: "The time to save the planet is not tomorrow, but today". This spirit of urgency and action which is also supported by the Bangladesh Parliament's declaration of climate change as a "planetary emergency" in November 2019 highlights that the planet faces a series of converging crises, all on the same timeline – global warming, disasters, extreme weather events, biodiversity loss, acidification of oceans, water stress and food insecurity. To combat this "on a war footing" is to build on the key national development planning process including the Eighth Five Year Plan 2020–2025 of Bangladesh, Vision 2041 and Bangladesh Delta Plan 2100, Bangladesh Climate Change Strategy and Action Plan, National Adaptation Plan (NAP), and the Nationally Determined Contributions (NDCs) 2021. **The MCPP's principal aims are to secure prosperity of Bangladesh and its people for the future with investment within this decade**, through measures that:

**Boost Resilient and Green Growth through Maximal Resilience:** Rendering the people and economy of Bangladesh maximally resilient to climate change, reducing losses to GDP, and so maximizing Bangladesh's GDP growth beyond reference targets for economic growth. These measures will include empowering locally led action including gender responsiveness, strengthening the digital economy, increased risk-adjusted returns via enhanced financial protections, expanding economic partnerships and leveraging higher levels of international and domestic investment and green commerce, smoothing any adverse impacts of emerging from least developed country status, and advancing Bangladesh's attainment of upper middle-income status in a decade.

**Drive support through Locally Led Adaptation Hubs to Support the Most Vulnerable:** We will operationalize systematic financing to minimize and avert loss and damage including internal displacement through the Locally Led Adaptation Hubs. These hubs will support high levels of resilience and gender-responsive opportunities to enhance climate adaptation and counteract internal migration.

**Optimize Climate and Disaster Risk Management and Loss and Damage Financing:** A comprehensive program of financial and social protection including the elimination of extreme poverty by 2030. This milestone will be reached through the Climate and Disaster Risk Management and Financing Strategy. We experience economic and non-

economic loss and damage due to globally inadequate emission reduction measures. Increased action to avert, minimize and address impacts and loss and damage requires dedicated financing mechanisms and allocations.

**Promote Well-Being and Traditional Living:** Leveraging 21<sup>st</sup>-century technologies through Climate Resilient Technology Park for technology transfer together with an inherently sustainable traditional lifestyle while safeguarding and promoting physical and psychological well-being. This would entail green quality of life such as cleaner air, green health programs, greatly enhanced mobility for all, special support arrangements for the most vulnerable and marginal groups, including women, and people living with disability or mental illness. It would further entail green health programs; developing medicines for climate-related diseases and ultimately eradicating extreme poverty and exceeding key Sustainable Development Goal (SDGs) targets by 2030.

**Deliver Resilient Energy Systems:** Ensuring energy systems are resilient to the impacts of climate change and securing energy resilience to be built for the climate of the future through transforming Bangladesh from a net importer of energy to a net exporter, leveraging domestic energy resources to the maximum, and becoming a leading global and regional participant in the green economy (hydrogen, supply chains, high-value nature-based agriculture). Strengthening the current account balance and reducing imported price volatility and inflation risk by minimizing energy imports, expanding green exports, and enabling green commerce including through flagship energy projects such as the Bongoposagor Independence Giga Array, one of the first large scale hybrid RE-adaptation infrastructure projects and strategic.

**Strengthen Employment in a Green Economy:** Protecting workers and businesses from the harms of climate change by greatly increasing the level of protection. On top of that measure would be generating more aggregate employment than reference economic targets through strategic green job growth, lowering the level of unemployment, and ensuring upskilling of the workforce to high quality green tech jobs. Equally important is markedly increasing protective measures against the rising workplace heat that exposes indoor and outdoor workers to severe health and productivity risks.

The MCPP will be achieved within the framework of national planning processes and will further strengthen the already-foreseen actions of: the 8th Five Year Plan, Bangladesh Delta Plan 2100, Vision 2041, Bangladesh Climate Change Strategy and Action Plan, National Adaptation Plan, Bangladesh Climate Fiscal Framework and Nationally Determined Contributions 2021. The MCPP will be within the bounds of existing fiscal strategies, while optimizing them for resilience and sustainability and ensuring continued ongoing debt sustainability for Bangladesh. The MCPP prioritizes green growth approaches and public-private partnerships (PPP) as a key element in climate investment. The strategic channelling of green financing and policy shifts through the principal aims could create a multiplier effect: reviving the economy, investing in projects to help the country prepare for the impending challenges of

climate change while creating jobs, jump-starting the economy, and building a more equitable society.

The MCPP will support robust delivery of the 2030 UN Sustainable Development Agenda for Bangladesh in addition to an ambitious, accelerated implementation of the Paris Agreement on Climate Change towards which the MCPP also serves as the nation's long-term low GHG emissions and climate resilient development strategies. With a primary focus to 2030, the MCPP also incorporates strategic perspectives extending beyond 2040 to the mid-century.

The MCPP will be implemented by concerned ministries as per rules of business. The investment in the MCPP will be coordinated and overseen by the Ministry of Finance in coordination with Ministry of Planning and relevant concerned ministries, and supported by a special committee which can include representatives of each concerned ministry, PPP Authority, the Bangladesh Investment Development Authority (BIDA), Bangladesh Bureau of Statistics and CVF/V20 representatives from the Government of Bangladesh. An Advisory Board with consultative status comprising key private-sector industries represented by leaders in companies and business chambers in Bangladesh to complement and reinforce investment and partnership efforts. Progress and monitoring will be completed by the Bangladesh Bureau of Statistics that will complete an annual assessment for submission to the Ministry of Finance, Ministry of Planning and relevant concerned ministries.

## **New Hallmark Initiatives within the MCPP**

Bangladesh already pursues and works to complete a number of key national planning processes. The MCPP is specific to the green growth and climate change agenda and to securing Bangladesh's prosperity and independence path amid the major and rapidly increasing threats of global climate change. The MCPP proposes a number of hallmarks, new initiatives that will help to anchor the MCPP and accomplish its goals and objectives. Such key initial initiatives include:

- **Locally Led Adaptation Hubs:** To avert or minimize impacts and loss and damage requires fund and dedicated financing mechanism, as well as unlocking local-level leadership through the establishment and capacity building of hubs for climate change adaptation in the most vulnerable communities of Bangladesh. The Hubs aim to support high degrees of resilience and gender-responsive focus, creating local opportunities for prosperity to counteract climate-induced internal migration, promote the effective management and leveraging of public resources for adaptation, and the adoption of the Kampala Principles for effective private sector development cooperation.
- **Comprehensive Climate and Disaster Risk Management and Financing Strategy:** The application of a comprehensive set of climate and disaster risk

financing and insurance (CDRFI) instruments and a strategy for their utilization to close the financial protection gap will be instrumental for achieving resilience and enabling adaptation investments. A key component of the strategy includes a transformation in poverty reduction and social inclusion through the delivery of Adaptive Social Protection (ASP). The strategy can be supported by the V20 collaboration on a global public-private partnership for analytics to close the protection gap. With support from the G20+ and V20 InsuResilience Global Partnership, the different CDRFI instruments can complement and enable the resourcing of adaptation investments.

- **Resilient Well-Being Programs:** The MCPP will support a strengthening of disability-inclusive, gender-responsive national initiatives in the domain of mental health and well-being, including crisis preparedness and management for mental health training and capacity programs, trauma counseling, educational and child support programs, and general well-being and awareness programs in support of healthy, sustainable and traditional lifestyles.
- **Bongoposagor Independence Giga Array:** A 4-gigawatt wind generation array network linked to a mangrove green belt. This would be one of the first large scale hybrid RE-adaptation infrastructure projects. It would be sited offshore on the Bay of Bengal shelf, harvesting renewable energy to meet the nation's rapid energy growth and backstopping national energy security, while enabling coastal resilience outcomes through the mangrove green belt.
- **Strategic Energy Hubs:** A strategic program of reconversion of coal, oil, and diesel thermal power plants together with workforce upskilling to act as high-tech green hydrogen production facilities, and waste-to-energy/biomass power plants, interconnected with Bangladesh's growing LNG/natural gas network. This will reinforce grid stability, provide cleaner-burning fuels and develop a new, high-value strategic export product in the form of green hydrogen from renewable sources.

## Climate Change and Carbon Intensive Loss Impacts

Bangladesh's high vulnerability to climate change can be attributed to a number of topographic, hydro-geological, and socio-economic factors. They include its geographical position in South Asia, its flat deltaic topography with low elevation, its extreme exposure to climate variability, its high population density and incidence of chronic/abject poverty, and its greater dependency on an agrarian economy for incomes and employment, which in turn is severely affected by a capricious climate.

Bangladesh's geographical characteristics are intricately linked to local and regional hydrological characteristics that rely on climatic processes, including seasonality. Bangladesh is at risk of natural disasters such as riverine and flash floods, tropical cyclones, storm surges, droughts, salinity intrusions, sea level rise, and riverbank and

coastal erosion. Flooding of various types, cyclones, and droughts is common. Many parts of Bangladesh's economy and society are severely affected by climate change including water resources, agriculture and forestry, food security, human health, and infrastructure.

Climate change has the greatest impact on human settlement, causing mass displacement of inhabitants and loss of livelihood. Some 22–30% of the country is usually inundated by heavy rainfall during the monsoon season, while a major flood may inundate two-thirds of the country.<sup>4</sup> Climate change will deplete capital stock in the construction sector by 0.05% annually until 2100.

A rise in sea levels and coastal erosion could lead to a loss of 4 percent or approximately 1500 sq km in near term, 6 percent or approximately 2300 sq km and by the end of the century around 10 to 15 percent of land surface and 30% food production by 2050. Up to one-third of Bangladesh's population is estimated to be at risk of displacement because of rising sea levels. A study of sea level rise scenarios by the Bangladesh Ministry of Finance projects the annual cost from loss of capital and reduced economic activity could range between 1.49% and 3.02% of GDP by 2031, with significant job losses.

The International Labour Organization (ILO) notes that the impact of rising heat on exposed indoor and outdoor workers already reduces Bangladesh's annual economic output potential by approximately 4% of GDP and will continue to grow if not addressed. Moreover, the increasing intensity and frequency of natural disasters would also divert limited revenue away from growth-enhancing investment to emergency relief.<sup>5</sup>

It is safe to say that climate change has been a threat multiplier in Bangladesh as the country continues to experience unprecedented impacts and losses from the phenomenon. Climate change is now a growing humanitarian crisis for the country. Bangladesh has therefore placed building adaptive capacities and adaptation at the very core of climate policies and plans.

The second Climate Vulnerability Monitor published in 2012 found that Bangladesh will face losses of up to 6.8% GDP by 2030, with a carbon-intensive losses of 0.5% of GDP by 2030. Emissions have gone up significantly over the past decade, with the

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4 Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh (MOEFCC). (June 2018). Third National Communication of Bangladesh to the United Nations Framework Convention on Climate Change. UNFCCC. Retrieved February 15, 2021, from [https://unfccc.int/sites/default/files/resource/TNC%20Report%20%28Low%20Resolution%29%2003\\_01\\_2019.pdf](https://unfccc.int/sites/default/files/resource/TNC%20Report%20%28Low%20Resolution%29%2003_01_2019.pdf)

5 International Monetary Fund (IMF). (2019, September 18). Bangladesh: Selected Issues (Country Report No. 19/300). International Monetary Fund (IMF) Staff Country Reports. Retrieved February 15, 2021, from <https://www.imf.org/en/Publications/CR/Issues/2019/09/17/Bangladesh-Selected-Issues-48683>

World Meteorological Organization predicting a 20% probability that temperatures will exceed the 1.5°C threshold of the Paris Agreement, it is likely Bangladesh will face higher GDP losses in 2030 and beyond. Moreover, an increase of one degree Celsius would increase the frequency of lightning strikes by 12% over the century. <sup>6</sup>

And considering that solar power prices have fallen 82% since 2010 and 18% between 2018 and 2019, along with concentrated solar power falling 47%, onshore wind by 39% and offshore wind by 29%, coupled with the inflationary pressure and volatility of fossil fuel prices, Bangladesh will face higher GDP losses in 2030 and beyond by locking in carbon assets.

The combined effect of climate change and carbon-intensive loss impacts may raise average yearly mortality by 150,000 by 2030 with about 55 million people impacted by climate change by 2030.<sup>7</sup> By 2050, climate change could make another 14% of the country “extremely vulnerable” to floods and displace some 35 million people from coastal districts.<sup>8</sup> Women are disproportionately vulnerable to these effects with a larger share of the burden falling on them.

**Table 1. Climate Change and Carbon-Intensive Loss Impacts and Effects<sup>9</sup>**

<b>Impact</b>	<b>Effect</b>
Heat stress	4.9% in GDP losses by 2030
	At least USD 30 billion losses per year by 2030
	4.84% working hours lost by 2030
	3.83 million full-time jobs lost by 2030
Outdoor and indoor pollution	USD 2.3 billion losses per year
	USD 2100 daily adjusted life year cost per capita (PPP)
Climate-induced disasters (e.g., drought, floods, and storms)	USD 4.075 billion losses per year by 2030

<sup>6</sup> Romps, D. M., Seeley, J. T., Vollaro, D., & Molinari, J. (2014). Projected increase in lightning strikes in the United States due to global warming. *Science*, 346(6211), 851–854. <https://doi.org/10.1126/science.1259100>

<sup>7</sup> Climate Vulnerable Forum (CVF) and Fundación Dara Internacional (DARA) (2012). *Climate Vulnerability Monitor*, 2nd Edn.: A Guide to the Cold Calculus of A Hot Planet. Retrieved February 16, 2021, from <https://thecvf.org/resources/publications/climate-vulnerability-monitor-2012/>

<sup>8</sup> Devnath, A. (2020, May 6). Cyclone Shows Cost of Delaying \$38 Billion Bangladesh Delta Plan. *Bloomberg Quint*. Retrieved February 16, 2021, from <https://www.bloombergquint.com/onweb/cyclone-shows-cost-of-delaying-38-billion-bangladesh-delta-plan>

<sup>9</sup> Summarized using above mentioned data and sources.

Habitat losses (e.g., labor productivity and sea level rise)	USD 50.62 billion losses per year by 2030
Sea level rise and coastal erosion	4% loss of land surface by 2050
	30% loss of food production by 2050
Sea-level rise	One-third of Bangladesh population at risk of displacement by 2100
	1.49% and 3.02% in GDP losses per year by 2031
Heavy rainfall during monsoon season	22–30% (regular floods) up to 67% (major floods) of the country inundated
Increased intensity and frequency of natural disasters	Diversion of limited revenue away from growth-enhancing development investment to emergency relief
Increasing frequency of lightning strikes	An increase of one degree Celsius would increase the frequency of lightning strikes by 12% over the century.
Climate change capital stock	Impact of climate change capital stock in the construction sector would be depleted by 0.05% annually until 2100
Climate change and carbon intensive loss	150,000 deaths added to the yearly average by 2030
	55 million people affected by 2030*
	6.8% in GDP loss by 2030 with a carbon intensive loss impact of 0.5% of GDP by 2030
Climate change	Additional 14% of the country “extremely vulnerable” to floods could dislocate more than 35 million people by 2050

*\*Women are disproportionately impacted by climate change*

## Introduction to The Mujib Climate Prosperity Plan

The Climate Prosperity Plan responds to the urgent need for Climate Vulnerable Forum (CVF) member countries and the Vulnerable Group of Twenty (V20) to attract new investment to drive prosperity through the coming decade on the frontlines of a planetary climate emergency.

These country-led strategic investment plans put socio-economic gains first while simultaneously embedding climate-resilient and zero- or low- carbon outcomes as intrinsic elements of “climate smart” and “green growth” design. Prosperity in the 21st century demands the integration of economic and climate agendas, presenting new opportunities to drive truly resilient growth. Climate Prosperity Plans are designed to extend finance mobilization across a range of sources for CVF/V20 infrastructure and economic programs. These programs will promote robust socio-economic progress and reduce emissions while building greater climate and disaster resilience, safeguarding both SDGs progress to 2030 and macroeconomic stability.

The Mujib Climate Prosperity Plan is the first CVF and V20 investment plan to specify a decade to achieve climate prosperity and enhanced macroeconomic management at the conclusion of the Mujib Year. In sum, the CVF and V20 plans aim to drive planetary prosperity. They will include analysis of the benefits for job growth, economic growth, environmental, and health benefits that would be realized if the projects in the plans are financed and implemented. They are structured with four 5-year cycles with provision for stocktaking and progress review at the midpoint of each cycle and mid-term evaluation upon completion of the first cycle. The plans include key projects from Bangladesh’s existing national plans and seek to finance these and other similar adaptation, climate-resilient, renewable, low-carbon infrastructure and projects. It is important to note that the plan is considered a living document, and will be updated every 5 years to take into consideration the evolving technology learning rates and access to resources.

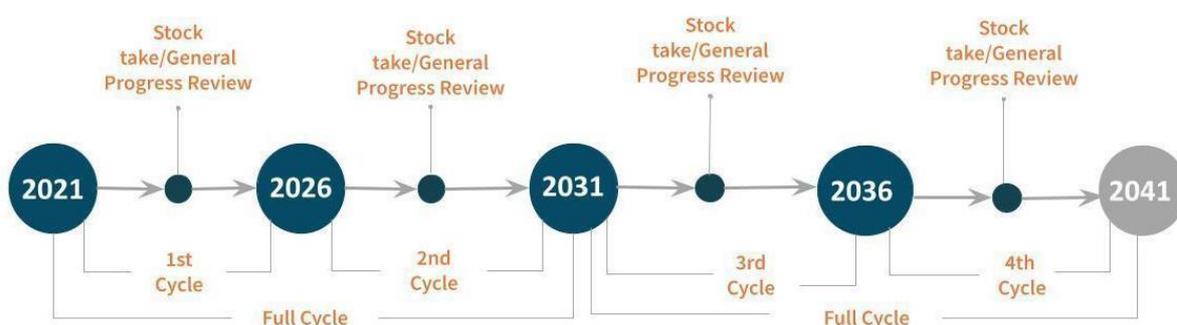


Figure 1

## The New Economic Vision for People-Centric Resilient Growth

The factors that affect vulnerable countries such as Bangladesh will increasingly affect the world economy. Avoidance of future macro-catastrophic risks is key to maintaining or overshooting our economic trajectory. Chief among these is climate risk that will require science to be at the core of our strategic and investment decisions. Recalibrating markets, technology, and finance towards more resilient and sustainable economic futures is urgently needed. Progress to achieve a strong, resilient, inclusive, and sustainable growth trajectory for Bangladesh should be achievable while accelerating efforts that defuse climate-disruptive risks of all kinds, prioritizing climate-resilient and low or zero carbon efforts while also maximizing economic growth, socio-economic benefits, and galvanizing SDGs progress.

We seek to improve our key socio-economic growth outcomes including national and disposable income, poverty reduction, investment, jobs, economic stability, trade balance, and other critical socio-economic results by optimizing core economic and climate responses within the real economy. In pursuing climate prosperity, we aim to meet, exceed, or ensure early achievement of the 2030 SDGs and be well on track to emerge, at the latest by 2030-50, as wealthy, climate-smart nations via the strongest possible economic growth and designed to be climate-smart.

A new financing paradigm is emerging: While income, revenue, and profits matter, physical climate and transition risk cannot be ignored. As we build back stronger, the economic paradigm of the last century must be changed by compelling polluters to value poverty reduction, modernized job opportunities, improved trade and macroeconomic stability. This improved economic vision will be supported by climate risk governance and reporting to identify and assess climate-related risks and opportunities that will influence the investment strategy of the government and market participants.

Climate vulnerable developing countries are burdened with a high cost of capital that undermines their capacity to develop low-carbon and climate resilient projects. There is also a compounding lack of investment in climate change action. An important element of this persistent investment gap is the perception of greater risk and associated high cost of financing in developing countries – especially for low-carbon and climate resilient infrastructure, modernized technology and adaptation projects.

Many climate-resilient and low-carbon projects have higher capital intensity than traditional infrastructure. For example, an adaptation project (e.g., critical infrastructure with climate protection like seawalls or storm drainage) may have additional costs in year one but enjoy lower operations and maintenance costs over time compared to infrastructure without resilient attributes. Similarly, a renewable energy project may have a higher upfront cost, but lower operating costs than a coal plant of equal output. As small changes in interest rates have compounding effects on project costs over time, lowering financing costs can therefore have significant price benefits for project end-beneficiaries (electricity customers, farmers using

resilient irrigation infrastructure and so on). This Climate Prosperity Plan hinges on providing a lower cost of capital or a high level of concessionality, especially for adaptation and climate-resilient projects.

Moreover, with reference to the Paris Agreement (Article 4, Paragraph 19), the Mujib Climate Prosperity Plan reflect our communication for long-term low greenhouse gas emission development strategies, mindful of Article 2 to address cost of capital issues and mobilize international, regional, and domestic capital.

## Summary of Climate Prosperity Outcomes

The MCPP estimates that investment in resilient pathways including energy, water, transport, supply chains, value chains, and so on will entail costs of at least USD 90 billion by 2030, with incremental gains of over USD 50 billion to be added to GDP versus business as usual, yielding value of over USD 850 billion over 10 years. Delaying these investments in infrastructure and adaptive capacity would result in costs and losses of at least 4.9% of GDP by 2030, equivalent to at least USD 30 billion per year by 2030.

## Socio-economic outcomes expected by 2030

- 1) Elimination of extreme poverty by 2030
- 2) Enhanced climate risk adjusted returns for micro, small and medium enterprises of 10% by 2025 and 20% by 2030, especially for women-owned and women-run enterprises.
- 3) Reduced climate-induced migration by 2030
- 4) 4.1 million new climate-resilient jobs and unemployment reduced to 3.9%
- 5) GDP growth of 9% with a GDP per capita increase of 137% by 2030, equivalent to USD 4,400, reaching upper middle-income status as per Vision 2041<sup>10</sup>
- 6) At least USD 30 billion in net savings or avoided losses per year by 2030
- 7) Cumulative revenue potential of up to USD 16 billion
- 8) Reduced volatility and improved cost-effectiveness with savings of 30% in the power sector
- 9) Improved trade balance of over USD 8 billion surplus by 2025 and up to USD 15 billion by 2030
- 10) Improved quality of life through clean air, safer workplaces, and better mobility

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<sup>10</sup> It is important to note that the COVID-19 crisis has led to GDP growth of 6.8% in 2021 and 7.2% in 2022. The 8FYP targets 8.5% GDP growth by 2025 which is to be achieved with 75% of the total investment needs to be generated from the private sector. A maximized scenario of new investment opportunities is consequently expected to raise GDP growth by 0.5% from the 8FYP to 9% by 2030.

- 11) Economic partnerships strengthened with countries aligned with safeguarding the 1.5-degree limit of the Paris Agreement by up to 10% in 2025 and by up to 30% by 2030.
- 12) Increase economic empowerment of women through increase in quality participation in the labor force, reduced vulnerability and increased decision-making authority and financial autonomy of women
- 13) Doubled agriculture productivity and reduced GHG emission to remain competitive with new green markets by 2030

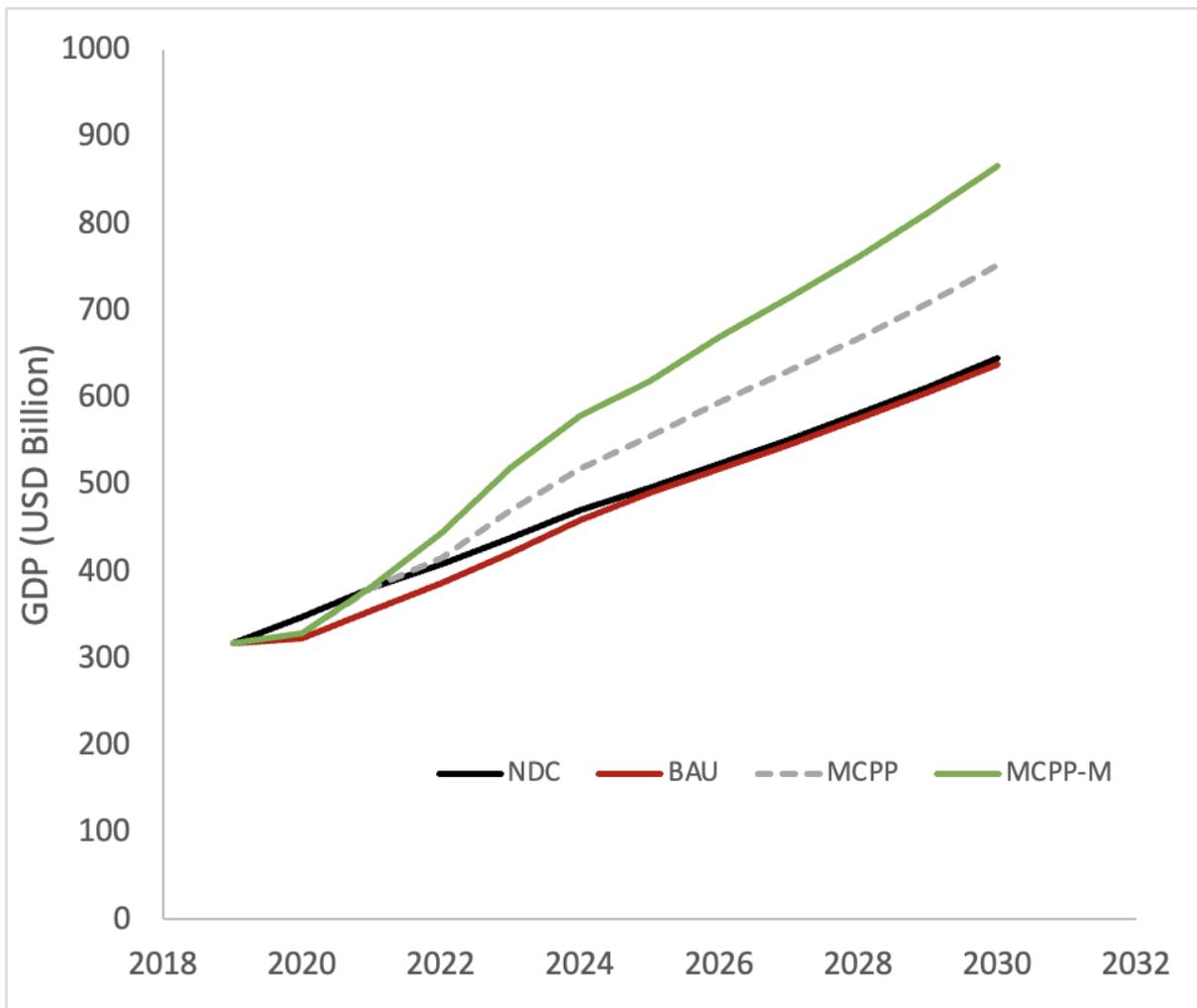


Figure 2

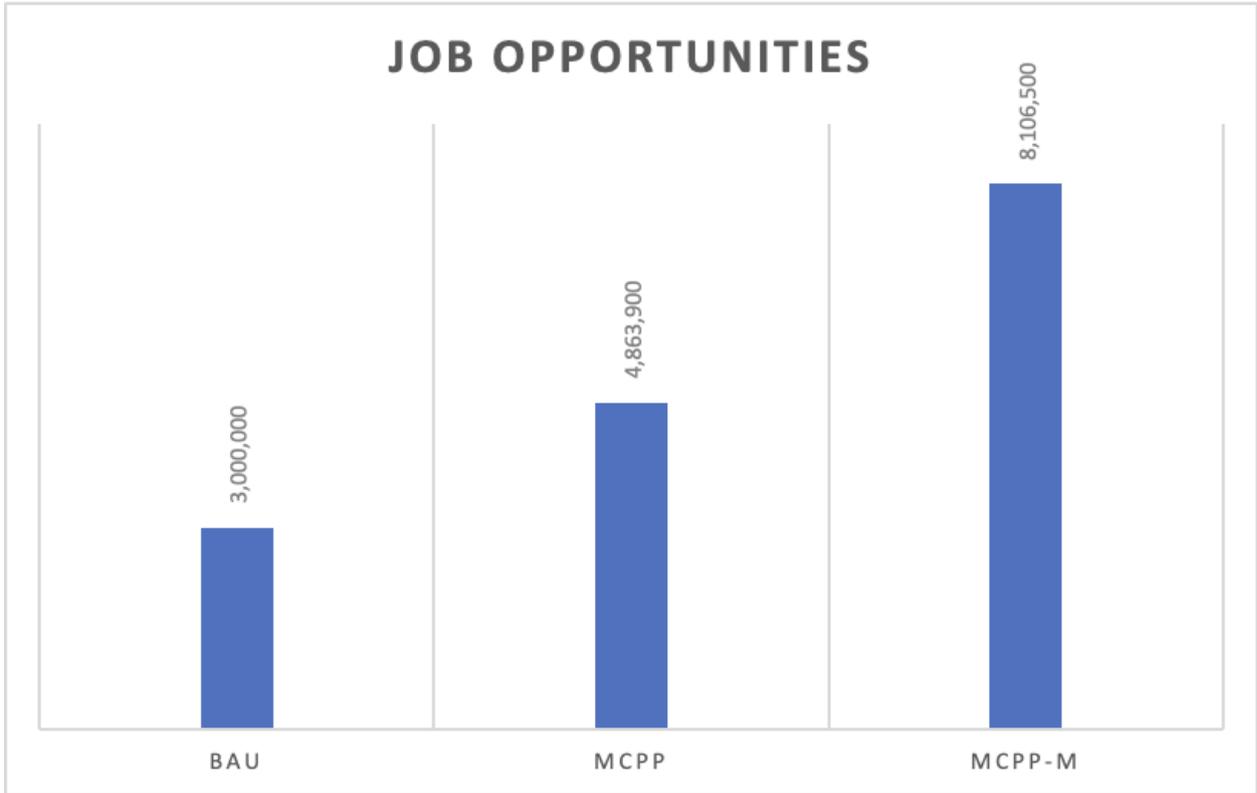


Figure 3

## SECTION 2. KEY PRIORITY AREAS

The impact of climate-fueled disasters are made more intense and more frequent due to failure to reduce global emissions. This current toolkit of standard macroeconomic 'fixes' may not ensure stability in an era of global physical shocks. Systematic climate risk management for policies and projects is essential, but it needs better climate data, tools and resilience planning. Efficient and prepared government institutions matter, as sectoral and cross-sectoral climate-centered policies and investment. Governments must continue to enable and reinforce climate-informed macro-level analysis via research such as whole-of-economy modelling of climate impacts, debt sustainability analysis, public expenditure review and poverty diagnostics<sup>11</sup>.

More importantly, greater internal coherence is key to stronger climate action – that is, the recognition that supply, demand, and development outcomes will hinge on the management of climate risk across sectors and levels of government. Consequently, the baking-in of climate risk in local and national plans, evidenced by explicit pathways for agriculture, infrastructure, and the like. Robust ownership follows more easily from greater internal coherence. Robust ownership of climate action (rather than a compliance response) can speed up the enabling of adaptation and resilience.

The Mujib Climate Prosperity Plan aims to support efforts of Bangladesh in mainstreaming climate change (with a focus on adaptation and resilience) in economic planning through innovative mainstreaming tools and approaches which ensure that climate change is factored into growth and development strategies. Such strategies include green growth infrastructure and access as well as a greener and healthier society.

Bangladesh has made strides in integrating climate adaptation and resilience into long-term planning through the Climate Fiscal Framework which determines: (1) an equitable division of climate funds and their allocation to relevant sectors; (2) division of services, identification of the demand for climate fund, and expenditure areas of financial authority for raising revenue, for national and international financing options, and for fiscal tools; and (3) governance framework for climate change funds under national fiscal policy.

This section comprises 6 key priority areas of the MCPP, incorporating four scenarios:

- Business-As-Usual (BAU): Uses the reference scenario based on the Vision 2041.

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<sup>11</sup> Monsod, T.C., Solon, O.J.C., Gochoco-Bautista, M.S., de Dios, E.S., Capuno, J.J., Abrenica, M.J.V., Arcena, A.L., Epetia, M.A., Escresa, L.C., Jandoc, K., Kraft, A.D., Magno, C., & Reside, R.E. Jr. (April 2020). Surviving the Lockdown and Beyond (Discussion Paper No. 2020-04). University of the Philippines School of Economics Discussion Papers. Retrieved February 16, 2021, from <https://econ.upd.edu.ph/dp/index.php/dp/article/view/1527>

- Nationally Determined Contributions (NDC): Based on the first NDC (Update) submitted in 2021. It is important to note this will be updated as NDC submissions continue to be updated.
- Mujib Climate Prosperity Plan (MCP): Realistic climate prosperity scenario based on current and expected prospective access to resources and support.
- Mujib Climate Prosperity Plan Maximized (MCP-M): Maximized climate prosperity scenario based on a significant increase in resources made available both from international support and the private sector (domestic, regional, and international).

## Key Priority Areas 1. Accelerated Adaptation

### Green Financing to Promote Green Growth, Accelerated Adaptation and Protective Infrastructure in line with 8FYP and Bangladesh Delta Plan 2100

We will invest in green growth, adapted and protective infrastructure to strengthen resilience, including green growth infrastructure and access. There will be a focus on the green growth and adaptation projects and programs in the 8FYP and Bangladesh Delta Plan 2100 (BDP2100).

#### Box 1. Special Focus: Accelerated Adaptation - Bangladesh Delta Plan 2100

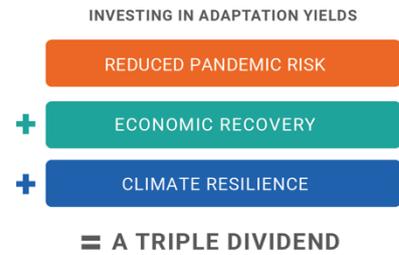
There will be a special focus on inland and coastal flooding, including natural flood management measures in line with the 8FYP and BDP 2100, towards a prosperous delta. Mitigating flood risks in urban areas lowers financial costs, increases security, and makes feasible investments that would otherwise be too vulnerable to climate risks. All in all, a key benefit of more resilient infrastructure is more reliable services, that crowd-in investment and economic development. This has a positive effect not only on businesses but also on households that can improve their productivity and living standards.

Bangladesh Delta 2100 (BDP 2100) is a shift in the economic vision towards resilience to climate-driven disasters such as cyclones and flooding. It addresses impacts such as temperature rise, erratic rainfall patterns, and sea level rise through enhanced and adaptive delta management (ADM). It aims to eliminate poverty by 2030 on a path to prosperity by 2041.

The implementation of the Bangladesh Delta Plan 2100 prioritizes the use of public-private partnerships (PPP) as a key method to enable investment. By leveraging private and public funds, projects are able to increase both the sources and overall levels of financing. Another promising way of scaling institutional investment is to expand investment options through financial instruments such as blended funds and green financing up to 2030 and expanding the toolkit to include resilience bonds up to 2041 and beyond. Resilience bonds are at the intersection of social bonds and sustainability bonds. They can be designed to complement respond to acute needs such as emergency medical equipment, social protection programs for vulnerable households, and rapid financing for communities and MSMEs, as well as for medium-term to long-term needs such as resilient hospital infrastructure, supply chains, basic infrastructure (water, sanitation renewable energy, etc.), logistics, urban services, and increased agricultural productivity with safe and nutritious food supply. Securitizing an asset pool of Bangladesh infrastructure and issuing green financing tools such resilience bonds can transform Bangladesh infrastructure projects into low-risk, liquid assets that are attractive to institutional investors. Backing resilience bonds with the credit rating of issuing institutions such as the Asian Development Bank and World Bank Group further reduces the risk of such bonds.

To accelerate the financing of the BDP 2100 phase 1, as highlighted in 8FYP, resilience bonds can enable an alternative financing avenue for sovereigns and corporates through capital markets for the portfolio within Phase 1 up to 2030.

Specifically, by leveraging multilateral development bank resources and the development of equity and debt instruments by state-owned investment vehicles, multilateral development banks and other development finance institutions would support investments that yield a “triple dividend” of 1) reduced pandemic risk, 2) economic recovery and growth, and 3) climate resilience.



There is a clear opportunity to invest in green growth and climate-resilient infrastructure to improve adaptation, avoiding further losses and reaping net benefits. The benefits of such investments are estimated to be four times the cost.<sup>12</sup>

Below is an overview of actions that development partners and the private sector could deploy within a COVID-19 stimulus package to improve health, the economy, and climate adaptation. It is important to note that developing a pipeline of resilient infrastructure projects, and better taxonomies and standards for a common language and understanding, is key for the prioritization of public investments and the structuring of financial instruments.

For example, water resilience in Bangladesh needs to be integrated at the basin, city, and utility level to ensure adaptation measures for water systems integrate with other urban services and are effective. Water utilities and service providers, in particular, need to have sustainable and resilient water resources management to ensure continuity of water supply and to provide safe and secure water. Policy and investment interventions to improve access to clean water and sanitation must be a critical component of any stimulus package. It must optimize water management for the effective distribution, especially for women, and use of water in human settlements, agriculture and industry, and support enhanced water governance through improved cooperation frameworks within and across the region.

Scaling up resilient infrastructure can provide both the source of and support for economic growth and job creation, removing barriers to adaptation and pandemic recovery. Adaptation solutions are employment-intensive and have a high return on investment, making them an excellent tool to overcome the current economic crisis while safeguarding livelihoods.

As with climate and health responses, the current crisis is also an opportunity for the adaptation community to explore ways to expand the application of digital solutions. These have already proven effective for enhancing climate-health information

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12 Mena-Carrasco, M. & Dufey, A. (2021, January 14). A Green and Resilient Recovery for Latin America. Comunidad de Estados Latinoamericanos y Caribeños (CELAC), Secretaria De Relaciones Exteriores (SRE), Global Center on Adaptation (GCA). Retrieved May 31, 2021, from <https://gca.org/reports/a-green-and-resilient-recovery-for-latin-america/>

exchange, reducing the impact of extreme weather events, and for improving food security.<sup>13</sup>

The opportunity to lessen and diffuse a compound climate-COVID crisis by supplementing emergency medical assistance to fight the COVID-19 pandemic with policy action that is optimized to strengthen resilience for critical climate, economic and pandemic risks, is reflected in the table below. Measures to build climate resilience across a range of key sectors of development bring clear direct and indirect benefits to tackling the COVID pandemic and its impact, and for recovering from this crisis. In the immediate pandemic response and for the recovery, example measures with triplicate benefits for tackling climate change, COVID and pandemic risk, and in support of economic recovery.

### Sector-based Resilience Measures

Sector	Example Measure by Policy Target			Resilience Dual-Dividend		SDG Benefit	Sendai framework
	COVID-19 Response	Pandemic Resilience	Post-Crisis Recovery	Pandemic	Climate		
Digital Economy	Internet access and digital tools	Internet access and digital tools	Internet access and digital tools	E-commerce, tracking tools and information sharing	Disaster and climate data access	9	-
Disaster Risk Reduction		Financial protection: infrastructure insurance	Financial protection: infrastructure insurance	Recovery less exposed to disaster risks	Communities rebuild faster	11	Priority 3 Investing in disaster risk reduction for resilience
	Emergency preparedness (e.g., early warning systems)	Emergency preparedness (e.g., early warning systems)	Emergency preparedness (e.g., early warning systems)	Reduced transmission following disasters	Reduced exposure of populations to hazards	3	Priority 4 Enhancing disaster preparedness for effective response, and to «Build Back Better» in

13 Global Center on Adaptation (GCA) & African Adaptation Initiative (AAI). (2020, May 22). Integrated Responses to Building Climate and Pandemic Resilience in Africa: A Policy Brief from Global Center on Adaptation and African Adaptation Initiative. Retrieved February 16, 2021, from <https://gca.org/reports/integrated-responses-to-building-climate-and-pandemic-resilience-in-africa/>

Sector	Example Measure by Policy Target			Resilience Dual-Dividend		SDG Benefit	Sendai framework
	COVID-19 Response	Pandemic Resilience	Post-Crisis Recovery	Pandemic	Climate		
							recovery, rehabilitation and reconstruction
Employment & Livelihoods	Social safety nets (e.g., cash transfers, cash-for-work)	Social safety nets (e.g., cash transfers, cash-for-work)	Social safety nets (e.g., cash transfers, cash-for-work)	Reduced economic shock from pandemic response	Reduced economic shock from climate hazards	8, 1	
	Labor heat stress measures	Labor heat stress measures	Labor heat stress measures	Reduced illness susceptibility for pandemic disease and lost work	Reduced heat-related illness and lost work	8, 1	
Resilient Energy Infrastructure and Access	Clean energy access	Clean energy access	Clean energy access	Health system energy needs met; reduced respiratory disease	Disaster resilience of energy systems	7	
Food & Agriculture	Disaster-resilient agriculture	Disaster-resilient agriculture	Disaster-resilient agriculture	Reduced pandemic food supply risk and recovery less exposed to disaster risks	Reduced exposure of agriculture to climate hazards	2	
	Enhanced nutrition	Enhanced nutrition	Enhanced nutrition	Reduced illness susceptibility for pandemic disease	Reduced food insecurity during	2	

Sector	Example Measure by Policy Target			Resilience Dual-Dividend		SDG Benefit	Sendai framework
	COVID-19 Response	Pandemic Resilience	Post-Crisis Recovery	Pandemic	Climate		
					climate shocks		
Health	Financial protection: health insurance		Financial protection: health insurance	Access to health services for pandemic disease	Access to health services for climate-sensitive diseases	3	
	Public healthcare services (with emphasis for agriculture sector)	Public healthcare services	Public healthcare services	Access to health services for pandemic disease	Access to health services for climate-sensitive diseases (e.g., malaria)	3	
Infrastructure		Financial protection: infrastructure insurance	Financial protection: infrastructure insurance	Recovery less exposed to disaster risks	Communities rebuild faster	9	
	Sanitation facilities	Sanitation facilities	Sanitation facilities	Reduced transmission of pandemic disease	Reduced transmission of climate-sensitive disease (e.g., cholera)	6	
Water	Clean water access	Clean water access	Clean water access	Reduced transmission of pandemic disease	Reduced climate-sensitive disease susceptibility and transmission	6	

Sector	Example Measure by Policy Target			Resilience Dual-Dividend		SDG Benefit	Sendai framework
	COVID-19 Response	Pandemic Resilience	Post-Crisis Recovery	Pandemic	Climate		
Forestry	Restoration through reforestation and afforestation activities for supporting the communities' livelihood	Restoration of forest and biodiversity through reforestation and afforestation continues to develop resilient ecosystems and community	Restore the forest and biodiversity to increase the ecosystem services and address climate change impacts	Restore forest ecosystem to prevent spillover zoonotic diseases	Carbon sequestration through afforestation and reforestation	15	

BDP 2100 projects include the blue economy, sustainable land use and spatial planning, agriculture and rural livelihoods, inland waterway transportation and urban water management, and renewable energy. Areas of investment include coastal zones (USD 11 billion), Barind<sup>14</sup> & drought-prone (USD 2 billion), haor<sup>15</sup> & flash flood (USD 350 million), Chattogram Hill Tracts (USD 750 million), river system & estuaries (USD 6 billion), and urban areas (USD 8 billion), among others.

### **Bangladesh Delta 2100 financed through green financing including resilience bonds can enable . . .**

Over USD 35 billion in investment to be mobilized by 2030 via low-cost international financing	1.5 million additional job opportunities by 2025 and 3 million additional job opportunities by 2030	The delivery of SDGs outcomes through linkage and pricing of benefits
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### **Target Milestones**

Year	Target	Lead Ministry
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<sup>14</sup> Barind is a comparatively high, undulating, region with reddish and yellowish clay soils.

<sup>15</sup> Haor: A haor is a wetland ecosystem in the north-eastern part of Bangladesh which physically is a bowl or saucer shaped shallow depression, also known as a backswamp.

2022	We will develop the analytical and guiding operational frameworks for development green financing issued by state-owned vehicles, multilateral development banks (MDB) and development banks for enhanced financing to eligible private sector investments that contribute to increased climate resilience while also reducing pandemic risks. This would enable economic recovery, promote both climate-proof and pandemic risk-adjusted growth, with SDGs as key performance indicators.	MoF
2023	We will develop a green finance roadmap that leverages MDB support for elements of the MCPPE and utilizes de-risking tools for credit strengthening.	MoF
2041	We will develop the analytical and guiding operational frameworks for development resilience bonds issued by state-owned vehicles, multilateral development banks (MDB) and development banks for enhanced resilience-focused resource mobilization including to eligible private sector participants that contribute to increased climate resilience.	MoF

**Bangladesh Delta 2100 is a direct investment measure that supports Covid-19 Recovery Interventions<sup>16</sup> such as . . .**

Climate and Resilience Results and Benefits: Addresses vulnerabilities Builds long-term resilience Targets disadvantaged groups (e.g., women, rural, etc.) Supports development of high-level technology Targets sectors or populations affected by non-financial shocks	COVID-19 Recovery Dividend: Support for long-term transformation Positive environmental and social outcomes High employment intensity Contribution to the productive asset base High economic multiplier Positive environmental and social outcomes
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**SDG...**

<sup>16</sup> Asian Development Bank (ADB) (2020, October). Accelerating Climate and Disaster Resilience and Low-Carbon Development Through the COVID-19 Recovery: Technical Note. <http://dx.doi.org/10.22617/TIM189600-2>

SDG 1: No Poverty	SDG 2: Zero Hunger	SDG 3: Good Health and Well-Being
SDG 5: Gender Equality	SDG 6: Clean Water and Sanitation	SDG 7: Affordable and Clean Energy
SDG 8: Decent Work and Economic Growth	SDG 9: Industry, Innovation, And Infrastructure	SDG 11: Sustainable Cities and Communities
SDG 13: Climate Action	SDG 14: Life Below Water	SDG 15: Life on Land
SDG 17: Partnerships		

<b>Key Measures</b>
Local-level integrated water management projects and studies of coastal areas as per BPD 2100 Phase 1
Increase tree coverage from 22% to 25% by 2030
Construction of the barrages as per BDP 2100
Restore degraded forests in CHT and haor ecosystems
Reduce/halt deforestation and forest degradation
Afforestation in newly accreted char lands and coastal belts
Infrastructure and water management projects for haor and flash-flood areas as per BDP 2100 Phase 1
Rationalized water and polder projects in Chattogram Coastal plains
National Rivers Stabilization and Land Reclamation Project
Ecological restoration of river systems around Dhaka city
Urban drainage network improvement and solid waste management projects in line with BDP 2100 phase 1
Setup of flood and drought management center
Improvement, expansion, and modification of the existing water resources infrastructure in drought-prone and Barind areas
Improvement of the existing flood forecasting and early warning systems (e.g., cyclone and surge warnings) and strengthening dissemination mechanisms

Restore, conserve biodiversity and genetic resources to support the development of resilient ecosystems

<b>Resources</b>		
<b>International Partners</b>	<b>National Budget</b>	<b>Contribution from Private Sector</b>
Credit enhancement instruments	Underwriting support	Industry capital investment and industry utilization

## Key Priority Areas 2. Just Transition of Labor and Future-Proofing Industry with Technology Transfer

### 2A. Just Transition and Modernization through Training and Skills Development for Labor Markets of the Future

The Just Transition can reduce future welfare liabilities and enhance tax revenue, while building Bangladesh’s ability to future-proof the workforce for green and resilient jobs to improve its competitive positioning in the global supply chain. The cost of reskilling 3.83 million people could be as much as USD 1.5 billion up to 2030.

Moreover, factors including increased frequency of heatwaves and high temperatures result in poor working conditions and low labor productivity. In extreme cases, this could lead to deaths from heat stroke. Bangladesh is among the countries most affected by heat stress and stands to lose 4.84 % of total working hours to climate-induced heat stress in 2030. This is equivalent to 3.83 million full-time jobs in 2030 and GDP losses of 4.9% by 2030.<sup>17</sup> Insulation and clean-energy heating, ventilation, and air-conditioning (HVAC) for buildings, especially workplaces, can help reduce losses and improve working conditions.

Labor Force Resilience	Scenario 1: 100% Climate Resilient	Scenario 2: 50% Climate Resilient	Scenario 3: 25% Climate Resilient
Avoided GDP losses in 2025 (%)	2.45	1.23	0.61
Avoided GDP loss in 2030 (%)	4.9	2.45	1.23

Further, we will accelerate a just transition and modernization of the labor force to better compete in the labor markets of the future and pave the pathway toward the Fourth Industrial Revolution. This will include reskilling and upskilling via technical and vocational education and training, as well as through improved efficiency from the use of automation. We recognize the growing consequences of non-financial shocks and an increasingly competitive environment as companies’ future-proof their supply

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17 Star Business Report. (2019, July 3). Heat Stress cuts productivity, jobs: ILO. The Daily Star. Retrieved February 17, 2021, from <https://www.thedailystar.net/business/news/heat-stress-cut-productivity-jobs-ilo-1765945#:~:text=Bangladesh%20may%20lose%204.84%20percent,70%20percent%20during%20the%20period>

chain with labor being a major input, reshaping labor markets. This reshaping exposes the vulnerability of lower-skilled employment especially in the manufacturing, agriculture, fisheries, service, and retail sectors.

Skilled laborers are typically less vulnerable, so the upskilling of labor is in line with 8FYP and key to the achievement of Vision 2041. While automation may reduce the number of some jobs, it will increase wealth creation. To ensure green job creation, it is essential to link the just transition and modernization with automation to unlock the creative capabilities of the workforce and enhance productivity.

Access for skills development or training opportunities is limited for individuals from lower-income households, rural and less well-educated workers, and women. The just transition program will target those people for the labor markets of the future in the following sectors - banking, finance, urban transport, ICT, health care, education, tourism, agriculture, shrimp cultivation, forest and biodiversity conservation, water management, waste management, carbon trading, electric transport, materials management, green construction, tanning, telecommunications, manufacturing such as the clothing industry, and renewable energy (e.g., solar, wind, biogas) and storage. Equally important, as highlighted in 8FYP, is the quality of educators whose expertise will be a key factor in the success of the just transition and modernization of the workforce.

We aim to foster women's qualitative participation in all areas of the economic sphere relating to green transition and low-carbon development. To enhance women's economic empowerment, targeted skills development training will be provided, based on women's needs. Gender-responsive training covering relevant skills coupled with fiscal stimulus packages and social protection programs will be a key priority. We will also focus on increasing the individual and institutional capacity of the labor force. While higher rates of investment from both domestic and foreign sources are needed, addressing technical and allocative efficiency barriers that prevent efficient use of capital will be vital.

Accelerated climate action through the installation and management of energy efficiency and renewable energy provides more jobs and higher skills than technologies of the past such as oil, coal, and gas. Power sector modernization through energy efficiency and renewable energy consistent with the 1.5°C limit of the Paris Agreement could create twice the number of jobs by 2050, which is equivalent to a 68% net increase in jobs globally.<sup>18</sup> For Bangladesh, a recent study showed that modernization through renewable energy and energy efficiency could lead to 6 times more jobs than fossil fuel generation, that is up to 55,000 new jobs between 2016 and 2030.<sup>19</sup>

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<sup>18</sup> Climate Vulnerable Forum (CVF) (2016). Low Carbon Monitor 2016: Pursuing the 1.5°C Limit Benefits and Opportunities. Climate Vulnerable Forum.. Retrieved February 17, 2021, from <https://thecvf.org/resources/publications/low-carbon-monitor/>

<sup>19</sup> Saha, B., Kindle, A., Cookson, P. , & Vaidya, R. (2017, May). Benefits of low emission development strategies: The case of clean energy policies in Bangladesh. LEDS Global Partnership and USAID. [ClimateLinks: A Global](#)  
**32 | Mujib Climate Prosperity Plan 2022-2041**

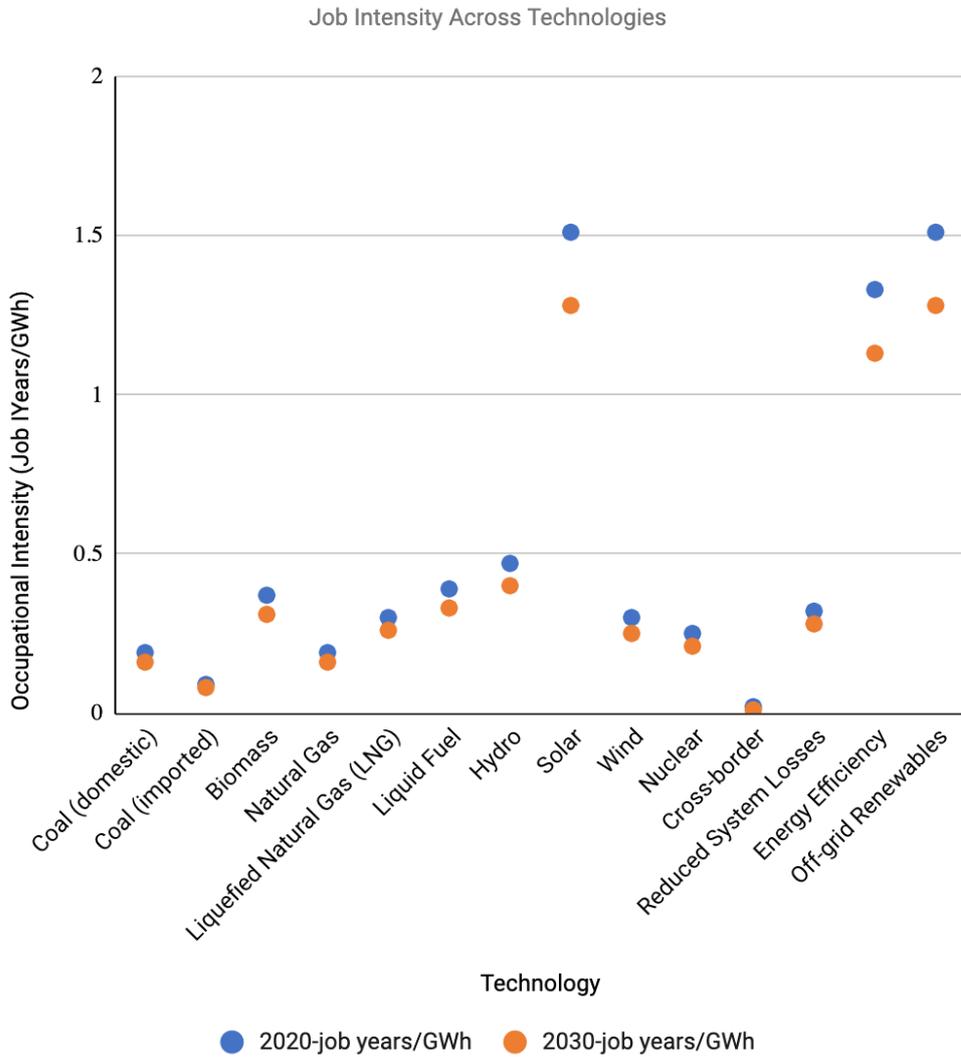


Figure 4: Job Intensity Across Technologies

<b>Just Transition and Modernization through Training and Skills Development for Labor Markets of the Future can...</b>		
Avoid GDP losses of up to 2.45% in 2025 and up to 4.9% in 2030.	Train and reskill at least 3.83 million people by 2030	Generate 6 times more job opportunities under the Mujib vision

Knowledge Portal for Climate and Development Practitioners. Retrieved February 17, 2021, from [https://www.climatelinks.org/sites/default/files/asset/document/2017\\_LEDS\\_RALI\\_Benefits%20of%20low%20emission%20development%20strategies\\_Bangladesh\\_Case\\_Study.pdf](https://www.climatelinks.org/sites/default/files/asset/document/2017_LEDS_RALI_Benefits%20of%20low%20emission%20development%20strategies_Bangladesh_Case_Study.pdf)

<b>Target Milestones</b>		
<b>Year</b>	<b>Target</b>	<b>Lead Ministry</b>
2022	We will join the Climate Action for Jobs Initiative.	MoEFCC
2022	We will conduct a labor market assessment and stress test the labor force and quality of educators to achieve a just transition and modernization.	Mol and MoLE
2023	We will create a plan to transform low-productivity and low-wage development to high-productivity and high-growth including reskilling and special gender-transformative labor market programs, coordinated with National Skills Development Authority (NSDA) and the National Human Resource Development Fund (NHRDF.)	Mol
2023	We will improve the quality of educators through enhanced support, training, and partnerships with regional and international collaborators.	MoEFCC
2023	The Bangladesh National Skills Development Authority (NSDA) will coordinate with workers' associations on the implementation of the transformational plan.	Mol
2024	We will finalize a combination of investment options including supply chain coordination, industry coordination to lower costs, national government, and donor support to boost workers productivity and efficiency.	Mol
2025	Retrofitting 50% of the commercial built environment to adjust to the hotter climate.	Mol
2030	Retrofitting 100% of the commercial built environment to adjust to the hotter climate.	Mol

**Just Transition and modernization of the labor force is a direct investment that supports Covid-19 Recovery Interventions<sup>20</sup> such as . . .**

Climate and Resilience Results and Benefits:  
Addresses vulnerabilities  
Builds long-term resilience

COVID-19 Recovery Dividend:  
Short implementation timeline  
Support for long-term transformation

<sup>20</sup> Asian Development Bank (ADB) (2020, October). Accelerating Climate and Disaster Resilience and Low-Carbon Development Through the COVID-19 Recovery: Technical Note. <http://dx.doi.org/10.22617/TIM189600-2>

Targets disadvantaged groups (e.g., women, rural, etc.) Targets sectors or populations affected by non-financial shocks	High employment intensity Positive environmental and social outcomes
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<b>SDGs . . .</b>		
SDG 1: No Poverty	SDG 4: Quality Education	SDG 5: Gender Equality
SDG 8: Decent Work and Economic Growth	SDG 9: Industry, Innovation, And Infrastructure	SDG 10: Reduced Inequality
SDG 13: Climate Action	SDG 17: Partnerships	

<b>Key Measures</b>
Built-environment adaptation, through insulation, other energy efficiency measures, and low-cost renewable energy powered heating, ventilation, and air-conditioning (HVAC) for buildings
3.83 million people trained and reskilled through Just Transition programs

<b>Resources</b>		
<b>International Partners</b>	<b>National Budget</b>	<b>Contribution from Private Sector</b>
International resources for training modules and technology transfer opportunities	National budget support via Skills Employment Investment Program (SEIP)	Public-private partnership and investment for better education, skills, entrepreneurship, and employment

## 2B. Future-Proof Bangladesh’s Position in the Global Supply Chain

We will future-proof Bangladesh’s role in global supply chains by positioning the country through export diversification as a viable modernized platform. This may counteract the loss of duty-free quota-free (DFQF) market access for Bangladesh’s exports as a result of the country’s LDC graduation by 2026. Export diversification will be supported by capitalizing on green opportunities including green logistics (e.g.,

ports, rail, inland waterway), green power including hydrogen, ammonia, batteries, other green technology, productivity, and energy efficiency gains, as well as preparedness for extreme weather events.

Moreover, modernization will include a reduction in environmental risks through improved supply chain engagement such as environmental data disclosure. Future-proofing the country's supply chain will reduce spillover risks that can undermine competitive global positioning.

The future-proofing is built on the foundation of 8FYP, which articulates that the government will implement policies to support improved infrastructure, strengthen human capital (through education and training) and incentivize research and development. Knowledge and technology transfer can enhance the resilient growth benefits of trade, and so ensure the country's participation in global supply chains and improved value engineering in supply chain management.

We will hasten export-led growth underpinned by green supply chain opportunities and diversification into sectors that can create jobs for many of the 2 million people entering the labor force each year.<sup>21</sup> This can build on Bangladesh Bank Refinance Scheme for Environment Friendly Products which aims to promote the environment-friendly financial products/initiatives in Bangladesh such as biogas, energy efficiency, green industry, and safe work environment.

As solar photovoltaic and wind power proves to be technically and economically viable, future-proofing the global supply chain includes accelerated support for modern technologies. For example, the deflationary cost trajectory of concentrating solar power (CSP) technologies increases the certainty of CSPs future in the energy mix, especially for industries that require thermal power or high energy intensity such as cement and steel production. Hydrogen has the additional advantage of being able to replace coking coal for zero-carbon emissions steel production.

Currently, there are 150 factories with the Leadership in Energy and Environmental Design (LEED) certification and 500 factories undergoing such certification. Meeting the standard for LEED certification realizes benefits such as cost savings from reduced energy and water consumption, lower operating costs, durability, and improved indoor air quality and employee productivity - which in turn contribute to global competitiveness of the factories. LEED certification will be completed for strategic export industries by 2030 including jute, leather, textiles, information technology (IT) services or components, high-value agriculture, and green hydrogen. It is important to note that commercial rooftop solar technology can also contribute to LEED certification.

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<sup>21</sup> Sumi, H.F., & Reaz M.M. (2020, January). Building Competitive Sectors for Export Diversification: Opportunities and Policy Priorities for Bangladesh. International Finance Corporation (IFC). World Bank. Retrieved April 5, 2021, from <http://documents1.worldbank.org/curated/en/982561587362264731/pdf/Building-Competitive-Sectors-for-Export-Diversification-Opportunities-and-Policy-Priorities-for-Bangladesh.pdf>

As a part of the Bangladesh government's own vision and action, a National Green Building Certification Scheme is in progress. The proposed scheme is designed to speed up the adoption of green building principles and enhance the design and construction of buildings. The goal is to support the environment by encouraging sustainable construction practices, conserving energy, water and building materials, and promoting resource efficiency.

According to the World Bank, the social cost of annual carbon dioxide emission from road freight transport in Bangladesh is equivalent to 1.2% of GDP with 60% of emissions caused by road congestion. Enhancing domestic logistics, for example, could save costs amounting up to 50% of sales for horticulture products.<sup>22</sup> Driving cost and energy usage efficiencies in transportation, storage and handling of freight will be a key objective to strengthen Bangladesh's position in global supply chains.

We will encourage the use of electric and hydrogen-powered vehicles and synchromodal transportation to transport goods, development of energy efficient warehouses through the use of sustainable building materials, and large-scale electrification of cargo-handling equipment in logistics facilities such as ports and inland terminals including cold chains. Incentive schemes will be deployed to lower the direct and indirect costs of logistics while also reducing both dependence on fossil fuels and their harmful environmental effects.

Improving the logistics network to ensure imports and exports are transported in the most cost-effective and efficient manner is in line with commitments from major companies already operating in Bangladesh.<sup>23</sup> Future-proofing Bangladesh's position in the global supply chain through measures such end-to-end digital integration, sustainable supplier relationships, optimized and automated supply chain management and responsible practices can crowd-in more than 280 members of RE100 with 100% renewable energy commitments<sup>24</sup> and over 1000 businesses with net-zero commitments by 2050.<sup>25</sup>

### **Green Exports Program**

The Green Exports Program will support export-led growth in the various industries mentioned earlier by including a certification of exports that utilize LEED certified factories, voluntary sustainability standards, green transportation, and clean energy

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<sup>22</sup> Staff Correspondent. (2019, November 14). High Transport Cost Hurting Economy The Daily Star. Retrieved February 17, 2021, from <https://www.thedailystar.net/backpage/news/high-transportation-cost-hurts-economy-1826758>

<sup>23</sup> Including those with RE100 commitments such as Ajinomoto, Citi, Commerzbank, Dell Technologies, FUJIFILM Holdings, HSBC, Kingspan, Konica Minolta, Mastercard, Nestle, Phillips-Van Heusen (PVH), Sanofi, Schneider Electric, SGS, Steelcase, Target Corp, Tata Motors, Unilever, and Visa, as well as companies with net zero commitments by 2050 such as LafargeHolcim, Charoen Pokphand (CP) Group, Nestle, H&M, Siemens, Unilever, Reckitt Benckiser Group, GlaxoSmithKline, Ericsson, Artistic Milliners, Arauco, Biogen, etc.

<sup>24</sup> RE100 (2022). RE100 Members. RE100. Retrieved March 21, 2022, from <https://www.there100.org/re100-members?page=1>

<sup>25</sup> UNFCCC (2022). Race to Zero Campaign. United Nations Framework Convention on Climate Change (UNFCCC). Retrieved March 21, 2022, from <https://unfccc.int/climate-action/race-to-zero-campaign>

utilization by energy efficiency measures in high-value agriculture, manufacturing, industrial and other built environments, renewable energy installations for high-value agriculture, manufacturing and industrial areas, including through the use of carbon credits, environmental data disclosure, measures taken to improve preparedness for extreme weather events.

The Green Exports Program aims at global recognition of Bangladesh’s ability to respond to current and future requirements of major companies and global policy shifts including renewable energy commitments, net zero carbon commitments, and pending carbon border adjustment taxes in the EU and other major economies.

The Green Exports Program will also include special support to micro-, small- and medium-sized enterprises and high-value agriculture products for manufacturing and will thus support the future-proofing of Bangladesh’s role in the global supply chain. This can be supported by Bangladesh Bank’s Green Transformation Fund which intends to facilitate access to financing in foreign exchange to export oriented textile and textile products, and leather goods manufacturing industries to import capital machinery and other necessities relevant to following environment-friendly/green attributes.<sup>26</sup>

To increase the global competitiveness and appeal of exports from Bangladesh, it is imperative to bring down the associated logistics costs. This reduction could be achieved by using digital technology to improve the way that transport vehicles and facilities are used. Green transportation and warehousing practices are particularly effective. In addition, using sustainable materials to package goods would increase the attractiveness of Bangladesh’s exports.

The localization of global supply chains is an opportunity for the South Asia region to become better integrated economically. Regional partnerships including connectivity with neighboring countries in terms of better value-chain/supply-chain integration can also be strengthened. Bangladesh’s location means it can become a key production center as it modernizes facilities, trains up labor, and improves transportation time and costs.

<b>Future-Proofing Bangladesh’s Global Supply Chain can . . .</b>		
Enable a 30% increase in energy savings per annum for industry <sup>27</sup>	Increase capture of global market share by at least 1% per year	Establish a green supply chain and logistics network to attract ESG (Environmental, social, and governance) investors among others

<sup>26</sup> Bangladesh Climate Fiscal Framework 2020

<sup>27</sup> Tetra Tech ES, Inc. (2014, May). Bangladesh: Industrial Energy Efficiency Finance Program (Project Number: 45916). Asian Development Bank (ADB) Technical Consultant’s Report. Retrieved June 7, 2021, from <https://www.adb.org/sites/default/files/project-document/80742/45916-014-tacr-01.pdf>

Target Milestones		
Year	Target	Lead Ministry
2022	We will appraise green opportunities including green logistics (e.g., ports and rail), green power including hydrogen, green technology, productivity and energy efficiency gains, as well as preparedness for extreme weather events.	MPEMR
2023	We will establish a Green Exports Program.	MoCom
2023	We will coordinate with major companies on improving logistics and sustainability to expand market opportunities in Bangladesh.	MoCom
2023	We will ensure LEED Certification of 500 additional factories.	Mol
2023	Structure investments to lower the cost of trading across borders, financial access, and the allocation of credit across sectors, and improved human capital allocation to enable greater export diversification <sup>28</sup>	MoF
2024	Make environmental and climate data disclosure mandatory throughout the supply chain in line with international standards. <sup>29</sup>	MoEFCC
2025	Reduce logistics cost by 25%.	Mol
2025	Extend LEED Certification to 1000 additional factories.	Mol
2025	50% LEED Certification for strategic export industries.	Mol
2030	LEED Certification of 2000 additional factories.	Mol
2030	100% LEED Certification for strategic export industries.	Mol
2030	Reduce logistics cost by 50%.	Mol

**Future-proofing Bangladesh's Positioning in the Global Economy is a Direct Investment Measure that Supports COVID-19 Recovery Interventions<sup>30</sup> such as . . .**

<sup>28</sup> Giri, R., Quayyum, S.N., & Yin, R. (2019, May 10). Understanding Export Diversification: Key Drivers and Policy Implications (Working Paper No. 19/105). IMF Working Papers. International Monetary Fund (IMF). Retrieved May 10, 2021, from <https://www.imf.org/en/Publications/WP/Issues/2019/05/14/Understanding-Export-Diversification-Key-Drivers-and-Policy-Implications-46851>

<sup>29</sup> [https://6fefcbb86e61af1b2fc4-c70d8ead6ced550b4d987d7c03fccdd1d.ssl.cf3.rackcdn.com/cms/reports/documents/000/005/554/original/CDP\\_SC\\_Report\\_2020.pdf?1613048129](https://6fefcbb86e61af1b2fc4-c70d8ead6ced550b4d987d7c03fccdd1d.ssl.cf3.rackcdn.com/cms/reports/documents/000/005/554/original/CDP_SC_Report_2020.pdf?1613048129)

<sup>30</sup> Asian Development Bank (ADB) (2020, October). Accelerating Climate and Disaster Resilience and Low-Carbon Development Through the COVID-19 Recovery: Technical Note. <http://dx.doi.org/10.22617/TIM189600-2>

<p>Climate and Resilience Results and Benefits:</p> <ul style="list-style-type: none"> <li>Addresses vulnerabilities</li> <li>Builds long-term resilience</li> <li>Supports development of high-level technology</li> <li>Targets sectors or populations affected by non-financial shocks</li> </ul>	<p>COVID-19 Recovery Dividend:</p> <ul style="list-style-type: none"> <li>Support for long-term transformation</li> <li>High employment intensity</li> <li>Skills development</li> <li>Contribution to the productive asset base</li> <li>High economic multiplier</li> <li>Strong supply chain</li> </ul>
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SDGs		
SDG 6: Clean Water and Sanitation	SDG 7: Affordable and Clean Energy	SDG 8: Decent Work and Economic Growth
SDG 9: Industry, Innovation, and Infrastructure	SDG 12: Responsible Consumption and Production	SDG 13: Climate Action
SDGs 17: Partnerships		

Key Measures
Establish Green Exports Program.
Energy efficiency measures installed in manufacturing, industrial and other built environments.
Renewable energy installations available to manufacturing and industrial areas to improve resilience.
LEED certification of 3,500 factories including 100% of strategic export industries.
50%–100% greening and electrification of the transport/logistics sector and strategic export industries.

<b>Resources</b>		
<b>International Partners</b>	<b>National Budget</b>	<b>Contribution from Private Sector</b>
International supply chain investment support from import and export partners	Fiscal incentives including tax holidays and commercial subsidies compatible with WTO provisions	Industry capital investment and industry utilization  Public Private Partnership on green logistics

## **Key Priority Area 3. Increasing public revenue to spend on the most vulnerable**

### **3A. Investment in the Realization of Locally Led Adaptation and Reduced Climate-induced Migration Outcomes**

We will invest in the realization of locally led adaptation including long-term funding and decision-making support at the most appropriate level for communities, as well as enabling preferential access for women, next generation youth, PWDs and climate displaced people. Mainstreaming climate change in various programmatic actions is key. We will provide a co-supported funding window through the Ministry of Local Government, Rural Development and cooperatives for locally led adaptation in collaboration with the Ministry of Planning and Ministry of Finance. The framing of locally led adaptation and the processes of a co-supported funding window will be detailed as needed, including the necessary institutional arrangements.

In line with the 8FYP and the National Adaptation Plan (NAP) of Bangladesh, the delivery of locally led adaptation aims to address poverty, inequality and vulnerability in all its dimensions, beyond income or consumption, through the inclusion of hazards compounded by climate change such as vulnerability to shocks and risks to health, education, empowerment. Moreover, locally led adaptation outcomes enable the acceleration of “My Village-My Town” to extend modernized facilities such as infrastructure, utilities, healthcare, digital solutions, and mobile financial services to every village. It also adds a climate resilient dimension which will enable acceleration of “My House-My Farm”<sup>31</sup> projects’ goals of organizing poor households under the village society, motivating them to save, providing skill development training, providing low-cost as well as seasonal credit, entrepreneurship development, marketing promotion, ecosystems conservation and digital financial service. 30 million people are at risk to be displaced from the coastal areas in Bangladesh with severe implications on livelihood, habitat, drinking water, and rural economy. Protecting internal displacement by more decentralized and resilient ‘My Village – My Town’ so that people have better life in their own settlement and the benefit of growth reaches to the bottom with less absorption of benefit in different ladders.

There is an opportunity for a systemic approach in mainstreaming climate change into local level planning and financing process in Bangladesh and not enough practical means to bring the climate science on the ground with people’s perception to the

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<sup>31</sup> Government of People’s Republic of Bangladesh Ministry of LGRD & Cooperatives Rural Development and Cooperative Division (2018, July 3). Project Overview: Ektee Bari Ektee Khamar (EBEK) Project (Third Revision). Retrieved February 17, 2021, from <http://www.ebek-rdcd.gov.bd/site/page/da340399-e912-46a4-a262-e01c4917cd28/>

scientific knowledge with local knowledge to address climate risk and support adaptation planning. Presently, the Government of Bangladesh spends approximately 7%-8% of its annual budget for adaptation and enhancing climate resilience (MoF, 2021).

To ensure climate finance investments are made within the right locations of the local level, on right risks, right communities, and on right adaptation means, we will continue to promote scalable LLA solutions offered by GoB's Local Government Division (LGD)'s project on Local Government Initiative on Climate Change (LoGIC). Whereby, a proven local climate financing mechanism has been established through evidence-based advocacy and two dedicated financing to support local adaptation plans. First, by providing grants to local governments as additional resources to climate-proof their investment on community-based adaptation schemes. Thereby, contributing to make local infrastructures including drinking water, livelihoods, irrigation, evacuation, early warning, water management systems, watersheds, roads, culverts etc. more resilient, gender responsive and best suited to incorporate nature-based solutions for adaptation. The LLA can benefit from incorporation of ccGAP by increasing women's role as first responder's and for monitoring and maintenance of local infrastructure (e.g., early warning, embankment breach, river erosion and infrastructure breakage). Secondly, by providing conditional grants directly to the vulnerable households, it is enhancing people's adaptive capacity by sharpening skills in pursuing individual and group enterprise on resilient livelihoods means, both on farm and off farm. It also includes incorporating innovative technology for climate change adaptation solutions at local level with small initiatives. The project is identifying 225 most climate vulnerable wards through census and risk atlas, and developed the vulnerability index of each household. The most vulnerable 35,000 households and moderate vulnerable 10,000 households are selected (in progress) for skill development on climate resilient livelihoods.

A scalable model as this exemplifies how structural barriers can be removed through policy advocacy, innovative financing mechanism, and public-private partnership, with government entities like LGD on the lead of locally led adaptation. By investing in climate resilient livelihoods like crab hatchery, sheep breeding, and sunflower oil processing, the model helps to scale-up nature-based solutions supporting locally led adaptation. It therefore encompasses ideas based on creating livelihood opportunities or jobs that are resilient and green as a sustainable pathway for employment and therefore contributing to the larger human development spectrum. Its unique contribution for measuring adaptation progress and outcome through effective tracking and monitoring make it distinctive in terms of its larger contribution to the global adaptation goal. It has also developed the social audit protocol and Adaptation Tracking Mechanism to assess both bottom up and top-down performance assessment of the adaptation benefits of the grants and training. Hence, the model provides evidence of enhanced resilience of vulnerable people, making its upcoming phases highly scalable through the GCF or other international climate finance mechanisms.

Among others, we will also continue to support housing initiatives like “Ashrayan”, to settle displaced and landless people through the extension of land ownership, ensuring visibility of the vulnerable and enabling their access to services. Under the Mujib Year Celebration, 100,000 more homeless families had already been given houses in December 2020. We also continue to strengthen country-wide national initiatives for rehabilitation of beggars who are often migrants as victims of climate-induced disasters like river erosion, floods and droughts, through rehabilitation centers with training and healthcare facilities and alternative employment. We also continue the implementation of the “Palli Janapad” project by the Ministry of LGRD & Cooperatives. The main aim of the project is restoration of agricultural land for food security and livelihood improvement of the rural community with modern facilities including community-based bio-gas plant as a source of renewable energy, solar power system as alternate source of electricity, rainwater harvesting and waste management facilities, and employment and entrepreneurship opportunities through various capacity building activities. These will contribute to zero migration by protecting or transforming the livelihoods of at-risk areas and people. It also safeguards the zero-poverty by 2030 target.

This measure will be complemented by ensuring that the coastal belt is made 100% climate resilient. Climate resilience means the capacity of a system, structure or entity potentially exposed to climate hazards to adapt, by resisting or changing to reach and maintain an acceptable level of functioning and structure. To ensure a climate-resilient coastal belt, appropriate processes are needed to adapt policy, governance arrangements, and co-management practices for resource development along the coastline in response to climate change.

We recognize the best way to implement locally led adaptation is to engage communities at the design phase, and also to support community-based monitoring and evaluation. Early engagement will allow the evaluation of community benefits while building adaptive capacities. Equally important is the engagement of local authorities to build confidence within their communities by making them part of the decision-making process. Locally led adaptation programs can leverage value across communities through collaborative ventures. Moreover, as locally led adaptation programs are integrated into broader value chain development, they can be supported with international and regional funding. To achieve these goals, a capacity-building program led by universities will be undertaken in tandem with the project design and implementation.

In addition, there is a need for blended and participatory risk mapping for the vulnerable unions of Bangladesh with top-down risk mapping. As a long-term journey, spatial and temporal factors will play critical roles to design context-specific and geographically-specific locally led adaptation solutions. In addition, using socio-economic indicators and exposure information, vulnerability should be quantified through ‘scoring’ across all unions in Bangladesh, segregated by wards and be available via open access dashboards. Based on this, we will support micro-modeling and downscaling methods towards inundation and risk mapping in line with 1.5 to 2.0 degree scenario-based projections

Climate change and its widespread effects threaten lives and livelihoods, impeding global efforts to reduce poverty and promote shared prosperity. Climate services use environmental knowledge and information that plays a vital role in climate-resilient development at the household level by increasing women's participation. Vulnerability mapping and analysis for women, especially when combined with different age groups, and indigenous women's knowledge and practices, will increase climate resilience and improve climate and environmental outcomes.

We will ensure women's representation and participation in capacity-building programs and enable policies and financing processes that address their needs. We will engage with women's organizations, networks, and unions to improve women's economic empowerment, self-entrepreneurship and climate, and environmental outcomes. In line with the ccGAP, we will continue to allocate financial resources to address gender and Disaster Risk Reduction (DRR) issues and ensure participation of women in community level assessments and mapping engagements. Access to modern technology will also enable women to manage climate risk, respond to climate variability, and access support and information relevant to their livelihoods during climate shocks. Targeted social protection measures linked to the resilience of social and ecological systems will contribute to women's adaptive capacity and provide a stepping-stone to other economic opportunities.

To ensure locally led adaptation is effective, the MCPP will create Locally Led Adaptation Hubs (LLA Hubs) that will act as focal points for locally led projects. LLA Hubs will prioritize 1) gender equality through a transformative approach to benefit women from climate actions, including through gender-focused and targeted training, special financing, and program opportunities, and 2) financial inclusion through targeted interventions to bring vulnerable communities under the umbrella of mobile financial services. More importantly, as a result of economic and non-economic loss and damage due to inadequate emission reduction measures globally, LLA Hubs must act to avert, minimize, and address impacts and loss and damage which will require finance and dedicated financing mechanisms.

The LLA Hubs will house information on communities, provide a forum for discussion and consultation on projects, enhance community participation and success tracking with specialized incentives for communities. As a Hub, or learning platform, an Adaptation Learning Center for women, similar to that established in Deluti Union of Bangladesh, by the Inclusive Budgeting and Financing for Climate Resilience project, can provide space for women to learn about climate adaptive livelihoods, share experiences and build their capacities, both individually and collectively.

The LLA Hubs will prioritize the most vulnerable regions taking into consideration the correlation between poverty and disaster, establishing hubs in 20% to 30% of areas by 2025 and 100% by 2030.

The development of equitable and sustainable business models is key to achieving prosperity outcomes through locally led adaptation. Such a business model may look like this:

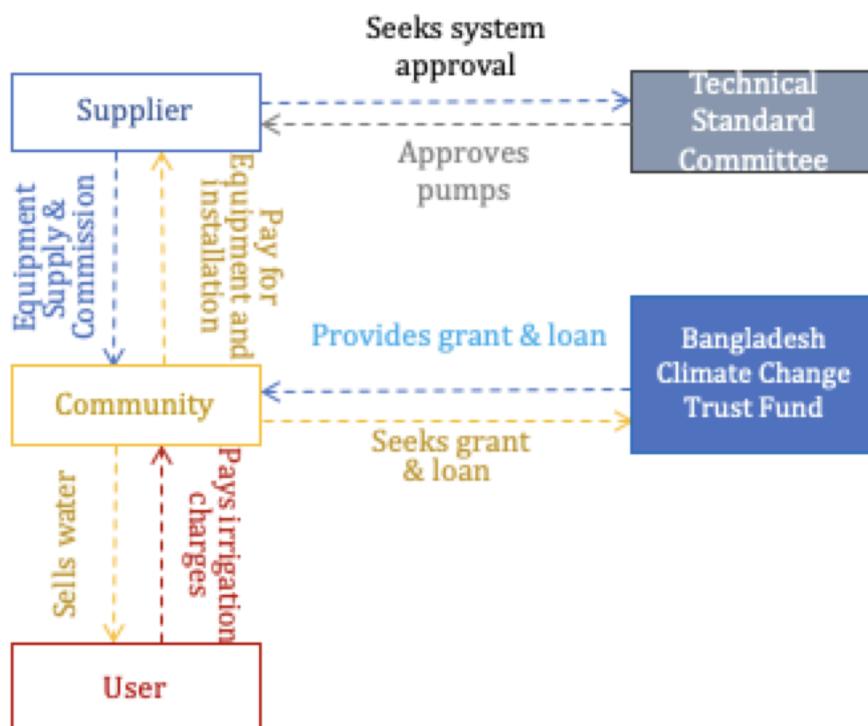


Figure 5: Business model -prosperity outcomes through locally led adaptation

The Private Sector Facility (PSF) of the Green Climate Fund (GCF) can be explored to fund and mobilize private sector actors and stakeholders, including institutional investors, and capitalize on existing funds to attract private corporations in climate interventions. This can engage both the local and global private sector in supporting climate change mitigation and adaptation projects, therefore catalyzing for funding high impact, transformative climate projects and activities in developing countries. We will support in exploring PSF’s pivotal role in supporting strategic private sector inclusion and engagement to upscale private-sector driven investments necessary. Also, the Kampala Principles on Effective Private Sector Engagement in Development Co-operation may guide private sector partnerships for development to be more effective while ensuring inclusivity at country level to provide sustainable value chains and responsible business models.

Locally led nature-based solutions can protect natural resources in communities while enhancing and protecting plant and animal biodiversity, conserving genetic resources, protecting wildlife habitats, and improving the condition and quality of ecosystems for multiple dimensions of resilience. In line with the ccGAP, we will document, disseminate and promote indigenous knowledge and products on agriculture with special focus to indigenous and traditional practices by women. Additionally, we could promote technologies and tools that help smallholder farmers and producers to increase their incomes by reducing input costs. Moreover, premium prices could be sought for sustainably produced products.

Consideration of these above factors will remain imperative for sustainable locally led adaptation interventions in Bangladesh. As such the transition from vulnerability to building resilience (economy and people) and then prosperity (focusing on

transformation of the economy and society towards environmental globalization) will contribute towards economic transformation in the long run.

<b>Locally led adaptation aims. . .</b>		
To mobilize USD 1 billion per year by 2030 from international and national resources in locally-led adaptation via the Ministry of Local Government and Rural Development in collaboration with the Ministry of Planning and Ministry of Finance by 2030, including through international channels such as the Green Climate Fund <sup>32</sup> , Global Environment Facility, and Adaptation Fund. Ministry of Agriculture and other relevant agencies can propose and submit proposals for consideration in the implementation of LLA Hubs	To generate USD 300 million in costs avoided per year. <sup>33</sup>	To eradicate extreme poverty by 2030.

<b>Target Milestones</b>		
<b>Year</b>	<b>Target</b>	<b>Lead Ministry</b>
2022	We will adopt the locally-led adaptation principles launched in the 2021 Climate Adaptation Summit. <sup>34</sup>	MoEFCC
2022	We will conduct vulnerability mapping and analysis in terms of geography, sex, age, disability, especially in rural communities and indigenous areas to better understand regional variations in composite vulnerability.	MoEFCC
2022	We will create a locally led adaptation window in the Ministry of Local Government and Rural Development in collaboration with the Ministry of Planning and Ministry of Finance. Ministry of Agriculture and other relevant agencies can propose and submit proposals for consideration in the implementation of LLA Hubs	MoLGRDC

<sup>32</sup> Engagement with the GCF is based on the current country programme of Bangladesh.

<sup>33</sup> Hallegatte, Stephane; Rentschler, Jun; Rozenberg, Julie. (2019). Lifelines: The Resilient Infrastructure Opportunity. Sustainable Infrastructure. Washington, DC: World Bank. © World Bank. Retrieved February 17, 2021, from <https://openknowledge.worldbank.org/handle/10986/31805> License: CC BY 3.0 IGO. (For every \$1 invested, at least \$4 in benefit).

<sup>34</sup> Global Commission on Adaptation. (2021, July). Principles for Locally Led Adaptation Action: Statement for Endorsement. World Resources Institute (WRI). Retrieved March 21, 2022, from [https://files.wri.org/s3fs-public/uploads/Locally\\_Led\\_Adaptation\\_Principles\\_-\\_Endorsement\\_Version.pdf](https://files.wri.org/s3fs-public/uploads/Locally_Led_Adaptation_Principles_-_Endorsement_Version.pdf)

2023	We will consult vulnerable communities to ascertain capacities and build capabilities to drive locally led actions including leading projects, delivery of projects, and greater access to finance.	MoLGRDC
2023	We will begin effective private sector engagement in climate change adaptation in promoting locally led adaptation in collaboration with PPPA, BIDA and other established mechanisms.	MoLGRDC
2023	We will develop an adaptation-tracking mechanism to quantify adaptation efforts and assess vulnerability reduction through adaptation interventions by exploring various indicators of vulnerability (social, physical, cultural etc.).	MoEFCC
2023	We will develop a mechanism for success tracking and incentivizing so that successful projects get more support, and the most vulnerable communities receive special support to get them on track.	MoLGRDC
2023	We will develop a national green growth strategy to guide the fund-allocation strategy, themes, delivery mechanisms, and capacity-building needs as well as financing approaches	MoEFCC
2024	We will form a consortium of national, regional, and international technical partners to build analytical skills, knowledge, and resources for delivering the plan.	MoEFCC
2024	We will mobilize an additional USD 100 million per year for locally led adaptation.	MoF
2025	We will mobilize an additional USD 150 million per year for locally led adaptation.	MoF
2026	We will establish LLA Hubs in 20% to 30% of the most vulnerable areas.	MoLGRDC
2026	We will mobilize an additional USD 250 million per year for locally led adaptation.	MoF
2027	We will mobilize an additional USD 350 million per year for locally led adaptation.	MoF
2028	We will mobilize an additional USD 500 million per year for locally led adaptation.	MoF
2029	We will mobilize an additional USD 650 million per year for locally led adaptation.	MoF

2030	We will ensure 100% of the coastal belt is made climate-resilient	MoLGRDC
2030	We will establish LLA hubs in 100% of the most vulnerable areas.	MoLGRDC
2030	We will mobilize an additional USD 1 billion per year for locally led adaptation.	MoF
2041	We will ensure zero climate-induced migration by 2041.	MoLGRDC

**Locally led adaptation is a direct investment measure that supports Covid-19 recovery interventions <sup>35</sup> such as . . .**

Climate and Resilience Results and Benefits:  
 Addresses vulnerabilities  
 Builds long-term resilience  
 Supports development of high technology  
 Targets sectors or populations affected by non-financial shocks

Covid-19 Recovery Dividend:  
 Support for long-term transformation  
 Positive environmental and social outcomes

**SDGs**

SDG 1: No Poverty	SDG 2: Zero Hunger	SDG 5: Gender Equality
SDG 6: Clean Water and Sanitation	SDG 7: Clean and Affordable Energy	SDG 8: Decent Work and Economic Growth
SDG 9: Industry, Innovation, and Infrastructure	SDG 10: Reduced Inequality	SDG 12: Responsible Consumption and Production
SDG 13: Climate Action	SDG 14: Life Below Water	SDG 15: Life on Land
SDG 16: Peace and Justice, Strong Institutions	SDGs 17: Partnerships	

**Key Measures**

<sup>35</sup> Asian Development Bank (ADB) (2020, October). Accelerating Climate and Disaster Resilience and Low-Carbon Development Through the COVID-19 Recovery: Technical Note. <http://dx.doi.org/10.22617/TIM189600-2>

Create LLA hubs that will act as a focal point for locally led projects and a repository of information on communities, provide a forum for discussion and consultation on projects to be developed, and enhance wider community engagement for LLA focusing mostly on vulnerable regions (20%–30% progressing towards 100% by 2030). The structure of LLA hubs will be decided and adopted through national consultations with all relevant stakeholders.

Mobilize USD 1 billion per annum in locally led adaptation by 2030.

Deploy a tracking mechanism to quantify adaptation efforts and assess vulnerability reduction through adaptation interventions through exploring various indicators of vulnerability (social, physical, cultural etc.) Universities can generate the relevant approaches, methods, and tools for such quantification of adaptation outcomes.

Deploy a tracking mechanism for success tracking and incentivizing so that successful projects get more support while the most vulnerable communities receive special support, including incentives.

Develop a blueprint to guide the national fund-allocation strategy, themes, delivery mechanisms, capacity-building needs and financing approaches such as guarantees, concessional loans, convertible debt, and equity.

Form a consortium of national, regional, and international technical partners to contribute to the development of analytical insights, knowledge and resources for delivering the plan.

Developing a multi-stakeholder platform for the demand and supply side actors in LLA to interact with the market as the key driver to achieve resilience and foster public-private interaction and enhanced private sector engagement.

<b>Resources</b>		
<b>International Partners</b>	<b>National Budget</b>	<b>Contribution from Private Sector</b>
Enhanced access to global funding windows such as the Green Climate Fund and exploring opportunities for regional and international partnership.	National budget support via 8FYP and allocation from Bangladesh Climate Change Trust Fund.	Industry – capital investment and industry consumers as users of ecosystem services.

### **3B. An Established Carbon Financing Regime for Revenue Generation**

Bangladesh, like many developing countries, has large carbon sinks. The world needs the certainty of a carbon financing regime that keeps our economies safe (1.5° C compliant). Equally important and based on analysis of the shortage of adaptation finance, a global carbon financing regime should bring substantial new financial support for adaptation.

The Bangladesh NDC targets major black carbon sources and major methane sources through the Bangladesh National Action Plan for Reducing Short-Lived Climate Pollutants (SLCPs). Full implementation of the National SLCP Plan is expected to reduce black carbon emissions by 40% and methane emissions by 17% by 2030.

In line with such targets, we will consider 1) enabling a carbon market or carbon financing mechanism with other V20 mechanisms; 2) harnessing the potential of Article 6 of the Paris Agreement and voluntary carbon markets to bring in additional financing; and 3) encouraging bilateral joint crediting mechanisms.

Strategies can include, but are not limited to, objectives such as revenue-raising (carbon tax), behavior shifts (carbon tax and carbon pricing), and new sources of investment finance (international carbon markets). As it is essential to prioritize the objective for each instrument put in place, a strategy for and the auditing of carbon in this regard is imperative.

As a starting point, a National Carbon Finance Coordination Hub will be set up to attract investment from the voluntary carbon market for a) specific standalone projects and b) sectoral jurisdictional programs, where funds from voluntary carbon markets (VCM) can be channeled through a fund and/or matched with other sources of funding. VCM demand is growing fast and will likely accelerate after the publication of the Taskforce on Scaling Voluntary Carbon Markets outputs. In addition, a monitoring and evaluation system for carbon pricing will also be under development. Agencies that may be considered for participation in the National Carbon Finance Coordination Hub include Bangladesh Forest Department, National Board of Revenue, Economic Relations Division, and Power Division.

The National Carbon Finance Coordination Hub will strategically look to donor partners early to fund or underwrite payments by results programs for a) forest/tree conservation, including sustainable management of non-timber forest products (NTFPs) b) afforestation and reforestation c) (natural) revegetation e.g., mangroves, d) coastal ecosystem conservation, protection and rehabilitation e.g., mangroves, tidal marshes, and seagrass meadows e) decarbonization of mass transit systems (e.g., Dhaka bus fleet) and/or f) a scrappage payment for early retirement of uneconomic coal-fired power stations in addition to being linked to loss and damage financing, adaptation, and renewable energy funding. These could either be done through the voluntary market or eventually under Article 6 of the Paris Agreement (subject to corresponding adjustments). Off-grid, rural micro and mini grids with storage may also apply for programs of support through carbon financing.

As Bangladesh is part of the V20, a joint carbon fund may be under consideration where projects, including from Bangladesh, can bid for carbon finance and the fund can be tasked with pooling revenue and marketing the credits. Moreover, Bangladesh, with a few similar-sized countries, may consider designing an emissions trading scheme (aimed at power stations, cement plants, and steel mills, for example). These may ultimately consider a bilateral or trilateral arrangement with a given sector, for example the power to set a target and allow installations relating to the target to trade and achieve goals collectively. The participating entities will require early feasibility studies and plans that include the institutional requirement for emissions trading, carbon markets, and carbon pricing. Bringing about such markets will be contingent on securing financing, including through international carbon markets.

Carbon tax implementation would require a dividend to transfer revenue to low-income households through rebates, and in order to raise additional revenue of up to 0.15% of GDP by 2025 and 1% of GDP by 2030.<sup>36</sup> The carbon tax would also include “industrial allocations” whereby groups such as MSMEs and low-income earners will be exempted from the tax. For other sectors and high-income groups, exemptions may range from 80% at the start of the program with a tempered reduction until 2030 to reach full compliance.

The carbon tax could be an additional revenue source alongside the tax reforms and income tax system modernization efforts highlighted in the 8FYP. An administratively practical option is to levy a carbon tax on fossil fuels and use the proceeds to bolster government revenue. That would enable other taxes to be reduced or earmarked for a combination of market readiness and adaptation/resilience projects.

We will also encourage carbon credits from forest carbon, soil carbon, renewable energy, and blue carbon to be made tradable through carbon financing platforms and joint credit mechanisms via bilateral arrangements with support from, for example, the Asian Development Bank and the private sector.

Bangladesh’s wood-burning cooking stoves could be modernized by better design and biogas. They could also benefit from an established market regime. Moreover, current commitments of total tree coverage to increase to 25% by 2030 from the existing 22% could also benefit from a carbon financing regime. There are also co-benefits stemming from reduced loss of life due to increasing lightning strikes.

**An established carbon financing regime can deliver. . .**

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<sup>36</sup>International Monetary Fund (IMF) Fiscal Affairs Department (2019, May 1). Fiscal Policies for Paris Climate Strategies—from Principle to Practice (Policy Paper No. 19/010). Policy Papers. International Monetary Fund (IMF). Retrieved February 18, 2021, from <https://www.imf.org/en/Publications/Policy-Papers/Issues/2019/05/01/Fiscal-Policies-for-Paris-Climate-Strategies-from-Principle-to-Practice-46826>

Up to 1% of GDP in additional revenue by 2030 <sup>37</sup> through implementation activities of the National Carbon Coordination Hub	At least 274 million tons of CO <sub>2</sub> from forest carbon <sup>38</sup> , raising between USD 1.37 billion <sup>39</sup> and 9.59 billion <sup>40</sup> from 2022 to 2041	At least 1 billion soil organic tons with carbon content valued <sup>41</sup>	Alternative revenue models for hybrid adaptation and resilience projects, and cleaner devices like commercial solar rooftop arrays and modernized cooking stoves, among others
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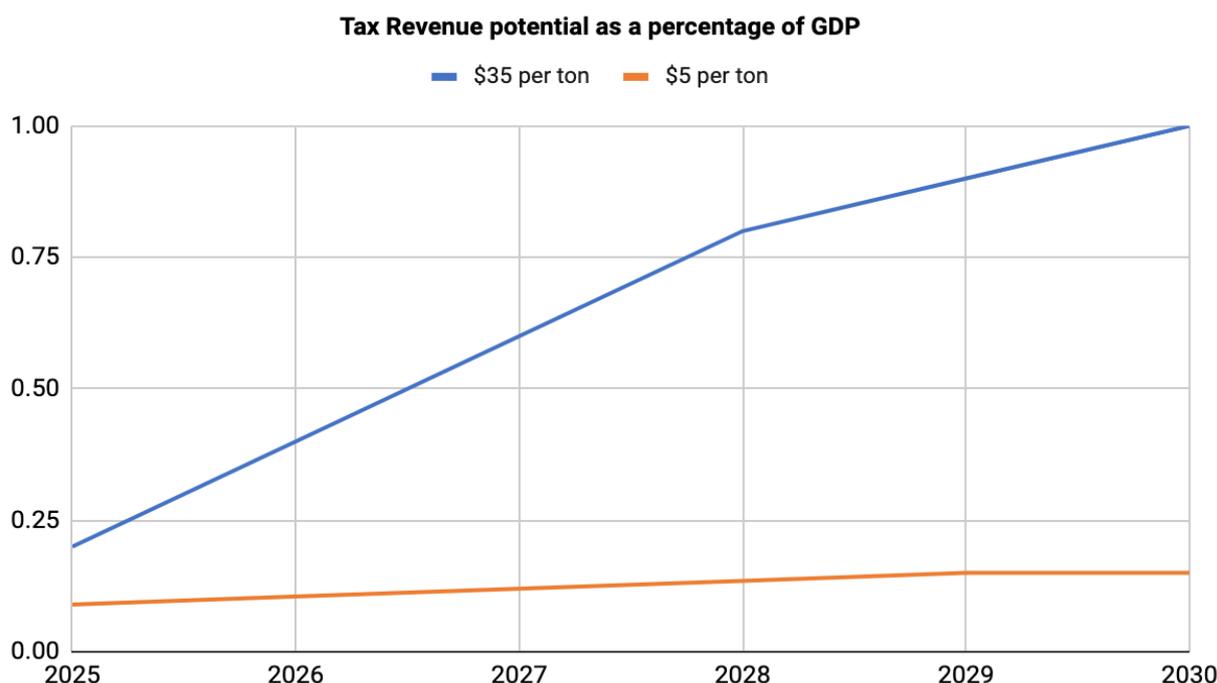


Figure 6: Tax Revenue as a percentage of GDP

<sup>37</sup> International Monetary Fund (IMF) Fiscal Affairs Department (2019, May 1). Fiscal Policies for Paris Climate Strategies—from Principle to Practice (Policy Paper No. 19/010). Policy Papers. International Monetary Fund (IMF). Retrieved February 18, 2021, from <https://www.imf.org/en/Publications/Policy-Papers/Issues/2019/05/01/Fiscal-Policies-for-Paris-Climate-Strategies-from-Principle-to-Practice-46826>

<sup>38</sup> GoB. 2020. Tree and Forest Resources of Bangladesh: Report on the Bangladesh Forest Inventory. Forest Department, Ministry of Environment, Forest and Climate Change, Government of the People’s Republic of Bangladesh, Dhaka, Bangladesh. Retrieved March 8, 2021, from [http://bfis.bforest.gov.bd/library/wp-content/uploads/2021/02/BFI-Report\\_final\\_08\\_02\\_2021.pdf](http://bfis.bforest.gov.bd/library/wp-content/uploads/2021/02/BFI-Report_final_08_02_2021.pdf)

<sup>39</sup> 274 million tons of CO<sub>2</sub> x USD 5 per ton (Note: voluntary carbon markets may have higher prices than the current accessible projects under the Clean Development Mechanism (CDM) and the price of carbon is expected to rise, especially as the IMF seeks to set a price floor, mirroring the G7 tax reform drive to set a minimum rate in international corporate taxation.)

<sup>40</sup> 274 million tons of CO<sub>2</sub> x USD 35 per ton

<sup>41</sup> GoB. 2020. Tree and Forest Resources of Bangladesh: Report on the Bangladesh Forest Inventory. Forest Department, Ministry of Environment, Forest and Climate Change, Government of the People’s Republic of Bangladesh, Dhaka, Bangladesh. Retrieved March 8, 2021, from [http://bfis.bforest.gov.bd/library/wp-content/uploads/2021/02/BFI-Report\\_final\\_08\\_02\\_2021.pdf](http://bfis.bforest.gov.bd/library/wp-content/uploads/2021/02/BFI-Report_final_08_02_2021.pdf)

<b>Target Milestones</b>		
<b>Year</b>	<b>Target</b>	<b>Lead Ministry</b>
2022	We will conduct a feasibility study and prioritization strategy for carbon pricing mechanisms and create a strategy for the National Carbon Finance Hub, including taking into consideration the implementation of Bangladesh National Action Plan for Short-Lived Climate Pollutants.	MoEFCC
2022	We will audit carbon assets (e.g., soil, forest, renewable energy, blue, and modernized cooking stoves) in coordination with the Bangladesh Forest Department and other relevant agencies	MoPEMR
2023	We will set up a National Carbon Finance Coordination Hub.	MoPEMR
2024	We will implement a monitoring and evaluation system for carbon pricing with support from the National Carbon Finance Coordination Hub.	MoEFCC
2025	We will implement carbon pricing or tax with dividends that disproportionately benefit low-income households, and carbon pricing.	MoPEMR
2026	We will commit resource gains from the domestic carbon financing to locally led adaptation and loss and damage.	MoPEMR
2030	We will integrate with international carbon markets in order to mobilize additional resources for locally led adaptation and loss and damage.	MoEFCC

**Carbon financing regimes are a policy & regulatory measure that supports Covid-19 Recovery Interventions<sup>42</sup> such as . . .**

Climate and Resilience Results and Benefits: Supports 1.5-degree goal Builds long-term resilience	COVID-19 Recovery Dividend: Skills development High economic multiplier Contribution to the productive asset base Support for long-term transformation Positive environmental and social outcomes
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<sup>42</sup> Asian Development Bank (ADB) (2020, October). Accelerating Climate and Disaster Resilience and Low-Carbon Development Through the COVID-19 Recovery: Technical Note. <http://dx.doi.org/10.22617/TIM189600-2>

<b>SDGs</b>		
SDG 7: Affordable and Clean Energy	SDG 12: Responsible Consumption and Production	SDG 13: Climate Action
SDG 15: Life on Land		
<b>Key Measures</b>		
Carbon marketplace setup		
Monitoring and evaluation system setup		

<b>Resources</b>		
<b>International Partners</b>	<b>National Budget</b>	<b>Contribution from Private Sector</b>
International resources for platform setup and access to tools for enhanced monitoring and evaluation	National budget support via 8FYP through modernization of tax policy	Private sector tax revenue contributions

## Key Priority Area 4. Comprehensive Climate and Disaster Risk Financing and Management

### 4A. Micro, Small and Medium Enterprise Financial Protection and Productivity Enhancement

We will support the building of a new system that prioritizes needs-responsive financial protection, supports proactive risk management, risk reduction, and immediate liquidity needs, as well as investment support for MSMEs, especially women-led and owned MSMEs. According to the 8FYP, outside agriculture, micro and small enterprises are the largest sources of employment in both rural and urban areas in manufacturing and services. Moreover, according to the World Bank, the financing gap for MSMEs is USD 2.8 billion.<sup>43</sup>

Increased resilience reduces the background risk from potential future disasters. This can have immediate and significant development benefits, even if disasters do not occur for a long time. Key benefits include economic gains from positive risk-taking (e.g., new enterprises and innovation); investments in productive assets (e.g., in small-scale agriculture); extending planning horizons (e.g., for building up savings); and an increase in land values. All these lead to job creation, rising incomes, greater productivity, and overall economic growth.

MSMEs contribute to 75% of employment, 25% of GDP, 40% of manufacturing output, and at least 75% of export earnings.<sup>44</sup> Increased climate-related risk means growing economic losses which warrants protecting MSMEs, the bedrocks of the economy, against climate impacts to maintain and strengthen current growth levels and safeguard jobs.

Key measures to support MSMEs include improving financial structures through innovative and alternative financing platforms (e.g., risk sharing facilities, factoring, warehouse receipt finance, and/or start-up capital policies) to meet the needs of MSMEs.<sup>45</sup> Opportunities to enhance productivity include more efficient equipment and lower power costs. Moreover, supporting linkages between MSMEs and large corporations can facilitate increased participation in global supply chains and enhanced participation in value chains.

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<sup>43</sup> World Bank (2019). Financing Solutions For Micro, Small And Medium Enterprises In Bangladesh. Retrieved February 22, 2021, from <http://documents1.worldbank.org/curated/en/995331545025954781/Financing-Solutions-for-Micro-Small-and-Medium-Enterprises-in-Bangladesh.pdf>

<sup>44</sup> Vulnerable Twenty Group (V20) (2019, September). Sustainable Insurance Facility (SIF): Solutions to Build Resilient Micro Enterprises Small and Medium: High-Level V20 Needs and Support Assessment. Munich Climate Insurance Initiative (MCII). Retrieved February 19, 2021, from [https://climate-insurance.org/wp-content/uploads/2020/04/DRAFT\\_V20\\_High-Level\\_Needs\\_and\\_Support\\_Assessment\\_Sept\\_2019.pdf](https://climate-insurance.org/wp-content/uploads/2020/04/DRAFT_V20_High-Level_Needs_and_Support_Assessment_Sept_2019.pdf)

<sup>45</sup> Vulnerable Twenty Group (V20) (2019, September). Sustainable Insurance Facility (SIF): Solutions to Build Resilient Micro Enterprises Small and Medium: High-Level V20 Needs and Support Assessment. Munich Climate Insurance Initiative (MCII). Retrieved February 19, 2021, from [https://climate-insurance.org/wp-content/uploads/2020/04/DRAFT\\_V20\\_High-Level\\_Needs\\_and\\_Support\\_Assessment\\_Sept\\_2019.pdf](https://climate-insurance.org/wp-content/uploads/2020/04/DRAFT_V20_High-Level_Needs_and_Support_Assessment_Sept_2019.pdf)

This builds on the 8FYP, which includes greater institutional and financial support to micro and small enterprises by converting the SME Foundation to the “Small Business Agency,” a one-stop support for technology, training, marketing, and regulatory improvements. We will work in close collaboration with the Bangladesh Bank on the financing side to introduce innovative financial solutions involving ICT to improve MSMEs’ access to commercial bank credit through low-cost approaches to loan applications, approvals, and supervision. We will also develop credit guarantee schemes to reduce credit risks and to provide start-up capital to MSMEs. At least 15% of cottage industries and MSMEs credit lines will be provided to women entrepreneurs by 2022, complementing the ccGAP to promote women’s access to financial instruments.

The V20’s Sustainable Insurance Facility aims to develop domestic and regional insurance actors’ portfolios to deliver climate and disaster risk products to market for MSMEs. In addition, there should be strategic premium support from development partners (either in the form of a premium subsidy or capitalization support) to enable sustainable private sector uptake of these products in cooperation with the SME Foundation and Ministry of Local Government, Rural Development and Co-operatives. Bangladesh is a member of the InsuResilience *Global Partnership*, a collaboration of the G7, G20+ and V20. Its targets represent national ambitions to progress towards and beyond the Partnership’s Vision 2025 to ensure 500 million vulnerable people are covered against disaster and climate shocks by pre-arranged risk finance and insurance.

According to the 2nd Climate Vulnerability Monitor, economic losses from climate-fueled disasters such as drought, floods and storms are expected to reach USD 4.075 billion per year by 2030. Related habitat losses such as reduced labor productivity and sea level rise are expected to reach USD 50.62 billion per year by 2030.<sup>46</sup> Maximized climate and disaster risk financing solutions can reduce those losses in the future.

Livelihood protection (including for women) in ecologically fragile areas is a priority in the Bangladesh Climate Change Strategy and Action Plan (BCCSAP). Access to reliable, affordable, and sustainable energy will provide communities – and especially women – opportunities to manage their own businesses, such as an ice-making business in a fishing community to preserve the catch, or other enterprises.

## **Comprehensive Climate and Disaster Risk Management and Financing Strategy**

The strategy comprises a comprehensive set of climate and disaster risk financing and insurance (CDRFI) instruments led by the Ministry of Finance. This will be crucial for achieving resilience and enabling adaptation investment but clear guidance is needed on applying the strategy, beginning with ensuring we have an overview and understanding of existing CDRFI instruments and to which risk layer to apply them.

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<sup>46</sup> Climate Vulnerable Forum (CVF) and Fundación Dara Internacional (DARA) (2012). Country Profile: Bangladesh. Climate Vulnerability Monitor, 2nd Edn.: A Guide to the Cold Calculus of A Hot Planet. Retrieved February 16, 2021, from <https://daraint.org/wp-content/themes/dara/pdf/Bangladesh.pdf>

Resilience baselines and integrated investment portfolios are still lacking, and this strategy aims to close that gap. Using the risk-layering approach in the strategy to build resilience, we will link planned adaptation with CDRFI instruments to achieve the most cost-effective reduction in exposure to climate risks. What will integrate investments in risk reduction (adaptation), risk retention (e.g., budgetary allocations for contingency funds for low-impact, high-frequency events), risk transfer on and across different levels (e.g., for high-impact, low(er) frequency events) and contingency financing, can also be used to repair the nation's most critical infrastructure.

As a starting point, we will collect data to determine key performance indicators of financing and insurance in the natural catastrophe sector to assess/prove the sustainability of risk financing and insurance markets. This includes, for example, supply side (loss ratio, solvency concerns) and demand side (coverage ratios, natural catastrophe losses, declined coverage etc.). This data may be supported by V20 collaboration on a global public-private partnership for analytics to close the protection gap, with support from the G20+ and V20 InsuResilience Global Partnership. The data may be hosted in the Insurance Development and Regulatory Authority (IDRA). The various CDRFI instruments can complement and enable the resourcing of adaptation investments to be applied in a coordinated manner, as indicated in the Bangladesh Climate Fiscal Framework (BCFF).<sup>47</sup> Similar developments in climate policy in the areas of planning, budgeting and performance management of climate finance by implementing the BCFF can garner “learning dividends” from projects such as Inclusive Budgeting and Financing For Climate Resilience (IBFCR) of the Government of Bangladesh.<sup>48</sup>

Moreover, a comprehensive program of social protection may be included in the Comprehensive Climate and Disaster Risk Management and Finance Strategy to enable a transformation in poverty reduction and social inclusion. This can be delivered through Adaptive Social Protection (ASP). This means integrating social protection with 1) climate and disaster risk management and 2) adaptation investments. An example of ASP is when droughts are anticipated and the program thus scales up conditional cash transfer via the social safety net to ensure a quick and effective response. This can also include linking public works with social safety nets where able-bodied adults work on rebuilding or other value generating activities for cash or food. As for connecting work within the climate risk insurance-MSMEs-social protection continuum, it would be advisable to examine a combination of social

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<sup>47</sup> Bangladesh Climate Fiscal Framework includes that the “existing insurance policy needs to be reviewed, in partnership with Insurance Development and Regulatory Authority (IDRA), to identify areas where innovative tools related to climate risk transfer issues can be included. Different challenges related to insurance access by specific climate vulnerable communities will also be identified and addressed. This will improve their adaptive capacity. The results of pilots carried out by different NGOs including the potential of micro-insurance as a complement to adaptation actions should also be reviewed to propose relevant tools to IDRA.”

<sup>48</sup> Inclusive Budgeting and Financing for Climate Resilience (IBFCR) | UNDP in Bangladesh. Retrieved from <https://www.bd.undp.org/content/bangladesh/en/home/projects/inclusive-budgeting-and-financing-for-climate-resilience-ibfcr.html>

insurance and climate risk insurance approaches, as well as considering the combination of labor market programs and climate risk insurance approaches.

## Maximized Climate and Disaster Risk Financing Solutions

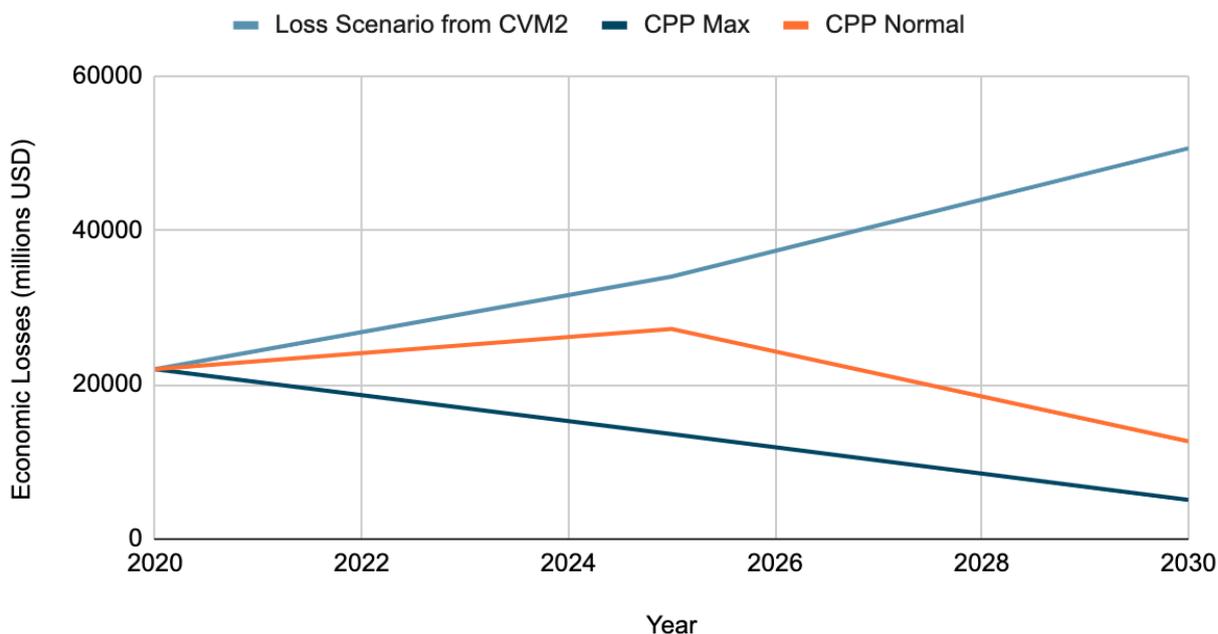


Figure 7: Economic Losses from Climate and Disaster Risks

Enhancing financial protection and productivity for MSMEs to enable . . .			
Extended financial protection against climate-related disasters for 50% (~15 million) of the most vulnerable of the population by 2025 and 100% by 2030 (~30 million) subject to international financial support for insurance premium subsidies. These can be tapered over time as internal market sustainability is achieved and market scale increases alongside technical assistance and capacity building for the national resilience bond industry.	Climate and financial risk and opportunity literacy training for 50% of MSMEs by 2025 and 100% by 2030.	Enhanced climate risk adjusted returns for MSMEs by 10% by 2025 and 20% by 2030.	BDT 237 billion (USD 2.8 billion) financing gap for MSMEs covered by 2030.

### Target Milestones

<b>Year</b>	<b>Target</b>	<b>Lead Ministry</b>
2022	We will establish a unified framework for MSMEs to improve the effectiveness of MSMEs policies.	MoI
2022	We will undertake a study to define most vulnerable areas and segments in relation to locally led adaptation in Point 3A.	MoLGRDC
2022	We will begin the Comprehensive Climate and Disaster Risk Management and Financing Strategy by the Ministry of Finance through developing public perspectives and collecting data about climate and disaster risk financing and insurance key performance indicators in the natural catastrophe sector in order to be able to assess/prove the sustainability of risk financing and insurance markets. This includes for example supply side (loss ratio, solvency concerns) and demand side (coverage ratio, national-catastrophe losses, declined coverage and so on.) The data may be hosted in the Insurance Development and Regulatory Authority.	MoF
2022	We will develop a national policy and strategic framework for the risk transfer mechanism.	MoF
2022	We will conduct a pre-feasibility study for climate protection instruments for MSMEs and the vulnerable people that depend on them.	MoI
2023	We will complete the Comprehensive Climate and Disaster Risk Management and Financing Strategy.	MoF
2023	We will participate in the V20's call for a Global Public Private Partnership in Risk Analytics and Resilience through the Global Risk Modelling Alliance and Global Resilience Index to enable Research and Knowledge Management	MoI
2023	We will start to implement V20's Sustainable Insurance Facility to develop domestic and regional insurance providers' ability to bring climate and disaster risk cover to market for MSMEs, with strategic premium support to promote sustainable private sector insurance uptake in cooperation with the SME Foundation.	MoI

**Enhancing financial protection and productivity for MSMEs is a direct investment and policy reform measure that supports COVID-19 Recovery Interventions<sup>49</sup> such as . . .**

Climate and Resilience Results and Benefits: Addresses vulnerabilities Builds long-term resilience Supports development of high-level technology Targets sectors or populations affected by non-financial shocks	COVID-19 Recovery Dividend: Support for long-term transformation High employment intensity Positive environmental and social outcomes Contribution to the productive asset base
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<b>SDGs . . .</b>		
SDG 5: Gender Equality	SDG 7: Affordable and Clean Energy	SDG 8: Decent Work and Economic Growth
SDG 9: Industry, Innovation, and Infrastructure	SDG 10: Reduced Inequality	SDG 13: Climate Action
SDGs 17: Partnerships		

<b>Key Measures</b>
Comprehensive Climate and Disaster Risk Management and Financing Strategy
50%–100% of the population living below the poverty line and at risk of falling below the poverty line covered by financial protection against climate-related disaster
50%–100% of MSMEs trained in climate financial risk and opportunity
Development of a national policy and strategic framework for risk transfer system
BDT 237 billion (USD 2.8 billion) financing gap for MSMEs covered

<sup>49</sup> Asian Development Bank (ADB) (2020, October). Accelerating Climate and Disaster Resilience and Low-Carbon Development Through the COVID-19 Recovery: Technical Note. <http://dx.doi.org/10.22617/TIM189600-2>

Resources		
International Partners	National Budget	Contribution from Private Sector
International facilities such as the Sustainable Insurance Facility (SIF) and Global Index Insurance Facility (GIIF)  Premium subsidies or capitalization support to support Comprehensive Climate and Disaster Risk Management and Financing Strategy	National budget support	Alternative financing platforms such as risk sharing facilities, factoring, warehouse receipt finance, and/or start-up capital policies  Public-private partnership for risk analytics and disaster risk financing through subsidies from developed and developing countries while banks, financial institutions and the (re)insurance industry develop risk analytics, and insurance and investment products

#### **4B. Development of Climate-Resilient and Nature-Based Agricultural and Fisheries Supply and Value Chains including National Disaster Risk Financing and Management to Safeguard Food, Nutrition and Water Security**

Bangladesh's economy is mostly agrarian and approximately 40% of its population depends on agriculture which is mostly regulated by climatic factors. Changing climate and adverse effects pose a significant challenge to agriculture, food security, and livelihoods. The contribution of agriculture to GDP was 14.2 percent in FY2017-18, and it employs over 40 percent of the workforce. Agriculture is one of the most vulnerable sectors to climate variability, such as changes in temperature, rainfall patterns, and rise in floods and droughts. According to the Department of Agriculture Extension (DAE), flash flood submerged 141,000 hectares of farmland in six north-eastern districts in 2017, affecting around 423,000 farmers. Therefore, the government of Bangladesh considers the agriculture sector as a critical one – particularly as it is very vulnerable to climate induced impacts. The government has taken a number of initiatives to make the agricultural sector resilient but there are huge gaps in extension services and research, coordination among departments and governance issues such as accountability and transparency. Transplanted Aman rice is predominant in both coastal and flood prone areas. In coastal areas, salinity is lower during Aman season due to abundant rainfall. People cannot cultivate Boro (winter rice) due to the unavailability of fresh water in coastal areas and the limited accessibility in flood prone areas. Limited aquaculture is practiced in flood prone areas. However, due to salinity intrusion, there should be adaptive agricultural

practices in the region. Shrimp culture in ghers is common in coastal areas though it makes the soil and water of those areas more saline. Crab and eel fish (kuchia) culture are increasing gradually. Climate adaptive agricultural practices are being introduced by the Government entities as farmers lose their crops in two consecutive seasons and the aggregate of losses reaches up to 100%. Relevant ministries like MoWCA are involved in addressing these challenges as women are largely involved in agriculture and livestock, particularly during the post-harvest period and in taking care of livestock. Water technology including rainwater harvesting and context-specific solutions that reduce salinity induced vulnerability remain imperative for further research and development in fragile environments.

The 8FYP, National Agriculture Policy and the National Adaptation Plan (NAP) prioritizes productivity improvements to raise yields; reduce climate vulnerability; and promote diversification to non-crop agriculture, fishing, livestock, and dairy products. Therefore, in accordance with the 8FYP, National Agriculture Policy and the NAP, the strategy will be to ensure a profitable and sustainable agricultural production system and to further increase agricultural diversification while maintaining food and nutrition security by improving farm productivity, the supply of inputs, price policy support, water supply, farm credit, and marketing support.

We will adapt agricultural, fisheries, livestock and poultry supply chains to climate change and upgrade agroforestry systems by improving access to agro-meteorological services. We will support research in developing climate-resilient plant varieties (cultivars), improving production and management techniques along the supply chain, and introducing risk transfer schemes for key supply chain actors. Such solutions include integrated mangrove-shrimp cultivation to sequester blue carbon.<sup>50</sup> This will complement and align with the “Sustainable Fishery Development Project” and the “Community-based Climate Resilient Fisheries and Aquaculture Development in Bangladesh” project supported by the Global Environment Facility.<sup>51,52</sup>

Formalizing supply chains through reinforced linkages between supply chain actors, as well as increased linkages between formal financial institutions and mature farmers/fisherfolk/enterprise groups would support the expansion of agriculture and fisheries finance via more innovative operating models. Examples from South Asia of high-value, nature-based solutions include seaweed cultivation, floating gardens, aqua-geoponics and vertical farming that uses rainwater in salinity-prone coastal

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<sup>50</sup> Ahmed, N., Thompson, S., & Glaser, M. (2018). Integrated mangrove-shrimp cultivation: Potential for blue carbon sequestration. *Ambio*, 47(4), 441–452. <https://doi.org/10.1007/s13280-017-0946-2>

<sup>51</sup> World Bank. (2019, July 11). Sustainable Fishery Development Project (P171352): Project Information Document (PID) (Report No: PIDC27261). Retrieved February 19, 2021, from <http://documents1.worldbank.org/curated/en/517901563252361747/text/Concept-Project-Information-Documents-PID-Sustainable-Fishery-Development-Project-P171352.txt>

<sup>52</sup> Global Environment Facility (n.d.). Community-based Climate Resilient Fisheries and Aquaculture Development in Bangladesh: Project Details (GEF Project ID: 5636). Retrieved February 19, 2021, from <https://www.thegef.org/project/community-based-climate-resilient-fisheries-and-aquaculture-development-bangladesh>

communities. These are innovative and culturally sensitive solutions in the context of climate-exposed communities.

Another option is scaled-up promotion of practices such as extension of farm mechanization, micro-irrigation to improve water usage efficiency and support for organic seeds, especially in communities with limited access to information and resources. Building upon the most successful examples would help address existing bottlenecks including governance issues, lack of capacity for monitoring, reporting, and validating quantitative indicators.

Extreme heat can severely reduce the yields of rice, wheat, and other cereal crops. According to the Department of Agriculture Extension, a 4°C extreme increase in temperature will result in a 28 percent reduction of rice and a 68 percent reduction of wheat output. Acute weather events and disasters are an ever-present risk. Consequently, risk-averse households and firms typically avoid long-term investments in productive assets, entrepreneurial activities are restricted, and planning horizons are shortened, leading to lost development opportunities. In Bangladesh over 1 million hectares of cultivable land are already affected by salinity intrusion caused by slow- and rapid-onset events e.g. the net cultivated area in Satkhira decreased by 7 per cent from 1996 to 2008. Crop losses due to SLR-induced salinity intrusion have been estimated as 200,000 metric tonnes, with salinity (+5 ppt) of irrigation water expected to further reduce farm productivity by up to 50 percent. We will support, among other measures, the deployment of genetically improved crop varieties with resilience to climate-linked events such as heat waves, flooding submergence, and salinization. The development of a heat-tolerant rice variety is an example.<sup>53</sup>

Risk reduction or management can have immediate and significant economic benefits. Working in extreme heat, for example, can have serious health implications, particularly for elderly people and communities with the least access to health care. A feasible investment that addresses this problem can also boost the overall productivity of farmers. Moreover, to ensure that adequate access to financial support liquidity is made available for low-income groups, social protection schemes will be introduced.

Food security<sup>54</sup> can be achieved by ensuring a safe and nutritionally adequate food supply both at the national and household level. Women play a vital role in agriculture, be it the cultivation of land or processing of the product. In addition, Nutrition security can be achieved through intensifying high value crops' (pulses, oil seed,vegetables,

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<sup>53</sup> Ahmad, R. (2021, April 22). After heatwave comes heat-tolerant rice. Dhaka Tribune. Retrieved June 18, 2022, from <https://www.dhakatribune.com/bangladesh/agriculture/2021/04/22/after-heatwave-comes-heat-tolerant-rice>

<sup>54</sup> Arimod, M.; Hawkes, C.; Ruel, M.T.; Sifri, Z.; Berti, P.R.; Leroy, J.L.; Low, J.W.; Brown, L.R.; Frongillo, E.A. 2011. Agricultural interventions and nutrition: Lessons from the past and new evidence. In: Thompson, B. Amoroso, L. (eds). Combating micronutrient deficiencies: Food-based approaches. Oxfordshire (UK). CAB International FAO. ISBN 978-1-84593-714-0. pp. 41-75.

fruits, tuber, spice) cultivation. Efforts must be taken to make the land available during rabi (winter) season judiciously accommodating these crops in the cropping systems instead of traditional mono crop cultivation. In general, technological change, utilization of productive resources and different types of training for women in agriculture are aimed at augmenting land and labor productivity and, therefore, have profound implications for labor absorption and employment in agriculture. It is essential to guarantee that women have access to proper training in agriculture land, materials and equipment.

To prevent gender-disproportionate harms from climate-driven shocks and disasters, it is vital to ensure the formulation and implementation of gender-responsive policies which aim to increase both women's agency and access to the productive resources, markets, training, and technology required to enhance agricultural productivity and output. Equally important is to ensure alternative livelihood opportunities for women affected by climate change. In line with the ccGAP, to sustain the dual expansion of climate-resilient livelihoods (e.g., climate resilient cropping, saline resistant vegetables, etc.) along with increased engagement and participation of women in such activities, capacity building and financial inclusion in terms of access to concessional loans/grants and insurance products are two major ways to empower marginalized women while providing safety nets in climate-vulnerable communities. Additionally, policy-based interventions to strengthen market infrastructure in hard-to-reach areas will underpin locally led adaptation and resilience.

The V20 Sustainable Insurance Facility's provision of climate and disaster risk financing and insurance should include premium subsidies and capitalization support to address both market inefficiencies and inequitable coverage. This could simultaneously overcome demand and supply challenges for optimal insurance coverage against extreme weather events. Depending on the target group, such as low-income households, MSMEs or governments, premium subsidies and capitalization support through shared risk with developed and developing country governments can be used at various scales.

Our approach contrasts starkly with the traditional after-the-fact, loss-centered approach for disaster risk management. It focuses on the benefits of saving lives, reducing losses, and promoting effective recovery from disasters. Moreover, international cooperation for nature-based solutions can be prioritized in order to phase out investment, trade, and export credit practices that drive deforestation and ecosystem loss.

Agricultural exports and agro-processing and new sectors of agricultural commercialization will be promoted to increase farm income and employment in non-crop activities, especially fisheries, fruit, vegetables, and dairy products. The implementation of the first phase of the BDP 2100 public investment program will strengthen water and drought management, lower flood risk, reduce waterlogging, and reduce soil salinity. Priority agriculture and rural infrastructure will be preserved and strengthened, increasing GDP by 1% by 2025.

This flagship plan will be a crucial step towards a green, nature-based, and resilient recovery from the COVID-19 crisis. The MCPP will help to strengthen rapid rural transformation, women's empowerment, poverty eradication, universal access to modern and sustainable agriculture, and power and energy security. We expect the plan to have profound effects as we work to tackle climate change, manage disasters, and protect the environment.

A good example of sustainable agriculture is initiatives of the the Bangladesh Rubber Board, which is building sustainable development through patronizing rubber cultivation, creating entrepreneurs and balancing resilience to climate changes. Another example of this is seaweed cultivation with its climate resilience and development benefits. It is a low or even negative carbon industry, resilient to climate shocks, does not require significant capital to be established, is export-focused, and offers a variety of forms of employment suitable for many different circumstances. Well-designed seaweed cultivation integrates well with other activities in the blue economy, for example by raising water quality and sustainably supporting other commercially valuable species. As Bangladesh has a large suitable continental shelf already identified around Cox's Bazaar and the coast south of Khulna, seaweed pilot schemes should be explored based upon marketing partnerships with international purchasers and global best practice for cultivation. Once established, these pilot schemes would then form the basis of a growing and profitable local industry.

COVID-19 has worsened Bangladesh's overall economic condition, putting vulnerable groups, including women and farmers, at further risk in terms of their socio-economic standing access to basic needs (e.g., food, water, and shelter). Human health and environmental health are intricately linked as detrimental changes in the environment will eventually affect human health. It is important to take necessary measures to mitigate the impacts of climate change and to create a sustainable agricultural system.

<b>Development of Climate-Resilient Agricultural and Fisheries Supply and Value Chains including National Disaster Risk Financing and Management to Safeguard Food Security, Nutrition and Water Security to enable...</b>		
Supply chain access to agro-meteorological services by 50% by 2025 and 100% by 2030	Enhanced productivity by 2.5% per annum by 2025 and 5% per annum by 2030	A reduction in the financial protection gap by 30% by 2025 and 100% by 2030

<b>Target Milestones</b>		
<b>Year</b>	<b>Target</b>	<b>Lead Ministry</b>
2022	Complete a disaster risk financing and insurance strategy for agricultural and fisheries supply chains including the provision of parametric insurance options/social protection schemes in addition to the provision of premium subsidies and capitalization support.	MoA
2023	Create a special fund for the development of climate-resilient and nature-based agricultural and fisheries supply and value chains	MoA
2023	Conduct a supply chain vulnerability analysis and cost-benefit analysis into financial and operational business impacts, as well as value-engineering prospects through stakeholder consultation.	MoA
2024	Make available climate data and information services, adequate risk assessment and financial modelling tools.	MoDMR
2025	Finalize an anticipatory and comprehensive risk management plan with multi-hazard early warning systems and weather-indexed protection and financing tools, including the provision of social protection schemes	MoDMR
2025	Improve supply chain access to agro-meteorological services by 50%	MoA
2025	Enhanced productivity by 2.5% per annum and 5% per annum by 2030	MoA
2030	Improve supply chain access to agro-meteorological services by 100%	MoA
2030	Doubling production and income through agro-processing and financial protection	MoA

**Development of Climate-Resilient Agricultural and Fisheries Supply and Value Chains including National Disaster Risk Financing and Management to Safeguard Food, Nutrition and Water Security is a direct investment measure that supports Covid-19 Recovery Interventions<sup>55</sup> such as . . .**

55 <https://www.adb.org/sites/default/files/publication/647876/climate-disaster-resilience-low-carbon-covid-19-recovery.pdf>

<p>Climate and Resilience Results and Benefits:  Addresses vulnerabilities  Builds long-term resilience  Supports development of high-level technology  Targets sectors or populations affected by non-financial shocks  Targets disadvantaged groups</p>	<p>Covid-19 Recovery Dividend:  High employment intensity  Skills development  Strong supply chain multiplier  Contribution to the productive asset base  Support for long-term transformation  Positive environmental and social outcomes</p>
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<b>SDGs . . .</b>		
SDGs 2: Zero Hunger	SDGs 6: Clean Water and Sanitation	SDGs 8: Decent Work and Economic Growth
SDGs 9: Industry, Innovation, and Infrastructure	SDGs 10: Reduced Inequality	SDGs 12: Responsible Consumption and Production
SDGs 13: Climate Action	SDGs 14: Live Below Water	SDGs 15: Live on Land
SDGs 17: Partnerships		

<b>Key Measures</b>
Enhance agricultural productivity towards food security in the Coastal Belt, Barind Areas, Char and Wetlands Lands (new deposits of soil on or near water) Haor, and Hill Tracts
Promote decentralized, localized industry activity for food processing and marketing in order to secure a higher proportion of the value chain to communities who are generating the primary agricultural outputs
Enhance low-cost, climate-resilient, environment friendly, context-specific, and culturally sensitive food security options (e.g., vertical farming/rooftop gardening and hydroponic for urban agriculture and wetland agriculture and floating bed, sorjan system for in salinity prone rural agriculture)
Develop innovative financing mechanisms in agricultural production i.e., through innovative climate-adaptive insurance in addition to the provision of premium subsidies and capitalization support, which can encourage the insurance sector to invest in lower-risk products and improve weather-based insurance
Sustainable supply of timber and non-timber forest products

Strengthen participatory forestry in forest and Trees outside Forest (ToF) areas to provide climate resilient livelihood

Ensure water security in both coastal and hilly areas through rainwater harvesting watershed management integration through use of land, vegetation, and water in a geographically discrete drainage area for the benefit of the communities residing therein, with the objective of protecting or conserving the hydrologic services the watershed provides and of reducing or avoiding negative downstream or groundwater impacts

Ecosystem restoration through reforestation and afforestation for watershed management and water security

<b>Resources</b>		
<b>International Partners</b>	<b>National Budget</b>	<b>Contribution from Private Sector</b>
<p>International resources for financial protection and technology transfer in advanced research and development opportunities along with research to foster South–South and North–South collaboration</p> <p>Through the V20 Sustainable Insurance Facility, enabling access to premium subsidies and capitalization support through shared risk with developed and developing country governments.</p>	<p>National budget from the Bangladesh Climate Change Trust Fund and Bangladesh Delta Plan 2100</p>	<p>Public–private partnership and investment for better agricultural practices, minimal crop loss with food processing and value addition and maximized farmers’ output for food security</p>

## Key Priority Area 5. Leveraging 21<sup>st</sup>-century technologies for well-being

### 5A. Resilient Well-Being Programs

The MCPP will support the strengthening of national initiatives in mental health and well-being to counteract the extreme vulnerability of people living with mental illness and physical and psychological disabilities. It will address the psychological dimensions of climate threat, considering that a single extreme cyclone has been shown to increase the prevalence of mental health issues in the general population by 4%, whether they were directly affected by the cyclone or not. The national initiatives will include crisis preparedness and management for mental health training and capacity programs, trauma counseling, educational support, support programs for women and children, support for children with special needs and general well-being programs to promote healthy, sustainable, and traditional lifestyles.

Traditional forms of community living and livelihoods in Bangladesh are more attuned to the preservation of the environment, and are associated, for example, with less reliance on fossil fuels for transport, artisanal forms of food production and gathering, traditional ingredients in foods, more regular exercise, and vibrant community activities, particularly periodic national and religious festivals.

As Bangladesh continues its emergence journey of modernity and rapid and sustained socio-economic development, pressure on traditional forms of living and ways of life has increased, sometimes to the detriment of health, such as through chemicals added to food and the environment, compounded by much greater energy use and reliance on motorized transportation. At the same time, higher incomes allow for a general increase in leisure time that creates opportunities to engage in sport, outdoor activity, and traditional cultural pursuits. The MCPP promotes traditional Bangladesh culture, lifestyle, and livelihoods as integral to a prosperous future, with the benefits of sustained socio-economic development, while retaining traditional national approaches to living and avoiding introduced practices that harm the environment and the well-being of the population. The MCPP also foresees ways of strengthening vulnerable communities, increasing participation in pursuits that promote physical and mental health through the promotion of local clubs, schools, and networks active in the performing arts, sport, and outdoor activity.

Resilient Well-Being Programs will broadly focus on three areas with emphasis on promoting nature therapy through green health programs: 1) psychological well-being; 2) physical well-being; 3) development of medicines for climate-related diseases.

**Psychological well-being** can be included as part of the Crisis Preparedness and Management for Mental Health (CPM-MH) strand of the National Resilience Program that is currently being implemented by the Department of Disaster Management. It aims at strengthening disability-inclusive, gender-responsive, national and community capacity to address recurrent and major disasters. A series of training of trainers (ToTs) sessions under this program aims to develop a pool of trainers that can

respond to crises and provide mental health support. These trainers form a strong network of additional crisis responders.

The operational and financial capacity of the CPM-MH program will be strengthened by considering alternative mental health services in the country to provide culturally appropriate socially inclusive services; broadening the base of trainers and trainees to include a diversified group of trainers especially at community levels; updating the training manual to expand information within chapters and include further sections on crisis aftermath. A key program under the MCPP is **Community-Based Psychological First Aid** to alleviate the mental health effects of disasters, including specialized support for women, children and children with special needs. This will entail provision of basic psychological support by general community members to their families, friends, neighbors and community during disasters or other stressors such as climate-induced migration.

**Physical well-being** through traditional ways of living supported by modern technology, while enabling sustained high socio-economic development, including sports such as cricket, Ha-du-du, football, handball, Kabaddi, Nouka Baich, Butthan, Kho Kho, Boli Khela, Lathi Khela, rugby, cycling, swimming, volleyball, and basketball as well as performance, for example folk and ethnic music, dance, theater such as baul, manipuri, and jaatra, complemented by ethically sourced food and traditional cuisine. Initiatives on climate awareness among the general population using mass media will also be strengthened.

Existing initiatives of the 8FYP and 7FYP will be further strengthened under the MCPP. These initiatives include improved roads, safe drinking water, developed water management, and high-speed internet and making sure that standard consumer goods are available in rural and semi-urban areas.

Additionally, the ongoing projects of “My Village, My Town” program to reduce rural-urban migration include:

- Setting up economic zones in semi-urban areas to ensure jobs for the local population
- Constructing green mini-stadiums at upazila (county) level to promote healthy living through sports and exercise with special facilities for women, and also serving as temporary evacuation centers or cyclone shelters for people affected by climate-induced migration
- Providing input support and training to ensure adequate inputs for scientific cultivation in agriculture and fisheries
- Providing input support and training to facilitate floating bed vegetable gardens and hydroponic
- Providing infrastructure to preserve surface water for use and to facilitate the recharging of aquifers

- Establishing a co-operative system in rural areas and increasing off-farm job facilities for the unemployed and informally employed in the agriculture sector
- Improving food and medicine storage in the event of flooding and other disasters
- Providing boat hospitals in coastal regions to serve the dual purpose of providing medical help and evacuation, including support for women’s health and psychological first-aid for trauma from natural disasters and climatic events
- Prioritizing clean air, pure water, healthy soil ensuring soil degradation neutrality (LDN) and pandemic resilience.

As Bangladesh transitions out of LDC status, the vibrant pharmaceuticals industry brings industrialization and jobs, as well as access to essential medicines for Bangladeshis and people in other developing countries and LDCs. It is therefore essential to **develop the pharmaceuticals industry for climate-related diseases and cancers** with a research, development, and deployment (RD&D) and investment program for climate-related diseases in partnership with the national adaptation programs, including through joint ventures with international pharmaceutical companies.

Resilient Well-Being Programs...		
Build psychological well-being through community-based psychological first Aid	Build physical well-being to deliver “My Village, My Town”	Develop the pharmaceutical industry to tackle for climate-related diseases

Target Milestones		
Year	Target	Lead Ministry
2022	We will pilot a community-based psychological first aid.	MoHFW
2022	We will establish improved food and medicine storage options.	MoHFW
2022	We will develop a pharmaceuticals research, development & deployment (RD&D) and investment program for climate-related diseases in partnership with the health national adaptation program, including through joint ventures with international pharmaceutical companies.	MoHFW
2023	We will establish additional state-supported boat hospitals.	MoHFW

2024	Formation of a specific cell to support the development of a pharmaceutical industry for climate-related disease	MoHFW
2025	We will strengthen implementation of and utilization green mini-stadiums at all upazilas (administrative regions)	MoLGRDC
2025	We will establish community-based psychological first-aid programs in 50% of vulnerable areas/communities.	MoHFW
2026	We will launch pharmaceuticals for climate-related diseases.	MoHFW
2030	We will establish community-based psychological first-aid programs in 100% of vulnerable areas/communities.	MoHFW
2030	Bangladesh will become a pharmaceutical developer for climate-related diseases.	MoHFW

**Resilient Well-Being Programs is a direct investment measure that supports COVID-19 Recovery Interventions<sup>56</sup> such as . . .**

Climate and Resilience Results and Benefits: Addresses vulnerabilities Builds long-term resilience Supports development of high-level technology Targets sectors or populations affected by non-financial shocks Targets disadvantaged groups	COVID-19 Recovery Dividend: Positive environmental and social outcomes
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**SDGs . . .**

SDGs 3: Good Health and Well-being	SDGs 5: Gender Equality	SDGs 11: Sustainable Cities and Communities
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**Key Measures**

Additional ToTs completed under the CPM-MH program.

<sup>56</sup> Asian Development Bank (ADB) (2020, October). Accelerating Climate and Disaster Resilience and Low-Carbon Development Through the COVID-19 Recovery: Technical Note. <http://dx.doi.org/10.22617/TIM189600-2>

Community-based psychological first-aid program set up in disaster-prone areas.
Green mini-stadiums constructed at upazila level utilized round the year
Registered local clubs, schools, and networks active in the performance arts, sport and outdoor pursuits supported in all upazilas.
Development of a pharmaceuticals research, development & deployment (RD&D) and investment program.
Formation and operationalization of pharmaceuticals research, development and deployment (RD&D) cell within Ministry of Health

Resources		
International Partners	National Budget	Contribution from Private Sector
Support in the creation of economic zones, the psychological first-aid program, and pharmaceuticals research, development & deployment (RD&D). Investment program for climate related diseases, including through joint ventures	National Budget Support via allocation of funds	Industry capital investment in economic zones

## 5B. Accelerated Digital Revolution

The MCPP will align with the government’s Digital Bangladesh programs to ensure efficiency, transparency, and accountability and pave the pathway for Bangladesh walking towards 4IR. This program will ensure delivery of government services to the doorsteps of citizens through the use of modern technology.

One of the drivers of the Digital Bangladesh initiative is e-governance, commonly called Digital Governance. Through an online service delivery gateway users can apply and pay for 169 government services such as land records, birth registration, telemedicine, and passports, and apply for overseas jobs online. This single online platform for government entities aims to make administration paperless and more efficient. All government-to-person (G2P) for example, social safety net payments and person-to-government (P2G) payments will be automated by 2022.

The government of Bangladesh estimates that around 7.7%<sup>57</sup> of the country's population makes payments through mobile financial services as of 2020. By 2030, we will increase this coverage to 25% of the population by promoting use of interoperable digital payment platforms, pro-internet banking policies, and micro-merchant support in provision of mobile financial services. As per the 8th FYP financial inclusion, assimilation of the otherwise excluded into the formal financial system by giving them access to financial products and services continues to be a key priority and extension of digital financial services (DFS) is a key component of national plans. The MCPP also foresees acceleration of initiative of the ICT Division to expand and deepen digital financial inclusion through innovative products and services such as 'rural e-commerce' to drive usage of electronic/online financial products/services (and vice-versa) by people who are currently unbanked and underserved.

The MCPP also foresees financial and policy support to banks, non-bank financial institutions (NBFI) and other equity funds that invest in or provide financial support to tech solution providers including e-commerce businesses that contribute to achieving SDGs, optimize traditional living, and promote well-being.

However, to ensure that the benefits of Digital Bangladesh reach even the last-mile users, the National Telecommunications Policy 2016 aims to ensure "Telephone and Internet for All" with the following goals to be achieved by 2025:

1. Increasing internet penetration to 90%
2. Providing broadband facilities to 90%
3. 50% of residences and organizations to have optical fiber connectivity

While increasing internet penetration and broadband will ensure access to digital solutions for all citizens, access to high-speed internet and 5G will increase the global competitiveness of Bangladesh by enabling the services of professionals and IT freelancers to be outsourced. Total value of IT export services including freelancing through the banking channel is USD 265.22 million in 2019-2020 financial year.

Access to services online and the infrastructure to support remote work will reduce traffic congestion, air pollution and fuel usage. Moreover, the digital revolution can enable associations such as the Bangladesh Garment Manufacturers and Exporters Association (BGMEA) to establish a global platform to assist with export opportunities.

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<sup>57</sup> Islam, P. (2020, October 8). Digital Bangladesh 2021: Payment systems and fintech. The Daily Star. Retrieved February 19, 2021, from <https://www.thedailystar.net/supplements/news/digital-bangladesh-2021-payment-systems-and-fintech-1974417>

Accelerated Digital Revolution to...		
Increase internet penetration to 90%	Extend broadband facilities to 90%	Ensure 50% of residences and organizations have optical fiber connectivity

Target Milestones		
Year	Target	Lead Ministry
2022	All G2P and P2G payments automated	ICT Division
2026	In-line with the National Financial Inclusion Strategy, we will create an inclusive digital financial infrastructure including DFS, Fintech, Regtech etc. and effective interface using technology between financial products and services as well as delivery channels used by different providers	ICT Division
2030	We will increase internet penetration and broadband capacity to 100%	ICT Division
2030	70% of residences and organizations will have optical fiber connectivity	ICT Division
2030	We will ensure 25% of the population makes payments through mobile financial services	ICT Division
2030	We will reduce paper usage in government offices and agencies by 30% of current consumption.	ICT Division
2030	Mobilize USD 350 million for 200 startups that promote well-being, optimize traditional ways of living, and contribute to achieving SDGs .	ICT Division

Accelerated Digital Revolution is a direct investment measure that supports Covid-19 Recovery Interventions <sup>58</sup> such as . . .	
Climate and Resilience Results and Benefits:	Covid-19 Recovery Dividend:

<sup>58</sup> Asian Development Bank (ADB) (2020, October). Accelerating Climate and Disaster Resilience and Low-Carbon Development Through the COVID-19 Recovery: Technical Note. <http://dx.doi.org/10.22617/TIM189600-2>

Builds long-term resilience Supports development of high-level technology Supports long-term decarbonization	High employment intensity Skills development Strong supply chain Contribution to the productive asset base Positive environmental and social outcomes
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<b>SDGs . . .</b>		
SDGs 3: Good Health and Well-being	SDGs 8: Decent Work and Economic Growth	SDGs 11: Sustainable Cities and Communities

<b>Resources</b>		
<b>International Partners</b>	<b>National Budget</b>	<b>Contribution from Private Sector</b>
	National Budget Support via allocation of funds	Industry capital investment in digital infrastructure

## **Key Priority Area 6. Maximized Renewable Energy, Energy Efficiency and Power & Transportation Sector Resilience**

### **6A. Maximized Renewable Energy Wealth, Energy Efficiency and Energy Storage Infrastructure**

Through the MCPP renewables roadmap, we will put Bangladesh on a path to energy resilience and independence by maximizing renewable energy and energy storage infrastructure, taking advantage of the deflationary price trajectory of domestic renewable electricity generation, energy efficiency and storage. Energy wealth utilization within the Mujib Borsho (centenary year) brings 100% energy access to the people of Bangladesh. Building off the up to 40% renewable energy by 2041 target and 100% renewable energy by 2050 goal of the Climate Vulnerable Forum, resilience and energy independence will enable Bangladesh to become a net exporter of energy and a global participant in the green economy through technological innovation. To complement this trajectory, Bangladesh will reduce, displace, and potentially replace outdated and expensive technology to improve the balance of trade, reduce inflationary pressures and exposure to volatility, and improve the sector's cost competitiveness. Specifically, reduced or even zero imports of coal, oil, diesel, and gas would insulate the economy from the ups and downs of volatile commodity markets providing valuable price stability while contributing positively to the balance of trade.

The 8FYP highlights that renewable energy power supply in Bangladesh has not grown and reliance on imported fossil fuel does not align with global trajectories nor is it in keeping with the latest International Energy Agency 1.5°C scenario. And despite an increase in the price of power (up 40% between 2016 and 2020) in the country, the power sector's financial capability remains limited. The 8FYP further highlights that there is power overcapacity and so incremental renewables and storage options may be promoted to reduce prices and enable new business opportunities and employment. The 8FYP further notes that the increasing reliance on high-priced imported liquefied natural gas (LNG) and imported coal will increase the cost of producing electricity.

Bangladesh recognizes that technological development in renewables and storage will undermine the competitiveness and return on investment of fossil fuel assets. Considering the deflationary price trajectory of renewable electricity generation and storage options, it is prudent to design the power system to encourage modernized technologies to take advantage of improved pricing and reliability and reduced exposure to inflationary pressures and international volatility.

Previous global market management decisions have resulted in excessive reliance on power generation using imported coal, fossil gas, oil, and diesel with open-ended imported fuel obligations. These options are increasingly uncompetitive and carry ongoing foreign currency and commodity price risks – all of which raise overall stranded asset risk. Bangladesh will adopt modernized management to take the energy system to the next stage of development by adopting the cost-effective and

resilient technologies that currently reshape global energy markets with their more reliable and competitive power.

The public and private sectors should take advantage of the falling price of solar power. Solar energy components have declined significantly in price. In recent years, solar energy's levelized cost of electricity (LCOE) can now compete with coal. Solar panels can also be installed on rooftops and water bodies such as dams instead of relying on agricultural land. For example, replacing diesel generators with solar-powered irrigation systems can expand irrigation opportunities for agriculture and reduce costs – subject to the availability of lease financing.

In addition to disadvantages such as price volatility, inflationary pressures, carbon emissions and pollution, fossil fuels also impose socio-economic costs on health. Luckily, these harms can be minimized by clean energy. A low-carbon trajectory could save Bangladesh a daily-adjusted life year cost per capita of USD 2100 (at purchasing power parity), taking into consideration both outdoor and indoor air pollution. This is equivalent to averting losses of USD 2.3 billion a year.<sup>59</sup>

To foster regional cooperation, Bangladesh will take advantage of record-low solar power tariffs through renewable energy auctions across the region (India for example) to better deliver price stability, cost competitiveness and power sector resilience. Domestic energy security will be driven by investment in solar (rooftop, grounded and floating) including reclaimed land under Bangladesh Delta Plan 2100. Solar power will generate 2000MW for government buildings alone, in addition to offshore wind and domestic storage capacity. Other opportunities include taking advantage of alternative power generation in the Bay of Bengal using predictable tidal power and conversion of the ocean's thermal energy.

Moreover, energy efficiency plays an important role in building the power systems of the future. Bangladesh's 2020 NDCs (Interim) note that the government aims to lower energy intensity (national primary energy consumption per unit of GDP) in 2030 by 20% versus the 2013 level: A total of 95 million tonnes of oil equivalent or 113 billion cubic meters of gas equivalent is expected to be saved during the period.

### **Bongoposagor Independence Giga Array & Energy Hubs**

Furthermore, considering Bangladesh's land constraints, the flagship Bongoposagor Independence Giga Array, a hybrid adaptation and offshore wind mega project will be implemented for both domestic consumption and export to the region and beyond in the form of electricity and converted green hydrogen, set up potentially in coastal island in the Southern region. A study of the National Renewable Energy Laboratory

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<sup>59</sup> Millyvirta, L. (2020, September). Air quality, health and toxics impacts of the proposed coal power cluster in Chattogram, Bangladesh. Centre for Research on Energy and Clean Air (CREA). Retrieved February 19, 2021, from <https://energyandcleanair.org/publication/air-quality-health-and-toxics-impacts-of-the-proposed-coal-power-cluster-in-chattogram-bangladesh/>

(NREL), USA confirms that there are wind speeds of around 7.5 m/s,<sup>60</sup> which is within the viable range for offshore generation in Bangladesh. Thanks to technological development over the last 5 years, equipment is now available to effectively harvest wind at almost every speed. Turbines designed for low speeds of (4.5 meters per second) and in the range of 6.5 to 7.5 m/s that can deliver 75% to 80% of their rated power at 7 m/s with hub heights that can reach 140m. In the spirit of maximizing opportunities for the delta, the giga array will include maximization of nature-based solutions such as planting mangroves to expand economic opportunities in fisheries, while encouraging fundraising via blue bonds to protect oceans and marine life, and to fund other marine projects.

This output will be complemented by the strategic Energy Hubs Program which will progressively convert uneconomical coal and oil/diesel fired generation plants through recapitalization and transformation of existing fossil facilities into biomass waste-to-energy plants and advanced hydrogen production centers. The Energy Hubs Program will benefit from the ability to produce green hydrogen through electrolysis powered by wind energy from the Bongoposagor Independence Giga Array at night when demand for electricity is low. Moreover, the offshore array can power an electrolyzer that operates in 'island mode' to power an electrolysis rig with no link to an electricity grid. Through the existing water resources available to participating power generation plants and via the logistics chains that already supply these plants, the green hydrogen produced by the Energy Hubs Program can:

- Dovetail with the growing network of natural gas/LNG capacity in Bangladesh, where green hydrogen can be blended with natural gas to make up to 30% of the fuel and used in consumer gas networks and appliances without modification.
- Support the growing share of hydrogen-propelled transportation including for regional aviation, heavy-duty trucking, fuel-cell vehicles, fuel-cell trains, passenger boats and shipping that would be promoted under the MCPP that includes land and water transport.
- Promote the overall optimization of Bangladesh's energy capacity and grid stability through a diversified, greening energy base.
- Promote ocean energy innovation such as tidal power and ocean thermal energy conversion in the Bay of Bengal.

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<sup>60</sup> Jacobson, M., Draxl, C., Jimenez, T., O'Neill, B., Capozzola, T., Lee, J.A., Vandenberghe, F. & Haupt, S.E. (2018, September). Assessing the Wind Energy Potential in Bangladesh: Enabling Wind Energy Development with Data Products (NREL/TP-5000-71077). USAID and National Renewable Energy Laboratory (NREL). Retrieved March 1, 2021, from <https://www.nrel.gov/docs/fy18osti/71077.pdf> p.64

- Promote the delivery of run-of-river hydroelectric power in areas with excess rainfall during monsoon season.
- Position Bangladesh as an emerging exporter of high-value green hydrogen and offshore wind power.

Such a hydrogen strategy could be supported by the Bangladesh Council of Scientific and Industrial Research (BCSIR) Hydrogen Energy Laboratory and commercialization through partnerships with participants in the gas, lubricants and related industries through investment tax credits and capitalization support.

These landmark energy programs will generate a significant number of new, high-quality jobs, with reconversion plants benefiting from dedicated upskilling initiatives for plant workers. Moreover, the Bongoposagor Independence Giga Array can further establish optimized artificial reefs on the base of each offshore wind installation to improve habitats for fisheries, yielding blue-economy benefits for Bangladesh.

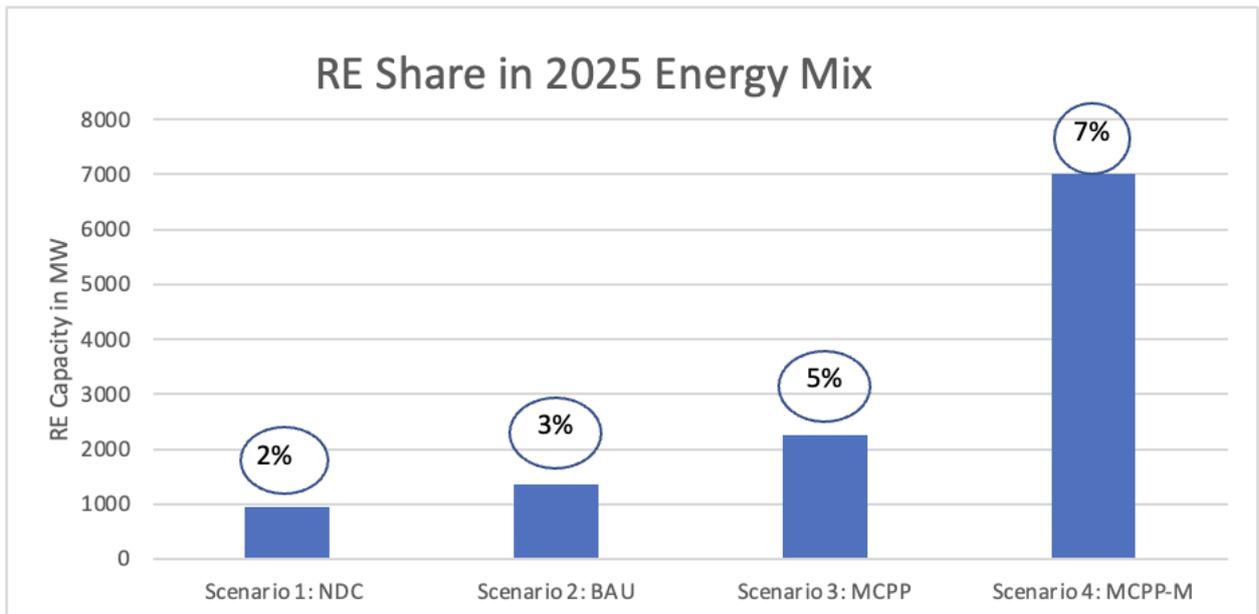
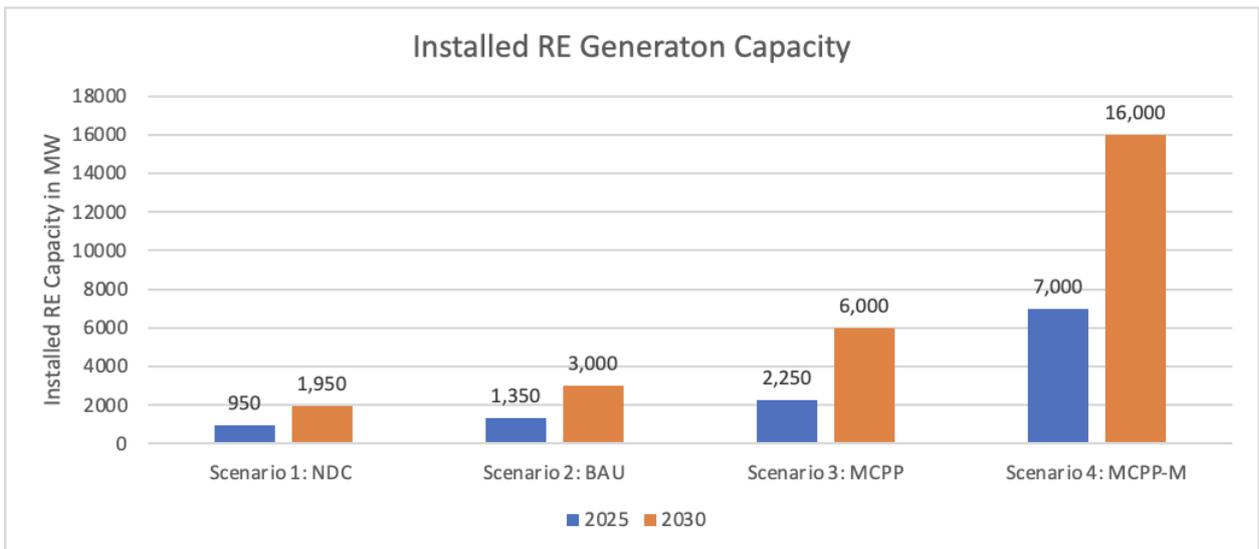
Bangladesh had a target of meeting 10% of power demand from renewable energy resources by 2020, but generation using renewable energy is still less than 3% of total electricity generation.<sup>61</sup> However, a policy signal to identify with certainty competitive renewable energy zones on land, lakes, at sea, clusters of rooftops, and canals to be matched with incentives and relevant grid investment and development could be an opportunity to rapidly surpass the target while delivering domestically sourced power for lower prices and creating jobs.

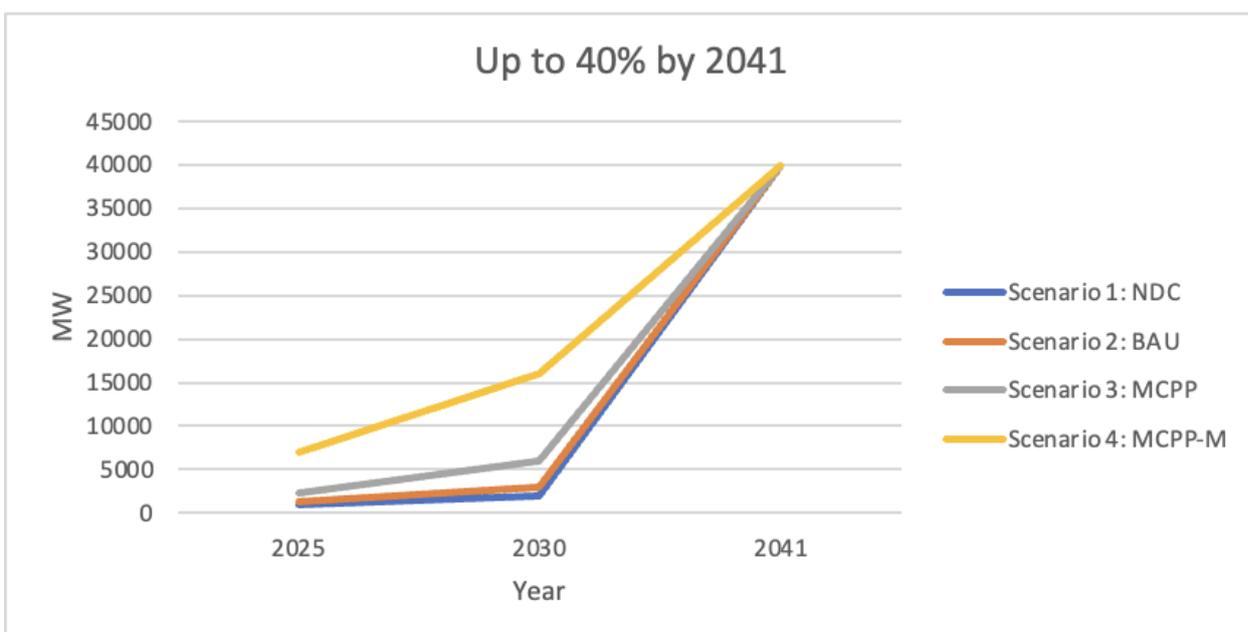
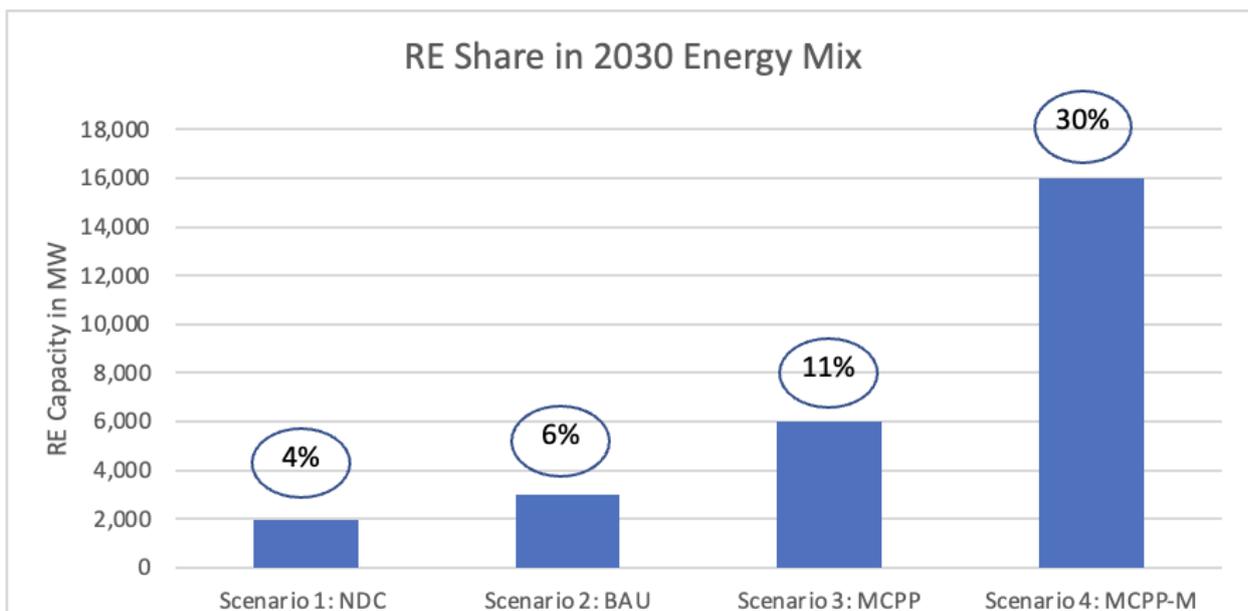
A complementary storage roadmap mandated by policy to optimize renewable energy and grid stability can encourage new market participants and investment. Phasing out the existing fossil fuel subsidies gradually, and redirecting them to loss and damage, adaptation, renewable energy, storage, and green hydrogen programs with an eventual phaseout provides some certainty over the modernization of Bangladesh’s power system.

<b>Maximized Renewable Energy Wealth, Energy Efficiency and Storage Infrastructure includes . . .</b>				
30% maximal variable renewable energy by 2030, lower energy intensity by 20% by 2030, subject to grid	An investment opportunity of at least USD 10 billion over the next decade in generation alone	Public cost savings of at least USD 1.7 billion per year in fossil fuel subsidies by 2030	Support for around 12,000 jobs by 2025 and around 40,000 jobs by 2030	

<sup>61</sup> Islam, S. (2021, March 25). Bangladesh to try again with national clean power policy. PV Magazine. Retrieved June 14, 2022, from <https://www.pv-magazine.com/2021/03/25/bangladesh-to-try-again-with-national-clean-power-policy/>

modernization, financing and investment, setting the trajectory for low carbon growth towards 40% renewable energy by 2041.





Cost savings from renewables under different scenarios are as follows:

Scenario	Net Savings per annum (BDT Crore)		Net Savings per annum (USD Million)	
	2025	2030	2025	2030
Scenario 1: NDC	913	3,971	108	468
Scenario 2: BAU	621	2,588	73	305
Scenario 3: MCPP	1,503	8,121	177	958
Scenario 4: MCPP-M	1,957	14,593	231	1,721

It is important to note that the maximum scenario leads to net savings of USD 1.721 billion per year by 2030. By 2050, savings may reach up to USD 3.7 billion per year.<sup>62</sup>

<b>Target Milestones</b>		
<b>Year</b>	<b>Target</b>	<b>Lead Ministry</b>
2022	We will conduct a feasibility study for Bongoposagor Independence Giga Array, one of the first large scale hybrid RE-adaptation infrastructure projects with an offshore wind mega-project for domestic energy security and blue economy benefits at a large scale.	MoPEMR
2022	We will include resilience in least-cost modeling studies for integrating variable renewable energy at scale and necessary policy support, including maximizing socio-economic outcomes and necessary policy support with development partners.	MoPEMR
2022	Energy Hubs will carry out a feasibility study for energy efficiency, tidal power, hydrogen production and value chain, and ocean thermal energy conversion in the Bay of Bengal.	MoPEMR
2023	Energy Hubs plan to enable conversion with recapitalization of existing fossil facilities to biomass waste-to-energy plants, and advanced hydrogen production centers with support from the Hydrogen Energy Laboratory and Sustainable and Renewable Energy Development Authority (SREDA), including taking advantage of seasonality and connecting hydrogen with renewable energy plants, including the upskilling of plant workers, and the overall optimization of energy capacity.	MoPEMR
2023	We will consult on a storage roadmap and policy development for Bangladesh to optimize renewable energy and grid stability including with the Bangladesh Rural Electrification Board's Electricity Distribution Modernization Program and development partners.	MoPEMR
2023	Bongoposagor Independence Giga Array begins installing 500MW of offshore wind per year up to 2030 with planting of coastal mangroves to build coastal resilience and expand economic opportunities around fisheries.	MoPEMR

<sup>62</sup> Teske, S., Morris, T., Nagrath, K (2019). *100% Renewable Energy for Bangladesh – Access to renewable energy for all within one generation*. Report prepared by ISF for Coastal Development Partnership (CDP Bangladesh; Bread for the World, Germany; World Future Council, Germany; June 2019. Institute for Sustainable Futures (ISF)

2023	We will set up 2,000 MW of renewable energy procurement on a modular basis completed by 2025 with access to low-cost capital through public-private partnerships and private power providers.	MoPEMR
2024	We will set up storage procurement to be completed in phases through 2030 with access to low-cost capital through public-private partnerships and private power providers.	MoPEMR
2025	All railway platforms to include solar power and other public spaces to maximize use of solar power	MoPEMR
2026	We will set up 5,000 MW of renewable energy procurement on a modular basis to be completed by 2030 with access to low-cost capital through public-private partnerships and private power providers.	MoPEMR
2029	We will phase out all imported fossil fuel subsidies and redirect them to lower cost options, loss and damage, adaptation, renewable energy, and storage technology; while enabling the lowest income groups to benefit from financial support and subsidized clean energy.	MoPEMR
2030	Bongoposagor Independence Giga Array completes installation of 4 GW of offshore wind generation and parallel planting of mangrove greenbelt.	MoPEMR
2030	We will set the trajectory for 40% renewable energy by 2041 and 100% by 2050.	MoPEMR
2041	40% renewable energy with support from international resources.	MoPEMR
2050	100% renewable energy with support from international resources.	MoPEMR

**Maximized renewable energy wealth, energy efficiency and storage are a direct investment measure that supports Covid-19 Recovery Interventions<sup>63</sup> such as . . .**

Climate and Resilience Results and Benefits: Supports 1.5-degrees goal Supports development of high-level technology Builds long-term resilience	Covid-19 Recovery Dividend: High employment intensity Skills development High economic multiplier Contribution to the productive asset base Support for long-term transformation
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<sup>63</sup> Asian Development Bank (ADB) (2020, October). Accelerating Climate and Disaster Resilience and Low-Carbon Development Through the COVID-19 Recovery: Technical Note. <http://dx.doi.org/10.22617/TIM189600-2>

	Positive environmental and social outcomes
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<b>SDGs . . .</b>		
SDGs 7: Affordable and Clean Energy	SDGs 8: Decent Work and Economic Growth	SDGs 17: Partnerships
SDGs 10: Reduced Inequalities	SDGs 13: Climate Action	

<b>Key Measures</b>
4GW Bongoposagor Independence Giga Array (offshore wind) with parallel planting of a greenbelt of mangroves – the largest hybrid RE-Adaptation project
Energy Hubs
Maximized floating solar installations

<b>Resources</b>		
<b>International Partners</b>	<b>National Budget</b>	<b>Contribution from Private Sector</b>
Credit enhancement to ensure gold standard financing	Underwriting support via PPA	Industry – capital investment and industry/consumers as purchasers and beneficiaries of energy generated
International low-cost refinancing or recapitalization		
International support for upskilling labor		

## 6B. Modernization of the Grid and the Ancillary Market to Support Resilience

We will position Bangladesh to pursue accelerated grid technology modernization and ancillary market development in order to allow for the power system to take advantage of rapid technological improvements to improve cost-competitiveness and socio-economic outcomes. For electric grids, resilience means not merely a restoration, even one with improvements such as greater tolerance of natural hazards. Resilience is building into the grid structure the fundamental changes in both the natural and human environment, towards a modern grid. The modern grid should reflect not only the need of consumers for dependable and affordable power, but also their aspirations for a cleaner, healthier, and safer environment.

We will thus enable adequate grid investments, reduction of broader infrastructure risks, protection from spiking fossil fuel prices and reduced pricing impacts. Furthermore, the 8FYP recognizes that grid improvements and extensions can address overcapacity issues.

<b>Modernization with. . .</b>		
1. High shares of domestic renewable energy	2. Increased installation of storage technology	3. Increased distributed energy resources
Through climate finance investment in . . .		
1. Infrastructure	2. Software (e.g., Advanced Distribution Management System software applications)	3. Training programs include use of grid modernization software application, strategies for advanced electric distribution planning methods and tools, with a focus on emerging grid modernization technologies and deployment of distributed energy resources.
<b>Towards the delivery of . . .</b>		
<b>Flexibility</b> through cost reductions associated with forecast errors and/or reductions in price spikes	<b>Resilience</b> to be able to adapt to changing conditions such as a set of defined hazards	<b>Affordability</b> to not exceed customers' willingness and ability to pay  <b>Security</b> to prevent external threats and malicious

<p><b>Flexibility</b> to be able to respond to adapt to economic variabilities and to take advantage of new technology</p> <p><b>Reliability</b> to maintain delivery of electricity, quality of power, and reduced interruption of distribution</p>	<p><b>Sustainability</b> to reduce health and environmental costs</p>	<p>attacks including reliance on unstable or volatile supply</p>
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A modernized power sector aims for increased flexibility to integrate market opportunities such as a new ancillary services market<sup>64</sup> for ramping products, fast frequency response from batteries, as well as for new market participants to provide ancillary services such as wind turbines providing inertial response, solar PV and utility-scale storage providing voltage support, and distributed energy resources (DERs) providing frequency and voltage control.

Energy storage systems such as batteries, flywheels, and compressed air energy storage are reserve resources that can have an important role in improving the stability and reliability of the electricity grid. Traditional power purchase agreements rely on the logic of maximizing extraction of good outcomes relative to low-cost financing on terms; however, the pricing of worst-case scenarios means the delivery of more expensive and volatile power purchase outcomes. The optimization of domestic renewable energy through a modernized grid can enable a constellation of investment with low-cost financing due to risk mitigation in the planning phase with storage and system balancing. In short, risk mitigation in the front end through the planning process may reduce the reliance of credit-impaired off-takers on traditional power purchase agreements and instead enable a cost-effective and optimized power system that prioritizes affordability, domestic energy security, flexibility, and resilience.

Green hydrogen presents an opportunity to take advantage of domestically sourced and low-cost power through direct delivery to manufacturing and transportation sectors both domestically and in the region while also improving grid resilience and flexibility. Green hydrogen also presents an opportunity to strengthen the grid through limiting any surges by matching energy demand, while blending green hydrogen with LNG. As Bangladesh has an existing gas network, the infrastructure can be modernized by setting up hydrogen electrolysis alongside existing domestic gas. Hydrogen can be liquefied for long-haul transport or conversion to ammonia, which together present opportunities to build a fuel cell industry in Bangladesh, substitute imported fertilizer, and export surpluses to liquid clean-fuel markets.

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<sup>64</sup> IRENA (2019). *Innovation landscape brief: Innovative ancillary services*. International Renewable Energy Agency, Abu Dhabi.

The strategic energy hubs in the location of coal plants and gas plants will be transformed to green hydrogen plants, waste-to-energy plants, and biomass plants. This creates new options around electric vehicles and transportation in urban areas. Moreover, the existing nuclear reactors could produce byproduct heat to increase the efficiency of hydrogen electrolysis and produce surplus power for hydrogen production. As such, green hydrogen presents an opportunity for Bangladesh to reduce its exposure to imported gas as existing infrastructure can blend up to 30% green hydrogen which enables a transition starting in 2030 to 100% green energy from the Bongoposagor Independence Giga Array, plus distributed solar photovoltaic and nuclear sources.

Supported by the Energy Hubs to enable conversion via modernization of fossil fuel plants, with the upskilling of plant workers, the overall optimization of energy capacity can enable the power and transportation infrastructure of a 21st century economy. Green energy trade with neighbors will also be fostered, replacing at least 50% of power imports with contracts for green energy. It could also enable the new 1000 MW of new transmission connectivity with India to include green energy trade as early as 2025.

In addition to the direct economic benefits of utilizing low-carbon technology in the power sector, women and other vulnerable groups will be prioritized with access and training to benefit from maximized renewable energy wealth, energy efficiency, and storage infrastructure. In rural Bangladesh, women are primary consumers of energy at household levels. According to the ccGAP, access to alternative low-carbon technology like improved cooking solutions and renewable energy-powered lamps and pumps could provide an interesting approach for promoting women's economic participation in climate action. Not only are jobs created for women who can be engaged in the upkeep and maintenance of solar-powered lamps or pumps for example, but can also translate to less time spent on certain activities.

For example, improved cooking solutions (ICS) presents an opportunity of improving health and livelihoods. The Gas Sector Master Plan (2017), Bangladesh, set an objective to reach 20 million households with ICS by 2030. The 8th FYP also highlights incentivizing the use of biogas through the gas use policy as the alternative of pipeline natural gas considering the limited domestic reserve of gas. According to the Renewable Energy Policy 2008, biogas has been considered as one of the promising Renewable Energy resources for Bangladesh.

Infrastructure Development Company Limited (IDCOL), a government owned non-banking financial institution, is currently implementing successful clean cooking initiatives through two programs - i) Improved Cooking Stoves (ICS) - Increase thermal efficiency of cooking stoves from tier 1 to tier 3 as per ISO standards. Each ICS saves about 1.5 ton of fuel wood and reduces 1.12 ton of emissions per year. ii) Domestic biogas program - prefabricated fiberglass biodigester technology. IDCOL's expertise and experience may be leveraged for installation of additional 18.2 million ICS and 100,000 domestic biogas plants by 2030 which will reduce about 60 million tCO<sub>2e</sub> and million tCO<sub>2e</sub>, respectively in the next 10 years.

<b>Target Milestones</b>		
<b>Year</b>	<b>Target</b>	<b>Lead Ministry</b>
2022	We will have a moratorium on planned (unbuilt) inflexible power plants such as 10 coal plants with capacity of 8.4GW.	MoPEMR
2022	We will install bidirectional meters.	MoPEMR
2022	We will begin studying a displacement strategy with partners for technologically outdated, expensive, and inflexible generation plants (e.g., old coal fired plants and high-speed diesel plants, etc.) towards new technology. This also includes co-locating solar irrigation pumps in farming areas to replace diesel powered irrigation pumps.	MoPEMR
2022	We will conduct a feasibility study on the Power Modernization Strategy towards competitive markets and optimize effective policies and undertake comprehensive analysis to create a competitive energy market design and opportunities of the future with Power Grid Company of Bangladesh Ltd (PGCB) and partners.	MoPEMR
2023	We will conduct a feasibility study on hydrogen for up to 30% absorption by existing gas infrastructure.	MoPEMR
2023	We will begin implementing infrastructure and software modernization and worker upskilling.	MoPEMR
2024	We will establish a Management Skill Development Center (MSDC) of Excellence under the Power Grid Company of Bangladesh.	MoPEMR
2025	We will establish a new ancillary services market through policy and improved market management design.	MoPEMR
2026	We will update the displacement strategy in partnership with partners for technologically outdated, expensive, and inflexible generation plants.	MoPEMR
2027	We will structure financing with donors and investors on a displacement strategy.	MoPEMR
2028	We will implement the displacement strategy to match with replacement capacity from domestic renewable energy and green hydrogen.	MoPEMR
2030	Achieve 100% clean cooking solutions by 2030 in-line with Bangladesh Country Action Plan's goal for clean cook-stoves	MoPEMR

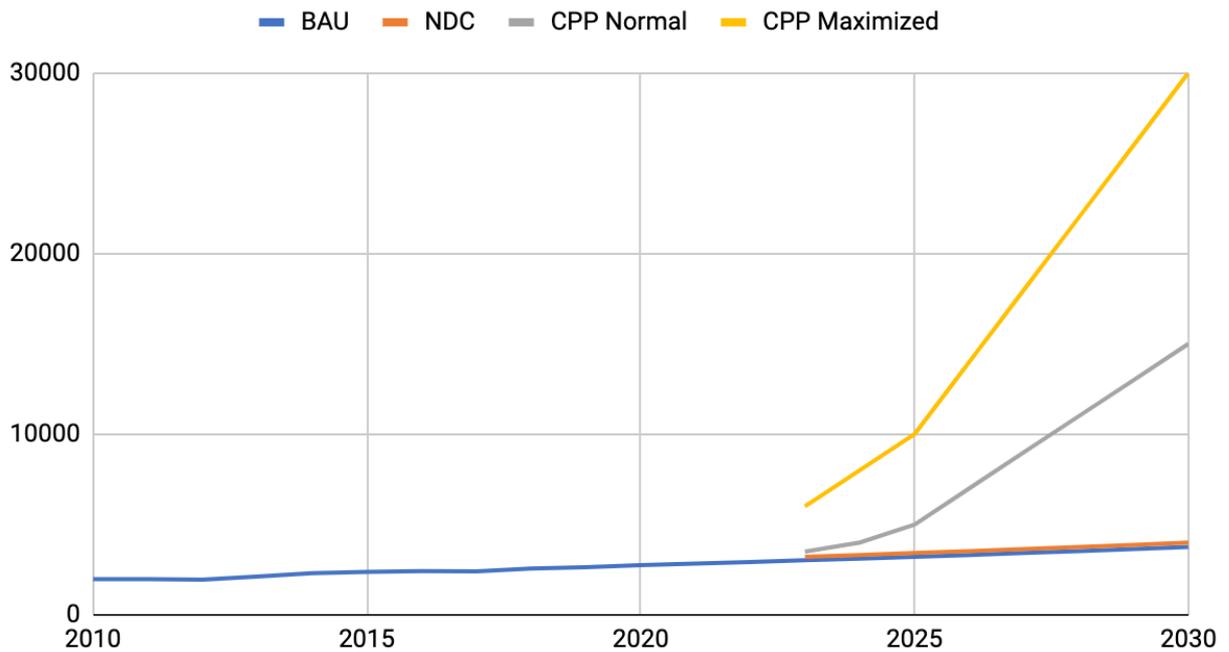
**Modernizing our grid could deliver . . .**

Incremental transmission and distribution (T&D) investment for fortifying grid infrastructure, software, and training, including advanced meters<sup>65</sup> to all households, delivering investment of over USD 3.1 billion by 2030

Establishing an ancillary service market to crowd in private sector investment of at least USD 250 million by 2025 and USD 500 million by 2030

Support for around 10,000 jobs by 2025 and around 30,000 jobs by 2030<sup>66</sup>

**Employment Potential for Grid Modernization**



<sup>65</sup> Est 35.2 million households x Est. USD 70 per smart meter

<sup>66</sup> IEA (2020), Sustainable Recovery, IEA, Paris. Retrieved March 1, 2021, from <https://www.iea.org/reports/sustainable-recovery/evaluation-of-possible-recovery-measures>

Note: In developed economies, job creation opportunities are as follows: 9.9 jobs per USD 1 million invested in storage; 6.8 jobs per USD 1 million invested in solar PV; 5.3 jobs per USD 1 million invested in grid modernization; 0.9 jobs per USD 1 million invested in wind; and 5.9 jobs per USD 1 million invested in hydrogen production.

**Modernizing our grid is a direct investment measure that supports Covid-19 Recovery Interventions<sup>67</sup> such as . . .**

Addressing climate and resilience vulnerabilities Building long-term resilience Supporting development of high-level technology Supporting 1.5° C goal	Covid-19 Recovery Dividend: High employment intensity Skills development High economic multiplier Contribution to the productive asset base Support for long-term transformation Positive environmental and social outcomes
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**SDGs**

SDG 5: Gender equality	SDG7: Clean and affordable and energy	SDG 8: Decent work and economic Growth
SDG 9: Industry, innovation, and Infrastructure	SDG 13: Climate action	SDG 17: Partnerships

**Key Measures**

Establishment of ancillary marketplace for ramping products and fast frequency response batteries, among others.
Incremental transmission and distribution upgrades for fortifying grid infrastructure (e.g., substations, transformers, high-voltage lines, medium- or low-voltage lines, metering, and associated components).
Installation of smart software platforms for utilities, automation components (hard or soft), remote monitoring, energy management systems, or other basic distribution infrastructure upgrades.

**Resources**

<b>International Partners</b>	<b>National Budget</b>	<b>Contribution from Private Sector</b>
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<sup>67</sup> Asian Development Bank (ADB) (2020, October). Accelerating Climate and Disaster Resilience and Low-Carbon Development Through the COVID-19 Recovery: Technical Note. <http://dx.doi.org/10.22617/TIM189600-2>

Credit guarantees to ensure gold standard financing	Budgetary support for Power Grid Company of Bangladesh	Industry – capital investment and industry/consumers as buyers of electricity
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## 6C. Transitioning to Transport Solutions of the Future

We will prioritize modern mobility solutions for both urban and rural areas as recognized in the 8FYP and NAP for intelligent, efficient, sustainable, safe, and regionally balanced transportation and traffic management systems. These would include green and electric inland water transportation to complement the Bangladesh dredging master plan to unlock 10,000 kilometers of river routes while the collected silt and debris can be used to raise low-lying land. In addition, high-speed electric rail, and urban development in climate-smart ways, such as modernization of urban mobility through rapid-transit e-buses and e-bikes is also included. Prioritization of women-only sections in rapid transit systems can also be included. We will unlock fiscal incentives (including tax breaks for electric transportation including inland water transportation and vehicles) to improve the project economics of modernized technologies, while removing fiscal incentives and increasing tax rates for outdated technology, contributing to the establishment of an Energy Efficient Vehicles (EEV) hub. The EEV hub can also attract EV production lines including, but not limited to, solar-powered car and boat producers. Special tax breaks will be provided for domestically owned EVs, and hydrogen-powered vehicles and other modernized transportation. This can include cars, shuttles, baby taxis, and scooters, among others. EV-charging infrastructure as part of the Bangladesh Rural Electrification Board network can thus be utilized.

As the transportation system in the capital Dhaka relies heavily on road transport, other mediums like public transport, walking, bicycling will be promoted to reduce congestion. To further capture sustainability gains and improved socio-economic outcomes, road improvements, storm drainage upgrades, and the establishment of green infrastructure including but not limited to footpaths, bike lanes, street trees, and urban parks will be part of the modernized mobility solution. The MCPP expands urban mobility in 8FYP to the entire country by 2023 and foresees reduction in private transport mobility due to establishment of public transport networks like MRTs.

In addition to urban passenger mobility, it is equally important to address congestion and the subsequent polluting impact of freight transportation between production and consumption centers as well as distribution activities within urban areas. We will leverage PPP models to create green distribution networks for freight through the use of integrated distribution facilities and electric vehicles to fulfill the freight demands of urban areas. The use of rail transportation will be encouraged for long-haul movement of goods to reduce dependence on road transport with rail growth supporting the Bangladesh Railway 30-year Revised Master Plan (2016-2045) to Cox's Bazar, Mongla Port, Tungipara, Barisal, Chattogram Hill Tracts and other parts of the

country. Similarly, use of internal waterways for transportation of goods will be prioritized to utilize the extensive network of waterways and bring down the logistics costs for transportation of freight.

<b>Transitioning to Transport Solutions of the Future to...</b>		
Mobilize at least USD 5 billion of green financing from international investors	Shift at least 30% of the newly registered transportation fleet to electric by 2030	Build modernized industries including ridesharing transportation industry and manufacturing capacity for modernized transportation

<b>Target Milestones</b>		
<b>Year</b>	<b>Target</b>	<b>Lead Ministry</b>
2022	We will enable green transportation options to engineer value in products by creating an enabling environment for manufacturing mobility solutions such as inland water way transportation, green electric buses, e-bikes, etc. including tax breaks for electric vehicles.	MoPEMR
2022	We will conduct feasibility studies and mapping to upgrade regional connecting highway corridors inside Bangladesh to improve road connectivity with neighboring countries.	MoRTB
2023	We will assess the Revised Strategic Transport Plan for Dhaka and adjacent cities for the use of modernized technology and green financing.	MoRTB
2023	We will conduct a feasibility study for electric vehicle adaptation in the entire country.	MoPEMR
2023	We will accelerate greening and electrification of inland water transportation in coordination with the dredging master plan to enhance green logistics and improve navigability of 10,000 kilometers of river routes.	MoS
2024	We will establish an energy efficient vehicles (EEV) manufacturing hub through strategic investments and adaptation of high technology for the domestic market and to penetrate regional and global markets.	MoRTB
2025	We will ensure 50% of the rideshare fleet is green/electric.	MoPEMR

2025	We will enable the climate resilience of the Bangladesh Railway 30-year revised master plan including protection measures from extreme weather, heavy rain, high temperatures, high wind speeds, and reduced soil stability. We will also support energy efficiency measures of railway infrastructure including a shift to electric.	MoR
2030	We will ensure 80% of the rideshare fleet is green/electric.	MoPEMR
2030	We will enable EV manufacturing to contribute up to 10% of GDP by 2030.	MoRTB
2030	We will ensure 1,500 km of national highways are upgraded to 4/6 lanes to handle traffic growth.	MoRTB
2030	We will ensure the GIS Road Network <sup>68</sup>	MoRTB
2030	At least 50% of railway infrastructure is climate-resilient and energy efficient.	MoR

**Transitioning to Transport Solutions of the Future is a direct investment measure that supports COVID-19 Recovery Interventions<sup>69</sup> such as . . .**

Climate and Resilience Results and Benefits: Addresses vulnerabilities Builds long-term resilience Supports development of high-level technology Targets sectors or populations affected by non-financial shocks Targets disadvantaged groups	COVID-19 Recovery Dividend: Skills development High economic multiplier Contribution to the productive asset base Support for long-term transformation Positive environmental and social outcomes
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**SDG . . .**

SDG 3: Good Health and Well-being	SDG 7: Affordable and Clean Energy	SDG 9: Industry, Innovation, and Infrastructure
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<sup>68</sup> Atlassian. (n.d.). 2.3. Bangladesh Road Network. *Logistics Capacity Assessment*. Retrieved March 8, 2021, from <https://dlca.logcluster.org/display/public/DLCA/2.3+Bangladesh+Road+Network>

<sup>69</sup> Asian Development Bank (ADB) (2020, October). *Accelerating Climate and Disaster Resilience and Low-Carbon Development Through the COVID-19 Recovery: Technical Note*. <http://dx.doi.org/10.22617/TIM189600-2>

SDG 11: Sustainable Cities and Communities	SDG 12: Responsible Consumption and Production	
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<b>Key Measures</b>
Electrify 10,000 km of internal waterways transportation in coordination with the dredging master plan
Restore all canals and box culverts
Construct 10,000 km of bike lanes
Construct 10,000 km of footpaths
Electrify transportation including rideshare, e-scooters, e-bikes, and e-baby taxis
Upgrade 1,500 km of national highways, 4,000 km of regional highways
Retrofit 13,000 km (approx.) of zilla and upazila (farm to market) roads

<b>Resources</b>		
<b>International Partners</b>	<b>National Budget</b>	<b>Contribution from Private Sector</b>
Support in the creation of special leasing facility windows and credit enhancement	Commercial subsidy for green and electric vehicles for transport/logistics sector for a period of time (e.g., tax exemption)	Industry capital investment and industry consumers as users of transportation system  Public Private Partnership on construction and electrification projects

## **SECTION 3. OVERSIGHT & IMPLEMENTATION AND FINANCING**

This section consists of three parts relating to implementation, financing and partnerships: 1) Mujib Climate Prosperity Plan Oversight & Implementation; 2) Financing, 3) Strengthened Economic Partnerships.

### **Mujib Climate Prosperity Plan Oversight & Implementation**

The activities under the MCPP will be implemented by the concerned ministries as per Government Rules of Business.

The climate-related reporting and assessment of the MCPP will be coordinated and overseen by the Ministry of Environment, Forest and Climate Change as the designated agency to ensure sustainable living environment for the present and future population of the country through protection of the environment and biodiversity, control of environment pollution, tackle climate change, development of forest resources and sustainable management of maritime resources.

Moreover, research and knowledge management will be led by the Ministry of Environment, Forest and Climate Change as the leading expert in climate change. In order to enable a learning-by-doing approach and to build a culture of research and evidence building, there will be special emphasis on technical assistance completion reports for technical assistance projects the expected impact, outcome and outputs; conduct of activities; evaluation and achievement of the expected outcomes; an assessment and rating; major lessons; and recommendations and follow-up actions.

The investment and financing in the MCPP will be coordinated and overseen by the Ministry of Finance in coordination with Ministry of Planning and relevant concerned ministries, and supported by a special committee which can include representatives of each concerned ministry, PPP Authority, the Bangladesh Investment Development Authority (BIDA), Bangladesh Bureau of Statistics and CVF/V20 representatives from the Government of Bangladesh, while the Prime Minister's Office can be in charge of monitoring the implementation of Mujib Climate Plan activities. Moreover, all relevant financing will be coordinated by the Ministry of Finance taking into consideration the Climate Fiscal Framework that includes Office of the Controller and Auditor General (OCAG), Parliamentary Oversight and social audits from civil society.

Resource mobilization, particularly from external sources and coordination with the private sector, will be crucial to the implementation of the MCPP, and the involvement of the PMO will play an important role.

A committee for implementing the MCPP will be responsible for:

1. Tracking the plan's implementation and overseeing the review, stocktaking and plan cycles, including the baseline and tracking of SDGs analytics of socio-economic outcomes to be completed by end of 2022
2. Enabling the marketing and promotion of economic partnership and investment with public and private international, regional, and bilateral partners, including through the formation of investment clubs and delegations
3. Commissioning, developing, and publicizing all analytical studies and strategies required for the effective and full delivery of the plan
4. Creating an online knowledge hub that is accessible to by the public sector, private sector, and civil society, including universities and research organizations
5. Collaborating with each relevant ministry and department in the government as per the Rules of Business (e.g., Economic Relations Division, Finance Division, Ministry of Environment, Forest and Climate Change, Ministry of Power, Foreign Aided Projects Audit Directorate, etc.).

Equally important is engagement with domestic implementation partners including the PPP Authority, Bangladesh Investment Development Authority (BIDA), Bangladesh Bureau of Statistics and CVF/V20 representatives from the Government of Bangladesh. The partners can have consultative status and will also include key private sector industries represented by the leadership of companies and business chambers in Bangladesh in order to complement and reinforce investment and partnership.

## The Financing Outline

The MCPP can seize the opportunity to address the prevailing market failure arising from the lack of private sector participation, as well as international public support, and investment in modernized, adaptive and resilient infrastructure. Insufficient information coupled with a lack of tailored affordable financing has led to underinvestment in resilience and adaptation. The introduction of a modernized power sector vision for Bangladesh, and the advent of climate and disaster risk financing and insurance builds on detecting market opportunity and pricing risk that can enable the outcomes of 8FYP, Vision 2041 and BDP 2100. Moreover, with Bangladesh's LDC graduation underway and expected in 2026, the cost of development finance and debt servicing may rise, creating a need to leverage private sector capital and diversify financing options.

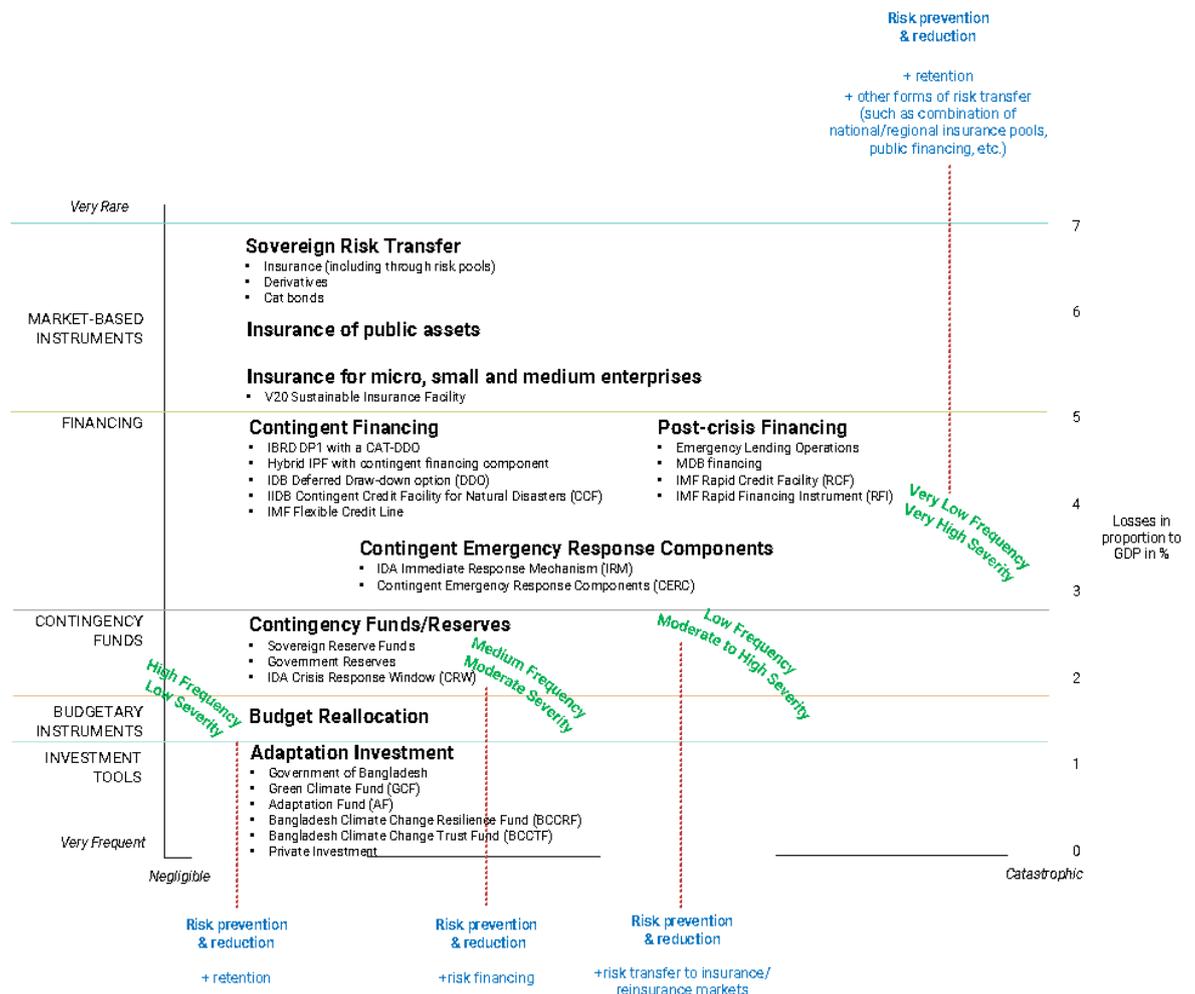
Therefore, green financing is considered to be part of resilience building and CDRFI as an element of national adaptation planning processes that can help to address the market failure outlined above. Green finance could also incentivize cost-effective investment in adaptation measures (soft and hard engineering), risk retention, risk

financing instruments such as risk transfer, contingent credit lines and cat-bonds, and risk management. Residual risk can be reduced through early-warning systems, communication and loss and damage or endowment funds. The building of value recognition stemming from pricing risk can drastically shift the economics of operating in our system by adding value to investment in and tools for options that offer resilience and price stability such as renewable energy and storage, disaster risk reduction, improved climate risk management and contributions to sustainable development goals by 2030.

The climate finance and green growth strategy may include, but is not limited to anticipatory and comprehensive climate and disaster risk management to enable adaptive capacities. International climate funds and green growth oriented support include from multilateral and bilateral sources as well as Climate Investment Funds (CIF), the Global Environment Facility (GEF) and the Green Climate Fund (GCF). The Bangladesh Climate Change Trust Fund (BCCTF) is a national climate fund that can be supplemented through fund matching by international climate funds. Furthermore, there is recognition of the need to withdraw capital from certain inflationary sectors such as coal, oil and gas, and therefore requires the development of green and adaptation-focused financing structures that can catalyze favorable debt terms, along with redirecting fossil fuel subsidies to loss and damage remediation, adaptation, renewable energy, storage, and grid modernization.

Figure 8: Climate Physical Risk: Climate Change Adaptation and Disaster Risk Reduction Options

Climate Physical Risk: Climate Change Adaptation and Disaster Risk Reduction Options



Source: Adapted from the World Bank/DRIP<sup>70</sup> World Bank (2011)<sup>71</sup>, Munich Climate Insurance Initiative (2018)<sup>72</sup>

<sup>70</sup> <https://www.scor.com/en/file/25401>

<sup>71</sup> Poundrik, S. (2011). *Disaster Risk Financing : Case Studies*. EAP DRM Knowledge Notes; No. 23. World Bank. © World Bank. Retrieved February 17, 2021, from <https://openknowledge.worldbank.org/handle/10986/10104> License: CC BY 3.0 IGO.

Clarke, D.I & Mahu, O. (2011). Risk Layering and Disaster Risk Financing Strategy. *Disaster Risk Financing and Contingent Credit: A Dynamic Analysis*. [https://www.researchgate.net/figure/Risk-layering-and-disaster-risk-financing-strategy\\_fig3\\_228220080](https://www.researchgate.net/figure/Risk-layering-and-disaster-risk-financing-strategy_fig3_228220080)

<sup>72</sup> Schäfer, L., Warner, K., Kreft, S. (2018). Exploring and Managing Adaptation Frontiers with Climate Risk Insurance. In: Mechler, R., Bouwer, L., Schinko, T., Surminski, S., Linnerooth-Bayer, J. (eds) *Loss and Damage from Climate Change. Climate Risk Management, Policy and Governance*. Springer, Cham. [https://doi.org/10.1007/978-3-319-72026-5\\_13](https://doi.org/10.1007/978-3-319-72026-5_13)

**Table: Climate Funds Architecture**

	Grants	Loans	Risk Mitigation Instruments	Equity	Average Fund Approval per Project	Co-Financing Ratio	Potential Implementers as indicated by the Facility
Bangladesh Climate Change Trust Fund (BCCTF)	✓				N/A	0	Government ministries
Climate Investment Funds such as Pilot Program for Climate Resilience (PPCR)	✓	✓	✓	✓	\$15.8 million (for PPCR)	1:1.3 (for PPCR)	ADB, World Bank
Global Environment Facility (GEF)	✓	✓	✓	✓	\$6.7 million	1:9.7	ADB, FAO, World Bank, UNDP, UNIDO, UNEP, IFAD, IUCN
Green Climate Fund (GCF)	✓	✓	✓	✓	\$42.4 million	1:2.2	Direct Access: IDCOL, PKSF  Indirect Access: AFD, ADB, GIZ, EIB, FAO, HSBC, WB, IFC, IFAD, IUCN, JICA, KfW, UNDP, UNEP, WFP, WMO

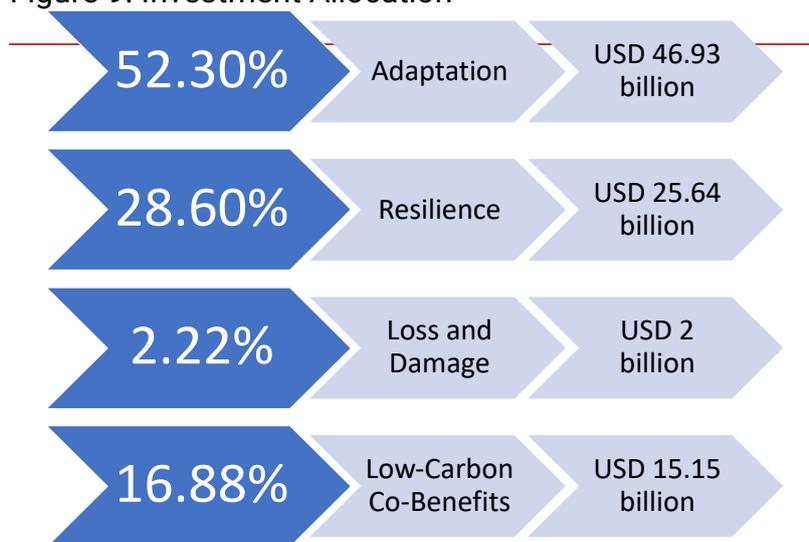
The Mujib Climate Prosperity Plan’s estimated level of investment is reflected below.

Mujib Climate Prosperity Plan	Est. Investment Size up to 2030	
	Per Program	Total
<p>Key Priority Area 1: Accelerated Adaptation</p> <ul style="list-style-type: none"> <li>- Green Financing until 2030 including Resilience Bonds up to 2041 to Promote Green Growth, Accelerated Adaptation and Protective Infrastructure in line with 8FYP and Bangladesh Delta Plan 2100</li> </ul>	USD 44.190 billion	USD 44.1 billion
<p>Key Priority Area 2: Just Transition of Labor and Future-Proofing Industry with Technology Transfer</p> <ul style="list-style-type: none"> <li>- Just Transition and Modernization through Training and Skills Development for Labor Markets of the Future</li> <li>- Future-Proof Bangladesh’s Position in the Global Supply Chain</li> </ul>	USD 1.51 billion USD 10.12 billion	USD 11.63 billion
<p>Key Priority Area 3: Increasing public revenue to spend on the most vulnerable</p> <ul style="list-style-type: none"> <li>- Investment in the Realization of Locally Led Adaptation Outcomes</li> <li>- Established Carbon Financing Regime for Revenue Generation</li> </ul>	USD 3.89 billion USD 25.13 million	USD 3.92 billion
<p>Key Priority Area 4: Comprehensive Climate and Disaster Risk Financing and Management</p> <ul style="list-style-type: none"> <li>- Micro, Small and Medium Enterprise Financial Protection and Productivity Enhancement</li> <li>- Development of Climate-Resilient and Nature-Based Agricultural and Fisheries Supply and Value Chains including National Disaster Risk Financing and Management to Safeguard Food Security, Nutrition and Water Security</li> </ul>	USD 2.87 billion USD 2.02 billion	USD 4.89 billion
<p>Key Priority Area 5: Leveraging 21<sup>st</sup>-century technologies for well-being</p> <ul style="list-style-type: none"> <li>- Resilient Well-Being Programs</li> </ul>	USD 150.75 million	USD 4.55 billion

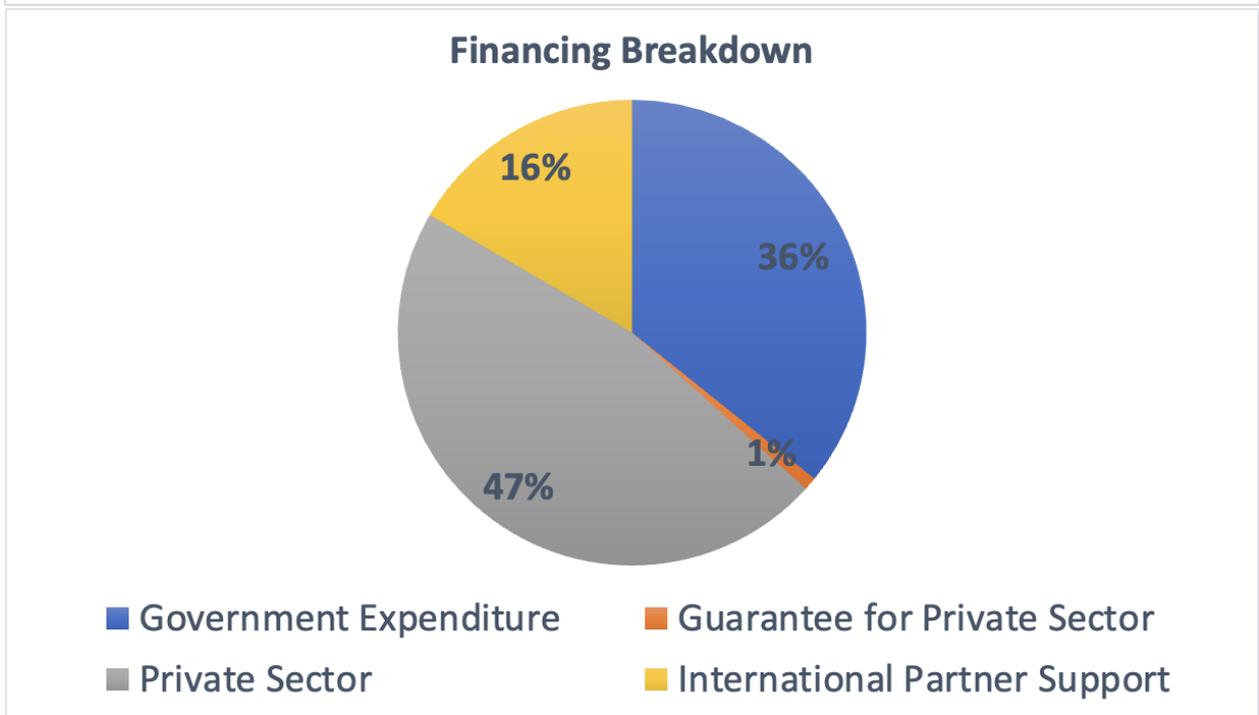
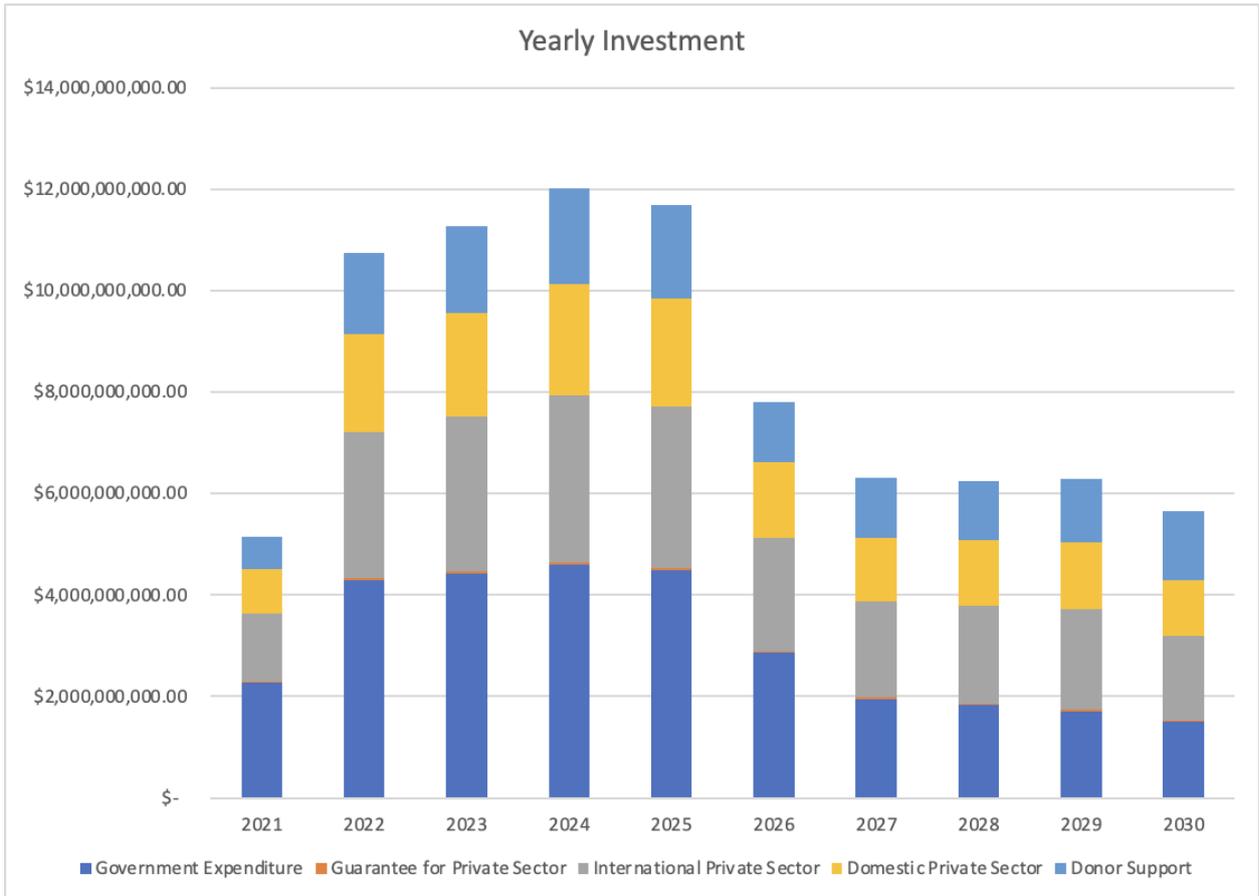
- Accelerated Digital Revolution	USD 4.40 billion	
Key Priority Area 6: Maximized Renewable Energy, Energy Efficiency and Power & Transportation Sector Resilience		
- Maximized Renewable Energy Wealth, Energy Efficiency and Energy Storage Infrastructure	USD 13.55 billion	USD 20.63 billion
- Modernization of the Grid and the Ancillary Market to Support Resilience	USD 3.18 billion	
- Transitioning to Transport Solutions of the Future	USD 3.90 billion	
<b>Total</b>	<b>USD 89.72 billion</b>	

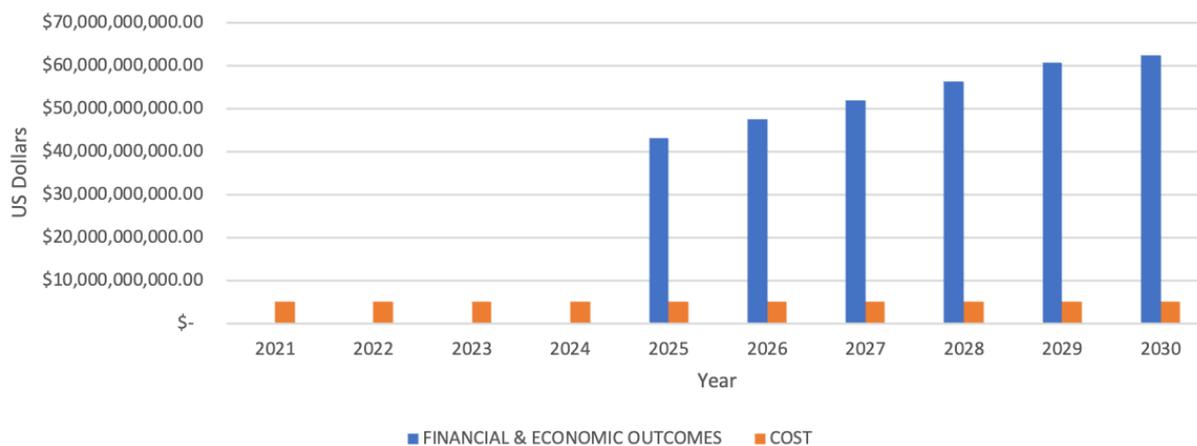
The resource breakdown of the MCPP is as follows:

Figure 9. Investment Allocation



Below is an overview of the breakdown in investment including guarantees for private sector, international partner support through grants, private sector participation (international and domestic) and government expenditure, which is based on existing planned government spending.





The **initial** typology of projects and financing<sup>73</sup> is as follows:

Type	Project Name	Project Details	Key Responsible Entity	Financing	Estimated Investment	Govt	Pvt	Concessional or de-risking tool or grant
Resilience/ Adaptation	Comprehensive Climate and Disaster Risk Management and Financing Strategy	Financial protection instruments	MOF, MoDMR, MOEFCC, MoWR	Risk and opportunity sharing and investment within members of the InsuResilience Global Partnership	USD 1 billion	40%	20%	40%

<sup>73</sup> Financing scenarios have been developed based on realistic scenarios of available international public finance as it would be expected to grow in future, and also the borrowing capacity of the government within its agreed fiscal constraints. Most of the public debt relates to large-scale projects derived from earlier plans that the MCPP has incorporated, notably Delta 2100. The plan aims to leverage USD 13.84 billion in international public funds.

Transport	Electrifying Transportation	E-Bikes, E-Buses in Dhaka		State-Owned Green SPV Build Operate Transfer	USD 1 billion	30%	40%	20%
Resilience/ Adaptation	Delta 2100 Phase 1	Coastal zones (USD 11 billion), Barind & drought-prone (USD 2 billion), haor & flash flood (USD 350 million), Chattogram Hill Tracts (USD 750 million), river system & estuaries (USD 6 billion), and urban areas (USD 8 billion), among others.		Resilience project bonds (both public and private sector) leveraging low-cost international financing sources	Over USD 35 billion in investment mobilized by 2030	20%	55%	10%
Adaptation	Locally led adaptation	To be determined	Lead Local Government Division,	Grant financing with international	USD 1 billion per year by 2030	55%	5%	45%

			MoEFCC, MoDMR, MoWCA, MOA, MoWR	and regional				
Resilience/Renewable Energy	Bongosagor Independence Giga Array (offshore wind – one of the first large scale hybrid RE-adaptation infrastructure projects)	500GW per year from 2023 to 2029, 1GW in 2030 and 4GW installed capacity by 2030	MPEMR	State-Owned Green SPV as off-taker with PPA Build Operate Transfer	USD 7.2 billion	20%	75%	5%
Energy Efficiency and Renewable Energy	Energy efficiency and renewable Energy (including floating solar and rooftop solar) for households, manufacturing, and industry	At least 1GW by 2025 At least to 2GW by 2030	MPEMR	Lease financing with concessional grant to reduce cost of capital for industry and households	USD 2 billion	30%	20%	40%

To ensure that finance can be effectively accessed, mobilized, and scaled up to contribute to achieving climate prosperity, our strategy includes creating pools of funds with credit enhancement to encourage programmatic investment, rather than project-level investment.

Given the catalytic role they can play in supporting both better public and private investment and in scaling up and reducing the cost of finance, we aim to strengthen state-owned institutions as we recognize the need to embark on the Mujib vision of a climate-resilient and low-carbon future to capture all possible socio-economic and financial benefits.

Optimized green financing structures to attract foreign direct investment and mobilize domestic private sector capital include but are not limited to the following:

- Prioritizing the use of public-private partnerships (PPP) as a key solution to climate investment in coordination with the PPP Authority as it may enable access to bonds or syndicated loans.
- Incentivizing investment in low-carbon and climate-resilient infrastructure including preferential refinancing rates, project-level and portfolio-level green assessments to support investors seeking such asset classes and risk-adjusted capital requirements for non-low-carbon and non-climate-resilient projects
- Creating special-purpose vehicles (SPV) or partnerships for climate resilience, for example, joint ventures or partnerships with state owned enterprises.
- Adopting alternative financing tools such as a special leasing facility windows. Modernized technology requires sizable capital expenditure and by changing the financing from a capital-expense model into an operating-expense model, and by matching expected revenue or savings with lease payments, it would greatly improve the affordability of modernization.
- Introducing measures that include the issuance of green financing tools up to 2030 and resilience bonds up to 2041 to make additional credit available for public and private sector actors that target triple-dividend investments. Such stimulus spending will have long-term impacts, especially when used for major infrastructure, or to support selected technologies and even in particular social protection programs. Choices made quickly without considering the wider range of risks facing Bangladesh and especially the now-inevitable effects of climate change could lock countries into high carbon and vulnerable options, closing off more resilient pathways. There is also the risk that misguided allocation of stimulus and recovery spending could lead to stranded assets, vulnerable populations, and irreversible damage to natural assets such as the healthy ecosystems and watersheds upon which the livelihoods of so many ultimately depend on.

- Enabling the Bangladesh Bank to use a variety of tools to incentivize investment in adaptation and resilient low-carbon infrastructure, including preferential refinancing rates, differentiated capital requirements such as a “fossil fuel penalizing factor”, and setting higher capital requirements for non-low-carbon and non-climate-resilient projects.
- Mobilizing state-owned enterprises, including banks and others, to play a risk-reduction role by deploying a range of business models and utilizing a range of instruments to reduce the cost of financing. A well-regarded state-owned enterprise, for example, can mobilize the volume of finance needed, bringing down the cost of capital and managing risk. There is a clear need for de-risking instruments and enabling flows into new green and resilient sectors and asset classes that could unlock significant investment.
- Creating a dedicated green capital markets platform to increase uptake and use of various relevant green financing such as resilience bonds, green bonds, climate bonds, and sovereign blue bonds that will help increase finance for resilient recovery packages. A green bond is focused on assets with positive and quantifiable environmental impacts. A blue bond also has green finance eligibility but is focused on marine conservation. A sustainability bond is debt security with environmental and social impacts. A social bond on the other hand raises funds for new and refinancing projects with positive social outcomes. A transition bond is a new class of debt security that can finance brown energy’s transformation to green and to catalyze resilience building. A dedicated green capital markets platform would reduce information asymmetry by improving and standardizing metrics for the classification of assets.
- Blended finance, such as V20-initiated initiatives, can be used as catalytic capital from philanthropic or public sources to increase private sector funding for high impact projects. Blended finance aims to de-risk loans for greenfield projects that will not proceed in the absence of concessional financing. It enhances asset credit value as it reduces uncertainty and costs in terms of risk-return expectations. For example, utilizing the V20’s Accelerated Financing Mechanism for the targeted use of credit strengthening for national banks can enable the financing of adaptation and resilience projects. This could include partial credit guarantees or insurance and risk sharing, including subordinated debt investment, thus lowering the cost of capital.
- Export Credit Agencies in developed countries can reinforce the cooperative relationship among financial institutions and government agencies through financial support for resilient infrastructure projects. In support of this, the central bank (Bangladesh Bank), for example, can craft enabling regulations in terms of hard currency being advanced by ECAs to local commercial banks to ensure borrowing is affordable and accessible for projects.

- Adopting the risk-layering approach in the Climate and Disaster Risk Management and Financing Strategy to build resilience, we will link planned adaptation with CDRFI instruments and thus utilize the most cost-effective reduction in exposure to climate risks that will integrate investments in risk reduction (adaptation), risk retention (e.g., budgetary allocations for contingency funds for low-impact, high-frequency events), risk transfer on and across different levels (e.g., for high-impact, low(er) frequency events) and contingency financing.

## **Economic Partnerships Strengthened**

A large part of economic partnership strengthening will come in the form of investment and trade with climate considerations by North–South, South–South, regional and international cooperation. Private domestic and foreign investment can be boosted by improving the investment landscape with a view to reducing the cost of doing business and providing access to serviced land through special economic zones. The MCPPE aims to increase domestic private investment and foreign direct investment. Strengthening economic partnerships is to be supported through marketing campaigns, publicizing projects, and hosting annual investor conferences with a range of capital providers, international institutions, and bilateral partners.

The Climate Prosperity Plans will drive climate resilience, adaptation, and low carbon development demand from investors (bilateral, multilateral, and commercial). These plans can serve as a negotiating tool to enable a climate trade that leads to robust competition with partners including strengthened economic partnerships with countries aligned with safeguarding the 1.5°C limit of the Paris Agreement. Concurrently, there will be a reduction in the volume of trade with countries that are not aligned with climate prosperity outcomes as a result of reduced fossil fuel imports.

There is significant opportunity for technology-transfer partnerships and building manufacturing capacity in Bangladesh. Partnerships in adaptation technology may be pursued in areas such as flood safeguards, weather forecasting technologies, insurance tools, more resilient crops, water recycling, water purification, efficient irrigation systems, and sensors especially for flood zones. Moreover, partnerships with the EU, Japan, the US, and Korea can be leveraged to pursue green hydrogen. India could be a valuable partner in solar power and electric vehicles. China can be leveraged for a modernized power grid and other resilient and quality infrastructure, alongside Japan and the EU. Partnerships can also be leveraged for green supply chains and value-engineering in agriculture, fisheries, and manufacturing with the US, EU, China, Southeast Asia, and others.

The regional partnerships in South Asia (including through the South Asian Association for Regional Cooperation) feature connectivity with neighboring countries

that can strengthen value-chain/supply-chain integration. Moreover, the South Asia region can secure regional energy security through least-cost options that are competitive enough to attract global manufacturing, agriculture, fisheries, and services. In addition, there is an opportunity to explore foreign direct investment by Bangladesh in member CVF/V20 countries to earn foreign currency overseas.

Given the heightened risk of spillover effects that could cause countries and industries to perform below their potential, it is imperative for economic partners to coordinate stimulus efforts to build a low-carbon and climate-resilient global supply chain.

Moreover, multilateral development banks can improve capacity-building efforts, including the creation of project-preparation tools to support speedier project cycles and implementation. Additional support for knowledge sharing between countries will also increase the capacity for modernization and climate adaptation.

# Glossary

Terminology	Definition
1.5° C limit	Official survival limit of temperature rise under the Paris Agreement beyond which climate-induced risks and disasters will be far more severe.
Adaptation	Adaptation refers to adjustments to ecological, social and economic systems in such a manner as to build resilience of human communities and natural ecosystems so as to moderate or minimize potential damage or to benefit from opportunities associated with climate change.
Adaptation Fund (AF)	Fund established in 2001 under the Kyoto Protocol to finance the projects and programmes in developing countries that are vulnerable to the adverse impacts of climate change.
Adaptive Social Protection (ASP)	An approach to reduce negative impacts of global challenges and change, such as poverty, food insecurity and climate change, as well as their increased interaction with natural hazards, such as floods, hurricanes or earthquakes. ASP involves combining social protection, disaster risk management and climate change adaptation
Grid modernization	Improvements needed in the power grid to accommodate new technology
Agro-meteorological services	Services concerned with interactions between meteorological and hydrological and agricultural factors.
Adaptation tracking mechanism	Mechanism that involves monitoring and quantifying complex processes of change that take place at the intersection of socio-economic, natural and political systems, and across multiple scales.
Capital intensity	Capital intensity is the infusion of high amounts of capital in a business or production process. It therefore requires a higher proportion of fixed assets (land, property, plant, and equipment) to produce goods and services. Industries or companies that require such large capital investments are known as capital intensive businesses.
Carbon assets	Physical and natural assets with direct or indirect exposure to GHG emission constraints, including first, soil, ocean carbon etc.

Carbon finance	Carbon finance is a mechanism adopted by OECD countries to provide money for GHG (carbon) emission reduction projects in the developing countries
Climate finance	Climate finance is the flow of funds from developed countries to developing countries to address the issues related to climate change. It refers to local, national or transnational financing, primarily provided by developed countries, which may be drawn from public, private and alternative sources and mobilized to help developing countries mitigate and adapt to the impacts of climate change.
Climate funds	Climate funds are resources earmarked at multilateral, bilateral and/or national levels for measures that address climate change. Several climate change dedicated funds such as GCF, Least Development Countries Fund (LDCF), Adaptation Fund, and Climate Investment Funds have been established to support the poor and vulnerable developing countries
Climate Investment Funds	The Climate Investment Funds (CIFs) is a multi-donor trust fund established by developed countries to provide developing and middle-income countries with urgently needed resources to manage the challenges of climate change and reduce their greenhouse gas emissions. The World Bank acts as a trustee of this fund. CIF consists of two distinct funds: the Clean Technology Fund and the Strategic Climate Fund. Currently, Nepal is implementing projects such as the Pilot Project for Climate Resilience, Scaling up Renewable Energy Programme and Forest Investment Programme under the Strategic Climate Fund.
Carbon sink	A carbon sink is any reservoir, natural or otherwise, that accumulates and stores some carbon-containing chemical compound for an indefinite period and thereby lowers the concentration of carbon dioxide (CO <sub>2</sub> ) from the atmosphere.
Carbon tax	It is the tax levied on fossil fuels, especially those used by motor vehicles, intending to reduce the emission of carbon dioxide and for prompting a switch to clean energy
Carbon trading	Carbon trading is a market-based system aimed at reducing greenhouse gases that contribute to global warming, particularly carbon dioxide emitted by burning fossil fuels and to add benefits for carbon sinks including forest carbon, blue carbon and soil carbon .

Catastrophe bonds	High-yield debt instrument that is designed to raise money for governments and private sector in the insurance industry in the event of a natural disaster.
Clean Development Mechanism (CDM)	Clean Development Mechanism (CDM) is a mechanism under the Kyoto Protocol through which developed countries may finance projects on reduction or removal of greenhouse gas emissions in developing countries, and, in return, receive carbon credits for doing so which they may apply to meeting mandatory limits on their own emissions.
Climate displacement	Mass migration of populations affected by climate change forcibly leaving their homes that have become uninhabitable
Climate equity	Protection from environmental hazards as well as access to environmental benefits for all, regardless of income, race, and other characteristics.
Climate finance	Local, national or transnational financing—drawn from public, private and alternative sources of financing—that seeks to support mitigation and adaptation actions that will address climate change
Climate Prosperity	Climate Prosperity aims to counteract the threat multiplier of climate change towards maximized socio-economic outcomes through transforming the real economy with technology transfer, new resources and economic partnerships.
Climate Resilience	The ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate
Climate smart design	With good spatial information, decision makers can plan for resilience to climate change.
Climate variability	Climatic parameter of a region varying from its long-term mean.
Climate Vulnerability Monitor	A CVM flagship report with new tools to assess global vulnerability to various effects of climate change within different nations. The 2nd edition of the report has underpinned the Paris Agreement survival limit of 1.5° C.
Compound interest rates	This is calculated by multiplying the initial principal amount by one plus the annual interest rate raised to the number of compound periods minus one. Interest can be compounded on any given frequency schedule, from continuous to daily to annually.

Climate disaster risk financing and insurance	This refers to a set of tools available to financially manage the impacts of increasing risk exposure due to climate change, including but not limited to pre-arranged financing and insurance solutions.
Co-financing	The joint or parallel financing of programs or projects. . Contributions may come from a range of actors including mul financial resource providers include bilateral funds, multilateral institutions, international climate funds, government or government-affiliated institutions, and private sector, among others.
Concessional loan	These are loans that are extended on terms substantially more generous than market loans. The concessionality is achieved either through interest rates below those available on the market or by grace periods, or a combination of these. Concessional loans typically have long grace periods.
Contingency fund/financing	Reserve of money set aside to cover possible unforeseen future expenses (e.g. climate-induced loss and damage)
Contingent Credit Lines	Contingent credit is one type of financial instrument to help governments secure funds in advance of a disaster
Cost of capital	Cost of capital considers the costs of financing—like loan interest or the minimum return investors expect to earn on the project..
Credit strengthening	Strategy for improving the credit risk profile of a business or government, usually to obtain better terms for repaying debt.
Current account balance	Measures the nation's earnings and spendings abroad and it consists of the balance of trade
Debt sustainability	A country's public debt is considered sustainable if the government is able to meet all its current and future payment obligations without exceptional financial assistance or going into default.
Deflationary price	Deflation is when the general price levels in a country are falling—as opposed to inflation when prices rise
Demographic dividend	Accelerated economic growth that may result from a decline in a country's birth and death rates and the subsequent change in the age structure of the population.

Direct Access	A mechanism in which national accredited entities of developing countries gain direct access to GCF funds to implement the selected projects and/or programmes. These entities may wish to choose other executing entities to carry out the work.
Disaster risk	The potential disaster losses of sudden or slow-onset events in lives, health, livelihoods, assets, and services, which could be incurred by a particular community or society over some specified future time period. Disaster risk is a function of hazard, exposure, vulnerability, and capacity.
Disaster risk reduction	The concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.
Disaster risk financing	This refers to a set of tools available to financially manage the impacts of natural disasters.
Energy independence	The ability of a country or region to meet all its energy needs without having to import primary or final energy.
Energy security	Uninterrupted availability of energy sources at an affordable price
Export competitiveness	Ability of a country/state/region to export more in value added terms than it imports when including for “terms of trade” to reflect all government “discounts” and import barriers.
Financial inclusion	Financial inclusion refers to efforts to make financial products and services accessible and affordable to all individuals and businesses, regardless of their personal net worth or company size. Financial inclusion strives to remove the barriers that exclude people from participating in the financial sector and using these services to improve their lives. It is also called inclusive finance.
Financial instruments	Financial instruments are monetary assets such as grants, concessional loans, guarantees and equity investments.
Financial protection	In the context of disaster risks, the level of payment to be expected based on the occurrence of a disaster event and/or the specific costs incurred as a result of a disaster event (for example, property insurance contract, parametric insurance contract, catastrophe bond, government compensation or financial assistance for disaster losses).

Fiscal sustainability		The ability of a government to maintain public finances at a credible and serviceable position over the long term
Foreign Investment	Direct	An investment in the form of a controlling ownership in a business in one country by an entity based in another country
Future proofing		Future-proofing is the process of anticipating the future and developing methods of minimizing the effects of shocks and stresses of future events or future trends
Insuresilience Partnership	Global	AG20 and V20 Partnership that aims to protect 500 million poor and vulnerable people to ensure more timely and reliable post-disaster response and to better prepare for climate and disaster risk through the use of climate and disaster risk finance and insurance solutions, increasing local adaptive capacity and strengthening local resilience.
Green energy		Green energy is any energy type that is generated from natural sources, such as sunlight, wind or water.
Greenhouse Gas		Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the Earth's surface, the atmosphere itself, and by clouds. This property causes the greenhouse effect. Water vapour (H <sub>2</sub> O), carbon dioxide (CO <sub>2</sub> ), nitrous oxide (N <sub>2</sub> O), methane (CH <sub>4</sub> ) and ozone (O <sub>3</sub> ) are the primary greenhouse gases in the Earth's atmosphere. Moreover, there are a number of entirely human-made greenhouse gases in the atmosphere, such as the halocarbons and other chlorine- and bromine-containing substances, dealt with under the Montreal Protocol. Beside CO <sub>2</sub> , N <sub>2</sub> O and CH <sub>4</sub> , the Kyoto Protocol deals with the greenhouse gases sulphur hexafluoride (SF <sub>6</sub> ), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs).
Green hydrogen		Hydrogen produced by splitting water into hydrogen and oxygen using renewable energy sources.
Green supply chain		Operational management method and optimization approach to reduce the environmental impact along the life cycle of the green product, from the raw material to the end product.
Green export		<p>There is no internationally agreed definition of a green sectors and products. However, it is generally agreed that environmental goods and services generally fall into one of two categories:</p> <ol style="list-style-type: none"> <li>1. Goods and services used to provide an environmental service such as wastewater treatment, solid waste management, and air pollution control. Related goods include a wide variety of industrial products</li> </ol>

such as valves, pumps, compressors, etc. that can be specifically employed for environmental purposes.

2. Goods and services whose production, end-use and/or disposal have reduced negative, or potentially positive, environmental impacts relative to a traditional substitute good providing similar function and utility. This category includes goods that are generally used for purposes other than environmental ones. For example, related goods may include items such as chlorine-free paper, renewable energy technologies, energy-efficient office machines, organic soaps, or natural fibre packaging or floor covering materials. Such goods, sometimes referred to as environmentally preferable products (EPPs), have inherently environmentally superior qualities compared to substitute goods. Related services include ecotourism services or renewable energy transport and electricity supply services.

Green Climate Fund (GCF)	A fund established within the framework of the UNFCCC as an operating entity of the Financial Mechanism to assist developing countries in adaptation and mitigation practices to counter climate change. At present, USD 10.3 billion has been pledged to this fund.
Grant	Grant is a type of financial instrument to address climate adaptation and/or mitigation project/programme in the developing countries with no expectation of a return payment.
Internal migration	Internal migration is the movement of people from one defined area to another within a country
Just transition	Greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind.
Kampala Principles	Principles to enhance the effectiveness of development partnerships with the private sector at the country level.
Liquidity needs	Amount of readily accessible resources is needed to cover regular investment, expenses, upcoming purchases, and/or emergency spending.
Leverage	Leverage is used in the context of climate finance in which it refers to public finance (e.g. from international finance institutions) that is used to encourage private investors to back the same project. This can be in the form of equity, loans, risk guarantees or insurance. This is also intended to reduce the perceived risk for the private sector. Financial institutions apply the terminology 'leveraging' to understand how their core contributions (for example, money provided by donor

	governments to a multilateral development bank) can be invested in capital markets to create an internal multiplier effect.
Locally led adaptation	Locally led adaptation action involves shifting power to local stakeholders to lead or meaningfully participate in adaptation actions.
Loss and damage	Harms caused by anthropogenic climate change. Defined economically, it is the difference between the adapted (using both country-level and expected resources from financial partners) sectoral and macroeconomic outputs and the initial baseline without climate change.
Low carbon	Low Carbon or Low Carbon Development means reduction of carbon emission to minimal level to mitigate greenhouse gases responsible for global warming and climate change. The concept of low carbon development was first discussed in UNFCCC, Rio in 1992. Low carbon development is generally expressed with the term Low Emission Development Strategies (LEDS) or Low Carbon Development Strategies (LCDS).
Low carbon economy	An economy based on low-carbon technologies (including in power, transport, and industry) and energy sources that produce low levels of greenhouse gas (GHG) emissions
Long Term Strategies (LTS)	Long-term Strategies (LTS) invite countries to communicate, by 2020, their vision for achieving a low-emission, sustainable economy. These mid-century strategies were first called into action by the Paris Agreement.
Mitigation	Efforts to reduce or prevent emission of greenhouse gases. Mitigation can mean using new technologies and renewable energies, making older equipment more energy efficient, or changing management practices, consumer behavior,, improving the insulation of buildings, and expanding forests and other 'sinks' to remove greater amounts of carbon dioxide from the atmosphere.
National Adaptation Plan (NAP)	National Adaptation Plan (NAP) is a continuous, progressive and iterative process undertaken by developing country parties to the UNFCCC to identify medium and long-term adaptation needs. It also includes developing and implementing strategies and programmes to address those needs. Nepal is currently in the process of preparing its NAP building on the experience of the National Adaptation Programme of Action.
Nationally Determined Contribution (NDC)	Nationally Determined Contributions (NDC) is a term used under the UNFCCC referring to actions designed to combat climate change,

	<p>especially for reduction of greenhouse gas emissions by all the countries that are party to the UNFCCC. NDCs are the basis of the post-2020 global emissions reduction commitment. Before the Paris Agreement came into force Nationally Determined Contributions were called Intended Nationally Determined Contributions (INDC). Many developing countries have also included other actions related to adaptation, technology and finance in their NDCs.</p>
Natural resource management	<p>Management of natural resources such as land, water, soil, plants and animals, with a particular focus on how management affects the quality of life for both present and future generations.</p>
Nature-based solutions (NbS)	<p>Nature-based solutions (NbS)) refers to the sustainable management and use of natural features and processes to tackle socio-environmental challenges. These challenges include issues such as climate change, water security, water pollution, food security, human health, biodiversity loss, and disaster risk management.</p>
Ocean acidification	<p>A reduction in the pH of the ocean over an extended period of time, caused primarily by uptake of carbon dioxide (CO<sub>2</sub>) from the atmosphere.</p>
Offshore wind	<p>Generation of electricity through wind farms in bodies of water, usually at sea.</p>
Paris Agreement	<p>The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016.</p> <p>Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels.</p> <p>To achieve this long-term temperature goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible to achieve a climate neutral world by mid-century.</p> <p>The Paris Agreement is a landmark in the multilateral climate change process because, for the first time, a binding agreement brings all nations into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects.</p>
Planetary emergency	<p>Planet faces a series of converging crises, all on the same timeline - global warming, disasters, extreme weather events, biodiversity loss, acidification of oceans, water stress, food insecurity, planetary overshoot, etc.</p>

Premium subsidies	Any form of financial support or provision of concessional finance (inclusive of grant finance) to reduce price of insurance
Public-private partnerships	Public-private partnerships involve collaboration between a government agency and a private-sector company that can be used to finance, build, and operate projects, such as public transportation networks, parks, and convention centers.
Price volatility	Price fluctuations of a commodity. Volatility is measured by the day-to-day percentage difference in the price of the commodity.
Private Sector Facility (PSF)	Private Sector Facility (PSF) is a mechanism in which the GCF can directly provide grants, concessional loans, risk guarantees or other forms of financial products (e.g. green bonds, refinancing, credit lines, equity financing) to accredited private companies or pass them on to such companies by accredited intermediaries. It is one of the windows under the GCF to encourage private sector role and investment in climate actions.
Reskilling	Reskilling is the process of learning new skills so you can do a different job, or of training people to do a different job.
Resilience	The ability of a system, community, or society exposed to hazards to resist, absorb, accommodate to, and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions. The resilience of a community in respect to potential hazard events is determined by the degree to which the community has the necessary resources and is capable of organizing itself both before and during times of need.
Resilience Bonds	Resilience bonds are bonds that are at the intersection of social bonds and sustainability bonds.
Risk management	Process of identifying, assessing and controlling threats to an organization's capital and earnings.
Risk retention	An individual or organization's decision to take responsibility for a particular risk it faces.
Risk transfer	A risk management and control strategy that involves the contractual shifting of a pure risk from one party to another.
Rural electrification	Ensuring electrical power in remote and hard-to-reach rural areas.

Salinity intrusion	The movement of saline water into freshwater aquifers, which can lead to groundwater quality degradation, including drinking water sources, and other consequences.
Sea level rise	An increase in the level of the world's oceans due to the effects of global warming.
Solar photovoltaic cell	A solar cell, or photovoltaic cell, is an electrical device that converts the energy of light directly into electricity by the photovoltaic effect, which is a physical and chemical phenomenon.
Soft and hard engineering	A hard engineering approach involves building structures, such as groynes, sea walls or rock armour, to protect the coastal area. A soft engineering approach works with natural processes.
Subordinated investments	debt An unsecured loan or bond that ranks below other, more senior loans or securities with respect to claims on assets or earnings.
Supply chain integration	Information and communication systems of all stakeholders are able to seamlessly exchange information through all planning, execution and completion of transport and logistics operations throughout a product's lifetime.
Technology transfer	Technology transfer is the process of transferring (disseminating) technology from the party that owns or holds it to another, in an attempt to transform inventions and scientific outcomes into new products and services that benefit society.
Transformation	Transformation refers to a change in the fundamental attributes of a system that are revolutionary and large scale. This type of changes cross the threshold and creates discontinuity in the system through adoption of new policies, measures, institutional constructs and activities. This change is a part of the ongoing decision-making process, which helps to improve the adaptation and mitigation actions.
Transition Bonds	Transition bonds are a relatively new class of debt instrument used to fund transition towards reduced environmental impact or lower carbon emissions.
Trade Balance	Difference between the value of the goods that a country (or another geographic or economic area such as the European Union (EU) or the euro area) exports and the value of the goods that it imports.
Trade Deficit	A trade deficit occurs when the value of a country's imports exceeds the value of its exports—with imports and exports referring both to goods, or physical products, and services. In simple terms, a trade

		deficit means a country is buying more goods and services than it is selling.
Upskilling		Upskilling is the process of learning new skills or of teaching workers new skills.
United Nations Framework Convention on Climate Change (UNFCCC)	Nations	United Nations Framework Convention on Climate Change (UNFCCC) is a framework for international cooperation to combat climate change. It aims to stabilize the greenhouse gas concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. It focuses on both mitigation and adaptation measures. There are now 197 parties to the Convention that was adopted at the Earth Summit in 199.
Voluntary Carbon Market (VCM)		The voluntary carbon market (VCM) was formed with the aim of driving finance to activities that reduce greenhouse gas (GHG) emissions.