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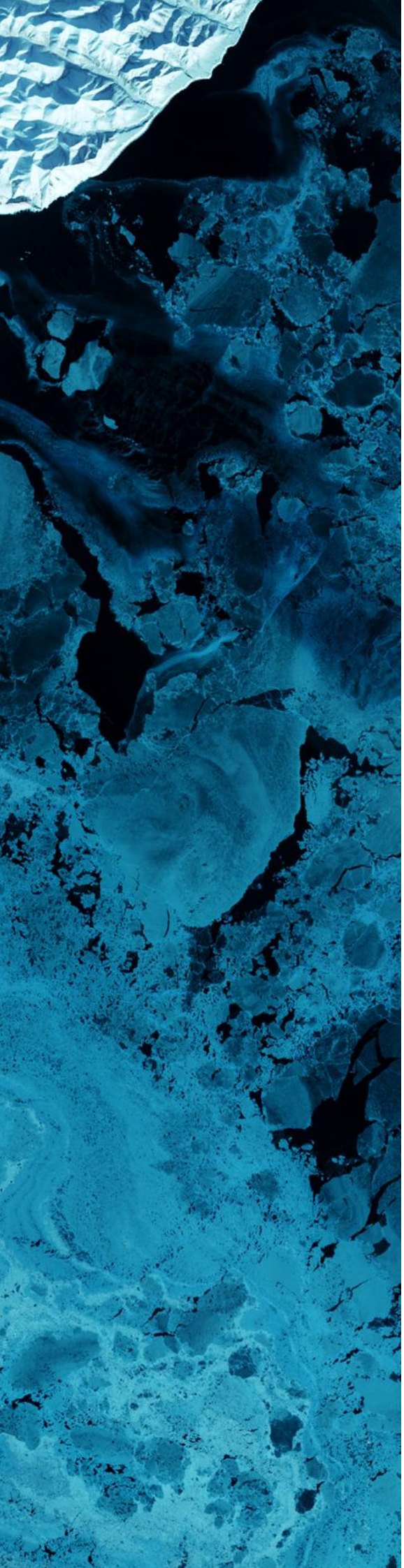
LESSONS IN MULTILATERAL EFFECTIVENESS

Pulling Together: The Multilateral Response to Climate Change

VOLUME III | Country Profiles

MOPAN



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ACRONYMS AND ABBREVIATIONS

AAAI	African Agriculture Adaptation Initiative
ADB	Asian Development Bank
AE	Accredited Entities
AF	Adaptation Fund
AfDB	African Development Bank
AFOLU	Agriculture, Forestry and Other Land Use
AICCRA	Accelerating the Impact of CGIAR Climate Research for Africa
ASAP	Adaptation for Smallholder Agriculture Programme
ASEAN	Association of Southeast Asian Nations
AU	African Union
CBIT	Capacity-building Initiative for Transparency
CCA	Climate Change Adaptation
CCAFS	Climate Change, Agriculture and Food Security Research Programme
CAP	Climate Action Plan
CCAP	Climate Change Action Plan
CCF	Climate Change Fund
CCMA	Climate Change Mitigation and Adaptation
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CCS	Climate Change Strategy
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CGIAR	Consultative Group on International Agricultural Research
CIF	Climate Investment Funds
C-NET	Climate Impact Assessment Network
CO2e	Carbon Dioxide Equivalent
COP	UN Climate Change Conference of the Parties

COSOP	Country Strategic Opportunities Programme
CPF	Country Partnership Framework
CPS	Country Partnership Strategy
CRA	Climate Risk Assessment
CRGE	Climate Resilient Green Economy
CRP	Climate Risk Profile
CsA	Climate-smart Agriculture
CTCN	Climate Technology Centre and Network
CTF	Clean Technology Fund
DAG	Development Assistance Group
DEO	Development Effectiveness Overview
DFID	Department of International Development of the United Kingdom
DMC	Developing Member Country
DPL	Development Policy Loan
DRM	Disaster Risk Management
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
ESAP	Environmental and Social Assessment Procedures
FAO	Food and Agriculture Organisation of the United Nations
FIP	Forest Investment Program
FSAP	Financial System Assessment Programme
G20	Group of 20
GCF	Green Climate Fund
GCIP	Global Cleantech Innovation Programme
GEF	Global Environmental Facility
GEO	Global Environmental Outlook Report
GGWI	Great Green Wall Initiative
GHG	Greenhouse Gas
IA	Implementing Agency
ICARDA	International Centre for Agricultural Research in the Dry Areas
IDB	Inter-American Development Bank
IDBG	Inter-American Development Bank Group
IDDRI	Institute for Sustainable Development and International Relations

IDFC	International Development Finance Club
IED	Independent Evaluation Department (ADB)
IEMP	International Ecosystem Monitoring Partnership
IEU	Independent Evaluation Unit
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IFI	International Financial Institution
IMF	International Monetary Fund
INDC	Intended Nationally Determined Contributions
IP	Impact Programme
IPCC	Intergovernmental Panel on Climate Change
IRENA	International Renewable Energy Agency
IRM	Initial Resource Mobilisation
LAC	Latin America and the Caribbean
LDC	Least Developed Country
LDCF	Least Developed Country Fund
LED	Low-emissions Development
LNG	Liquefied Natural Gas
LTS	Long-Term Strategies
LULUCF	Land Use, Land Use Change and Forestry
MDB	Multilateral Development Banks
MENA	Middle East and North Africa
MFF	Multi-Tranche Financing Facility
MIE	Multilateral Implementing Agency
MIGA	Multilateral Investment Guarantee Agency
MLF	The Multilateral Fund
MO	Multilateral Organisation
MOPAN	Multilateral Organisation Performance Assessment Network
MPA	Multiphase Programmatic Approach
MRV	Measuring, Reporting, and Verification
MS	Multilateral System
MTS	Medium-Term Strategy
NAMA	Nationally Appropriate Mitigation Actions

NAPA	Nationally Appropriate Plans of Action
NAZCA	UNFCCC Non-state Actor Zone for Climate Action
NDB	New Development Bank
NbS	Nature-based Solutions
NDC	Nationally Determined Contribution
NGO	Non-Governmental Organisation
NRM	Natural Resource Management
OECD	Organisation for Economic Co-operation and Development
PSF	Private Sector Facility
PMR	Partnership for Market Readiness
PPCR	Pilot Programme for Climate Resilience
PPP	Public-Private Partnership
PSAG	Private Sector Advisory Group
PV	Photovoltaic
REDD+	Reducing Emissions from Deforestation and Forest Degradation in
SAB	Sustainability Awareness Bond
SCCF	Special Climate Change Fund
SDGs	Sustainable Development Goals
SDPF	United Nations Sustainable Development Partnership Framework
SECAP	Social, Environment and Climate Assessment Procedures
SEFA	Sustainable Energy Fund for Africa
SIDS	Small Island Developing State
SLM	Sustainable Land Management
TA	Technical Assistance
UNCCC	United Nations Convention on Combatting Climate Change
UNDP	United Nations Development Programme
UNDS	United Nations Development Systems
UNEA	United Nations Environment Assembly
UNECA	United Nations Economic Commission for Africa
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organisation
UNSDCF	United Nations Sustainable Development Country Framework

UNSG	United Nations Secretary General
VF	Vertical Funds
WB	World Bank
WBCSD	World Business Council for Sustainable Development
WBG	World Bank Group
WHO	World Health Organisation
WMO	World Meteorological Organisation
WRI	World Resources Institute
WRM	Water Resource Management
WWF	World Wildlife Fund
WWUS	Water and Urban Infrastructure Services

1. BRAZIL

1.A Background

Brazil is the world's fifth-largest country geographically and the sixth-largest demographically, with an estimated population of more than 212 million in 2021 and growing at about 0.8% a year. It has a population density of 25 persons per km^2, reflecting a very uneven distribution across the national territory. Just over 87% of the Brazilian population resides in urban areas, including an estimated 22 million in São Paulo and more than 12 million in Rio de Janeiro. According to the *WB Little Green Data Book 2017*, Brazil is an upper-middle-income country, with an estimated GNI per capita of USD 9 900. Regarding land use, 34% of its land area was in agriculture and 59% in forests, primarily in Amazonia. However, Brazil's annual deforestation rate of 0.4% between 2000 and 2015, while roughly equal that for the LAC region, was significantly higher than that for all upper-middle-income countries. The rate fell between 2015 and 2018 but rose again in 2019 and 2020. On the other hand, 28.4% of Brazil's land area was in protected areas, exceeding the averages for LAC (23.3%) and for all upper-middle-income countries (15.2%).

1.A.1 Brazil's mitigation challenges

Brazil is currently the sixth highest developing country emitter of GHG after China, India, Indonesia, Mexico, and South Africa. In 2016 total GHG emissions were 1 467 TtCO_2e, according to Brazil's fourth national communication to UNFCCC, submitted in December 2020. Its per capita CO_2 emissions were estimated at 2.37 metric tonnes in 2018, down from 2.57 in 2015, but they undoubtedly increased subsequently. The communication indicated that the agriculture sector contributed 33.2% of total emissions, followed by the energy sector (29.9%), and LULUCF with 27.1% with industrial processes and waste responsible for 6.4% and 4.5%, respectively. More than 70% of Brazil's energy is generated by hydropower and it uses sugarcane-based ethanol in part to power its vehicle fleet. However, between 2010 and 2016, overall emissions in Brazil grew by 19.4%, and 61% of this increase was due to LULUCF, 20% from energy, 12% from agriculture, 4% from waste, and 3% from industrial processes, with the increase for LULUCF primarily due to deforestation and associated fires in the Amazon and Cerrado Biomes.[1]

Rising deforestation in the Cerrado and Amazonia regions is mainly due to the continued expansion of soybean plantations and cattle ranching. The change of federal administrations in January 2019 and its export-enhancing policies and relaxation/lack of enforcement of existing environmental laws and regulations, moreover, has encouraged greater land use clearing and associated fires in both biomes over the past two years, which have led to increased GHG emissions.[2] The deforestation rate and associated incidence of fires in the Cerrado, which covers parts of ten states and more than 2 million km^2, has been even higher.[3] Brazil is presently the world's leading exporter of soybeans (mainly to China) and beef and the second largest exporter of iron ore. The expansion of these two major products is the main force driving deforestation in the Amazon and the Cerrado. On a more optimistic note, Brazil's reliance on renewable biomass (i.e., sugar cane) is positive to the extent that it substitutes fossil fuels in the transport sector.

1.A.2 Brazil's adaptation challenges

Brazil harbours nearly 60% of the Amazon, home to nearly 20% of the world's fresh water and whose

1 Government of Brazil, Fourth National Communication of Brazil to the UNFCCC, Brasília, D.F., 31 December 2020.

2 Using satellite imagery, Brazil's National Space Research Institute, monitors deforestation in the Amazon and has reported an increase from a low annual rate of around 4 000 km^2 in 2012 and 6 000 km^2 in 2015 to 7 000 km^2 in 2018, 10 000 km^2 in 2019 and 11 000 in 2020, despite the government's deforestation target of a total of 3 900 km^2 by 2020.

3 The WBG paper, "Cerrado Biome Conservation in Brazil: World Bank's Approach, Program, and Projects 2019" (Brasília, 2019), states that, "between 2013 and 2018, Amazon Biome deforestation represented 39 813 km^2. Over the same period, the Cerrado Biome lost 56 296 km^2, 2.7% of its cover and only 48% of the area covered by native vegetation remains."

productive bio-diverse ecosystems provide essential services for nearly 30 million people regionally and globally, including 350 indigenous communities. Climate change impacts in the basin are significant: higher temperatures may change the range and distribution of temperature-sensitive species, increased drought severity can greatly affect the Amazon's freshwater ecosystems, changes in precipitation and temperature could impact the spread of disease, and sea level rise and storm surge will have substantial impacts on lowland areas of vast delta and inland areas. Coupled with deforestation and environmental degradation, these impacts greatly threaten both the region's natural resources as well as tourism. Climate variability and change also threaten agriculture both in Amazonia and the Cerrado and in the already drought-prone semi-arid northeast, Brazil's poorest region. Droughts are expected to become even more frequent and severe due to climate change, affecting major cities particularly in the southeast and coastal areas.

1.B Brazil's adaptation and mitigation priorities

The Brazilian government's current development priorities include restoring economic growth and fiscal stability and expanding employment generation. The COVID-19 pandemic, which the government has continually failed to address effectively, has adversely affected all of these. Exporting primary exports, including soybeans, iron ore, meat, and poultry, is an important part of the growth strategy. According to its NDP, Brazil's agenda prior to the onset of COVID-19 had four main axes: coherence of macro and structural policies, investment in infrastructure, growth in trade and productivity, and tax and financial sector reform.

Regarding climate change, Brazil submitted its NDCs in December 2016. They were based on the national policy on climate change (2009), the law on the protection of native forests (i.e. Forest Code, 2012), the law on the national system of conservation units (2000), and related legislation, instruments, and planning processes.[4] It affirmed that Brazil considered adaptation to be a fundamental element of the global effort to tackle the effects of climate change and noted that the government was designing new public policies, through its NAP issued in May 2016 and aimed at implementing knowledge management systems, promoting research and technology development for adaptation, and developing processes and tools for adaptation actions and strategies at different levels of government. In addition, the government was seeking to enhance national capacity in water security (through the national water security plan) and conservation and sustainable use of biodiversity (through the NSP for protected areas and implementation of the forest code). The NAP would also strive to: (i) strengthen Brazil's adaptation capacity, assess climate risks, and manage vulnerabilities at the national, state, and municipal levels; (ii) integrate vulnerabilities and climate risk management into public policies and strategies, and (iii) enhance the coherence of national and local development strategies with adaptation measures.

Regarding mitigation, the NDC document indicates that Brazil intends to reduce GHG emissions by 37% below 2005 levels by 2025 and by 43% below 2005 levels by 2030. It also observed that the country would "strive for a transition towards energy systems based on renewable sources and the decarbonisation of the global economy by the end of the century," assuming it had access to the necessary financial and technological means. It also set targets and highlighted additional measures for the use of biofuels and other renewable energy sources (excluding hydropower), energy efficiency in the electricity and industrial

4 Federative Republic of Brazil, *Intended Nationally Determined Contribution Towards Achieving the Objective of the United Nations Framework Convention on Climate Change*, Brasília, 9 December 2016, pg. 1.

sectors, low-carbon agriculture, and net zero illegal deforestation in the Amazon region by 2030.[5] Brazil's NDC statement observed that additional actions would require large-scale increases of international support and investment flows, together with technology development, deployment, diffusion, and transfer. Regarding the forest sector, the implementation of REDD+ activities required adequate, predictable results-based payments in accordance with the pertinent COP decisions.

The government's December 2020 communication to UNFCCC reaffirms its initial commitments to reduce GHG emissions in 2025 by 37% and in 2030 by 43% below the 2005 level: its ambitions have not increased. It justifies this by arguing that Brazil is already making an important contribution to international efforts to fight climate change based on: (i) the 30% share of its territory in conservation units and indigenous peoples areas; (ii) the extent to which renewable energy sources contributed to power generation (83% in 2019) and automobile fuel consumption (46% that same year; (iii) the legal requirements that land-use legislation requires landowners to set aside for preservation of between 20% and 80% of the area of their properties (depending on the biome) and to conserve riparian forests and other fragile ecosystems, and (iv) because the low carbon agriculture plan (had allocated some USD 3 billion to mitigation measures in the agro-ranching sector through the recovery of degraded pastures, biological nitrogen fixation, increased accumulation of organic matter, no-tillage practices, agroforestry systems; forest planting, and crop-livestock-forestry integration.[6]

1.C MO climate change programmes in Brazil

World Bank Group

The WB issued its CPF for Brazil in May 2017 for FY 2018-23. The document states that the government had expressed interest in borrowing up to USD 3.0 billion for FY18 and FY19, including USD 1.0 billion for subnational investment projects involving rural and municipal development. Climate change is identified as one of Brazil's development challenges, including in the context of "inadequacies in the policy framework for the use and protection of Brazil's natural resources." The document observes that the policy commitments and the progress achieved over the past decade provide are evidence that Brazil is, "well placed to continue along a green growth path." However, further work is required in three areas: (i) institutional fragmentation needs to be overcome to reduce the compliance costs of environmental regulation, increase the effectiveness of policy implementation, and facilitate improved long-term planning given the growing increased risks of climate change and natural disasters; (ii) pricing policies must be reviewed to improve incentives for the conservation of water and other natural resources and encourage investments in improved quality and resilience of service provision, and (iii) the conflicts between conservationist and development goals would be more easily resolved by enabling small producers to access the appropriate technologies to increase their yields, to intensify the use of agricultural land use, especially for pastures, and on to considering traditional forest-dwelling communities as the stewards of Brazil's natural patrimony.

5 Arguably, Brazil already had one of the largest, most successful biofuel programmes to date, including cogenerating electricity using biomass, and had, "achieved the most impressive results of any country in reducing emissions from deforestation, mainly by reducing the deforestation rate in Amazonia by 82% between 2004 and 2014." It also noted that Brazil's energy mix consisted 40% of renewables (75% of renewables in its electricity supply or three times the world average and more than four times that for OECD).

6 It neglected to mention, however, that deforestation in the Amazon and elsewhere in Brazil had risen sharply over the past two years and that the current federal government had failed to enforce much of the legislation it had referred to as being one of the world's "most protective" of land use, while many of its policies were having exactly the reverse effect on private farmer/rancher behaviour including more encroachment in protected areas, including indigenous areas, particularly in Amazonia.

The inclusive and sustainable development CPF FA includes new activities to support Brazil's NDCs, focusing on land use and leveraging global partnerships to this effect. Ironically, in retrospect, the CPF added that the existing portfolio would help consolidate gains in social inclusion and sustainable NRM, including through advocacy activities to safeguard Brazil's strong recent track record in protecting the environment and marginalised people.[7] However, the January 2019 change in the federal administrations probably impacted this in a negative way as only four new lending operations were approved in 2019 and eight others in 2020 including one in October 2020, of a USD 1 billion loan for income support for the poor affected by COVID-19.

Over the past decade, the WB has indeed sought to help the government address some of its climate change challenges and priorities, focusing both on mitigation and adaptation. However, no new projects aiming to do so have been approved in recent years despite the intentions expressed in the CPF. The WB has also supported the expansion and consolidation of protected areas in the Amazon and elsewhere, although these projects are not thematically tagged as being for climate. All but two of these projects were approved prior to the Paris Agreement; the others — the Integrated Landscape Management in the Cerrado Biome Project approved in June 2018 and the Brazil Investment Plan Co-ordination Project approved in November 2017 — are part of a larger programme that had been initiated earlier. Nearly all of these were primarily mitigation projects in the Cerrado.

These projects were all financed by WB-managed trust funds and involved grants rather than loans, due to the government's reluctance to borrow for climate change-related purposes. Four operations were approved between April 2014 and April 2015 funded by the British Cerrado Climate Change Mitigation Trust Fund. Another six, approved between July 2014 and November 2017, like the most recent ones, are financed under the FIP CIF as part of the Brazil Investment Programme prepared jointly by the Brazilian Government, the WB, and IDB. The most interesting of these operations, Sustainable Production in Areas Previously Converted to Agricultural Use, financed by a FIP grant of USD 10.3 million and implemented by a dependency of the ministry of agriculture, piloted the low-carbon agriculture plan mentioned in Brazil's first NDC statement in 2016 and in the December 2020 update. It was followed-up with a second FIP grant for USD 21 million for the Integrated Landscape Management in the Cerrado project, approved in October 2018, to replicate this approach in priority areas elsewhere in the biome.

The WB is also implementing two projects financed by the CTF. The larger involves a USD 200 million CTF commitment with an estimated total project cost of USD 1.324 billion for the financial instruments for Brazil's Energy Efficient Cities project, approved in May 2018. The other entails a much smaller commitment for the Pilot Hybrid and Electric Bus Rapid Transit Corridor and Concession Model for São Paulo, approved in April 2018.

International Finance Corporation

IFC's climate change-related portfolio in Brazil since 2010 consists of two wind energy projects approved in 2013 with USD 271.0 million in commitments, one loan to a private financial intermediary for on-lending to SMEs approved in 2016 that reportedly includes climate mitigation elements (IFC commitment of USD 30 million), and five agri-business operations for sugar cane-based ethanol production and energy co-generation, varying between USD 40 million and USD 80 million in IFC commitments.

7 WBG, *Country Partnership Framework for the Federative Republic of Brazil, FY18-FY23*, Washington D.C., 16 May 2017, pp. 12, 18-19, and 28-32. The other objectives were to provide more inclusive and sustainable urban services and to promote the socio-economic development of small rural producers and vulnerable groups.

Inter-American Development Bank

The IDBG strategy for Brazil, 2019-22 that was issued in June 2019 highlights four priorities: (i) improve the business climate and narrow gaps in sustainable infrastructure to enhance competitiveness; (ii) promote international and national integration to boost productive capacity; (iii) build a more effective public sector that promotes fiscal sustainability, and (iv) reduce social inequality and inequality of opportunity by enhancing public policy efficiency. In addition, IDBG will provide cross-cutting support for gender and diversity, environmental sustainability and climate change, and innovation and digital transformation. Regarding the energy sector, it states that Brazil's energy matrix is highly dependent on hydroelectric energy, "which helps to provide renewable, clean, and low-cost power, but increases the country's vulnerability to climate change." Consequently, it argues that additional generating capacity should mainly come from other renewable sources, such as wind and solar energy, to comply with the country's NDC goal of increasing renewables (excluding hydroelectricity) in the energy matrix from 28% to 33%. It also observed that Brazil's urban areas are the eighth most congested in the world and that restricted urban mobility imposes environmental costs and has a negative impact on the goal of reducing GHGs by 37% by 2025 and 43% by 2030, noting that inadequate planning was the main urban challenge. In the transport sector, IDBG would prioritise multimodal transport systems, modernising and expanding climate-resilient infrastructure, and operating efficiency, while in the energy sector, it would promote policies and investments to diversify the matrix, increase the role of renewable energy sources, encourage the use of innovative solutions, and promote regional energy integration. Lastly, the IDBG would also support the implementation of effective mobility plans, promoting, "a general shift toward more sustainable modes with low emissions and the use of new technologies." IDB anticipated USD 7.2 million of new lending during the CPS period.[8]

IDB has approved six climate change-related projects in Brazil since 2010. None of thee involve loans, thus reconfirming the government's reluctance to borrow for climate change-related activities. By contrast, the private sector is willing to borrow for climate-related activities, as indicated by the IFC projects mentioned above and IDB Invest loans to Brazilian enterprises, including those for renewable energy (wind and solar) and ethanol production. Regular IDB operations, however, are mainly small TA projects financed by grants ranging in commitment size from USD 300 000 to USD 1.1 million and focussing mainly on adaptation in various sectors. In most cases, they are state-specific, involving Amapá in Amazônia, Mato Grosso in the centre-west, São Paulo in the southeast, and Instituto INHOTIM, in Minas Gerais, also located in the southeast. The IDB is also responsible for implementing one of the FIP/BIP operations, the Forest Information to Support Public and Private Sectors in Management Initiatives Project that was approved in October 2013 for a grant of USD 5.62 million.

International Fund for Agricultural Development

IFAD issued it most recent COSOP for Brazil in March 2016, covering the 2016-21 period. The document identifies IFAD's target beneficiary group as landless families and family farmers with limited land area and lower fertility soils who are usually located far from the largest markets and have limited access to TA and financial services in the semi-arid parts of the northeast, which is increasingly, "affected by environmental and climate change problems, including an intensification and higher frequency of droughts and floods, and an increase in areas under risk of desertification." One objective is to improve agricultural production, food security and nutrition, and access to markets, adding that IFAD's support would include building the capacity of rural families and their organisations to manage natural resources, adapt to climate change, and facilitate their access to institutional and other markets.

8 IDBG, *IDB Group Strategy with Brazil, 2019-2022*, Washington D.C., June 2019.

The COSOP states that its operations in Brazil will continue to focus on the semi-arid zone, but that IFAD will expand its activities into other ecosystems where rural poverty is high and where the rural poor are also increasingly affected by environmental and climate change problems. These areas include transitional Amazon areas in the western part of the northeast (Maranhão) and the forest zone nearer to the east coast where sugarcane production was declining "due to soil deterioration and higher frequency of droughts." More generally, IFAD's programme would support family farmers in improving their management of natural resources and better adapting to the effects of climate change by: (i) financing water storage infrastructure for cattle production and irrigation along with appropriate TA; (ii) using organic practices, including seeds adapted to local conditions, agroforestry production systems, soil conservation practices, multiple cropping, and organic rather than synthetic inputs, and (iii) supporting income-generating activities that preserve native forests and biodiversity such as bee-keeping, agroforestry, and the traditional cultivation of products from natural forests. The two proposed new projects could also support the implementation of a climate information and alert system. Total IFAD financing for 13 projects in Brazil is on the order of USD 300 million.[9]

United Nations Development System

UNDS, including IFAD, UNDP, and UNEP among other entities, issued its SDPF for Brazil in October 2016 for 2017-21. Focused on the "5 Ps" (people, planet, prosperity, peace, partnerships), it has two desired outcomes for the planet: "strengthened institutional capacity to promote public policies for the sustainable management of natural resources and ecosystem services and combating climate change and its adverse effects." The SDPF observes that one of the greatest challenges in Brazil is ensuring the implementation of its regulatory framework consistent with environmental and public policies related to the sustainable management of natural resources/ecosystem services and combating climate change and its effects. It adds that governments at all levels, the private sector, academia, and civil society must all co-operate to "optimise knowledge, strengthen capacities, and promote consistency among public policies and their implementation."

United Nations Development Programme

Two UNDP projects for Brazil since 2010 have provided additional financing for the GEF small grants programme (5th and 7th replenishments, approved in June 2019 for nearly USD 4.5 million and in December 2012 for USD 5 million) and one for preparing Brazil's Fourth National Communication and Biannual Update Report to UNFCCC, approved in May 2016 for roughly USD 7.53 million. Three other projects for Brazil alone: (i) Taking Deforestation Out of the Soy Supply Chain, approved in March 2017 for a GEF commitment of USD 6.6 million with CI, the WWF, WFF, and IFC EAs; (ii) Sustainable Land Use Management in the Semi-arid Region of the Northeast (Sergipe), approved in October 2014 for a GEF grant of USD 3.8 million, and (iii) Production of Sustainable Renewable Biomass-based Charcoal for Iron and Steel Industry in Brazil approved in January 2014 with GEF financing of USD 7.15 million. UNDP also had a project with the national water agency, Water Resources, Climate Change, and Ozone Depleting Substances: Emerging Themes in the National Water Agenda, and a budget of USD 4.0 million, starting in October 2015.

United Nations Environment Programme

UNEP, like UNDP, is a GEF and GCF IA although it has no current GCF operations solely for Brazil other than a small technology needs assessment for implementing CAPs. Over the past decade, however, six GEF-financed projects have involved Brazil, including four multi-country projects: (i) the Sustainable

9 IFAD, *Federative Republic of Brazil Country Strategic Operations Programme*, Rome, March 2016.

Cities Impact Programme, whose concept was approved in December 2019 for a GEF commitment of USD 146.7 million; (ii) Implementation of the Strategic Action Programme to Ensure Integrated and Sustainable Management of the Trans-boundary Waters Resources of the Amazon Basin Considering Climate Variability and Change, approved in November 2019 with a GEF commitment of over USD 11.7 million, and (iii) Stabilising GHG Emissions from Road Transport through Doubling of Global Vehicle Fuel Economy: Regional Implementation of the Global Fuel Economy Initiative that involves 18 other countries and was approved in November 2013 for GEF financing of USD 2.26 million. UNEP is also implementing other GEF projects including Promoting Sustainable Cities in Brazil through Integrated Urban Planning and Innovative Technologies Investment, approved in January 2017 with GEF funding of USD 22.6 million and Mitigation Options of GHG Emissions in Key Sectors in Brazil, approved in October 2012 with a GEF commitment of USD 4.18 million.

Global Environment Facility

Many of the climate change-related GEF projects in Brazil over the past decade are mentioned above since UNDP and UNEP are their IAs. Nineteen such projects have been approved for implementation over the past decade, and the concepts of another seven have been approved since June 2019 and are at various stages of preparation. Of this total, six are global, three are regional (including two for the Amazon Basin), and the other seventeen are for Brazil alone. Most are for multiple FAs, primarily biodiversity and land degradation in addition to climate change. There have been six different IAs for these projects: UNEP (six), UNDP (six), WB (five), IDB (five), FAO (three), and UNIDO (one).[10]

All WB GEF projects or their concepts have been approved since 2016, two of which are Brazil-specific: Sustaining Healthy Coastal and Marine Ecosystems Project, whose concept was approved in June 2019 for a GEF grant of roughly USD 14.5 million, and the Amazon Sustainable Landscapes Programme, approved in August 2017 for a GEF commitment of USD 60.33 million. The others are multi-country projects, specifically: (i) Food Systems, Land Use Restoration Impact Assessment (concept), involving many other countries in Africa, Asia, and South America, approved in June 2019 and (ii) an addendum for this programme (concept) adding four new countries approved in December 2019 for another USD 67.9 million, and (iii) Phase II of the Amazon Sustainable Landscapes Programme (concept) also including Bolivia, Colombia, Ecuador, Guyana, Peru, and Suriname, approved in June 2019 for expected GEF financing of USD 88.3 million.

The IDB GEF projects were primarily approved before 2016 generally with smaller commitment amounts. Two of these are regional projects: Agtech for Inclusion and Sustainability; SP Ventures Regional Fund (Agventures II), involving a number of other LAC countries and whose concept was approved in December 2019 for an expected GEF commitment of USD 5 million, and the Water Funds: A Conservation Climate-Resilient Model for Stressed Watershed in Latin America and the Caribbean Project, approved in June 2018 for a GEF grant of USD 1.83 million. The others are Brazil-specific: (i) Conservation, Restoration, and Sustainable Management Strategies to Enhance the Caatinga, Pampa, and Pantanal Biodiversity, approved in August 2017 for GEF financing of USD 32.6 million; (ii) Low-Carbon Urban Mobility for Large

10 The UNIDO project, Biogas Applications for Brazilian Agroindustry, was approved for implementation in May 2017 for a USD 7 million GEF commitment. FAO projects include two for Brazil alone, an approved concept in December 2020, Strengthening Participatory Process for Sustainable Economic Development, Conservation of Biodiversity, and Maintenance of Carbon Stocks in Amazon Wetlands, with an expected GEF grant of around USD 3.4 million, and Reversing Desertification Process in Susceptible Areas of Brazil: Sustainable Agro-forestry Practices and Biodiversity Conservation, approved in May 2016 with a GEF grant of some USD 3.9 million), and one global project that also includes other countries, AVACLIM: Agro-ecology, Ensuring Food Security and Sustainable Livelihoods While Mitigating Climate Change and Restoring Lands in Dryland Regions, approved in May 2018 for a GEF commitment of around USD 1.14 million.

Cities, approved in August 2014 for a GEF grant of USD 6 million; and (iii) Recovery and Protection of Climate and Biodiversity Services in the Southeast Atlantic Forest Corridor of Brazil, approved in June 2014 for a GEF commitment of USD 31.5 million.

Global Climate Fund

To date the GCF has approved only two large operations for Brazil:

- Planting Climate Resilience in Rural Communities in the Northeast – approved in November 2020 with IFAD as the IA for a GCF grant of USD 34.5 million, a GCF loan of USD 65 million, and a total estimated value of USD 202.5 million. The project seeks to address observed and projected drought-related climate impacts and build the resilience of the most vulnerable farmers in northeast Brazil, by transforming family farmers' productive systems towards low-emission and climate-resilient agriculture. It is expected to increase access to water for agriculture through solar irrigation, and support women, youth, and traditional communities to scale up other tested adaptation and mitigation measures in their agricultural activities.
- REDD+ Results-based Payments for Results Achieved by Brazil in the Amazon Biome in 2014 and 2015, approved 28 February 2019 with UNDP as the IA for a results-based payment of USD 96.5 million. These results were reported to UNFCCC and were fully compliant with its requirements. Brazil planned to reinvest the proceeds received in activities consistent with its NDCs, to develop an environmental services incentives programme for the conservation and recovery of native vegetation (Floresta+) and strengthen the implementation of its REDD+ strategy. An estimated 18.8 million tonnes of GHG emissions were avoided in the Amazon Biome in 2014 and 2015.

1.D Conclusions, challenges, opportunities and lessons

Brazil's main climate change challenge therefore is to curb new land clearing, deforestation, and associated fires, particularly in the Cerrado and in Amazonia where these have risen significantly over the past two years after having fallen significantly during the preceding decade. This is a direct response to increasing international demand for beef and soybeans, the strong export-oriented growth model of the federal administration that took office in January 2019, and the corresponding lack of or lesser application and enforcement of Brazil's environment legislation, including the forest code on legal deforestation restrictions. In short, it reflects not only the current absence of political will to ensure private sector compliance with existing climate-related federal laws and regulations, but is also in fact a deliberate de facto policy to ignore them. The government's recent decision to maintain the ambition of its climate change mitigation commitments in updating Brazil's NDCs in December 2020 confirms this.

The need and opportunities to strengthen national efforts to address climate change are evident but require strong federal government commitment to occur. Consequently, the MOs have been able to do little over the past few years at the federal level, which is likely to continue at least until 2023, when the next presidential term begins. Even prior to this, the vast majority of MO-supported activities have involved providing concessional finance given the government's reluctance to borrow for climate change-related investments and TA. This situation notwithstanding, the ministry of agriculture continues to pilot CsA activities in the Cerrado as part of its low-carbon agriculture programme with the use of resources from the FIP. However, this does not outweigh the counter-pressures of increasing deforestation and fires in the Cerrado and Amazonia. IFAD also continues to incorporate climate adaptation efforts in its projects

in the northeast working directly with the state governments involved, and the WB has provided TA and financial support to the federal government and selected states to manage water resources and drought risks, particularly in the northeast, over the past decade.

Much of the MOs' past support has focused on mitigation, especially for renewable energy, and ethanol production in the private sector by both IFC and IDB Invest. Adaptation has received far less attention, other than some actions to support the drought-prone north-eastern states and perhaps through the GEF Sustainable Cities Programme; more information is needed about the plans and achievements of this initiative to date. Even the mitigation-related activities are small in financial terms. While Brazil still has an ambitious programme for future hydropower investments, most of the new facilities are expected to be in the Amazon region and may also entail significant environmental and possibly social costs as well as potential climate change benefits. This was evident with the most recent Belo Monte dam and reservoir on the Xingú River in southern Pará. Therefore, neither the WB nor IDB had any financial involvement nor have they been involved in other large hydro projects over the past several decades. Neither organisation is likely to be engaged in any future projects of this type. Brazil also appears to lag behind other countries on alternative forms of renewable energy generation despite considerable solar and wind potential, especially in the northeast and coastal areas, respectively. The main lessons from this review include the following:

- **MOs need to stress the vital importance of proactive measures to reduce deforestation and fires in the Cerrado and Amazonia** as part of their policy dialogue with the federal and state governments and consider possible lending and/or other restrictions regarding other priorities absent a more positive federal response to these challenges.
- **Through their analytical work and policy dialogue, MOs need to help the federal government weigh the significant trade-offs between continuing to promote large-scale commercial primary exports (e.g. soybeans and beef) and reducing GHG emissions from agro-ranching activities that have led to more forest clearing and fires in the Cerrado and Amazon Biomes in recent years.**
- **MOs also need to continue to work with the ministry of agriculture, sub-national governments, the private sector, and civil society to support the low-carbon agriculture programme and agricultural intensification, reforestation, and the restoration of degraded lands more generally.**
- **Brazil's climate change adaptation and resilience-building challenges require more attention, particularly for drought risk management and desertification in rural areas, flood and land use management in cities of all sizes, coastal protection, and WRM, especially in critical water basins such as the São Francisco River.**
- **MOs need to increase their current levels of co-ordination and collaboration on climate change actions in Brazil and with national and subnational governments.** This refers not only to the WB and the IDB, but also to UN agencies, particularly FAO, IFAD, UNDP, and UNEP, which have climate-related responsibilities and activities under current and future UNSDPF.

2. ETHIOPIA

2.A Background

Socio-economic features

With a population of 109 million (2018), Ethiopia is the second most populous nation in Africa after Nigeria and the region's fastest growing economy.[11] Growth averaged 9.8% a year from 2008-09 to 2018-19 with impressive declines in poverty despite a 2016 drought. Despite rapid urban population growth, 78% of Ethiopia's population still live in rural areas. Smallholder agriculture and livestock account for over 30% of GDP, 65% of employment, and 75% of commodity export value despite the growing share of industry and construction. Land-locked and mountainous with a land area of about 1.1 million km^2 (about twice the area of France), large parts of Ethiopia are vulnerable to drought. However, the country is not (yet) water scarce overall thanks to over 1000 m3 of internally renewable water resources per capita. Its diverse climate includes equatorial rainforest with high rainfall and humidity in the south and southwest, and Afro-Alpine climates in the mountains and desert-like conditions in the east and south-eastern lowlands.

Government strategy is guided by a growth and transformation plan that is currently in its second phase. The aim is to become a lower middle-income country by 2025, through broad-based, inclusive economic growth, including implementing the country strategy for a climate resilient and green economy first laid out in 2011.[12,13,14] The second phase of the plan runs through 2020 and targets average annual GDP growth of 11%. It aims to improve crop and livestock productivity to ensure food security and reduce emissions, protect forests and support reforestation, expand electricity generation from renewable sources and leapfrog to energy efficient technologies in transport, industry and construction. It notes that building a green economy offers cost-efficient abatement potential while promoting GTP targets. GTP II also aims to continue expanding physical infrastructure and urban development, increase manufacturing and agricultural value chains and create jobs, and improve health, education and social protection. The plan integrates the SDGs and important Africa agendas such the CAP, Agenda 2063 of Africa, and the Addis Ababa Action Agenda into its strategies and programmes.[15],[16],[17] Since 2017, Ethiopia has chaired the LDC group at UN climate change negotiations. Ethiopia has a federal government system and decentralised decision-making.

11 WDI database.

12 http://gggi.org/site/assets/uploads/2017/11/2015-08-Sectoral-Climate-Resilience-Strategies-for-Ethiopia-1-Agriculture-and-Forestry-Climate-Resilience-Strategy.pdf

13 Emphasising the crosscutting nature of resilience, the CGRE highlights eight vulnerable sectors: agriculture, forestry, health, transport, power, industry, water and urban, which are emphasised again in its 2019 National Adaptation Plan. https://www4.unfccc.int/sites/NAPC/Documents/Parties/Final%20Ethiopia-national-adaptation-plan%20%281%29.pdf

14 A CGRE facility was operationalized in early 2013 to attract climate finance to support the institutional building and implementation of Ethiopia's CRGE Strategy http://www.mofed.gov.et/web/guest/crge-facility

15 https://sustainabledevelopment.un.org/index.php?page=view&type=400&nr=1329&menu=35 The Common African Position post-2015 Development Agenda ... recognises trends such as population growth and the youth bulge, urbanisation, climate change and inequalities and prioritises structural transformation for inclusive and people-centred development in Africa. It is an AU (UN)-sponsored document. It received technical support from the NEPAD Agency, the AfDB, UNECA, UNDP's regional bureau for Africa, and the UNFPA.

16 https://au.int/en/agenda2063/overview#:~:text=AGENDA%202063%20is%20Africa's%20blueprint,global%20powerhouse%20of%20the%20future. AGENDA 2063 is Africa's blueprint for transforming Africa into the global powerhouse of the future and is co-ordinated by the AU. Its many strategic documents include Document 7 linking the 20 Africa 2063 goals with the SDGs, including SDG 13.

17 The Addis Ababa Action Agenda provides a comprehensive set of policy actions by AU member states, with over 100 concrete measures to finance sustainable development, transform the global economy and achieve the SDGs. https://www.un.org/esa/ffd/ffd3/wp-content/uploads/sites/2/2015/07/DESA-Briefing-Note-Addis-Action-Agenda.pdf

Ethiopia's key challenges include sustaining positive economic growth and poverty reduction. Both require significant progress in job creation. The government already devotes a high share of its budget to pro-poor programmes and investments but improving competitiveness and the business environment face difficulties. While Ethiopia has managed the health impacts of the COVID-19 pandemic relatively well, with 125 000 confirmed infections as of 31 December 2020, the shock to the economy has been severe; many enterprises remain closed, unemployment and poverty are rising, and children have lost learning opportunities.[18],[19] Economic growth is projected to be 4% less than that forecast before the pandemic. Ethiopia is also experiencing the worst locust invasion in 25 years with 200 000 hectares damaged or destroyed by October 2020, according to FAO estimates.[20] The impact has been exacerbated by the conflict in Yemen, where many of the swarms originated but where no early control measures could take place, and by COVID-19, which has disrupted supply chains. The conflict in Tigray has also caused economic damage and human suffering.

2.A.1 Ethiopia's mitigation challenges

Ethiopia's GHG profile is dominated by AFOLU emissions and related energy sector emissions. Using estimates from 2010, the INDC estimated total GHG emissions at 150 MtCO2e dominated by agriculture, especially the livestock sector (enteric fermentation and manure left on pasture), followed by forest degradation and deforestation, including burning fuel wood.[21] GHG emissions are estimated to have increased by 86% between 1993 and 2011, an average of 4% per year, (less than GDP, which increased by over 300% during the same period).[22] Total primary energy supply more than doubled from 1990 to 2012, with biofuels and waste accounting for 93% in 2012, followed by fossil fuels at 6%, and 1% from renewables. The electric grid system consists almost entirely of renewable energy, nearly all from hydropower, with wind and geothermal. INDC noted that 77% of the population lacks access to modern energy sources and relies on wood for fuel. Private vehicle ownership is still very low (about three per 1000 people).[23] Per capita emissions of 1.8 tCO_2e compare with a world average of 6.7 tCO_2e and account for only 0.3% of global emissions.

Table 1: Principal sources of GHG emissions in Ethiopia (2010)

Source	% contribution	Total MCO_2e
Livestock (methane and nitrous oxide)	42	65
Crop cultivation (Nitrous oxide)	9	12
Deforestation and degradation, including cutting and burning fuel wood for energy	37	55
Electric power generation	3	5
Transport	3	5
Buildings and construction	3	5
Industry	3	4
TOTAL	100	150

Source: INDC 2015

18 https://covid19.who.int/region/afro/country/et

19 https://blogs.worldbank.org/africacan/tackling-impacts-covid-19-imperative-ethiopias-journey-prosperity

20 https://www.aljazeera.com/gallery/2020/10/21/in-picture-ethiopia-struggles-to-suppress-desert-locust-infestat

21 https://unfccc.int/sites/default/files/ethiopia_indc.pdf prepared by the Ethiopian Ministry of the Environment and Forestry.

22 https://www.climatelinks.org/resources/greenhouse-gas-emissions-factsheet-ethiopia

23 https://www.nationmaster.com/country-info/profiles/Ethiopia/Transport

2.A.2 Ethiopia's adaptation challenges

Severe weather events such as droughts and floods have historically imposed heavy costs in Ethiopia and are likely to become more frequent with climate change. Average temperatures in Ethiopia have increased by 1°C since 1960 (0.25°C per decade). Increases have been most noticeable from July through September, with the number of hot nights rising by over one-third and number of hot days rising by 20%.[24] The number of cold days has also decreased. These changes have led to higher evapotranspiration and lower soil moisture, especially in the central regions and highland areas. While precipitation trends across Ethiopia are highly variable, some areas are expected to experience reduced rainfall. For example, rainfall in the south-central region of the country has dropped by 20% since 1960 and the rains in central and northern areas occurring in February to May have become less and less predictable. Rises in the surface temperature of the Indian Ocean influence the migration of the inter-tropical convergence zone, which can further increase variability in the timing and duration of rainfall seasons. Most climate models predict continued increases in temperature with significant implications for human and animal health, agriculture, water resources, and ecosystems, and decreases in rainfall with, significantly, a larger percentage of precipitation falling during heavy events, increasing the risk of floods and landslides.[25],[26]

Agriculture and livestock sectors have suffered the most severe Impacts. in the country's more arid south-east and east, droughts have led to widespread hunger and death and the dependence of substantial populations on food aid for survival. Government programmes have long recognised the importance of resilience to weather-induced events and the need for adaptation to climate change. Since the early 2000s, the government has undertaken programmes to combine emergency response measures with longer-term support to increase resilience, especially in the most vulnerable rural areas. Even so, an estimated 8 million people will have needed food aid in 2020 as a result of drought, the locust invasion, COVID-19, and the conflict in Tigray.[27]

2.B Ethiopia's adaptation and mitigation priorities

Adaptation and mitigation goals and priorities

The INDC highlights that, for Ethiopia, adaptation and mitigation go together. The INDC is integrated with both the GPT and the CRGE. Ethiopia intends to limit its net GHG emissions in 2030 to 145 $MtCO_2e$ or less, a reduction of 64% from the business as usual scenario in 2030 with better forestry and agricultural practices constituting the main source of emissions reductions/increased sequestration. (Figure 18)

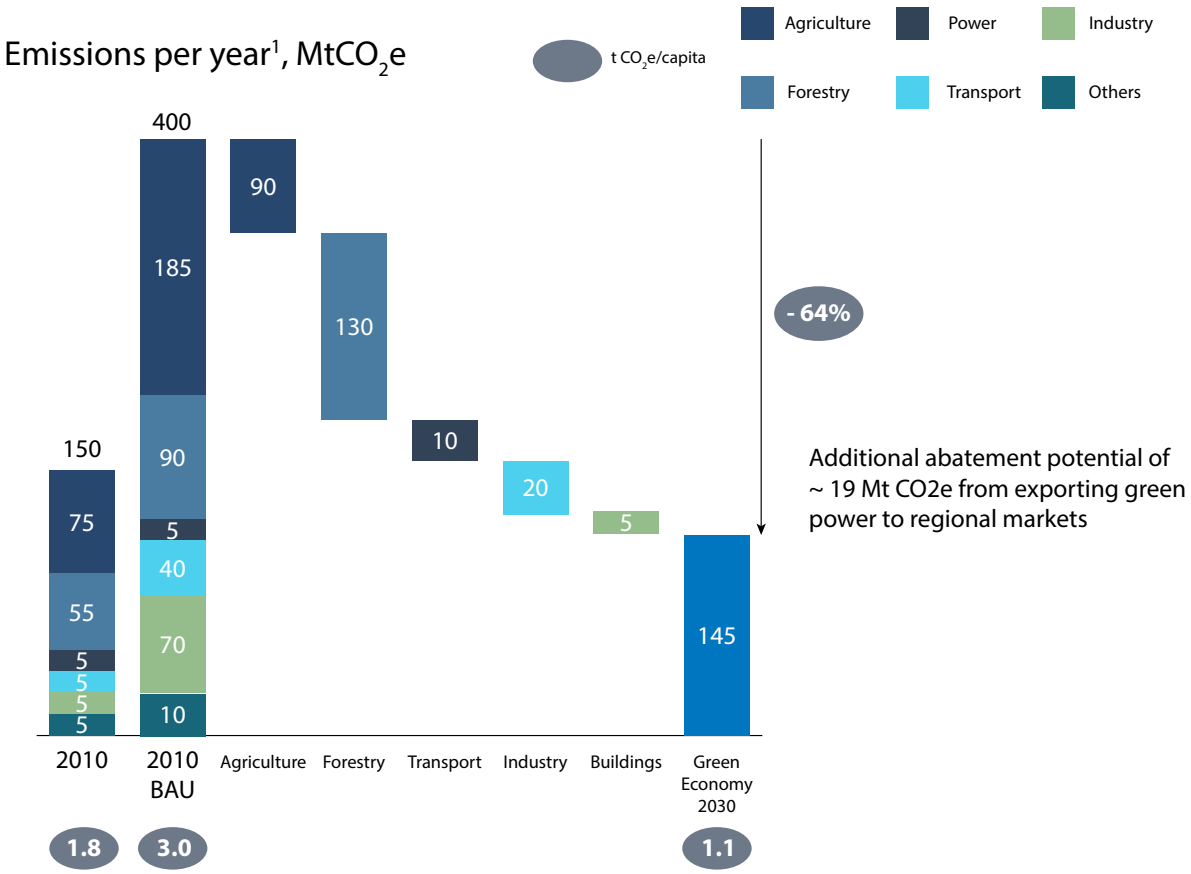
24 https://climateknowledgeportal.worldbank.org/, Country Risk Profile Ethiopia 2020, drawing on data from https://www.ipcc.ch/reports/

25 Under a high global GHG emissions scenario, these could be by 1.8°C by the 2050s and 3.7°C by 2100.

26 Large livestock are particularly vulnerable to heat stress; Ethiopia has the largest number of livestock in Africa (58 million cattle, more than Argentina) but growth in output has tended to come more from growth in numbers rather than higher productivity. https://www.ifpri.org/cdmref/p15738coll2/id/132771/filename/132980.pdf

27 https://www.wfp.org/countries/ethiopia#:~:text=WFP%20supports%20300%2C000%20people%20and,to%20buy%20fresh%20nutritious%20produce. This includes about 750 000 refugees from neighbouring countries. WFP estimates its funding requirements for Ethiopia for January 2020 to May 2021 at USD 209 million.

Figure 1: Ethiopia INDC sources of planned GHG abatement



1 Rounded numbers
2 Currently estimated emissions from buildings and waste

Source: https://unfccc.int/sites/default/files/resource/Indonesia-2nd_BUR.pdf

A review of the first phase of the growth plan that was done in preparation for phase two highlights progress with reforestation and with establishing a REDD+ Secretariat to facilitate CO_2 trading, and the role of Norwegian assistance. It also mentions capacity and implementation challenges. Investment priorities are summarised below.

INDC investment priorities

GHG mitigation is built on four pillars:

1. Improving crop and livestock production practices for greater food security and higher farmer incomes while reducing emissions.
2. Protecting and re-establishing forests for their economic and ecosystem services, while sequestering significant amounts of carbon dioxide and increasing the carbon stocks in landscapes.
3. Expanding electric power generation from renewable energy.
4. Leapfrogging to modern and energy efficient technologies in transport, industry and building sectors.

An estimated USD 150 billion of financing is needed, including USD 80 billion investment costs and USD 70 billion operation and maintenance costs.

Ethiopia's CAP is built on three pillars. Since many interventions contribute to both adaptation and mitigation, and because adaptation is the priority for Ethiopia, these are described in greater detail below:

- Drought management has nine intervention areas: (i) increase agricultural productivity and climate resilience (minimising food insecurity and increasing incomes); (ii) protect humans, wildlife and domestic animals from extreme droughts and ensure water supplies through digging wells and water harvesting); (iii) diversify economic opportunities from agroforestry and sustainable afforestation (iv); enhance irrigation systems through rainwater harvesting and conservation of water, improve water-use efficiency; (v) improve urban water supply and waste water treatment provision while using water saving technologies; (vi) improve food storage; (vii) create biodiversity corridors; (viii) support ecosystem health through sustainable land and water management practices, and (ix) expand electric power generation from geothermal, wind, and solar to minimise the adverse effects of droughts on the predominantly hydro-electric energy sector.
- Flood management has three intervention areas: (i) adopt an ecosystem rehabilitation approach in the highlands of Ethiopia, including land, forests and infrastructure; (ii) develop further hydro-electric power generation on new and existing dam sites, and (iii) implement climate change compatible building/construction codes for all infrastructure developments.
- Crosscutting issues include five intervention areas: (i) develop climate risk insurance systems; (ii) reduce the impact of fires and pest epidemics using integrated pest management, early warning systems, harvesting adjustments, thinning, patrols and wider public participation; (iii) develop effective early warning systems and DRM policies; (iv) strengthen the capacity to deal with the expansion and emergence of human, animal, crop and plant diseases, and (v) strengthen capacity for breeding and distributing disease-resistant crop and fodder varieties.

No estimate of financing needs is provided.

2.C MO climate change programmes in Ethiopia

As highlighted in the INDC, CRGE and GTP, the Ethiopian government has prioritised climate resilience in key investment programmes for nearly two decades. It has also had some success in bringing development partners together on core programmes and currently has more than 30 DPs, including non-traditional donors such as China, Turkey, and India.[28],[29] The aid co-ordination framework comprises the 28-member Development Assistance Group (DAG), Sector/Thematic/Technical Working Groups, and the Effective Development Co-operation Task Force. The annual government-DAG high-level forum is a key dialogue platform for discussing major topics and agreeing on follow-up actions. One key partner, the AfDB, mentions aid co-ordination challenges, including that the conditionality requirements of different donors hinder the effective management of multi-donor projects, and that non-traditional donors such as China, Turkey and India, which are not yet effective DAG participants are increasing in EthiopiaDAG is liaising to bring them to the group.

Ethiopia co-ordinates the Africa Adaptation Initiative inaugurated in the AU in 2016. Participants include UNEP, UNDP, AfDB, WBG, the EU, WWF and other organisations.[30] It focuses on four key areas: (i) enhancing climate and observational infrastructure; (ii) early warning systems and climate change projection systems; (iii) institutional and policy support, facilitation of project implementation and access to resources, and (iv) advocacy to access additional support. Launched in Marrakesh in November 2016, it is complemented by the African Agriculture Adaptation Initiative.[31]

African Development Bank

The 2016-20 AfDB CPS highlights the roles of the CRGE and GTP in shaping its programmes.[32] The CPS is also based on the AfDB Green Growth Framework, first published in 2013, and its High Five Agenda.[33] The CPS focuses on infrastructure, especially energy, water supply, connectivity, and governance, with an emphasis on delivering basic services at local level, and on an enabling environment for private sector development. The 2016-20 CPS highlights achievements under the previous CPS, including three million trees planted along transport corridors, 400 MW of green power traded with neighbouring countries, wind and solar power, and support to the CRGE facility aiming to facilitate access to funds such as the GCF, and to carbon markets.[34]

28 OECD DAC regularly analyses development aid. The figures include OECD member country bilaterals, AfDB, WBG and EU aid (not climate financing aid from the Arab Funds or aid from non-traditional bilaterals) In 2018 Ethiopia was the largest recipient in Africa of development aid from these sources: disbursements were just over USD 4 billion, or USD 8 per capita. Figures are broken down by sector not theme so cannot be used to estimate the proportion of climate-related financing. https://www.oecd.org/dac/financing-sustainable-development/development-finance-data/Africa-Development-Aid-at-a-Glance-2018.pdf

29 From the 2016-20 AfDB Ethiopia CPS.

30 http://climateinitiativesplatform.org/index.php/African_Adaptation_Initiative_(AAI)

31 https://sustainabledevelopment.un.org/partnership/?p=36657

32 https://www.afdb.org/en/news-and-events/afdb-board-approves-2016-2020-country-strategy-paper-for-ethiopia-15577

33 These frameworks are discussed in greater detail in the MO reports. The green growth framework highlights that green growth is about empowering countries to realise their development objectives and growth targets while maximising the efficiency of natural resource use, minimising waste and pollution, and strengthening the resilience of livelihoods and economic sectors to exogenous shocks. https://www.afdb.org/en/news-and-events/afdb-launches-green-growth-framework-entry-points-for-action-for-transition-to-green-growth-in-africa-13556 The High Five Strategy, launched in 2015, aims to Feed Africa, Light Up Africa, Industrialise Africa, Integrate Africa and Improve the Quality of Life for the People of Africa https://www.afdb.org/en/high5s

34 The CRGE facility is the government's primary financial vehicle for mobilising, accessing, and combining domestic and international, public and private sources of finance to support the institutional building and implementation of Ethiopia's CRGE strategy. http://mptf.undp.org/factsheet/fund/3ET00

The 2016-20 planned lending programme totals USD 2.51 billion. Transport, focusing on linking agricultural producers with suppliers and trade logistics, accounts for about 20%; energy, focusing on access, transmission, and regional integration just over 20%, and water supply and sanitation 9%. Improving district level basic services accounts for a further 20%; PPPs for agro-industrial parks, related infrastructure and ICT rollout to villages for 16%, and a private sector line of credit to SMEs for 4%. Non-lending activities total USD 6.6 million, of which the largest is a trust fund-supported study of the regional carbon trade, a groundwater assessment, and a study of PPP potential in the water and sanitation sector. This is a substantial scale-up from the previous CPS, but the focus is broadly similar. The portfolio in 2016 totalled USD 1.1 billion in public sector operations, of which nearly 35% was for energy – mostly transmission – 35% to transport, 5% for agriculture (drought resilience) 6% for water and sanitation and 17% for basic services delivery. It included a further USD 69 million, most of which was fully disbursed, and included two small operations for solar and wind power generation.

AfDB's main focus is to help mainstream climate-resilient, low-carbon growth into Ethiopia's growth agenda. In energy it will focus on continuing support for no-carbon electricity generation (specifically wind power) and access to people and transmission to industrial centres and neighbouring countries. The CPS refers to the recent investments in renewable energy in Ethiopia, including the Great Ethiopian Renaissance Dam (6 000 MW), the Gilge-gibe III (1870 MW) and Genale Dawa III (254 MW) hydropower projects, and the Adama and Ashegoda wind power projects, and notes that these will contribute to Ethiopia's green growth targets while also earning foreign exchange. In the water and sanitation sector, off-grid renewables will replace diesel engine generators for pumping water in rural areas, and trees will be planted around water source areas to enhance rainwater infiltration. The AfDB will integrate transport infrastructure and services with nodes of agricultural production and trading, bringing markets closer to producers and enhancing economic and transport corridors. These efficiency gains have the potential to be climate friendly. In agriculture, AfDB has an ongoing operation to support drought resistance and improve land and water management, crop productivity and livestock carrying capacity. Through the technologies for the African Agricultural Transformation initiative launched in 2018 as part of the broader Feed Africa Strategy, AfDB is supporting a government-led programme to provide heat-tolerant wheat seed to expand wheat production into 400 000 lowland irrigated areas.[35],[36]

AfDB has worked in partnership with the Ethiopian government and the the WBG to develop and support implementation of the scaling up renewable energy programme under the CIF. USD 50 million was approved under the investment plan, prepared in 2012, subject to detailed project preparation.[37] The most recent operation approved in 2020 that enables access to off-grid energy to the people of Ethiopia is a thematic line of credit to the Commercial Bank of Ethiopia.[38] CTF provided funding of USD 20 million and AfDB provided USD 80 million. Of this, USD 44 million will be deployed as a revolving fund by the CBE. In addition, there is an EU guarantee of USD 38 million that will help move forward the electrification targets embedded in Ethiopia's National Electrification Plan launched in March 2019. It provides credit to private sector enterprises, co-operatives and microfinance institutions to provide off-grid energy technologies and productive appliances to customers in peri-urban and rural areas of Ethiopia, targeting four stand-

35 https://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/technologies-african-agricultural-transformation-taat The technologies for the African agricultural transformation programme, funded by the AfDB, is a knowledge- and innovation-based response to the need to scale up proven technologies across Africa. The aim is to boost productivity and make Africa self-sufficient in key commodities. The programme is being implemented in 31 countries and focuses on nine priority commodity agricultural value chains (maize, wheat, rice, sorghum/millet, cassava, high-iron bean, orange flesh sweet potato, aquaculture and small livestock) with the support of enablers. AfDB works closely with the CGIAR and other partners on this initiative.

36 https://www.afdb.org/fileadmin/uploads/afdb/Documents/Policy-Documents/Feed_Africa-Strategy-En.pdf

37 https://www.climateinvestmentfunds.org/country/ethiopia

38 https://www.climateinvestmentfunds.org/projects/dpsp-iii-enabling-access-grid-energy-people-ethiopia-thematic-line-credit-commercial-bank

alone solar home systems, mini-grids, and other solutions such as solar water pumps. The estimated total emission reductions of the project over its life are 1.7 $MtCO_2e$. In addition, the CTF is extending a USD 10 million concessional senior loan to develop the 50 MW Tulu Moyo geothermal power plant project in Ethiopia. The CTF approved the loan on 20 April 2020. The Aluto Langano geothermal power plant was also considered under the CIFs. (A previous plant in the same area was closed in 2018 due to operational difficulties). It is now being funded with a USD 17 million grant from the Japan International Co-operation Agency. The plant is to be commissioned in August 2021 with capacity of 5 MW. Aluto Langano Geothermal Wellhead Power System, owned by the state-owned Ethiopian Electric Power Facility, will operate it.[39] Another project considered under the programme, the Assela Wind Farm project, with a capacity of 100 MW, is receiving EUR 95 million in funding from the Danish government.[40]

AfDB is also supporting the government in developing carbon accounting rules, accessing climate funds, and modelling climate vulnerability at sector level. With the WBG, it is participating in the USAID-led Power Africa Initiative launched in 2013 covering six countries including Ethiopia to increase access to reliable, affordable, and sustainable power in Africa.[41]

COVID-19 response: AfDB approved a USD 165 million grant in July 2020 to help Ethiopia's COVID-19 national emergency response plan to expand social protection coverage, enhance capacity to contain the virus outbreak, and address macro-fiscal imbalances while also helping small businesses.

World Bank Group

The 2018-22 CPS identifies two key priorities: strengthening rural livelihoods for the bottom 40%; and fostering faster and more inclusive structural change. It is organised around three FAs: (i) promoting structural and economic transformation through increased productivity, (ii) building resilience and inclusiveness, and (iii) supporting institutional accountability and confronting corruption. The CPS notes the need for a spatially differentiated approach, highlights the vulnerability of agriculture and pastoral ecosystems to drought and flood and also the progress Ethiopia has made in rehabilitating land, in improving watershed management, and in expanding irrigation. It includes enhanced management of natural resources and climate risks as key objectives under the resilience pillar. The CPF emphasises the linkages with areas such as improving connectivity, access to electricity and agricultural productivity under the competitiveness pillar as well as strengthened statistical capacity, governance in service delivery, and citizen engagement under the institutional accountability pillar. It notes also that Ethiopia has the second largest energy deficit on the continent, and one of the cleanest electricity generation systems (97% hydro).

Ethiopia's indicative IDA18 allocation (July 2018-20) was USD 4.0-4.8 billion with an additional USD 1 billion in trust funds.[42] Much of the lending contributes to large-scale government programmes. Pillar 1 (economic transformation) operations are envisaged in market access roads, urban development, electricity access, livestock and fisheries development and job creation. Pillar 2 (resilience and inclusiveness) focuses on service delivery, rural and urban social safety nets, resilient landscapes, education and water and sanitation. Pillar 3 (governance) focuses on statistics, social accountability and preparing for the next census. There are also targeted programmes for Ethiopia's large refugee population (see Table 2).

39 https://www.afrik21.africa/en/ethiopia-eep-signs-epc-contract-for-aluto-langano-geothermal-power-plant/

40 https://ieefa.org/ethiopia-approves-financing-for-100mw-assela-wind-farm/

41 https://www.usaid.gov/powerafrica#:~:text=Power per cent%20Africa's per cent%20goal per cent%20is per cent%20to,new per cent%20home per cent%20and per cent%20business per cent%20connections.

42 A total of USD 82 billion financing was approved in 2020 for IDA19, running from 1 July 2020 to 30 June 2023.

Table 2: Indicative FY18-FY19 IDA lending programme

Focus Areas	Indicative Lending FY18-FY19	IDA18 Special Windows
Promote structural and economic transformation through increased productivity	• Roads for market access (USD 375 million) • Livestock and fisheries sector development (USD 150 million) • Urban development (USD 400 million) • Electricity access (USD 250 million) • Energy guarantee (USD 50 million) • Competitiveness and job creation AF (USD 130 million)	Jobs Compact (USD 50 million IDA and USD 150 million sub-regional refugee window) Berbera corridor (possible, regional window) Skills development (possible, regional window)
Building resilience and inclusiveness	• Enhanced Shared Prosperity through Equitable Services (ESPES-service delivery for health, education, agriculture and WASH • (USD 700 million) • Ethiopia Rural Safety Net Project (USD 600 million) • General Education Quality Improvement Programme • (USD 375 million) • Resilient Landscapes (USD 100 million) • Rural Water Supply, Sanitation & Health • Pastoralist Support • Urban Safety Nets 2	Development response to displacement impacts project (regional window)
Supporting institutional accountability and confronting corruption	Enhanced shared prosperity through equitable services - statistics and social accountability components, including financing for the next census	

Source: https://documents1.worldbank.org/curated/en/613041498788104835/pdf/Ethiopia-Country-Partnership-Framework-June-5-2017-FINAL-06052017.pdf

The focus of CPS 2013-18 was broadly similar to that of the current strategy, with pillars on competitiveness and employment, enhanced resilience and reduced vulnerability, and good governance and state building. Operations spanned a similar group of sectors and, under the resilience pillar outcomes connected with DRM, included resilience to food insecurity, sustainable NRM, and resilience to climate change.

The 2018-22 CPF continues to support increased resilience, including for drought and flooding. Pillar 2 includes a specific objective for enhanced management of natural resources and climate risks. It also includes a measure on GHG emissions avoided and sequestered, and groups together with the SLM,

pastoral livelihoods and forestry programmes, agriculture, irrigation and productive social safety net programmes, trust fund activities on clean cooking, roads and dam climate resilience.[43] The CPF also supports enhanced productivity through improving access to inputs, markets and commercialisation, and irrigation. It supports improved land tenure, thus improving incentives for investment in land improvements. Most of the programme was financed through IDA, but one project also benefits from GCF finance.[44]

The CPF includes analytical and advisory work on a range of climate-related topics. These include the energy sector, clean cooking, off grid renewable energy and the wind sector, support for DRM, sustainable water and sanitation services, and pastoralism.

The CPF includes targets related to the SDGs, specifically on (i) increasing access to electricity by 50% by the end of FY21; (ii) improving learning outcomes for girls, increasing contraceptive prevalence and reducing the prevalence of child stunting; (iii) increasing agricultural productivity, especially for female-headed households by 23%; (iv) protecting up to 14 million (additional) people from food insecurity; (v) improving access to clean water and basic sanitation by one-fifth and 43% respectively; (vi) reducing travel time on upgraded roads by 56%, accelerating market access for farmers, and (vii) doubling the area of reforested lands and the number of land-use certificates issued.

The WBG responded to the COVID-19 crisis with an emergency credit of USD 82 million in April 2020 to help improve health services delivery and a USD 250 million supplement in June to the Growth and Competitiveness Development Policy operation. This DPF series aims to boost economic transformation in Ethiopia by increasing private sector participation and promoting good governance practices, including moving towards a sustainable financing model for Ethiopia's development. It does not include specific measures to support green, climate-resilient growth.

International Fund for Agricultural Development

Approved in 2016, IFAD's current COSOP seeks to enable rural households to raise their incomes and improve their food security.[45] Its two objectives include (i) enhanced resilience and productivity of ecosystems and livelihoods through improved management of natural resources, particularly water, and (ii) enhanced linkages with the private sector to ensure increased and sustained access to markets, finance and agricultural technology. Operations focus on three areas: (i) participatory small-scale irrigation development, especially in the highlands; (ii) pastoral community development, with a focus on the more arid lowlands, and (iii) rural finance.

Like the WBG and the AfDB, IFAD's programme is grounded in GTP II and CGRE and mainstreams climate resilience into its operations. It includes a limited number of large-scale programmatic operations including the Pastoral Community Development Project (USD 223 million) co-financed with the WBG, a planned Participatory Small-Scale Irrigation Development Programme II (USD 145 million) co-financed

43 The WBG has had a longstanding engagement in SLM in Ethiopia. Recent evaluations are largely positive https://ieg.worldbank.org/reports/ethiopia-sustainable-land-management-project-i-and-ii-ppar. The most recent SLM project was approved in 2019 with an IDA credit of USD 500 million and a total cost of USD 1.6 million. http://documents.worldbank.org/curated/en/949841560736884940/Ethiopia-Climate-Action-through-Landscape-Management-Program-for-Results-Project

44 The Resilient Landscapes and Livelihoods project was approved 2020 with WBG as IA, for a cost of USD 296 million and GCF support of USD 165 million. https://www.greenclimate.fund/project/fp136

45 https://www.ifad.org/web/guest/document-detail/asset/40230880

with the ASAP, and a Rural Financial Intermediation Programme (USD 248 million).[46] In addition, a Community-based Integrated NRM project, (USD 27.1 million) financed by the Spanish GEF, was scheduled for completion in 2017. The programmes address climate challenges including: (i) changes in the duration and quality of the rainy season; (ii) delayed onset of the rainy season that leads to late planting; (iii) extreme yield losses owing to mid-season dry spells or early cessation of the rains, and (iv) reductions in surface water resources, lowland water points and groundwater resources.

Investments will prioritise climate resilience and adaptation by: (i) promoting sustainable agriculture and land and water management; (ii) increasing economic productivity; (iii) strengthening and mainstream climate resilience and sustainable NRM activities, and (iv) promoting capacity building at federal, regional and at woreda levels. Investments would be aligned with Ethiopia's Climate-Resilient Green Economy Strategy to reduce carbon dioxide emissions.[47] It will also strengthen linkages between investment projects and grant-supported research activities, notably with the CGIAR, as well as South-South partnerships. There has not been a major shift in the climate-related focus of operations since 2015, although IFAD is now focusing on a more limited number of areas to maximise impact and comparative advantage.

International Monetary Fund

The IMF has an ongoing programme with Ethiopia. In December 2019 it approved three-year arrangements under the Extended Credit Facility and the Extended Fund Facility of about USD 2.9 billion to help Ethiopia implement its home-grown economic reform plan aimed at maintaining macroeconomic stability and improving living standards. The board paper noted that the public investment-driven model of the past two decades has delivered impressive economic and social outcomes but has resulted in growing vulnerabilities. The programme helps to address macroeconomic imbalances and implement structural reforms to upgrade policy frameworks and facilitate the shift from public to private sector-led growth. It supports: (i) a transition to a more flexible foreign exchange regime, including reforms to boost foreign direct investment and exports; (ii) strengthening financial management and oversight of state-owned enterprises; (iii) boosting domestic revenue mobilisation and increasing expenditure efficiency; (iv) reforming the financial sector to support private investment and modernising the monetary policy framework, and (v) reinforcing the supervisory framework and bolstering financial safety nets.

In April 2020, the IMF provided USD 411 million under the rapid financing instrument to help Ethiopia mitigate the balance of payments problems and economic slowdown associated with COVID-19.

While none of the elements of the IMF programme relate directly to climate change, the close alignment of Ethiopia's GPT with climate resilience, low-carbon growth, and the need to attract private sector finance to facilitate low carbon energy access means that the programme reforms do help improve the enabling environment for climate-smart growth.

46 https://www.ifad.org/en/asap#:~:text=The%20Adaptation%20for%20Smallholder%20Agriculture,environmental%20finance%20to%20smallholder%20farmers.&text=It%20has%20helped%20five%20million,and%20build%20more%20resilient%20livelihoods.https://www.ifad.org/en/asap#:~:text=The%20Adaptation%20for%20Smallholder%20Agriculture,environmental%20finance%20to%20smallholder%20farmers.&text=It%20has%20helped%20five%20million,and%20build%20more%20resilient%20livelihoods.

47 IFAD tool developed by FAO, the land-based accounting system estimates carbon stock changes (i.e. CO_2 emissions or sinks) and GHG emissions per unit of land as a result of specific interventions http://www.fao.org/3/a-i8075e.pdf CGIAR and CCAFS -- a core research programme – also use it https://ccafs.cgiar.org/resources/publications/ex-ante-carbon-balance-tool-ex-act

United Nations Development Programme

UNDP places a special focus on building national capacity but is also supporting investments under the CRGE plan. UNDP contributed to the formulation of the national CRGE document and to sector and regional plans, the establishment of a national CRGE facility and the CRGE registry.[48] It has also worked with other development partners on Ethiopia's disaster risk reduction programmes. With GEF support, UNDP is supporting the NDC update that will define new indicators and targets for the mitigation and adaptation components, disaggregate the 64% GHG emission reduction target into "conditional" and "unconditional" contributions, strengthen the necessary requirements for better engagement in the global carbon market, and identify climate change-related budget expenses.[49] It will also: (i) update the transparency components of the NDC; (ii) improve institutional co-ordination (iii) prepare an NDC financing strategy; (iii) contribute to the development of Ethiopia's long-term (2050) strategy toward zero carbon; (iv) conduct a diagnostic on enabling private sector investments, and (v) build capacity in sectoral ministries for NDC implementation. The programme is being undertaken in collaboration with the FAO, which is launching a new initiative, Scaling up Climate Ambition on Land Use and Agriculture through NDC and NAPAs (SCALA).[50]

UNDP is also working with Ethiopia on four investment operations, all with GEF support. They also include two emissions reduction operations: one supports municipalities to improve solid waste management, including composting, and the other to promote greater use of renewable energy technologies and more fuel efficient cook stoves in rural communities, which is particularly important in the Ethiopian context as it accounts for over 20% of emissions abatement potential. (For greater detail, see GEF section)

United Nations Environment Programme

UNEP has a regional office in Addis Ababa, which serves as the liaison office to the AU and the UNECA in Ethiopia with the following mandate:

- Develop linkages with the AU Commission to strengthen the environmental dimension of pan-African initiatives in accordance with Agenda 2030 and the AU Agenda 2063: The Africa We Want (e.g. by supporting the African Common Strategy on Combatting Illegal Trade in Wild Fauna and Flora, promoting renewable energy initiatives, and environmental diplomacy).
- Maintain partnerships with the diplomatic corps based in Ethiopia to keep them aware of current and emerging environmental challenges and opportunities in Africa and ongoing efforts.
- Strengthen co-operation with UNECA and other UN agencies.
- Foster a strategic partnership with the government and facilitate UNEP's environment's operations in Ethiopia and the region.

UNEP has facilitated a number policy papers in Ethiopia. One of the most recent, which is relevant to climate change, is the Non-Motorised Transport Strategy 2020-29, launched in 2020 by the ministry of transport with the support of the UNEP Share the Road Programme and UN Habitat.[51] The strategy vision is that, "Ethiopian cities and rural centres will provide safe, efficient, and accessible walking and cycling networks to improve mobility for all residents, enhance access to opportunities, and facilitate inclusive

48 http://mptf.undp.org/factsheet/fund/3ET00

49 https://www.ndcs.undp.org/content/ndc-support-programme/en/home/our-work/geographic/africa/Ethiopia.html#:~:text=Ethiopia's%20NDC%20update%20will%20define,carbon%20market%20and%20identify%20climate The programme comprises a UNDP USD 540 000 capacity building grant, running from April 2020-21.

50 http://www.fao.org/climate-change/programmes-and-projects/detail/en/c/1273079/

51 https://www.unenvironment.org/explore-topics/transport/what-we-do/share-road/ethiopia

urbanisation." By 2030, the national government aims to build nearly 430 km of pedestrian infrastructure and more than 300 km of cycling tracks across the country's secondary cities, with 600 km of walkways and 200 km of cycling lanes in the capital, Addis Ababa. The national strategy is accompanied by a three-year implementation plan. It is linked to the Ethiopian initiative Menged Le Sew, Streets for the People, designed to keep people walking while influencing collective behaviour, sustainable mobility, urban design, and inclusive transport planning. UNEP's Share the Road Programme has partnered with WRI Ethiopia to enhance and strengthen the capacity of the government at the national and city levels.

Green Climate Fund

GCF has approved five investment operations including Ethiopia so far, supporting climate resilience landscape and water management, and clean energy access.[52] Total GCF funding is USD 233 million and one readiness operation has been approved for USD 0.827 million. Two of the five operations are country-specific projects and three are multi-country. In addition, two readiness grants have been approved, including one for USD 300 000 in 2015 and another for USD 827 000 in 2019. These activities help the ministry of finance, the Ethiopian National Implementing Entity, meet its objectives in project management, finance, procurement administration and management, and employment screening services assessment and management, including gender considerations. The readiness support will build the capacity of its climate finance delivery unit, the CRGE Facility and also help the ministry organise stakeholders' consultations, enhance the engagement of the private sector and of other non-state actors, and strengthen sub-national and local finance and economic development entities.

Country-specific Investment operations

- **Resilient landscapes and livelihoods project:** a crosscutting project (i.e., entailing adaptation and mitigation) approved in 2020, with WBG as IA, for a cost of USD 296 million of which USD 165 million is from GCF. The project scales up existing initiatives and pilots bottom-up innovations, targeting rural livelihood productivity and resilience through SLM, low-emission resilient agriculture practices (CsA), and enhanced land tenure, including for women. An estimated 43.8 million tonnes of GHG emissions are avoided with 30 million beneficiaries including 4.2 million direct and 26 million indirect.
- **Responding to the Growing Risk of Drought: Building the Gender Response Resilience of the Most Vulnerable Communities** is an adaptation project approved in 2017 with the Ethiopian government as IE, for a cost of USD 50 million of which USD 45 million comes from the GCF.[53] The project supports solar-powered water pumping and small-scale irrigation, the rehabilitation and management of degraded lands around their water sources, and the creation of an enabling environment by raising awareness and improving local capacity. Improved water supply and management systems will increase the local communities' productive capacity and the water ecosystem's carrying capacity Over 50% of the beneficiaries will be women, and 30% of households are female-headed. Of the 1.3 million beneficiaries, 0.3 million are direct and 1 million indirect.

Multi-country operations

- **The Arcaro Fund (Sustainable Forest Fund):** approved in 2020 with the Mitsubishi Financial Group of Japan as IA, for a cost of USD 200 million of which USD 29 million is from GCF. Including seven countries in LAC and Africa and with a 15-year implementation period, it seeks to invest in sustainable plantation forestry projects in emerging forestry markets, while also bringing adaptation co-benefits.

52 For the operations summarised below see https://www.greenclimate.fund/countries/ethiopia

53 The ministry of finance and economy is the IA through the CRGE Facility within the ministry, and the ministry of environment and forestry is the designated authority.

The project provides incentives for rural communities to increase carbon sinks by producing wood in a sustainable manner and conserving natural forests, while contributing to the reduction of illegal logging. An estimated 20 $MtCO_2e$ will be avoided.

- **Climate Investor One:** approved in 2019 with the Dutch Entrepreneurial Development Bank as IA, for a cost of USD 822 million of which USD 100 million is from GCF. Including 18 countries in Africa, Latin America, and Asia, it provides financing to develop renewable energy projects in regions with energy deficits. A major constraint is a lack of early-stage project financing combined with insufficient domestic and overseas financing to support domestic renewable energy markets at scale. Climate Investor One is a blended finance facility, including (i) a development fund that provides loans in the early stage of a project life cycle, and (ii) a construction equity fund meeting up to 75% of total construction costs in tandem with the project sponsor. The fund eliminates the need for complex multi-party financing structures, reducing the time and cost associated with delivering renewable energy projects. An estimated 54 $MtCO_2e$ will be avoided.
- **Universal Green Energy Action Programme:** approved in 2016 with Deutsche Bank AG as IA, for a cost of USD 300 million of which USD 80 million is from GCF with a 15-year implementation period. The programme aims to increase access to clean electrical energy for mainly rural populations in seven Sub-Saharan African countries. It provides financing to decentralised energy service companies for renewable offgrid and mini-grid systems for rural households, communities and industries Investments and will target: (i) off-grid renewable electricity energy in the form of solar home systems through an affordable payment plan; (ii) green mini-grid projects through companies that install, operate, and maintain PV-based mini-grids to sell energy services in rural communities, and (iii) industrial renewable electrical energy and selected on-grid installations by investing in companies that provide modular, transportable, and rented PV farms, offering SMEs and communities competitively-priced solar power. At a later stage, the programme will work with local financial institutions to enable banks to provide long-term loans to businesses that provide clean electricity solutions. An estimated 51 $MtCO_2e$ will be avoided.

Global Environment Facility

GEF funding for Ethiopia-specific programmes has been quite limited over the last six years.[54] The STAR 5 allocation for the 2014-17 period, covering biodiversity, climate change and land degradation, entailed USD 23.23 million in support from GEF; under STAR 7, covering the 2018-22 period, it entailed USD 22 million in GEF support.

Much GEF support has been targeted at SLM, building on earlier operations and continuing to support the government's long-term objective of strengthening the resilience and adaptive capacity of Ethiopian farming and livestock systems within the broader landscape. There are also operations to assist with GHG emissions abatement, including support to use cleaner fuel and more efficient stoves for cooking and heating, and from improved solid waste management. The ongoing programme includes:

- **A project to promote CCA and sustainable economic growth among communities in Ethiopia's lowlands** was approved in 2018. It is being implemented through UNDP with the Ethiopian National Meteorological Agency, DRM and the food security sector for a cost of USD 16.4 million, with GEF support of USD 5.3 million. The project will strengthen the ability of land users to adapt to climate change impacts by disseminating credible weather information and advisory services using locally suitable communication channels to inform actions for building resilience and adaptive capacity at a watershed level. It builds on an earlier GEF-supported operation also aimed at strengthening climate information and early warning systems.

54 https://www.thegef.org/country/ethiopia All of the projects mentioned can be found through this website.

- **A project to support integrated landscape management to enhance food security and ecosystem resilience in Ethiopia** cost USD 155 million with GEF/UNDP support of USD 11 million and was approved 2015.[55] Smallholder farming (cultivation and pastoralism) is a mainstay of Ethiopia's economy across the six regions in which this project will be implemented. Farming occurs in often-degraded environments with vegetation, erosion, and soil fertility losses. Demand for natural capital including biomass fuels exacerbates environmental degradation and affects food production; this project proposes an integrated approach bringing together the capacity to achieve food security with the need to restore and manage environmental resources. It has three components: (i) multi-stakeholder platforms to support the dissemination and uptake of integrated approaches; (ii) the development of specific approaches and mechanisms to scale up across target sites in the country; and (iii) systematic monitoring, assessment, learning and knowledge management. This operation complements other ongoing SLM projects in Ethiopia.
- **A medium-size grant for capacity building to comply with the Paris Agreement and implement its transparency requirement**, implemented through UNDP with the ministry of environment and forestry for a cost of USD 1.4 million with GEF support of USD 1.1 million was approved in 2018.[56] This operation seeks to set up a permanent inter-ministerial body to report on NDC implementation and establish a system for GHG emission inventory and functional GHG database and information system. It would also develop guidelines on formulating GHG mitigation policy measures, methods to quantify and integrate support needs into the public budget system and report on the utilisation of the support received, and provide training on GHG assessment methods.
- **Creating opportunities for municipalities to produce and operationalise solid waste (COMPOST) project,** implemented through UNDP and the ministry of housing and urban development, cost USD 53 million with GEF support of USD 6.6 million, and was approved 2016.[57] The project promotes integrated solid waste management and urban green infrastructure approaches in six Ethiopian cities and towns, working towards objectives of its Growth and GTP II. It seeks to: (i) strengthen the regulatory framework and institutions to integrate solid waste management and urban green infrastructure in urban systems; ii) develop market-based systems with MSEs that are supported professionally to ensure the financial sustainability of compost production and utilisation; iii) implement a NAMA that transforms the capacity of urban systems to generate large emission reductions, and iv) operationalize integrated solid waste management and urban green infrastructure, with quantified GHG emission reductions within a NAMA framework.
- A project to promote greater use of renewable energy technologies for households and productive uses in rural communities in Ethiopia, with UNDP as IA together with central and regional implementing authorities, cost USD 73 million with GEF support of USD 4 million and co-financing from central and local governments and the Development Bank of Ethiopia was approved in 2014 under STAR 5. Of the 15 initiatives in the CRGE strategy, improved cook-stoves offer the greatest potential to reduce GHG emissions: an estimated 34 $MtCO_2e$ (fuel wood-efficient stoves only) and as much as 51 Mt annually by 2030 (with alternative-fuel stoves and fuel wood from regenerated plantations), 20% of Ethiopia's projected abatement potential. This requires switching more than 20 million households to more efficient stoves. The project aims to reduce Ethiopia's CO_2 emissions by two $MtCO_2e$ annually by promoting renewable energy and low GHG technologies as a substitute for fossil fuels and non-sustainable

55 https://www.thegef.org/project/food-iap-integrated-landscape-management-enhance-food-security-and-ecosystem-resilience

56 https://www.thegef.org/project/capacity-building-program-comply-paris-agreement-and-implement-its-transparency-requirements

57 https://www.thegef.org/project/ethiopian-urban-nama-creating-opportunities-municipalities-produce-and-operationalise-solid

biomass, with a focus on rural household appliances for cooking, lighting, and heating. Activities are designed to remove barriers to the use of off-grid renewable energy technologies in households and enterprises in rural areas. The four components consist of a combination of (i) de-risking instruments, market-enabling activities (ii and iv) that will combine with a financial support mechanism (iii) to help transform the market for off-grid renewable energy technologies in rural communities. The project will benefit approximately 800 000 additional households (4 million people) who will be enabled to invest in approximately 200 000 small-scale solar PV products (about 2.5 MWp total capacity) and approximately 600 000 improved cook-stoves.

2.D Conclusions, challenges, opportunities and lessons

Despite rapid, inclusive growth over the last 20 years, Ethiopia remains a low-income country, with low human development indicators and large numbers of people vulnerable to food insecurity (see Table 3).

Table 3: Ethiopia key socio-economic indicators

	2000	2010	2018
Land area (1000 km^2)			1 100
Population (millions)	66	88	109
Fertility (live births per woman)	6.5	5.1	4.2
Life expectancy (years at birth)	52	62	66
Poverty head count (national)	44	30	23
GDP per capita current USD (PPP)	480	1 050	2 150
GNI per capita at last method current USD	130	400	800
Income share held by lowest 20%	9.1	8	7.3
Cell phone subscriptions (per 100 population)	0	7.8	36.2
Economic growth rate	6.1	12.6	6.8
Agriculture (% of GDP)	45	41	31
Industry (share of GDP)	11	9	27
Statistical capacity	N/A	62	80

Source: WDI

Note: N/A indicates data not available

Nearly 80% of Ethiopia's population of 112 million is rural, and agriculture and livestock account for over 30% of GDP, 65% of employment, and 75% of exports. Ethiopia is highly vulnerable to droughts, floods and periods of extreme heat and extreme weather events are becoming more frequent with climate change. Access to electricity is still low (though improving) at 27% and vehicle ownership levels are very low (three per 1000). Ethiopia is a low GHG emitting country; its per capita emissions of 1.8 tCO_2e compare with a world average of 6.7 tCO_2e and account for only 0.3% of global emissions. Furthermore, 88% of emissions

are from the AFOLU sectors, and 93% of primary energy supply comes from biomass and related waste. CsA and greater access to cleaner energy sources are key to green, resilient growth. Ethiopia has abundant clean energy resources, including hydroelectricity, solar, wind, and geothermal power, and is committed to developing them (see Table 4).

Table 4: Ethiopia key environmental indicators

	2000	2010	2018
Forest area (km^2)	137	123	125
Protected Areas (% of total land area)	0	0	18.5
Fresh water withdrawals (% of internally renewable resources) % water withdrawals used for irrigation % access to safe drinking water source	4.6 14	6.4 	N/A 76
Annual urban population growth rates	4.2 %	6.4 %	N/A
CO_2 emissions per capita (kg)	0.05	0.07	0.14
Electric power consumption per capita (kWh) % access to electricity[58]	23 5	48 N/A	N/A 45
Forest area (km^2)	137	123	125

Source: WDI
Note: N/A indicates data not available

Ethiopia has recognised the importance of resilience and vulnerability reduction for decades. The government articulated its CRGE strategy in 2011, and its growth and transformation plans (currently in phase 2), and the NDC are grounded in this strategy. In its NDC, Ethiopia commits to GHG reductions of 64% below a business-as-usual scenario by 2030. CsA (with reduced emissions, greater drought resilience and higher productivity) together with reforestation and broader landscape restoration are the first two elements in the NDC. Expanding electric power generation from renewable resources and leapfrogging to modern and efficient technologies in the transport, industry and building sectors are the second two. Its adaptation plan highlights drought management, flood management, and cross cutting issues such as reforestation and watershed management. Initial cost estimates were provided for the GHG abatement but not for the adaptation elements.

MO priorities are well aligned overall with country priorities. For Ethiopia, CCA and vulnerability reduction are key to inclusive growth and to the welfare of citizens. The government has recognised this for decades, and MOs have provided support to government-led programmes designed to reduce climate related vulnerabilities and increase resilience. These have been adapted over time in the light of lessons learnt and have in several cases provide a vehicle for MO co-operation. The Productive Social Safety Nets Programme is one example (see Box 1).

58 Source https://www.iea.org/articles/ethiopia-energy-outlook

Box 1: The Rural Productive Social Safety Net Programme[59]

The programme began in 2005 seeking to reduce vulnerability by combining programmes to provide basic needs to the poorer households in rural areas with community-based public works projects to restore productive ecosystems and local infrastructure, and to enhance the effectiveness and outreach of emergency response programmes when an extreme weather event occurs. With specific interventions adapted to local circumstances, it has taken a learning-by-doing approach and has strong M&E mechanisms built in. The current phase, which runs from 2017-21, has a total cost of USD 1.86 billion, of which the Ethiopian government is financing USD 600 million and ten development partners are financing the balance.[60]

Beyond the direct benefits to households, the programme's public works contribute to broader government investments in SLM. They show significant improvements in the majority of watersheds in land cover, range of plant species, increased production of forage and medicinal plants, increased groundwater and improved spring yields, reduced run-off and soil loss, reduced flooding on private croplands, and increased cropping land through land reclamation. To date, some 1.2 million hectares have been treated through soil and water conservation activities within closed areas, resulting in increased income for community groups adopting new livelihoods activities such as bee-keeping and increased crop yields. Recent research indicates that public works activities are enhancing climate resilience in Ethiopia.

Source: https://projects.worldbank.org/en/projects-operations/project-detail/P157801

These programmes have been largely financed through government and MO support. Climate finance has been limited, although GCF recently made a substantial contribution to the SLM project (see above) and the GEF has made smaller contributions to several projects. Sustainable land and water management, reforestation, and enhanced agricultural and livestock productivity are the most important element of Ethiopia's GHG abatement strategy. The CGRE was a landmark document, and both phases of Ethiopia's overall growth plan align with it.

Ethiopia faces six principal challenges

1. **Ethiopia generates electricity almost entirely from clean energy sources** (very largely hydropower) and has the potential both for further developing hydropower and for generating solar and wind power. Ethiopia's large-scale hydropower development projects have, however, posed challenges for traditional MOs. The downstream riparian countries from landlocked Ethiopia have expressed concerns about two strategic investments over the last ten years. MOs withdrew in both cases from providing direct financial support to these projects. As costs of alternatives have come down, Ethiopia is now also focusing on developing solar, wind, and geothermal resources (see Box 2).

59 https://projects.worldbank.org/en/projects-operations/project-detail/P157801

60 These include the WBG (IDA), USAID, CIDA, DANIDA, the EC, UNICEF, WPF, DIFID, Ireland and the Netherlands ,https://www.odi.org/projects/1144-productive-safety-net-programme-psnp-ethiopia#:~:text=The per cent%20Productive per cent%20Safety per cent%2DNet per cent%20Programme,based per cent%2C per cent%20form per cent%20of per cent%20social per cent%20protection. https://projects.worldbank.org/en/projects-operations/project-detail/P163438

Box 2: Renewable energy

Improving access to energy has been a priority for Ethiopia, which until now has depended largely on hydroelectric power for renewable electricity generation. However, some major projects have been controversial. The 1 870 MW Gibe III hydroelectric project built at a cost of USD 1.8 billion on the lower course of the Omo River in Ethiopia, began generating electricity in 2016.[61] It complements the 450 MW Gibe II and the 184 MW Gibe Gelbe, and was constructed with Chinese financial assistance after the AfDB, EIB, and WBG withdrew support because of concerns raised by Kenyan NGOs about the impact of the facility on water flows into Lake Turkana and on the livelihoods of the indigenous Oromo people. More recently, construction of the USD 4.8 billion Grand Renaissance Dam, in the headwaters of the Blue Nile, with an eventual capacity of 6 000 MW, was built without international aid because of Egypt's concerns about its impacts.[62] China is providing some financial and TA with turbines and transmission.

2. **Much of the NDC strategy is good development** and it is difficult to separate those elements that may be eligible for incremental climate finance, especially as regards adaptation. Shifts to cleaner fuels, especially for cooking, also raise affordability and social issues.
3. **The enabling environment for private sector investment has also been challenging. There have been improvements in the last two years, however.** The IMF, WBG, and AfDB have been assisting with policy and regulatory reforms in this regard. Private sector investment will facilitate more rapid development of a variety of clean energy sources.
4. **Ethiopia still has limited capacity to meet the NDC MRV.** Measuring AFOLU emissions is especially challenging and Ethiopia receives assistance from various sources to improve its measurement and reporting capacity. For example, the Australian Centre for International Agricultural Research through the CGIAR CCAFS project, Enhancing Capacities for MRV of Sustainable Livestock Actions in Ethiopia.[63, 64] The German government has also provided broader assistance through the tracking and strengthening climate action programme that is implemented by WRI. UNDP is providing assistance (see above). The Norwegian government has provided assistance with REDD. To date, climate finance has been relatively limited although GCF has recently approved two country level operations, one for small-scale irrigation and WRM (under the adaptation window) and another for SLM (crosscutting), along with three multi-country lines of credit for investment in energy, in which Ethiopia is participating.
5. **Ethiopia continues to be obliged to tackle short-term crises.** It is facing the worst locust invasion in 25 years. It has dealt quite well with the health impact of COVID-19, but economic growth has slowed sharply. Additionally, recent civil conflicts have displaced many people and disrupted livelihoods.
6. **Ethiopia is a regional leader in climate change negotiations at the UNFCCC.** It has a clearly-defined path for lower GHG emissions, climate-resilient growth under the full ownership of the ministry of finance and the sectoral ministries, and established procedures for donor co-ordination. This facilitates collaboration between MOs and other elements of the climate MS. Research organisations and think tanks such as the CGIAR and WRI also collaborate. Moving forward, as Ethiopia urbanises and vehicle ownership increases from the current very low levels, support for sustainable urban development will become more of a priority in maintaining its current climate responsible growth path.

61 http://www.power-technology.com/projects/gilgel-gibe-iii-hydroelectric-power-project/,https://www.hydroreview.com/articles/2015/10/power-generation-begins-at-1-870-mw-gibe-iii-hydroelectric-project-in-ethiopia.html

62 https://www.water-technology.net/projects/grand-ethiopian-renaissance-dam-africa/

63 CGIAR. Climate Change, Agriculture and Food Security Programme.

64 https://ccafs.cgiar.org/resources/publications/roadmap-livestock-monitoring-reporting-and-verification-improvement

Ethiopia still faces fundamental development challenges, and addressing these will be crucial to moving forward with its NDC and with its growth plans more broadly. A substantial albeit declining proportion of the population still faces food insecurity; access to electricity and clean water remains limited, and much of the population still depends on low productivity agriculture. Human development indicators are improving but remain low. In addition, Ethiopia continues to host a large refugee population because of the civil conflict in several neighbouring countries and has also faced recent civil unrest. Continued support will be crucial to address these challenges.

Box 3: WBG analytical and advisory services

ASA: Energy sector development

- Energy sector review and strategy
- Clean cooking energy
- Off-grid renewable energy
- Wind sector
- Sustainable and equitable WASH services
- Urban productive safety nets
- Support for the DRM framework
- Performance of cereal markets

Jobs

- Multi-sectoral work on jobs
- Analytical work in preparation for jobs compact

Other

- Review Ethiopia rural roads programme
- Early Years agenda
- Pastoralism
- Resilience for the Ethiopian road network
- Urban land and affordable housing

Source: http://www.power-technology.com/projects/gilgel-gibe-iii-hydroelectric-power-project/,https://www.hydroreview.com/ articles/2015/10/power-generation-begins-at-1-870-mw-gibe-iii-hydroelectric-project-in-ethiopia.html

Box 4: Major AfDB CPS operations 2016-20

Transport Sector

1. Integrated Transport Project Phase I, 2016
2. Integrated Transport Project Phase II, 2018

Water & Sanitation

3. Ten Towns Integrated Water Supply and Sanitation Programme, 2018
4. Addis Ababa East Akaka Wastewater Treatment Plant, 2019
5. Extension of One Wash National Programme, 2020

Energy Sector

6. Mekele-Dallol and Semera-Afdera Power Transmission Project, 2016
7. Addis Ababa Distribution and Transmission System Improvement Project, 2017
8. Wind Energy Programme (Assela-Wind Plant Development) ADF 2017
9. Ethiopia Wind Energy Programme Geothermal Plant, 2017
10. Jimma - Atango Power Transmission Project, 2019
11. Ethiopia-South Sudan Electricity Interconnection Project

Source: AfDB.

3. INDIA

3.A Background

India covers 2.973 million km² and has the world's second largest population (1.38 billion). This gives a population density around 464 persons per km². Classified by the WB as a lower middle-income country, India had an estimated gross national income per capita of USD 2 120 in 2019. Roughly 35% of its inhabitants reside in urban areas, with an urbanisation rate of around 2.3% a year over the past decade. Six of the world's 34 megacities – Delhi, Mumbai, Kolkata, Bangalore, Chennai, and Hyderabad – are in India and have a combined population of around 100 million. As the world's sixth largest economy, India is also the fourth largest electricity consumer. Roughly 60% of its total land area is dedicated to agriculture, while less than 24% remains in forest, and 5.4% is in protected areas.

India's three-year action agenda (FY2017-19), identifies key government priorities: enhanced agricultural productivity through land, market, and subsidy reforms; enhanced industry, trade and services to boost productivity and create high wage jobs, including a manufacturing and export-based strategy; balanced growth nationwide, and an inclusive society. The plan also seeks to improve the country's competitiveness by promoting skills development, catalysing entrepreneurship, and strengthening connectivity, including multi-modal transport logistics.

3.A.1 India's mitigation challenges

India is the world's third highest emitter of GHG emissions, with an estimated total of 2.65 GT of CO_2 in 2018, according to the IEA. Its per capita emissions were 2.7 tCO_2e in 2015. Energy sector emissions accounted for 68.7% of the total in 2014, of which 49% were from electricity and heat generation and 24% from manufacturing and construction, with much of the rest coming from transport use. In 2014, 75% of India's electricity was generated by coal, 11% by hydropower, 5% by natural gas, 3% each by nuclear and wind, and 2% each by fuel oil and biofuels.[65] Agriculture was the second largest single sectoral source of CO_2 emissions in 2014, of which 19.6% is caused by ruminant enteric fermentation, especially cattle, contributing 45% of the subtotal; rice paddies were also a significant source, while industrial processes, land use change and forestry, and waste were responsible for 6%, 3.8%, and 1.9%, respectively. Overall, emissions increased by 2 060 $MtCO_2e$ or 180%, between 1990 and 2014. In recent years, India has sharply stepped up generating renewable energy, especially from solar plants. It is also presently the fourth largest wind power globally after China, the United States, and Germany.

3.A.2 India's adaptation challenges

India is highly vulnerable to the impacts of climate change. The government's report on its NDCs to the UNFCCC highlighted the following areas: (i) nearly two-thirds of the population earns its livelihood in agriculture but droughts and floods are frequent and the sector is already facing a high degree of climate variability; (ii) water is the most critical component of the life support system with a total catchment area of 252.8 million hectares, covering more than 75% of the country; (iii) health-related stress will increase from extreme weather-related disasters such as the wider spread of vector-borne diseases including malaria and dengue and the increasing frequency of heat and cold waves; (iv) coastal impacts due to tropical storms and sea level rise along 7 515 km of shoreline encompassing parts of nine maritime states and two Union Territories that are home to 14.2% of the population, and (v) natural disasters as the subcontinent is among the world's most disaster-prone areas. Nearly 85% of India's area is vulnerable to one or multiple

65 India is the world's second largest coal producer, importer, and consumer after China, where coal consumption has plateaued. The March 2019 *The Carbon Brief Profile* for India reports that analysts expect India's rapid growth in the use of coal to continue and drive increases in global demand in the years ahead.

hazards, including some 45.64 million hectares that are subject to flooding, and (vi) biodiversity, with only 2.4% of the world's land area, India is home to 7-8% of all recorded species, and four of thirty-four global biodiversity hotspots. The Himalayas are the most important concentration of snow cover outside the polar region with over 9 500 glaciers, some of which are the perennial sources of major rivers.

The joint WBG and ADB 2020 CRP for India makes a more recent assessment of its adaptation challenges. Its key messages include: (i) by the end of the century, the average temperature in India is projected to increase by 1.1-4.1°C over the 1986-2005 baseline. The rate of warming will depend on the 21st century emissions pathway; (ii) projected temperature rises are greatest in the northern regions where annual minimum and maximum temperatures are expected to increase at a greater magnitude than the national average; (iii) disaster risk reduction and adaptation should be considered very high priorities to protect communities from the widespread, diverse increases in projected hazard intensities; (v) the intensification of climate extremes is projected along with increased drought risk and increases in the amount of precipitation during heavy rainfall events; (vi) agricultural systems need major restructuring that considers crop range shifts to respond to the negative outlook for yields, particularly of staple cereal crops, and (vii) urban areas and key infrastructure will face major pressures, particularly from rising temperatures and WRM challenges.

3.A.3 Government response

To address these challenges, the government adopted a NAPCC in June 2008. This plan is based on an awareness that climate change action must proceed simultaneously in energy, industry, agriculture, water, forests, urban spaces, and the fragile mountain environment. It put forward eight national missions covering mitigation and adaptation: (i) solar energy; (ii) enhancing energy efficiency; (iii) creating a sustainable urban habitat; (iv) conserving water; (v) sustaining the Himalayan ecosystem; (vi) creating a green India by expanding forests; (vii) making agriculture sustainable, and (viii) establishing a strategic knowledge platform to serve the other missions. The plan also served as the basis for India's NDCs, which were submitted to the UNFCCC in advance of the Paris COP in November-December 2015. India's states were also required to produce CAPs, some of which include emissions reduction commitments, electric mobility policies, or solar and wind capacity quotas.

3.B India's adaptation and mitigation priorities

Adaptation goals and priorities

Government priorities are reflected in the 2015 NDCs and include those summarised above for the areas of greatest vulnerability to the increasing impacts of climate change. As the NDC stated, priorities are "to better adapt to climate change by enhancing investments in development programmes in sectors vulnerable to climate change, particularly agriculture, water resources, Himalayan region, coastal regions, health and disaster management." It also affirmed that it would also proceed with the following: (i) developing climate resilient infrastructure; (ii) full implementation of the Green India Mission and other afforestation programmes, and (iii) planning and implementing actions to enhance climate resilience and reduce vulnerability to climate change.

India's mitigation goals and priorities

The pertinent NDCs are to: (i) reduce the emissions intensity of its GDP by 33-35% by 2030 from the 2005 level; (ii) achieve about 40% cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030 with the help of technology transfer and low-cost international finance, including from GCF, and (iii) create an additional carbon sink of 2.5-3 $BtCO_2e$ through additional forest and tree cover by 2030. In addition, the government pledged to continue its ongoing mitigation efforts by: (i) introducing new, more efficient and cleaner technologies in thermal power generation; (ii) promoting renewable energy generation and increasing the share of alternative fuels in the overall fuel mix; (iii) reducing transportation sector emissions; (iv) promoting energy efficiency in the economy, notably in industry, transportation, buildings and appliances, and (v) reducing emissions from waste.

India's cross-cutting goals and priorities

The NDCs also include four objectives for adaptation and mitigation: (i) to put forward and further propagate a healthy, sustainable way of living based on the traditions and values of conservation and moderation; (ii) to adopt a cleaner climate-friendly path than the one previously followed by others at a corresponding level of economic development; (iii) to mobilise domestic, new and additional funds from developed countries to implement these mitigation and adaptation actions in view of the resources required and the resource gap, and (iv) to build capacities, create a domestic framework and international architecture for quickly diffusing cutting-edge climate technology in India and for joint collaborative R&D for such future technologies. The NDC document likewise discusses India's associated financial, technological, and capacity building requirements but it is not yet known whether the government intends to raise the ambition of its mitigation-related NDCs in advance of COP 26 in November 2021.[66]

3.C MO climate change programmes in India

World Bank Group

The WBG's most recent systematic country diagnostic is the basis of the current CPF for FY2018-22. It concluded, among other things, that India's, "growth pattern will need to adjust to become more resource efficient and address the consequences of climate change." The CPF affirms that the WBG would support the government's climate mitigation and adaptation activities "across the portfolio," observing that India is highly vulnerable to climate change and that its climate change effects could push 45 million people into poverty. However, it also notes that India is a world leader in promoting policies and practices to address climate change, including, "championing of renewable energy through the International Solar Alliance."[67] The WBG was expecting to support India's efforts to address climate change through a mix of climate-focused operations and advisory services and analytics across CPF objectives and to help leverage the private sector to support the development of market mechanisms and tap private sector financing and knowhow to tackle India's climate change-related challenges. The main CPF FAs are: (i) resource-efficient growth; (ii) enhancing competitiveness and job creation, and (iii) investing in human

66 See *India's Intended Nationally Determined Contribution: Working Toward Climate Justice,* Delhi, October 2015. After signing the Paris Agreement in December 2015, India converted its unchanged INDCs directly into its first NDCs, which have not yet been updated.

67 India launched the International Solar Alliance in November 2015, involving 121 countries most of which are located entirely or partly between the Tropics of Cancer and Capricorn, to work for the efficient consumption of solar energy to reduce the fossil fuels consumption.

capital. Two of the five sub-objectives under the first FA are to increase access to sustainable energy and improve DRM and resilience to climate change. WBG-supported mitigation-related interventions would include assisting India in scaling up renewable energy and mobilising private financing through a mix of WBG instruments, as well as providing TA for the market design for integrating the renewable energy grid and next generation renewable energy technologies. In addition, IFC would also promote renewable energy through investments and PPPs transaction advisory work. The WBG would likewise support India's leadership role in promoting the International Solar Alliance and facilitate knowledge exchanges to share its energy efficiency experience with other countries.

As concerns adaptation and mitigation activities in rural areas, the CPF states that the WBG would support the government's ongoing efforts to: (i) improve the management of water resources through reforms and capacity strengthening; (ii) develop efficient, sustainable, performance-based service delivery models for the water sector; (iii) improve hydrological data information systems to monitor performance and use; (iv) foster investments in water use efficiency, including for irrigation and drainage; (v) promote efficient rural enterprise models and associated value chains for inland aquaculture, forestry, including timber and non-timber forest products, and agroforestry to reduce pressure on land resources and build resilience in the rural economy; (vi) implement the agroforestry and trees outside forests programmes as part of the national commitments on carbon sequestration, and (vii) build farmers' capacity to adapt and mitigate the impacts of climate change, including by promoting CsA practices, inland aquaculture, and improving degraded forests, agroforestry, and plantation forests to restore and enhance ecosystems, preserve biodiversity, and reduce GHG emissions. For urban areas, the WBG would help cities become

> …more green, liveable, productive, and resilient" by investing in affordable and sustainable public transport services, including mass rapid transit systems in large cities; improving water systems; supporting an enabling environment for green buildings; and mobilising the private sector to address issues in municipal waste management, wastewater recycling and reuse, municipal healthcare, affordable/green housing, and energy efficiency.

And it stated that the WBG would use its portfolio of projects and TA to create resilient infrastructure and provide further support to build state and local level DRM institutions and build capacity for disaster risk reduction and emergency preparedness. WB lending was projected at USD 3.3-4 billion a year and IFC finance at some USD 10-13 billion over the CPF period.

A review of the WBG's climate change-related portfolio (as identified by the WBG) for India before and after the end of 2015 shows operations in several sectors, including agriculture, energy, transportation, and WRM. Those approved in 2016 and more recently appear to focus predominantly on adaptation, while earlier operations were more mixed in sector and focus on mitigation as well as on adaptation. Several projects are for individual states (e.g., Andhra Pradesh, Himachal Pradesh, Maharasthra, Rajasthan, Tamil Nadu, Uttarakhand) and others are geographically broader in scope. A more detailed examination of the energy sector portfolio reveals a substantial majority – 24 of 32 WB projects and 23 direct and equity IFC investments – approved over the past decade involve financing for renewable energy (solar, wind, and hydro). Thus, WBG investment operations in the sector are well aligned with India's climate change plans and generally consistent with the normative frameworks.

The WB is an IA together with ADB for two CIFs for which India is eligible. India has mainly been the recipient of CTF resources but has also received a small grant administered by ADB from the PPCR. India's CTF investment plan supports the development of more than 3 GW of new installed solar power capacity

and associated transmission infrastructure as well as for 800 MW of new grid-connected rooftop solar PV nationwide, resulting in enough power to serve nearly one million homes and reduce GHG emissions by 25 million tonnes.

Asian Development Bank

ADB's most recent CPS for India covers roughly the same period (2018-22) as the WBG's most recent CPF. Its inclusive and sustainable growth assessment linked (diagnostic) document identifies India's need to address its climate change challenges as a significant development priority. It emphasises the already apparent effects of climate change, observing specifically that the arrival time of the monsoon has changed, long winters and dry spells have become more frequent as are forest fires. It also noted that India was spending about 5% of GDP on adaptation measures and that UNEP's 2016 Emissions Gap Report had assessed India to be on track to achieve its voluntary NDC pledges by 2020.

The CPS adopted climate change as its third strategic pillar, affirming that ADB would support the government's efforts to meet its NDCs and improve economic resilience to climate change impacts, and especially to increase the proportion of renewable energy consumption and focus on green corridors for high voltage transmission lines to evacuate renewable power to load centres through its sovereign and non-sovereign (i.e., private sector) operations, including those with financial intermediaries. It would also work with domestic financial institutions to deepen access to climate financing to develop renewable energy and improve energy efficiency, while in the urban sector it would support methane capture from wastewater and solid waste management facilities, as well as the development of non-motorised, low-carbon mass urban transit. It also affirmed that ADB would mainstream CCA and DRM across all sectors and promote the consideration of climate proofing in infrastructure projects and would pay special attention to increasing urban climate change resilience, "particularly in environmentally sensitive states and cities that require unique and customised approaches." Finally, ADB would assess natural disaster and climate change vulnerability risks for all new investment projects and incorporate appropriate resilience measures in their design. ADB is expected to to lend between USD 3 and 4 billion annually during the CPS period.

ADB's self-identified portfolio of climate change-related sovereign and non-sovereign projects over the past decade were mainly approved before 2016. Only five sovereign and five non-sovereign projects (some involving several loans) were approved after the end of 2015. All **non-sovereign** operations involve the renewable energy sector; the **sovereign** projects also concentrate on renewable, including solar, energy transmission. One of the more recent **sovereign** operations (Rajasthan Renewable Energy Transmission) was also part of a MFF, many of which are in ADB's India portfolio.[68] However, others are primarily for adaptation purposes, including for water resource and flood management for a large irrigation project in Tamil Nadu and for coastal protection and management using both structural and nature-based interventions in Karnataka. Altogether, the post-2015 climate-related projects entailed nearly USD 748.7 million in ADB commitments and the non-sovereign commitments almost USD 202 million. The climate change-related projects prior to 2016 were more diverse in sectoral terms, and included several transport (road and rail) projects and two urban development operations. But the majority were also in the energy sector and strongly focussed on mitigation (i.e., renewable energy and, to a lesser extent, energy efficiency). Most of these projects were state-specific: three in Madhya Pradesh and two each in Assam, Himachal Pradesh, Rajasthan, and Uttarakhand, one of the latter was approved in 2013 in response to serious flooding, to partially finance emergency assistance in co-ordination with the WB, which had a similar project involving

68 The MFF is an ADB financing modality that supports a client's medium- to long-term investment programme or plan. The board approves a maximum amount and the conditions for financing, including that its multiple tranches require no more than 10 years for implementation after which the undisbursed loan funds are cancelled.

different sectors. Interestingly also, the WB has a similar coastal protection and management project in other states. Both operations were larger investment follow-ups to an earlier ADB-managed GEF-funded TA project for integrated WRM in India.

International Fund for Agricultural Development

IFAD's COSOP for India for 2018-24 emphasises the links between climate change and long-term food security, observing that Indian agriculture is highly vulnerable to climate change because it continues to be highly sensitive to monsoon variability. Observing that "seasonal water scarcity, rising temperatures, and more frequent risk of drought jeopardise the country's food security," it concludes that a major challenge for India is to "promote the widespread adoption of climate-smart techniques and other adaptation measures that sustain production and productivity and ensure continued national food and nutritional security."

As a response, IFAD proposed support for the "diversification of crops and livelihoods, promotion of integrated farming, and improving the outreach of social security nets to build resilience to climate change and market variability." In addition, it would seek to boost CsA production and diversify income sources and converge with government schemes for insurance and social protection. It would also make NRM and CCA core features of its programme in support of the COSOP's strategic objective of making smallholder food and agricultural productive systems remunerative, sustainable, and resilient, as this is seen as being fundamental to increasing incomes This would require promoting "innovative, environmentally sustainable and climate-resilient technologies and practices, covering crop varieties, soil health and water conservation measures, integrated pest management, agroforestry, and precision farming." It would also "maintain those environmental services at watershed level that are critical to ensuring reliable water supply and natural resource-based livelihoods and agricultural production systems." Finally, IFAD would also explore climate change mitigation options, including reducing emissions from farming systems and accessing carbon markets by selling carbon sequestration services. When the COSOP was issued, IFAD's active portfolio in India consisted of nine projects that include the following climate change-related operations:(i) the Andhra Pradesh Drought Mitigation Project; (ii) Fostering Climate Resilient Upland Farming Systems in the Northeast (Mizoram and Nagaland States), and the (iii) Post-Tsunami Sustainable Livelihoods Programme the Coastal Communities of Tamil Nadu, although some of the others may have climate-relevant elements as well. IFAD's 2019-21 allocation for India totalled nearly USD 166.3 million.

United Nations Development Programme and United Nations Environment Programme

The UN entities, including IFAD, UNDP, UNEP and 16 other agencies, have jointly prepared a SDF for India together with the government for 2018-22 that reflects one of the core objectives of the ongoing UNDS reform of strengthening the co-ordination and effectiveness of the assistance of UN entities at the country level. The SDF identifies seven strategic priority areas – the fifth is "climate change, clean energy, and disaster resilience" –– for UNDS collective assistance to India during this six-year period with UNDP as the convener (or co-ordinating entity). The objectives associated with this priority area are that, by 2022, environmental and NRM be strengthened and communities have more access to clean energy and are more resilient to climate change and disaster risks. The climate change-related results of the actions of the relevant UN agencies (including UNDP and UNEP) under the energy sub-heading are expected to include: (i) enhanced energy efficiency in selected energy intensive sectors to reduce GHG emissions and contribute to the country's NDC targets; (ii) innovative partnerships and financial models that contribute to achieving at least 10% of 100 GW national targets for solar energy generation by 2022; (iii) increased use of renewable energy, including through solar and wind power and new technology under the environment

and resilience sub-heading to entail meeting national commitments under the UNFCCC and NAPCC, and (iv) increased institutional and community resilience by integrating CCAM measures and disaster risk reduction into national policies, strategies, planning and programmes.

In addition, regarding this priority area, the UN entities would seek among other things, to promote: (i) innovative, integrated solutions for better ecosystem management (especially coastal and mountain regions) and natural resources, including agricultural management to reduce negative environmental impacts, and (ii) adopting and scaling-up technological, institutional, and financial models and approaches for effective CCMA, air quality mitigation, and waste and chemical management. They are also expected to: (iii) contribute to national policies and programmes to increase access to affordable, efficient, clean energy, especially for vulnerable groups in low-income states and underserved areas, and (iv) strengthen capacities to plan and implement local strategies and action plans to enhance urban and rural resilience, among other activities.

Both UNDP and UNEP are GEF and GCF IAs along with several other UN entities and the IFIs – WB, ADB, IFAD. UNDP has 15 climate change-related projects in India initiated between 2013 and 2020 of which two GEF-funded projects (Preparation of the Third National Communication to the UNFCCC and the Small Grants Programme) have traditionally been funded by this source and implemented by UNDP. Ten UNDP projects in India have been initiated since 2015 and five others, including the two just mentioned, between January 2013 and May 2015. UNDP entirely funded one of the earlier projects (USD 9.52 million) whereas two others counted on co-financing from USAID (Strengthening Community Resilience to Disasters and Climate Change) or from the governments of Australia, Switzerland, and several Indian government entities (Strengthening Climate Change Planning and Implementation). The other two projects initiated before the end of 2015 were also financed by the GEF (Market Transformation, with a grant of USD 4.11 million, and Access to Clean Energy with a grant of USD 2.95 million).

The GEF funds three of the ten UNDP projects for India initiated after 1 January 2016, including two readiness grants and one investment project. In addition, two GEF-funded projects include the Small Grants Programme – one financed by DFID (Infrastructure Climate Resilience Growth) and a second financed by the India-led International Solar Alliance, a third by various Indian government entities, a fourth co-financed by the Central Emergency Relief Fund (Disaster Risk Recovery in Kerala and Orissa), and a fifth jointly financed by UNDP and two Indian state governments (Resilience Building of Communities in Guwahati and Ranchi). The more recent projects are concerned with adaptation/resilience building for the most part while those initiated prior to 2016 are focused on a mix of mitigation and adaptation.

Of UNEP's eight climate change-related projects initiated over the past decade, several also receive GEF financing. One of these (Mainstreaming Agro-biodiversity Conservation and Utilisation in the Agri-cultural Sector to Ensure Ecosystem Services and Reduce Vulnerability) with a start date in November 2016 is for India only and the other two are for several countries, including India, with start dates in November 2015 (Building the Foundation for Forest Landscape Restoration at Scale) and June 2014 (Stabilising GHG Emissions from Road Transport through Doubling of Vehicle Fuel Economy: Regional Implementation of the Global Fuel Economy Initiative), respectively. A total of five UNEP climate-related projects have start dates after 2015 with total budgets of around USD 41.6 million: two are for adaptation/resilience building and the other three are for mitigation. The first of the three earlier projects (Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants), whose start date was September 2012, also identified both UNDP and WB, among others, as implementing partners.

Global Environment Facility

The GEF has been funding projects in India for climate change, among other FAs (e.g., biodiversity, land degradation, etc.), including those with the WB, UNDP, and UNEP as their implementing agencies, for three decades, with resources replenished six times since it began as a pilot programme in 1991. Considering the present and immediately prior tranches (i.e., no. 6 from mid-2014 through mid-2018 and no. 7 from mid-2018 to mid-2022), thus far only one GEF project for India alone has been approved for implementation with tranche 6 resources, in May 2018 (Transforming Indian Agriculture for Global Environmental Benefits and the Conservation of Critical Biodiversity and Forest Landscapes), with FAO as its IA. However, it has also been included in an approved (likewise for FAO implementation) global project in August 2019 using tranche 6 resources (Agro-ecology, Ensuring Food Security, and Sustainable Livelihoods while Mitigating Climate Change in Dryland Regions) that targets the climate change and land degradation FAs, and also includes six other countries in addition to India.

According to the GEF website, no projects have yet been approved for implementation with tranche 7 resources, but three project concepts for the climate change FA have been wholly or partly approved, while another has been proposed and is likely to be approved, all with UNDP as their IA. (i) Accelerating Adoption of Super-Efficient Technologies for Sustainable Thermal Comfort in Buildings (grant of some USD 4.4 million); (ii) Capacity Building for Establishing an Integrated and Enhanced Transparency Framework for Climate Actions and Support Measures (grant of USD 3.8 million; (iii) Seventh Operational Phase of the GEF Small Grants Programme, which all respond to the biodiversity and land degradation FAs (grant of roughly USD 4.5 million), and (iv) the proposed operation, Preparation of India's 4th National Communication and Fourth Biennial Update Report to the UNFCCC and Strengthening Institutional and Analytical Capacity on Climate Change (grant of nearly USD 46 million).

Concepts have also been proposed but not yet approved for GEF tranche 7 financing for two global projects focusing in part on climate change and involving India and other countries, to be implemented by the WB. These are the Food Systems, Land Use Restoration Impact Programme also targeting the biodiversity and land degradation FAs and including 15 other countries in addition to India, and the Global Wildlife Programme, also targeting the biodiversity FA and including 14 other countries. Concepts have been proposed for UNEP implementation for two additional projects, the Sustainable Cities Impact Programme, which also targets the biodiversity and land degradation FAs and includes eight other countries in addition to India, and the Global Programme to Support Countries with the Shift to Electric Mobility, which also includes 25 other countries.

Green Climate Fund

The GCF presently has three active investment projects in India:

- Ground Water Recharge and Solar Micro Irrigation to Ensure Food Security and Enhance Resilience in Vulnerable Tribal Areas of Odisha for "enhancing the resilience of vulnerable communities in Odisha through groundwater recharge and solar micro irrigation." Approved on 6 April 2017, the project will be partly financed by a GCF grant of nearly USD 34.4 million and with an estimated total value of USD 166.3 million. It is also expected to avoid 52 300 tonnes of GHG emissions. The project IA is the National Bank for Agriculture and Rural Development.
- Line of Credit for Solar Rooftop Segment for Commercial, Industrial, and Residential Housing for "enabling access to long-term, affordable finance for solar rooftop installation projects in commercial, industrial, and residential housing sectors in India, including vulnerable communities." Approved on

1 March 2018, the project has a GCF loan of USD 100 million and an estimated total value of USD 250 million. It is expected to avoid emissions of 5.2 $MtCO_2e$ over 20 years. The National Bank for Agriculture and Rural Development is the IA.

- Enhancing the Climate Resilience of India's Coastal Communities for "protecting and restoring the natural ecosystems of India's coastal zone to strengthen the climate resilience of coastal communities." Approved on 20 October 2018, the project has GCF financing of USD 43.4 million and an estimated total value of USD 130.3 million. As a crosscutting project, it is expected to avoid 3.7 million tonnes of GHG emissions. It will be implemented in 24 target ecosystems in 12 coastal districts across Andhra Pradesh, Maharasthra, and Odisha. UNDP is the IA.

3.D Conclusions, challenges, opportunities and lessons

The principal climate change challenges that India faces for both mitigation and adaptation/resilience building were briefly described at the beginning of this report. The government identified climate finance, technology development and transfer, and capacity building as most in need of external support in connection with its NDCs. The MOs examined indeed appear to have sought to respond to these needs and the government's associated requests for external assistance. Both the WBG and ADB have increased their financial support to the public and private sectors for renewable energy over the past decade, starting even before Agenda 2030 and the Paris Agreement as is clearly reflected in their respective country strategies for India and their operations on the ground. Since the Paris Agreement, moreover, all the selected MOs – except IFAD, whose support was already predominantly focused on climate adaptation in the agricultural sector – have increased their support for adaptation resilience building activities in India, including for rural, coastal and urban areas. These MOs have also increased their assistance for extreme weather-related DRM and improved WRM over time.

Much of the MO financial support for mitigation in India continues to be for renewable energy, with a strong emphasis on solar energy and considerable focus on one-off private sector operations, especially by IFC and ADB. All the MOs examined support India's expressed intention to reduce its traditional dependence on coal and to sharply increase the share of renewable and other forms of clean energy. The CTF was also targeted to support this national objective both before and after the Paris Agreement, and the GEF has also continued to provide grant financing to India for climate change issues, particularly adaptation, with UNDP, UNEP, and the WB among others, including FAO and UNIDO, as key IAs. GEF shifted the way it provides support after mid-2014 for much larger multi-country and multi-FA operations. The bulk of the financial resources allocated to India for climate-related purposes continues to come from the WBG and ADB, both through loans using their ordinary capital resources and their use of CIF and GEF concessional funds that are sometimes blended with or leveraged by regular loan resources. Most, however, take the form of traditional investment lending, although ADB prefers the MFF particularly (but not only) in the energy and transport sectors, for many of its sovereign operations.

In summary, country demand and MO supply appear generally well aligned, which seems to have increased further after the approval of the SDGs and the Paris Agreement. However, the extent of collaboration and co-ordination among the selected and other development partners at present, despite apparent cross-consultations, appears to leave ample room for improvement. Several considerations are relevant in this regard, including the definition of the division of labour, particularly between the WB and the ADB during each periodic planning cycle through their respective strategic dialogues with the government. In any event, it is important to recall that their share – and that of the other selected MOs and

development assistance agencies collectively – of total government resources for achieving its climate change priorities – is comparatively small. The government, moreover, is currently emphasising the need for enhanced multilateral and bilateral donor co-ordination more generally.

Several areas can thus be identified as persistent opportunities:

- Co-ordination among MOs and other development partners can be stronger in their climate-related policy dialogue and interventions in India for mitigation, especially in the energy sector, and for adaptation.
- Greater use could be made of DPL at the national level – particularly in the energy and transport sectors – and (selectively) at the state level in support of their respective CCAPs, as the WB has attempted to do for Himachal Pradesh.
- Recent MO efforts have increasingly focused on helping India address its vulnerability to climate change, especially in the agricultural and water resource sectors and in coastal areas. These initiatives are insufficient and further financial assistance and TA are likely needed.
- The same applies to India's urban resilience needs given that its megacities and other agglomerations of all sizes continue to grow rapidly.
- MO and other development partner assistance for CCA/resilience building needs to be better integrated with their support for natural DRM in practice, as the ADB, WB, and UN have all pledged to do in their most recent country strategies.

4. INDONESIA

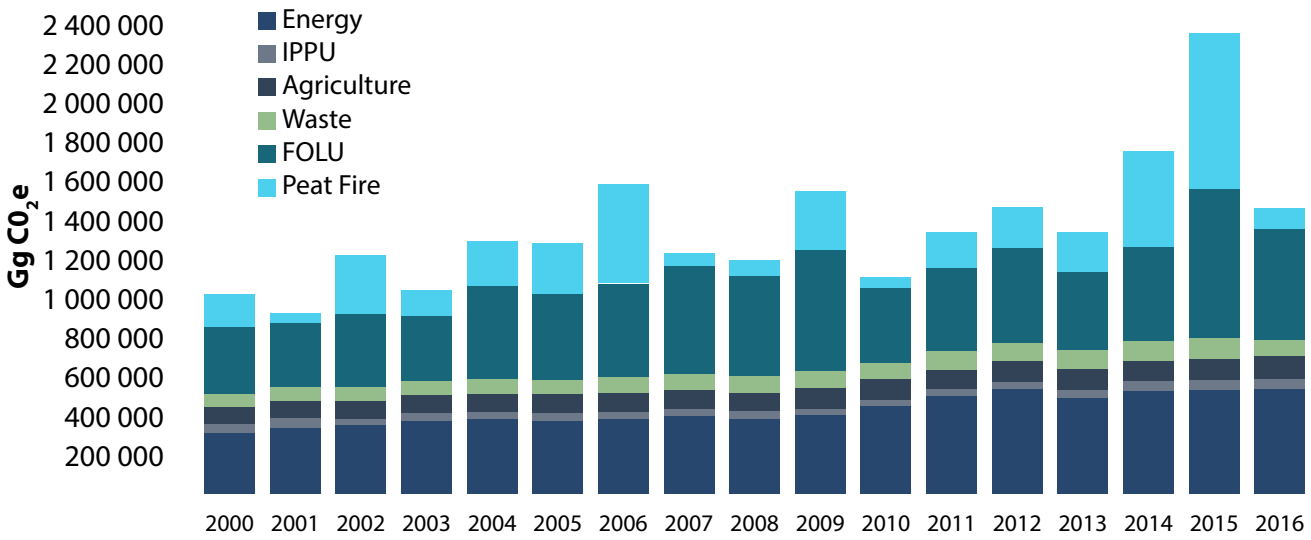
4.A Background

Indonesia is the world's fourth largest country in demographic terms, with an estimated population of around 273.5 million in 2020. The country is composed of more than 17 500 islands with over 81 000 km of coastline and a total land area of 1 811 570 km^2, for a population density of about 151 persons per km^2. Around 56% of the population resides in urban areas although more than half the population lives in Java, home to Indonesia's two largest cities, Jakarta, the capital with a metropolitan population of around 1 1million, and Surabaya, with more than 3 million inhabitants. According to the WB Little Green Data Book, Indonesia's GNI per capita was USD 3 440, putting it in the lower middle-income group. Regarding land area, 31% was in agriculture, 50.2% in forests, and 14.7% was in terrestrial protected areas in 2017. Indonesia's average annual deforestation rate at 0.6% between 2000 and 2015 also exceeded the rates for the Asia and the Pacific Region (-0.2% a year) and for all lower middle-income countries as a group (0.4%).

4.A.1 Indonesia's mitigation challenges

Indonesia is the third largest emitter of GHGs in Asia and the tenth largest in global terms. Emissions have varied from one year to the next but appear to have risen over time(see Figure 2).

Figure 2: Indonesian GHG emissions



Source: https://unfccc.int/sites/default/files/resource/Indonesia-2nd_BUR.pdf

Emissions stem from deforestation (AFOLU) and peat land fires, and secondarily from burning fossil fuels for energy. Indonesia's annual GHG emissions were nearly 2.4 BtCO_2e in 2015, a peak year. Indonesia is home to 10% of the world's tropical forests and 36% of its tropical peat lands. It also accounts for 53% of global palm oil cultivation, whose expansion is largely responsible for the country's higher than average deforestation rate. From 2000 to 2015, Indonesia lost an average of 498 000 hectares of forest each year, making it the world's second largest deforester after Brazil.[69] In 2015, for example, changes in land-use, peat lands and forests were estimated to have accounted for 79% of Indonesia's GHG emissions, accord-

69 Generally involving slash and burn land clearing to make way for new plantations, this has led to increasing seasonal fires releasing vast amounts of carbon to the atmosphere, at the same time resulting in significant local and regional air pollution that have affected the neighbouring countries of Singapore and Malaysia as well as Indonesia itself.

ing to the Carbon Brief Profile. Indonesia is the world's fifth largest coal producer and exports about 80% of its production, primarily to China. About 58% of Indonesia's electricity was generated by coal in 2017, while only 5% came from renewables, primarily geothermal energy, of which it is the world's second largest producer.

4.A.2 Indonesia's adaptation challenges

As a populous nation spread across a chain of tropical islands, Indonesia is highly vulnerable to the impacts of climate change. Sea level rise threatens as many as 42 million of its inhabitants. It is estimated that a one-metre rise could inundate more than 400 000 hectares. Jakarta has been described as the world's fastest sinking city. Increased rainfall is projected for most of Indonesia's islands, except for those in the south, including Java, where declines are projected to be as high as 15%.

However, these variations in precipitation are expected to result in more flooding and drought in the wetter and drier areas, respectively. Indonesia's largest cities are among the areas most vulnerable to flash flooding. Climate change could also affect the timing of the annual monsoon, which could have significant negative effects on agricultural production.

The 2020 joint WB and ADB *Climate Risk Country Profile* for Indonesia contains the following key messages, among others: (i) Indonesia is ranked in the top third of countries for climate risk, with high exposure to all types of flooding and extreme heat. The intensity of these hazards is expected to grow as the climate changes. The population exposed to an extreme river floods could grow by 1.4 million by 2035-44. (ii) Indonesia is particularly vulnerable to sea level rise, with the country ranked fifth highest in the world in terms of the population inhabiting lower elevation coastal zones. Without adaptation, the total population likely to be exposed to permanent flooding by the 2070-2100 period could reach over 4.2 million. (iii) Rice production is particularly vulnerable to climate change as global changes in El Niño patterns are likely to impact the onset and length of the wet season and higher temperatures are projected to reduce rice crop yields. Alongside other impacts on agricultural production, Indonesia faces multiple climate-related threats to its food security. (iv) Climate change is also likely to have impacts on water availability, urban development, particularly in the coastal zones, and health and nutrition, with implications for poverty and inequality.

The Government of Indonesia's Medium-Term National Development Plan for 2020-24 sets a goal of achieving prosperous, fair, and sustainable development. Its priorities include efforts to accelerate the development of human capital, improve infrastructure and connectivity, simplify regulations and bureaucracy, and promote economic transformation. The impact of COVID-19 means that these goals may be difficult to achieve, and the government has established a taskforce on the COVID-19 response and recovery that prioritises health care, social protection systems, and economic support measures.

In its first NDC to the UNFCCC submitted in November 2016, the government considered climate mitigation and adaptation efforts to be "an integrated concept… essential for building resilience in safeguarding food, water, and energy resources" and consistent with its commitment to contribute to the achievement of the SDGs. As a response, Indonesia planned to transform to a low-carbon economy and to build resilience into its food, water, and energy systems through the following enhanced actions: (i) sustainable agriculture and plantations; (ii) integrated watershed management; (iii) reduction of deforestation and forest degradation; (iv) land conservation; (v) utilisation of degraded land for renewable energy, and (vi) improved energy efficiency and consumption patterns. The preparation of this document considered the need to take urgent action to combat climate change and its impacts, promote food security and sustainable agriculture, achieve gender equality, and ensure the following:

> …availability and sustainable management of water, access to affordable, reliable, and renewable energy for all, sustained, inclusive and sustainable economic growth, resilient infrastructure, sustainable consumption and production patterns, conservation and sustainable use of the oceans, seas, and marine resources, and protecting, restoring, and promoting sustainable use of terrestrial ecosystems, sustainably managing forests, combating desertification, and halting and reversing land degradation and biodiversity loss.[70]

4.B Indonesia's adaptation and mitigation priorities

Indonesia's adaptation goals and priorities

Indonesia's first NDC document observed that population growth would increase pressures on its already limited resources and that climate change impacted the lives of all Indonesians but affected its most vulnerable communities most severely. It also stated that climate change-induced natural disasters would affect a greater number of people living below the poverty line, that the rising food, water, and energy prices that frequently follow droughts, floods, and other disasters, would likely drive the poor further into poverty, increasing socio-economic disparities that could potentially lead to political instability in those areas most impacted by climate change. To prevent further disparities, Indonesia planned to build social resilience by: (i) enhancing adaptive capacity through development of early warning systems, broad-based public awareness campaigns, and public health programmes; (ii) strengthening community capacity and participation in local planning processes to secure access to key natural resources; (iii) ramping up disaster preparedness programmes for natural disaster risk reduction; (iv) identifying highly vulnerable areas in local spatial and land use planning efforts; (v) improving human settlements, provision of basic services, and climate resilient infrastructure development, and (vi) promoting conflict prevention and resolution.

It also noted that climate change presented significant risks for Indonesia's natural resources and would affect the production and distribution of food, water, and energy. Finally, it observed that "as an archi-

70 Government of Indonesia, *First Nationally Determined Contribution of the Government of Indonesia*, Jakarta, November 2016.

pelagic country with high biodiversity," Indonesia's ecosystems and landscapes provided essential environmental services including watershed protection, carbon sequestration and conservation, and disaster risk reduction. To build climate resilience, it needed to protect and sustain these services by taking "an integrated, landscape-based approach" to managing its terrestrial, coastal, and marine ecosystems. Thus, it would pursue the following priorities to support enhanced climate resilience: (i) ecosystem conservation and restoration; (ii) social forestry; (iii) coastal zone protection; (iv) integrated watershed management, and (v) climate resilient cities.

Indonesia's mitigation goals and priorities

According to the NDC document, Indonesia voluntarily committed to reducing 26% of its GHG against the business-as-usual scenario by 2020 and could increase its contribution up to a 41% reduction of emissions by 2030, subject to the availability of international support. In this context, the country was "committed to transition its current development pathway towards low carbon and climate resilience in a phased-approach." The pathway towards decarbonising the economy would be fully integrated into its national medium-term development plan for 2020-24 and based on the following enabling conditions: (i) certainty in spatial planning and land use; (ii) land tenure security; (iii) food security; (iv) water security; and (v) renewable energy. Finally, it stressed that international assistance from developed countries of finance, technology development and transfer, and capacity building would be necessary for to increase its ambition in reducing GHGs emission, including for implementing NDC and REDD+ under Article 5 of the Paris Agreement.[71]

4.C MO climate change programmes in Indonesia

World Bank Group

Together with ADB, the WBG is one of the largest providers of financial assistance to Indonesia to help it address climate change. The WBG's CPF for Indonesia for 2016-20 has six engagement areas: (i) infrastructure platforms at national level; (ii) sustainable energy and universal access; (iii) maritime economy and connectivity; (iv) delivering local services and infrastructure; (v) sustainable landscape management, and (vi) collecting more and spending better. At least half of these areas have elements associated with assisting the country to meet its climate mitigation and adaptation/resilience-building challenges. The document identifies climate change as one of five mega-trends that will shape Indonesia's economic prospects during the CPF period and beyond and that policy reforms could "turn into powerful drivers of growth and long-term economic transformation." It also states that global climate impacts will bring higher temperatures, precipitation changes, flooding, and rising sea levels over the next two decades, with especially negative consequences for the poorest people, adding that "adapting to these threats, together with measures to mitigate the country's contribution to GHG emissions, especially through the burning of peat forests, will be major challenges running throughout the country's development choices."

WBG support for engagement area 2 would focus on four sub-areas, including renewable energy and low-carbon development and, more specifically, accelerating geothermal and other renewables comple-

71 Article 5 states, "Parties are encouraged to take action to implement and support, including through results-based payments, the existing framework as set out in related guidance and decisions already agreed under the Convention for: policy approaches and positive incentives for activities relating to reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries."

mented by sustainably developing hydropower and the gas sector. Assistance under engagement area 4 would include support for sustainable urbanisation to help make Jakarta and Surabaya "world class cities" and improve secondary cities. Regarding engagement area 5, WBG assistance would do the following:

> …support design and implementation of a landscape programme focused on improving management of, and benefits from, terrestrial natural assets [and] could involve investments and support for policy reforms pertaining to land and forest governance and administration to reduce poverty, create a better investment climate for infrastructure investment, establish a co-operation framework for sustainable livelihood and agricultural development, and increase jobs and income while maintaining the natural asset base.

More importantly, from a climate change perspective, it would address the underlying drivers of deforestation and forest degradation, "which could unlock the enabling conditions for Indonesia's REDD+ Agenda." The landscape programme would also support Indonesia's global commitment to reduce GHG emissions by 2020 by 41% and "improve resilience of Indonesia's communities to the impacts of climate change and natural disasters." WBG operations in Indonesia were projected to include USD 7.5 billion from the WB and USD 3 billion from the IFC for the CPF period.

Four – or half – of the climate change-related WBG projects approved since 2010 were initiated after the 2030 Agenda and three were initiated after the Paris CCA was enacted. Two DPLs are included in this series – including one specifically for climate change that was approved in May 2010 – and the other for energy sector development that was approved in December 2015. Two other operations – the first approved in July 2011 and the second in February 2017 – were for geothermal clean energy investment and geothermal energy upstream development, respectively. The other projects are quite diverse. The two most recent projects are to improve solid waste management for regional and metropolitan cities and to accelerate agrarian reform. One of the pre-2016 projects was an operation for pumped storage; another was for water resources and irrigation sector management.

The two DPLs stand out for their climate change-specific objectives. The climate change DPL, approved in 2010, was a pioneering operation addressing broad policy responses across mitigation and adaptation concerns. It included policy support for geothermal energy expansion, the development of standard agreements to purchase renewable energy, and energy conservation regulations together with policy and institutional actions aimed at both mitigation and adaptation in a variety of other sectors. However, in a PPAR issued in February 2016, the WBG Independent Evaluation Group evaluated this DPL as moderately unsatisfactory mainly because it had been designed as a programmatic series of three loans but insufficient borrower ownership resulted in implementing only the first of the three. Its energy-related components were nevertheless among the more successful, but the inability to proceed to the second and third loans limited potential additional policy advances on various fronts, especially those involving coastal adaptation and forest management.

The 2015 energy sector DPL deepened the push for climate-friendly energy reforms, including reducing subsidies on power tariffs, removing licensing and regulatory constraints to the development of renewables, and rationalising the gas supply framework.[72] However, it also had somewhat mixed results. According to the June 2019 ICR, the electricity subsidy proceeded successfully until the end of 2017 when energy prices were frozen until at least December 2019. Still, one interesting feature of the DPL is that it appears that the WB and ADB did try to collaborate and co-ordinate strategically, as the ADB had

72 It should be noted with respect to the latter that whereas gas is a fossil fuel energy source, policy distortions make it an underutilised fuel in Indonesia that can substitute for higher carbon coal-fuelled plants.

a parallel sustainable, inclusive energy project that delivered 19 of its 22 planned regulatory and policy changes and was rated effective ex-post at least in the short term, even if the longer-term view appears to be substantially less positive.

These findings suggest the complexity of a deeper examination of WB support to the energy sector in Indonesia over the past decade. DPLs and infrastructure finance facilities comprise the largest segments of the portfolio in terms of dollar commitment amounts. These operations target multiple infrastructure sectors, of which energy typically accounts for 30-50%. The loans aim to assist the government in reforming policies to improve the regulatory and investment climate for private sector participation in infrastructure. Policy components have typically included support for rationalising energy tariffs and reducing subsidies, a direction consistent with energy conservation and GHG emissions abatement. However, power transmission and distribution have played the largest role in the WB's portfolio of energy investment projects. Distribution investments are carbon-neutral or reducing, as they decrease energy losses, and the WB has not financed connections to coal power plants. In addition, as an IA for the GEF, the WB has provided USD 3.68 million in grant funding for Indonesia's participation in the multi-country Partnership for Market Readiness.[73] Finally, IFC invested in four power projects over the period examined, two of which develop hydroelectric dams and the other two of which finance efficient combined cycle gas turbine power plants. These are significant sources of GHG emissions but they produce power with about half the emissions intensity of coal power stations.

The WBG and ADB also administer projects in Indonesia financed by two of the four CCIFs, the CTF, and the FIP. All CTF projects were in the energy sector and most involved support for clean energy development. In the WB's case, two of these projects – the Geothermal Clean Energy Investment and Geothermal Upstream Energy projects – were co-financed by regular WB loans and CTF concessional loans. The FIP projects are much smaller in financial terms and involve grants rather than loans. Of the two WB-managed projects, one was to promote community-based NRM and institutional development and the other was for strengthening the rights and economies of vulnerable local communities. Altogether, the WB was managing USD 249.0 million in three CTF projects and the IFC was managing another USD 37.5 million plus a geothermal electricity finance programme. The WB was also administering USD 23.68 million in the two FIP projects mentioned above.

Asian Development Bank

ADB also provides substantial financial assistance to Indonesia, both directly with its ordinary capital resources and, to a lesser extent, through the administration of funds from the CTF and FIP. ADB's most recent CPS for Indonesia for 2020-24, identifies climate change as one of its principal development challenges. More specifically, it states that as part of its economic recovery strategy, Indonesia will have to overcome its longstanding development challenges, including climate change and disaster risks, and achieve environmental sustainability, including by, "building back greener." The CPS also recognises that Indonesia is among the world's largest GHG emitting countries and highly exposed to climate change risks and natural disasters. It also affirms that government responses have included a low-carbon development initiative, the 2018 disaster risk financing and insurance strategy, and the launch of the environmental trust agency in 2019 to mobilise finance related to climate change, the environment, and disasters. It argues

73 With more than 30 participating countries, the PMR supports the preparation and implementation of market-based polices and approaches to scale up climate change mitigation, including carbon pricing instruments (such as carbon taxes and emissions trading schemes) and provides a platform for sharing experiences and lessons learnt by major UNFCCC Annex I and non-Annex I countries with a view to shaping the future of cost-effective GHG mitigation.

that Indonesia could use the COVID-19 recovery to reorient its economy toward a more strategic low-carbon trajectory while simultaneously addressing underlying vulnerabilities and improving the climate and disaster resilience.

The new CPS focuses on three strategic pathways, including "supporting climate change mitigation and adaptation measures, environmental sustainability and green recovery, disaster risk management and finance, and water and food security." Here, ADB would concentrate on strengthening the country's resilience to natural disasters, disease outbreaks, and climate change. It also pledged that ADB would "embed climate change mitigation and adaptation measures in its infrastructure investments" and support Indonesia's NDC goal of 23% of energy supply from renewable sources by 2025. This represents a scaling up of ADB's ambition compared to its previous CPS for Indonesia for 2016-19, issued in August 2016. However, even the earlier CPS stated that ADB would integrate climate change considerations into individual projects, especially for flood management, irrigation, and water security programmes, and support the promotion of renewable energy, cleaner fuels, and improved electricity transmission systems. It also observed that ADB's support would "help Indonesia shift to a cleaner growth path by encouraging renewable and clean energy use and fostering energy conservation." ADB's sovereign lending during the CPS period was projected to be on the order of USD 10.7 billion.

ADB's evolving project portfolio reveals a growing focus on climate change-related activities over the past decade, particularly in its sovereign projects, which rose in number from four between 2011 and 2015 to nine between 2016 and 2019. These operations also became more diversified during the latter sub-period. Non-sovereign operations, however, have continued to concentrate on renewable, mainly geothermal, energy throughout the decade, as was also the case with ADB's use of CTF resources and for its sovereign portfolio prior to 2016.

International Fund for Agricultural Development

IFAD's COSOP for 2016-19 focused predominantly on Indonesia's adaptation challenges and noted, for example:

> **… with 81 000 km of coastline, Indonesia is vulnerable to rising sea levels and coastal erosion.** Over the past 15 years, increasingly erratic weather patterns and extreme weather events have affected the country, causing the death of 181 500 people and damaging 3 050 000 hectares of rice fields.

It added that an estimated 15 400 natural disasters, such as floods, droughts, and landslides, had afflicted the country over this period, including the prolonged 2015-16 El Niño drought that disrupted farming seasons, increased pests and diseases, and reduced crop yields and that "without adequate climate change adaptation measures, rice production is predicted to fall by at least 20%." The COSOP put forward three "strategic objectives," the second being "small-scale producers and their families are more resilient to risks, which includes climate adaptation." It was expected to have two main outcomes in this regard: (i) sustainable, climate-smart productive systems and (ii) inclusive, risk-mitigating financial services and use of remittances.

The COSOP also affirmed that smallholder adaptation to climate variability is a major condition for increasing productivity and reducing vulnerability, that water scarcity is already a concern and that rain patterns are expected to change. Building producers' resilience to environmental risks was one of the COSOP's main expected outcomes and piloting climate risk-oriented approaches such as index insurance schemes would be considered. IFAD likewise affirmed that it would expand its partnership with the ministry of environment and forests through the GEF-supported Haze Prevention and Sustainable Peat Land

Management Initiative. It also planned to increase its interventions by scaling-up pilot innovations and building on successful replication and scaling-up experiences, such as under the Rural Empowerment and Agricultural Development Programme, the Coastal Community Development Project, and the National Programme for Community Empowerment in Rural Areas.

United Nations Development Programme and United Nations Environment Programme

The UN recently issued its UNSDCF for Indonesia for 2021-25, on which IFAD, UNDP, UNEP and numerous other UN entities participated, together with the national development planning ministry, BAPPENAS. The framework was based on a common country assessment diagnostic study prepared by the same entities. Green development, climate change and natural disasters is one of the strategic priorities identified by the framework, which noted the strong prerogative to support Indonesia's rapid transition towards low-carbon development by prioritising climate change and NRM while reducing vulnerabilities to natural hazards. The desired development outcome is that "institutions, communities, and people actively apply and implement low-carbon development, sustainable natural resources management, and disaster resilience approaches." The UN would help to promote an "irreversible shift towards low-carbon development to be achieved by a combination of ambitious Government leadership and mobilisation of broad-based partnerships involving people, business, communities, and industry associations." Awareness raising would help rebalance the move towards more sustainable production and consumption and stronger policy, regulatory, and enforcement frameworks would enhance land management, safeguard ecosystems, and tackle environmental degradation, including by enhanced levels of community NRM. New IFAD financing of roughly USD 135 million was projected for the COSOP period.

UNDP is the responsible IA for one GCF project (see below) and at least eighteen other climate change-related projects involving Indonesia that were approved between January and July 2020. Many of these have been financed wholly or in part with GEF resources. These projects have focused on both mitigation and adaptation challenges. In addition to support for preparing Indonesia's Third National Communication to the UNFCCC and for the GEF Small Grants Programme, other recent UNDP implemented projects include: (i) Enhancing Transition to EVs, which initiated in June 2020; (ii) Accelerated Clean Energy Access to Reduce Inequality, which began in March 2020; (iii) Advancing High-Efficient Lighting Market, initiated in February 2020; (iv) Arafura and Timor Seas Action Programme, Phase 2, which began in February 2019, and (v) Forest Area Planning and Management in Kalimantan, initiated in December 2017. Most of these projects are also financed by GEF.

UNEP is or has been the IA for seven climate change-related projects involving Indonesia that have been approved since 2011, all of which include other countries. One of these operations – Global Project to Leapfrog Markets to Energy Efficient Lighting, Appliances, and Equipment, initiated in March 2018 — as well as the Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants that began in December 2012, and Poverty-Environment Action for the Sustainable Development Goals, initiated in August 2018, identify UNDP, while another Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants also identifies the WB as an implementing partner. Other recently approved UNEP projects include the Global Peatlands Initiative, initiated in June 2019 that also include the Democratic Republic of Congo and Peru, and Up-scaling Community Resilience through Ecosystem-Based Disaster Risk Reduction, which started in September 2018 and involves Indonesia, Ethiopia, India, and ten other countries. Some of these projects also have the GEF as their funding source.

Global Environment Facility

The project portal identifies numerous GEF operations involving climate change and other FAs since 2010 as involving Indonesia. Respective concepts have been submitted for three of these, all multi-country operations covering more than one FA, especially biodiversity, and proposed for management by the WB. The most recent, Food Systems, Land Use Restoration Impact Programme, is expected to involve Brazil, Ethiopia, India, and 23 other countries in addition to Indonesia. The second, the Global Wildlife Programme, involves India, Indonesia, and 14 other nations, and the third is the Global Partnership on Wildlife Conservation and Crime Prevention for Sustainable Development, which also involves India and 17 other countries as well as Indonesia. There were other GEF-financed projects for Indonesia only, primarily after 2016, many of which, as indicated above, have or have had UNDP or UNEP as their IA.

Green Climate Fund

Two GCF projects approved for Indonesia alone both aim to boost climate change mitigation.[74]

- **REDD+ Results Based Payments for 2014-16,** approved in August 2020, with UNDP as the IA, described as recognising Indonesia's REDD+ results for this period as a total volume of 27 mtCO_2e submitted to the GCF for results-based payments. The GCF website indicates that Indonesia would use these proceeds to invest in activities that support the implementation of its national REDD+ action strategy, which would enhance current efforts to improve forest governance. This would entail working with key agencies at national, provincial, and local levels to strengthen the development, co-ordination, and implementation of Indonesia's overall REDD+ architecture and to provide support for decentralised sustainable forest governance, including establishing forest management units and expanding social forestry. The GEF amount is just under USD 104 million.
- **Geothermal Resource Risk Management Project,** approved in October 2018, aims to help Indonesia scale up geothermal energy development by designing and introducing an upstream risk mitigation mechanism and promoting a conducive regulatory environment. Under this project, both public and private geothermal developers would have access to funds to help mitigate early-stage development risks. The facility would provide contingent financing and soft loans for resource confirmation drilling, with a GCF grant of USD 90 million and a total value estimated at USD 410 million. The WB is the IA.

4.D Conclusions, challenges, opportunities and lessons

The selected MO strategies and operations are generally aligned with Indonesia's CCMA/resilience-building challenges and priorities, but fiscal constraints limit Indonesia's borrowing capacity. Greater assistance is nonetheless required to help respond to the country's extensive adaptation needs in urban and rural sectors, including for CsA and improved water resource and flood management, particularly in coastal and

74 Three other GCF projects have been approved for multiple countries including Indonesia. These include the Global Subnational Climate Fund Equity Project and the Global Subnational Climate Fund Technical Assistance Project, both approved in November 2020 for GCF financing of USD 150.0 million and USD 18.5 million for Indonesia and 41 other countries in 4 different regions respectively. The third project involving Indonesia and 17 other countries in 3 regions is the Climate Investor One Project, approved in October 2018, to provide financing to develop renewable energy projects in regions with power deficits to reduce energy costs and CO_2 emissions. It involves GCF financing of USD 101.5 million in grants and has a Dutch financial intermediary as its IA.

other low-lying areas and areas subject to what are likely to be increasingly frequent and severe droughts, and to accelerate the shift from the current dependence on fossil fuels to greater reliance on renewable sources needs.

More importantly, the need to curb deforestation and associated fires from land clearing due primarily to the expansion of oil palm plantations continues. There are two main difficulties. On the one hand, the process is driven by international demand for palm oil, which together with increasing coal exports, are important sources of foreign exchange and support economic growth. There may therefore be a significant trade-off between reducing deforestation and continuing to expand export earnings. On the other hand, the enforcement of environmental regulations in Indonesia, especially at the provincial and local levels, is notably lax and the forestry sector continues to be plagued by corruption. In addition, whereas some recent MO documents pay considerable attention to promoting a landscape approach, there is not much evidence showing that this approach has been implemented in practice. The extent to which the MOs and other development agencies are effectively working together and with other parts of the MS, is also unclear and in the past they have occasionally worked at cross purposes.[75] More strategic co-ordination among them is probably still needed, a process that the government should lead. There are thus at least six main challenges and opportunities for MOs.

1. **Prudent macro-economic and fiscal policies cap the fiscal deficit at 3% of GDP.** Given low domestic tax revenue generation, this poses fiscal constraints on the government's external borrowing requiring an increase in tax mobilisation if MOs are to have larger lending envelopes in Indonesia for climate change or any other purpose.
2. **Conflicts between national macroeconomic and CCM goals need to be reconciled to the extent possible.** Through their country policy dialogue, analytical work, policy-based lending, and TA, MOs could play a useful role by elucidating the trade-offs and piloting and scaling up ways to limit or reconcile them.
3. **MOs need to continue their efforts to promote energy policy reforms and support public and private sector efforts to reduce Indonesia's reliance on fossil fuels, especially coal, and increase electricity generation from renewable sources, including wind, solar, and geothermal.**
4. **MOs need to accelerate and intensify efforts to help Indonesia reduce deforestation and adopt more sustainable forest management practices**, including by intensifying oil palm, and investing in other forms of afforestation in degraded areas and by promoting improved enforcement of environmental regulations, although this is admittedly especially challenging in such a large and decentralised country.
5. **MOs need to increase support for CCA and resilience building across the board** (i.e., in all relevant sectors and in both rural and urban areas) with an emphasis on coastal and other low-lying areas, using concessional resources to the extent possible.
6. **MOs need to strategically co-ordinate their approaches to CCMA**, particularly on the policy front and in relation to climate finance, technology development and transfer, and institution building at both the national and subnational levels.

75 This was found to be the case, for example, in the PPAR for the WB's programmatic climate change DPL, which failed to go its originally planned second and third loans in part because there had been poor co-ordination between the WB and a bilateral development assistance agency that had held out the prospect that Indonesia would receive considerable grant resources for REDD+ activities if it met certain conditions, which it did not. While this was not the only reason for this outcome, the offer undermined the government's appetite for requesting the additional loans of the DPL series: "free resources" were considered a better alternative.

5. JAMAICA

5.A Background

Jamaica is a SIDS, and the largest English-speaking island in the Caribbean. It is an upper middle-income country with a per capita GDP of USD 5 582 in 2019 that ranks 93rd globally.[76] With area of 10 830 km^2 and a population of 2.96 million, Jamaica is the most densely populated of the Caribbean SIDS. The country is divided into three geologic regions that have shaped the distribution of human settlements and agriculture. More than 70% of all major industries are located in the coastal zone and some 80% of the population lives within 5 km of the coast.[77] More than half (54%) of the population is concentrated in small cities and town, but the countryside retains a rural feel, with pockets of poverty in small farm holder communities. Jamaica has a high literacy rate (84%) and life expectancy (73.5%). Its upper middle-Income country status notwithstanding, Jamaica is highly indebted and struggling due to low growth, high public debt service, and exposure to external shocks. In 2018, Jamaica's GDP was USD 16.45 billion (with an external debt of USD 16.05 billion) and an annual rate of growth of 1.9%. In 2020, Jamaica had a negative rate of economic growth of -6.2% due to COVID 19. However, it is expected to recover in 2021 to 2.7% and the debt service to GDP ratio to remain below 100%.[78] Jamaica's key economic sectors are tourism (which accounts for 30% of GDP and 25% of all people employed in the country), agriculture at 6.6% of GDP, mining at 4.1%, and manufacturing (including textiles and refining crude oil imports) account for 29.4% of Jamaica's GDP.[79] Jamaica has rich mineral resources and is one of the world's largest producers of alumina and bauxite, producing over 12.6 million tonnes of bauxite and 3.46 million tonnes of alumina for export each year.[80] In addition to its productive sectors, Jamaica is also highly dependent on remittances (USD 2.5 billion annually). These suffered huge losses in 2020 due to the COVID-19 pandemic, putting dependent households at further risk.

5.A.1 Jamaica's adaptation challenges

As a SIDS within the Caribbean/Atlantic hurricane belt, Jamaica is at very high risk from storm surge, coastal flooding, and damage to strategic infrastructure. Climate Watch gives Jamaica a climate risk index score of 64.83, placing it 57 of 181 countries; it is highly vulnerable.[81] Climate models predict a growing frequency of Category 4 and 5 hurricanes in the Caribbean and a steady increase in sea level rise of up to 1 metre by the end of the century.[82] The IDB (2020) estimates that in the decade between 2001 and 2012, Jamaica suffered an annual average loss of 1.3% of GDP in damage and loss from floods, hurricanes and droughts.[83] The government has estimated this cumulative loss at USD 128.54 billion.[84] Tourism and agriculture are particularly vulnerable. The natural assets that support Jamaica's thriving tourism industry are subject to increasing impacts — from storm surge, sea level rise, increases in sea surface temperature, and ocean acidification, leading to the loss of living corals and the coastal protection they provide. Agriculture is also vulnerable to hurricane damage and changes in precipitation patterns, leading to excess

76 Data for 2019. Climate Watch, WRI. https://www.climatewatchdata.org/countries/JAM

77 Third National Communication of Jamaica to the Framework Convention on Climate Change 2018 (see pdf file)

78 WB Indicators https://data.worldbank.org/country/JM

79 https://www.worldatlas.com/

80 Significantly, the processing and loading facilities for these high value exports are located along the north coast, where Columbus first landed (Discovery Bay) and where Jamaica's coral reefs once flourished, before the combined effects of siltation, eutrophication, overfishing, warming temperatures and coral disease precipitated an ecological shift from coral domination to algal domination.

81 https://www.climatewatchdata.org/countries/JAM#ghg-emissions

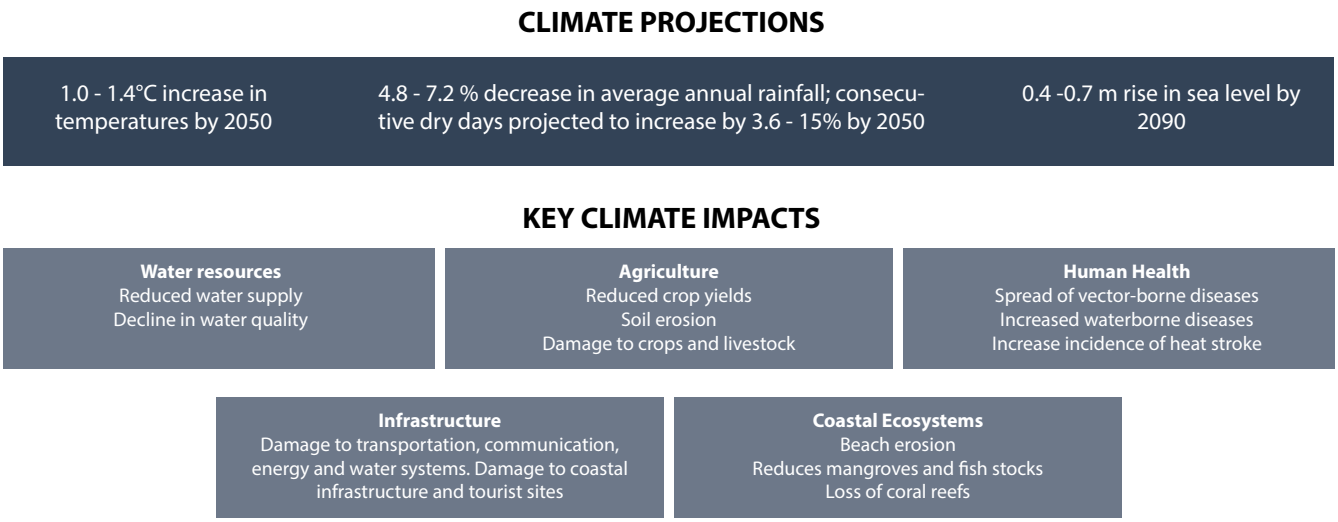
82 State of the Caribbean Climate 2020. University of the West Indies, Mona, and the Caribbean Development Bank.

83 *Improving Climate Resilience in Public Private Partnerships in Jamaica. IDB* Climate Change Division, and the Development Bank of Jamaica. Technical Note No IDB-TN-01916. June 2020, and USAID Climate Risk Profile.

84 Intended Nationally Determined Contribution of Jamaica Communicated to the UNFCCC.

rainfall and flooding in some years and prolonged drought in others. The result is excess soil erosion, damaged crops, and reduced livestock yields that lead in turn to lower food security, rural incomes, and ability to withstand future shocks. The USAID 2017 CRP of Jamaica predicts a 1-1.4°C rise in temperature by 2050, a 4.8-7.2% decrease in average annual rainfall and a 0.4-0.7 metre rise in sea level by 2090. Figure 20 summarises these climate projections and their impacts for Jamaica.[85]

Figure 3: Climate projections and impacts



Source: https://www.climatelinks.org/sites/default/files/asset/document/2017_USAID-CCIS_Climate-Risk-Profile-Jamaica.pdf

5.A.2 Jamaica's mitigation challenges

Jamaica is highly dependent on fossil fuels. Crude oil, coal and petroleum products constitute 87% of its energy mix, only a fraction (less than 1%) of which comes from renewables). In 2016, Jamaica consumed approximately 54 000 barrels of oil/day, making in 98th in the world for oil consumption.[86] The bulk of Jamaica's energy is consumed in mining—primarily bauxite (37.4%), followed by electricity (25%), transport (20%), and the sugar industry (12%)[87]. Reducing its dependency on imported fossil fuels is a major element of Jamaica's National Energy Policy.[88] Per capita GHG emissions have fluctuated around a mean of 2.62 tonnes over the past ten years. In 2010, they were at 2.65 tonnes, in 2016 they were 2.83 tonnes, and in 2019 they dropped to 2.56 tonnes.[89,90]

The energy sector is the greatest source of GHG emissions, followed by industrial processes (including mining), agriculture, and waste. LULUCF is similar to agriculture at less than 600 kt per year.

85 2017 USAID–Climate Change Integration Support– Climate-Risk-Profile Jamaica.

86 https://blogs.IDB.org/caribbean-dev-trends/en/jamaicas-energy-market

87 In 2014, 92% of households had access to electricity through the Jamaica Public Service Company (BUR-1, 2014).

88 The energy policy targets for reducing petroleum in the country's energy from 95% in 2010 to 30% petroleum, 42% natural gas, 5% coal, and 20% renewables by 2030.

89 https://www.worldbank.org/en/topic/climatechange

90 World Data Atlas: https://knoema.com/atlas/Jamaica/CO2-emissions-per-capita

Figure 4: Jamaica's GHG emissions by sector

2012	CO_2e
Total	9.08Mt
Energy	6.87Mt
Agriculture	657.95kt
Industrial Processes	522.12kt
Waste	520.37kt
Land-use Change and Forestry	503.71kt

2017	CO_2e
Total	9.22Mt
Energy	6.93Mt
Agriculture	652.70kt
Industrial Processes	575.88kt
Waste	534.31kt
Land-use Change and Forestry	529.7kt

Source: Modified from Climate Watch data (https://www.climatewatchdata.org/countries/JAM#ndc-content-overview

5.B Jamaica's adaptation and mitigation priorities

As a SIDS and a member of the Alliance of Small Island States, Jamaica has played an important role in shaping the 2030 Agenda and in advocacy efforts to include loss and damage in international climate change negotiations.[91] In 2010, Jamaica established its Vision 2030 as a framework to define its own medium-term national development plan priorities, integrating them with the 17 SDGs.[92] With the launch of the Paris Agreement in 2015, Jamaica drafted a climate change policy framework in support of Vision 2030, as a strategic roadmap to address its climate change challenges.[93] The policy framework is crosscutting, mainstreaming climate action across all major sectors, and serves as a blueprint for international support. Building resilience to climate change is one of Jamaica's highest priorities. It was essential to Jamaica's ambition of graduating to developed country status by 2018.[94] By climate-proofing vital sectors of the economy and mitigating the adverse social and economic impacts from climate and other shocks, Jamaica aims to build a path toward a more resilient future.

In 2016, the climate change division of the ministry of water, land, environment and climate change moved to the ministry of economic growth and job creation—with a higher profile and political mandate. The division's role is to co-ordinate and facilitate all climate-related activities, including the preparation, compilation, and submission of biennial update reports and national communications as well as other related activities. Creating and relocating the division and the creation of a network of climate change focal points in each of Jamaica's ministries, departments and agencies has allowed Jamaica to make meaningful progress toward mainstreaming climate change across key sectors.[95] Jamaica has also taken steps to strengthen its fiscal resilience to natural hazard shocks and climate impacts by obtaining parametric insurance coverage for hurricanes, earthquakes and excess rainfall events under the regional Caribbean

91 https://climateanalytics.org/blog/2019/loss-and-damage-at-cop25-a-hard-fought-step-in-the-right-direction/ ; https://climateanalytics.org/blog/2020/climate-change-and-small-islands-more-scientific-evidence-of-high-risks/

92 https://jamaica.un.org/en/sdgs

93 Climate Change Policy Framework, Ministry of Water, Land, Environment and Climate Change, September 2015.

94 Jamaican Ministry of Economic Growth and Job Creation Climate Change Division, September 2018.

95 BUR -1, 2014

Catastrophe Risk Insurance Facility); and by securing a contingent credit facility with the IDB. The government is also being assisted by the WB to design a catastrophe bond to reduce risk to the insurance sector.[96] In addition to fiscal stabilisation, Vision 2030 aspires to a healthy natural environment for Jamaica through, among other things: (i) sustainable management of its natural resources; (ii) reducing hazard risk and CCA, and (iii) sustainable urban and rural development.

Intended Nationally Determined Contribution

Jamaica's INDC covers mitigation and adaptation actions. Under its INDC (2015), Jamaica committed to mitigating the equivalent of 1.1 million metric tonnes of carbon dioxide per year by 2030 versus the business-as-usual scenario (with 2005 as the base year). This is a reduction of 7.8% of emissions compared to business-as-usual. With international support, Jamaica would increase its ambition to a 10% reduction of GHG emissions compared to the business-as-usual scenario. This reduction target is based on enhanced implementation of the national energy policy (see Figure 5).

Figure 5: Business-as-usual scenario

BAU emission in target year		
2025	13 443 kT CO_2eq	
2030	14 492 kT CO_2eq	
Mitigation scenario emissions in target year		
↓ Unconditional contribution: 7.8% below BAU by 2030	2025	12 370 kT CO_2eq
	2030	13 368 kT CO_2eq
↓ Conditional contribution (contingent on international support): 10% below BAU by 2030	2025	12 099 kT CO_2eq
	2030	13 043 kT CO_2eq

Source: https://www.ndcs.undp.org/content/dam/LECB/events/2018/20191008-caribbean-ndc-dialogue/undp-ndcsp-caribbean-dialogue-presentations/undp-ndcsp-caribbean-dialogue-21-Country%20Experts-Jamaica.pdfv

Nationally Determined Contribution

In 2020, coinciding with the five-yearw anniversary of the Paris Agreement, Jamaica submitted its NDC. More ambitious than its INDC in terms of its sectoral coverage (the inclusion of LUCF emissions) and commitment. The inclusion of LUCF in the NDC is a new addition to Jamaica's prior commitments under the UNFCCC that incorporates both avoided deforestation through better protection and the promotion of carbon sinks through afforestation and expanded agroforestry. Under the NDC, the revised targets are 1.8-2.0 $MtCO_2e$ lower than they would be, compared with a range of 1.1-1.5 $MtCO_2e$ as pledged in its INDC in 2015.[97] The updated NDC states that Jamaica's target is to achieve a 25.4% reduction relative to

96 IDB Improving Disaster Risk Management Project Profile 2020.

97 Under the updated NDC 2020, Jamaica has broadened its sectoral scope and taken steps to move towards an economy-wide target to decarbonise the Energy Sector); it will also bring emissions from the land use change and forestry sector within its NDC for the first time. This reflects the importance of the Land Use Change/Forestry sector to Jamaica, which accounts for more than half of the island's total land use, and the important commitments to preserve and enhance these stocks.

business-as-usual emissions in 2030 without international support (unconditional), and a 28.5% reduction relative to business-as-usual emissions in 2030 conditional upon international support. This translates into an emissions target of 7.02 Mt for Energy and LUCF by 2030 without support, and 5.1 Mt with international support.[98]

National mitigation actions

In the Energy Sector, Jamaica is working toward reducing GHG emissions. Jamaica's National Energy Policy (2010) was aligned with the targets outlined in the INDC and includes six key pillars, from modernising the country's energy infrastructure and regulatory framework to the development of renewable energy sources and greater energy efficiency in industry to reduce Jamaica's heavy dependency on imported fossil fuels.[99] To achieve the latter, the policy targets a new energy mix comprised of petroleum (30%), natural gas (40%) and renewables (30%) by 2030.

In 2014, the government gave the Jamaican Public Service Company, the sole electricity utility in the country, the mandate to lead this effort. Switching a major part of the energy mix to LNG is expected to result in greater stability in the price of electricity for customers – a primary objective of JPS and the Government of Jamaica. LNG is also seen as a bridge to cleaner energy and the introduction of renewables. So far, the purchase of wind and solar farms is being done primarily with domestic resources, although IFC has invested in a 34 kW wind farm on the southeast coast.

In addition to modernising the national grid, Jamaica has invested in the world's largest hybrid energy storage facility (25.4 MW and USD 21.6 million) to optimise power from wind and solar. The battery storage facility and micro-grid increase the stability and reliable distribution of these clean sources of power.[100]

In the transport sector, CO_2 emissions accounted for 24% of fuel combustion in 2014.[101] A year later, Jamaica began taking steps to lower emissions in the sector by increasing the fuel efficiency of vehicles, introducing super low-sulphur diesel fuel and removing duties on hybrid and EVs. Last year, with support from UNDP, the ministry began plans to develop an "updated, gender responsive and climate proofed National Transport Policy, Strategy & Action Plan."[102] This effort builds on an earlier (2014) UNDP/GEF regional project to double global vehicle fuel economy standards, and recent analyses of priority actions to reduce GHG emissions by 10% by 2030 relative to the business-as-usual scenario.[103]

98 Climate Watch Data Jamaica https://www.climatewatchdata.org/countries/JAM

99 https://climate-laws.org/geographies/jamaica/policies/ministry-of-energy-and-mining-long-term-national-energy-policy-2009-2030

100 This is a PPP between the Jamaica Public Service utility (80%) and ABB (20%) involving battery storage of wind and solar energy and a mini-grid for energy use locally. https://www.energy-storage.news/news/abbs-jamaica-renewable-hybrid-microgrid-is-a-lesson-for-the-caribbean-and-b.

101 https://data.worldbank.org/indicator/EN.CO2.TRAN.ZS?locations=JM

102 https://procurement-notices.undp.org/view_notice.cfm?notice_id=71917

103 https://www.osti.gov/biblio/1507689

Mitigation and adaptation in the agricultural and forestry sectors

The CCPF for Jamaica (2015) identifies agriculture as a critical sector for mitigation and adaptation.[104] For mitigation, Jamaica is committed to introducing more water and energy efficient farming practices, diversifying food production techniques, expanding agroforestry, including the reforestation of degraded forest to create carbon sinks, and protecting forests from illegal logging. Adaptation co-benefits from these investments include reduced soil loss and runoff from fragile watersheds, aquifer recharge, and surface water storage during periods of drought, and reduced risk to rural livelihoods upstream and downstream through income diversification, including the promotion and expansion of agroforestry and aquaculture. Jamaica is also beginning to invest in nature-based adaptation to protect its unique biodiversity (with benefits to tourism, wildlife and human/ecosystem health) and also to achieve greater resilience to climate change impacts from rising air and sea temperature, changes in wind and rainfall patterns, disease vectors, and sea level rise. One early project with the IDB (2014) was the integrated management of the Yallahs and Hope River Watershed Areas. This USD 3.9 million project aimed to improve the conservation and management of biodiversity and the provision of ecosystem services within the region. Avoided deforestation, along with reforestation and sustainable land use in the region were thought to yield emission reductions of more than 550 000 tCO_2e over the four-year project.[105]

To secure vulnerable coastal zone areas, the site of Jamaica's legendary tourist assets of white sand beaches, blue lagoons, coral reefs and rainforests, and to protect vital tourist infrastructure and that in the manufacturing, mining and transport sectors, the government is developing integrated coastal zone management guidelines and plans in sites with high biodiversity and economic value.[106]

Jamaica has also introduced a ban on importing and manufacturing single use plastic bags (2020) and developing a complementary plastic waste minimisation project. Minimising plastic waste will reduce the emissions from producing plastic bags and the pollution of stream beds and coastal waters from their inadequate disposal, thereby providing mitigation and biodiversity/adaptation benefits.

5.C MO climate change programmes in Jamaica

The World Bank Group

The WB-Jamaica CPS 2014-17 aims to create conditions for sustained and inclusive growth in the country. Its three strategic engagement areas are: (i) public sector modernisation; (ii) creating an enabling environment for private sector growth, and (iii) social and climate resilience. While the strategy reflects Jamaica's development priorities for growth, mobilising private sector investment in key development

104 Policy framework goals are to: (i) mainstream climate change considerations into national policies and development planning; (ii) support the institutions responsible for research, data collection, analysis and projections at the national level on climate change to facilitate informed decision-making; (iii) facilitate and co-ordinate the national response to climate change and promote low carbon development; (iv) improve communication at all levels on climate change impacts and also adaptation and mitigation related opportunities so that decision makers and the general public will be better informed, and (v) mobilise climate financing for adaptation and mitigation initiatives. https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Jamaica First/Jamaica's INDC_2015-11-25.pdf

105 Update of Jamaica's NDCs 2020.

106 Global Facility for Disaster Reduction and Recovery https://www.gfdrr.org/

sectors, and increasing its resilience to external shocks — including by reducing vulnerability to climate and other natural disasters — it places less priority on helping the country mitigate its GHG emissions to achieve its NDC targets under.[107]

In the decade between 2010-20, WBG projects tagged with a climate change theme totalled some USD 695 million. However, the vast majority of these investments were related to debt management and fiscal sustainability (USD 500 million). The majority of the others (most since 2015) have focused on adaptation and building resilience in the rural landscape to reduce vulnerability to and to enhance recovery from the predicted impacts of climate change. One early project (2011) was designed to help the ministry of energy modernise its infrastructure and governance and lay the groundwork for a shift to reducing carbon emissions in its energy sources and uses. In 2014, IFC invested in a wind farm project on Jamaica's southwest coast to generate 34 MW of clean energy. No other climate-related investment projects were identified in its portfolio subsequent to 2010. WBG projects with a clear mitigation or resilience theme between 2010-21 are discussed below. For a more complete list of projects, see WBG's project portal.[108]

2021: Jamaica Catastrophe Bond for increased Financial Resilience to Natural Disasters and Climate Shocks (USD 16.3 million in the pipeline): to expand the government's portfolio of disaster risk finance instruments and financial preparedness for climate and disaster shocks.

- **2020: Jamaica First Economic Resilience DPL** (USD 70 million): this project builds on the 2016 disaster vulnerability project by including a specific component to enhance fiscal and financial resilience against natural disaster risks as part of the overall objective to buffer the economy against environmental risk while growing the economy. The project's development objectives are to (i) support fiscal sustainability and inclusion; (ii) enhance fiscal and financial resilience against natural disaster risks, and (iii) improve the investment climate for sustainable growth. This policy loan complements IMF and IDB investments in fiscal stabilisation in Jamaica to help accelerate growth.
- **2019: Second Rural Economic Development Initiative Project for Jamaica** (USD 42 million, Jamaica Social Investment Fund): the project's objective is to enhance access to markets and to climate resilient approaches for targeted beneficiaries, mostly in the agricultural and tourism sectors
- **2018: Promoting Community-based Climate Resilience in the Fisheries Sector** (USD 4.88 million, SCCF): this project seeks to have more targeted fishing and fish farming communities adopt climate-resilient practices.[109]
- **2016: Disaster Vulnerability Reduction Project** (USD 30 million): the project seeks to enhance Jamaica's resilience to disaster and climate risk and it has three disaster vulnerability risk components: (i) TA for improved disaster and climate resilience; (ii) risk reduction, including retrofitting vulnerable key assets and securing coastlines, and (iii) a contingency emergency response component to support Jamaica's emergency preparedness and response capacity.
- **2015: Improving Climate Data and Information Management** (USD 6.8 million, PPCR): the project's objective is, "to improve the quality of climate related information for effective planning and action at local and national levels." It has three components: (i) upgrading hydro-meteorological data; (ii) climate resilient planning, and (iii) climate change education, awareness and behaviour change.[110]

107 Jamaica Country Partnership Strategy for the period 2014-17, World Bank.

108 https://projects.worldbank.org/en/projects-operations/projectslist?searchTerm=Jamaica%20Climate%20Change

109 https://www.climateinvestmentfunds.org/projects/promoting-community-based-climate-resilience-fisheries-sector-jamaica

110 https://www.climateinvestmentfunds.org/projects/improving-climate-data-and-information-management-project

- **2015: Central America and the Caribbean Catastrophe Risk Insurance Project** (USD 19.5 million): the objective is to improve the affordability of high-quality sovereign catastrophe risk transfer associated with earthquakes and climate-related events for countries participating in the project, which helps to mitigate the short-term cash flow problems suffered by small developing economies after major natural disasters. The parametric insurance mechanism allows for rapid pay-outs to help members finance their initial disaster response and maintain basic government functions after a catastrophic event.[111]
- **2011: Jamaica Energy Enhancement and Efficiency Project** (USD 15 million): the goal is to increase energy efficiency and security by implementing the national energy policy whose priorities it mirrors, and build a natural gas facility as part of renewable energy transition.
- **2014: IFC Wind Farm Loan to BMR Jamaica Wind Limited** (USD 20 million loan): the objective is to support the development of a 34 MW green field wind farm in St Elizabeth Parish, Jamaica.

Inter-American Development Bank

The IDB's 2016-21 CS with Jamaica focuses on constraints to economic growth. It has been working closely with other development partners, especially the WB, the IMF, and the Caribbean Development Bank on fiscal stabilisation and risk reduction. Climate resilience is a crosscutting theme in the investment portfolio. In line with its focus on economic stabilisation, IDB supports increasing climate finance resources to support the transition toward a lower-carbon, more resilient future and to mitigate and manage disaster risk. Projects include:

- 2021: Programme for Improving CCA Governance (cost to be determined) and 2020: Programme for the Strengthening of Disaster Risk Management (USD 25 million) (in preparation): these two loans are being designed as a programmatic series to help improve the country's financial capacity for DRM and its governance of CCA across vulnerable sectors. The loans include strengthening and modernising the regulatory, institutional, and budgetary framework for DRM, and implementing priority policy-related reform actions related to governance and administration in the CCA sphere.
- 2020: Blue Carbon Restoration in Southern Clarendon, Jamaica (USD 3.368 million): the objective of the project is to restore the mangrove ecosystems in southern Clarendon along Jamaica's southern coast to viable/healthy, and optimally functioning coastal forested ecosystem conditions. The interventions are expected to improve the blue carbon sequestration capacity of these restored areas — carbon stored in coastal and marine ecosystems — in addition to improving climate change resilience. The University of the West Indies is the executing agency.[112]
- 2015: Financing Water Adaptation in Jamaica's New Urban Housing Sector (USD 5.75 million loan from CIF (PPCR)): the project goal is to facilitate the uptake of water adaptation measures in the housing sector and increase resilience to changes in rainfall.
- 2014: Adaptation Programme and Financing Mechanism for the PPCR Jamaica (USD 7.9 million grant PPCR; USD 10 million IDB loan): the goal of the project is to generate information on approaches to addressing climate challenges, help mainstream climate change into development planning and processes and disseminate results across sectors. The latter includes financing mechanisms for sustained adaptation initiatives by the public and private sectors and community-based organisations.

111 CCRIF is the world's first regional fund to use parametric insurance, giving member governments the unique opportunity to purchase earthquake, hurricane, and excess rainfall catastrophe coverage with the lowest possible pricing. CCRIF was developed under WB technical leadership and with a grant from the government of Japan. Between 2007 and 2020, the CCRIF has paid out a total of USD 193 814 574 in claims to members (Jamaica benefitted from coverage resulting from excess rainfall in 2020). https://www.ccrif.org/about-us

112 https://www.IDB.org/en/project/JA-T1169

In 2017, the IDB's private sector affiliate, IDB Invest, launched an initiative to transform the Caribbean into a climate-smart zone. The mechanism is a public-private initiative — the climate-smart coalition — with an USD 8 billion investment plan to scale up renewable energy and energy efficiency, build low-carbon, resilient infrastructure, and introduce new financing models to attract investment in climate-smart development. Access to the fund is conditional on policy reforms to promote climate-smart growth, thereby strengthening the capacity of Caribbean countries to plan for and embed long-term resilience in their sector strategies. The climate-smart zone PPP is expected to benefit an estimated 3.2 million households in the region, including Jamaica.

IDB Invest also launched its sustainable islands platform, designed to help Caribbean SIDS make progress towards SDG 13 and 14 through climate-resilient investments in the blue economy and the circular economy. This includes restoring natural capital, which is to say mangroves, coral reefs and other coastal habitats that provide mitigation and adaptation services. Jamaica is one of 11 Caribbean Basin Island states to benefit.[113]

Global Environment Facility

The GEF has been a major player in supporting Jamaica's effort to confront climate change. With the establishment of climate finance under the UNFCCC's SCCF, Jamaica has benefitted from GEF support for adaptation and mitigation since 2001.[114] Since 2015 and the launch of the CBIT under the Paris Agreement, Jamaica has strengthened its monitoring and reporting of NDC actions and improved its public credibility for reducing emissions and increasing resilience to the worst impacts of climate change in the most vulnerable sectors of society. Under GEF 7, a global project to promote E-Mobility was launched in 2019, under the GEF's Sustainable Cities Impact Programme in partnership with UNEP. Jamaica is participating, moving beyond fuel efficiency standards to electrifying city fleets. Also in 2019, the launch with resources of the AF, the LDCF and the SCCF, of the challenge programme for adaptation innovation that supports scalable, bankable solutions to help industries and communities cope with the adverse impacts of climate change and build economies resilient to changing weather and water patterns. The GEF partners with the region's two major IFIs (WBG and IDB) as well as UNDP and UNEP as IA.

United Nations Environment Programme

UNEP has had a longstanding presence in Jamaica and in the Caribbean region as a whole. In 2016, it opened a Caribbean sub-regional office in Kingston that co-ordinates its support to 23 countries and territories in the region. UNEP's support to Jamaica in the climate change arena has been primarily to build capacity and pave the way for investment projects in mitigation (improving fuel efficiency standards, promoting energy efficient and renewable energy buildings in new infrastructure) and adaptation. These themes are highlighted in UNEP's *The Green Economy: Scoping Study for Jamaica*, prepared in 2016, which focuses on five key economic sectors: agriculture, tourism, construction, energy, and water and sewerage as entry points for a greener economic transition.[115] Creating the enabling policy conditions for green growth is seen as key to attracting private investment and PPP. This strategic thrust is reflected in UNEP's portfolio with support from the GEF.[116] One such example is provided below.

113 https://idbinvest.org/en/news-media/caribbean-leaders-launch-plan-make-region-climate-smart-zone-idb-support

114 www.thegef.org/projects

115 https://www.unenvironment.org/news-and-stories/news/energy-transformation-jamaicas-key-inclusive-green-economy-new-unep-studies-0 , https://www.greengrowthknowledge.org/research/green-economy-scoping-study-jamaica#:~:text=The%20Green%20Economy%20Scoping%20Study%20for%20Jamaica%20identifies,energy%2C%20agriculture%2C%20construction%2C%20water%20and%20sewerage%2C%20and%20tourism.

116 https://open.unep.org/country/jm

- 2014-19: Stabilising GHG Emissions from Road Transport Through Doubling of Global Vehicle Fuel Economy: Regional Implementation of the Global Fuel Economy Initiative (USD 2.2 million, GEF for 20 countries): the global project seeks to reduce vehicle fleet CO_2 emissions in line with the GFEI target of a 50% improvement in the overall global fleet fuel economy by 2050. Activities in Jamaica have focused on policy discussions with the private sector and awareness-raising with the general public on the importance of increasing fuel efficiency standards. In 2019, Jamaica took an important step toward electrifying public vehicles as part of a USD 33 million GEF-UNEP E-Mobility global pilot programme.

United Nations Development Programme

Since Jamaica ratified the UNFCCC, UNDP has played a leading role in building government capacity to organise administratively, to build its technical capacity, and to fulfil its reporting requirements as a responsible party to the Climate Change Convention and the Paris Agreement. UNDP operates within the UN CPD for Jamaica.[117] The plan, developed in co-ordination with the ministry of planning, focuses on four priority areas: "(i) access to equitable social protection systems and basic services; (ii) democratic governance, citizens' security and safety; (iii) resilience to climate change and natural disasters and universal access to clean energy, and (iv) natural resource management." Selected projects, most with GEF support and reflecting UNDP's role in capacity building, are presented below.[118]

- **2005-20: Preparation of National Communications to the UNFCCC (including INDC, NDCS and BURs)**: UNDP has provided support to Jamaica on its reporting requirements to the UNFCCC.
- **2016: Deployment of Renewable Energy and Energy Efficiency in the Public Sector** (USD 1.32 million, GEF): this project seeks to advance a low carbon development path and reduce Jamaica's public sector energy bill by introducing renewable energy and improving energy efficiency.
- **2016: Caribbean Climate Change Partnership** (USD 16 million, with the government of Japan): under this regional partnership, Jamaica launched a climate-smart technologies demonstration project to offset climate change impacts in rural communities and schools in 2016. The project includes solar-powered irrigation systems, cutting edge water harvesting systems and other climate smart technologies and techniques that are being deployed in select rural communities and schools to mitigate the impacts of climate change.

Green Climate Fund

In 2020, Jamaica's GCF support included USD 4 million for two (regional) projects and USD 2.8 million in support of five readiness activities. The two regional projects are linked to the GCF's sub-national global fund to catalyse domestic resource from the private and public sector for climate action. One is an equity fund and the second is a TA fund designed to demonstrate how sub-national climate projects should be structured and de-risked to attract funding from both private and public investors. This project is the first of its kind in Jamaica. The impact equity fund aims to mobilise support in a 1:4 public/private ratio funding for middle-scale infrastructure projects tied to Jamaica's NDCs.

International Fund for Agricultural Development

IFAD has no active programmes in Jamaica. Its last project closed in 1996.

117 UNDP Country Programme Document for Jamaica (2017-2021), DP/DCP/JAM/3. https://jamaica.un.org/en/18219-country-programme-document-jamaica-2017-2021

118 https://open.undp.org/projects

Donor collaboration and co-ordination on SDG and NDC implementation

Formal donor co-ordination among UN agencies to support Agenda 2030 and Jamaica's commitments to its NDCs is overseen by the Planning Institute of Jamaica and the UNDP through the joint national steering committee for the UN Multi-Country Sustainable Development Framework 2017-21.[119] UNEP is a member and the WBG, IDB, IMF and bilateral organisations are observers to the committee.

As noted earlier, the WBG, IDB, and the IMF collaborate on a programme of economic stabilisation through a series of DPL, emergency assistance (COVID 19 recovery), and access to catastrophic risk insurance. Reducing financial volatility is seen as a necessary risk mitigation strategy against natural and climate-related disasters to which Jamaica is vulnerable. In addition to advisory services and co-ordinating support to the ministry of finance, the WB and the IDB have each committed USD 510 million for an extended fund facility to de-risk investment by the private sector in strategic infrastructure through grants, TA, risk capital, and other instruments. The IDB co-ordinates with the Caribbean Investment Facility to mobilise private sector support for both mitigation and adaptation and partners with JICA on regional energy efficiency and conservation.[120],[121] With GEF support, UNDP and UNEP have helped build capacity in the energy and transport sectors to improve governance, introduce innovation, level the playing field by setting industry standards, and setting the stage for green investing.

COVID-19 and donor response

Several MOs are providing targeted support to Jamaica to address the COVID-19 pandemic: The IMF provided an emergency loan of USD 520 million in May 2020 under the rapid financing instrument. These resources will "help [Jamaica] meet the urgent balance of payment needs stemming from the COVID-19 pandemic, while catalysing additional support from development partners."[122] The WB will supplement the government's COVID-19 response and recovery efforts with a budget support operation, the details of which have yet to be worked out.[123] The GEF is making available additional support for specific actions that reinforce an environmentally sustainable pandemic response, which are informed by a GEF COVID-19 task force of experts that is investigating the root causes of emerging infectious diseases in support of a potential early warning system for future pandemics and a sustainable post-COVID-19 recovery plan.[124]

119 The framework is designed to ensure synergies across UN agencies at the regional and national levels within a single strategic development framework. Through oversight and monitoring results in the CIP, the national steering committee helps reduce duplication and promotes transparency and accountability in development assistance. https://jamaica.un.org/en/18233-joint-national-steering-committee-un-multi-country-sustainable-development-framework-2017

120 The Caribbean Investment Facility was established in 2012 primarily to contribute to regional economic development and growth by mobilising resources for strategic infrastructure investments and support to the private sector. https://www.gihub.org/resources/financial-facilities/the-caribbean-investment-facility/

121 IDB and CS with Jamaica, 2016-21 https://idbdocs.IDB.org/wsdocs/getdocument.aspx?docnum=40713849

122 https://www.imf.org/en/News/Articles/2020/05/15/pr20217-jamaica-imf-executive-board-approves-disbursement-to-address-the-covid-19-pandemic

123 https://blogs.worldbank.org/latinamerica/return-paradise-poverty-perspective-jamaicas-covid-19-recovery-response

124 GEF Corporate Scorecard, December 2020.

5.D Conclusions, challenges, opportunities and lessons

Jamaica is strongly committed to meeting the SDGs and its NDCs under the Paris Agreement. It has aligned both its climate change policy framework and its national development policy, Vision 2030, accordingly, mainstreaming climate action across sectors. It is garnering public support for this vision through education campaigns targeting all sectors of society.[125]

Managing risks and recovering from external shocks remain huge challenges for Jamaica, as it seeks to find a stable path toward economic growth. The response of the IFI MOs has been to invest heavily in strengthening macro-economic stability and DRM capacity. This support has bolstered Jamaica's economy and positive economic growth is projected in a post-COVID-19 recovery. But gaps remain in disaster preparedness and response, the application of robust safeguards to reduce vulnerability, and the adequacy of financial instruments to mitigate risk in vulnerable sectors.

Investment in Jamaica's rich natural capital is underfunded. While Jamaica has taken steps to enhance its forests and reduce risk to its freshwater resources, many of its tourist assets remain highly vulnerable to hurricanes and storm surge, sea level rise, increasing sea surface temperature, ocean acidification, and coral disease. Currently, only 15.9% of Jamaica's terrestrial and some 4% of its marine area have effective protected area status.[126] Although rich in biodiversity, Jamaica lags far behind the targets of the Convention on Biodiversity to place 30% of the world's land and seas under protection by 2030. As a SIDS, Jamaica cannot afford to lose the natural assets that underpin its tourist economy, which are vital to the livelihoods and resilience of the rural poor.

Nbs offers opportunities for gains in adaptation and resilience against climate impacts, as well as mitigation, by restoring coastal habitat and wetlands. Jamaica could benefit from funding opportunities opening in the GEF, UNEP, and the CIF (particularly for SIDS), to invest in biodiversity conservation, restoring and rehabilitating its degraded forests, and integrated coastal zone management to realise ecosystem benefits across a range of services. This will enhance the productivity of these lands and seascapes, particularly as recent global events have highlighted the importance of ecosystem health in maintaining community health and welfare. By expanding its protected area system and managing its natural capital more wisely, Jamaica stands to gain across all three dimensions of the sustainability paradigm – environmental, economic, and social – while building resilience well into the future.

Mitigation targets for emissions reduction have received less direct support, but policy reforms in energy intensive sectors and pilots in innovative technology have opened a path for private sector investment. There is still broad scope in Jamaica for mobilising private sector finance to modernise the energy grid, develop greater access to clean energy (wind and solar) through improved storage and distribution at the local level (mini-grids), improving efficiency gains in construction, and decarbonising the transport sector. The MOs are collaborating on ways to reduce financial and investment risk, taking equity shares in innovative pilots in renewable energy and E-mobility that can leverage hundreds of millions of dollars in PPP. The collaboration around policy and sector reforms in line with Jamaica's newly-updated NDCs needs to be strengthened to deliver on these national commitments and on the potential of the MS to have a greater impact and scale in support of the Paris Agreement.

125 https://sustainabledevelopment.un.org/content/documents/19499JamaicaMain_VNR_Report.pdf
126 https://data.worldbank.org/indicator/ER.MRN.PTMR.ZS?locations=JM

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