



TECHNICAL ASSISTANCE REPORT

THE GAMBIA

Climate Policy Diagnostic

JULY 2024

Prepared By

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Fiscal Affairs Department

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Acronyms and Abbreviations

ADF	Advance Disposal Fee
AfD	Agence Française de Développement
AfDB	African Development Bank
ANR	Agriculture and Natural Resource
ARF	Advance Recycling Fee
BAU	Business as Usual
BCM	Billion Cubic Meters
CATDDO	Catastrophe Drawdown Option
CO ₂ e	Carbon Dioxide Equivalent
CPAT	Climate Policy Assessment Tool
DRF	Disaster Risk Financing
DRM	Disaster Risk Management
DRS	Deposit Refund System
DWR	Department of Water Resources
EWS	Early Warning System
FAD	Fiscal Affairs Department
FAO	Food and Agriculture Organization of the United Nations
GBA	Greater Banjul Area
GCF	Green Climate Fund
GMD	Gambian Dalasi
GCCA+	Global Climate Change Alliance Plus
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GoTG	Government of The Gambia
ha	hectares
ICZM	Integrated Coastal Zone Management
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
IRC	International Water and Sanitation Centre
IRENA	International Renewable Energy Agency
LGAs	Local Government Areas
LPG	Liquified Petroleum Gas
LULUCF	Land Use, Land-Use Change, and Forestry
MoA	Ministry of Agriculture
MCM	Million Cubic Meters
MECCNAR	Ministry of Environment Climate Change and Natural Resources

MFI	Micro-Finance Institution
MLRGRA	Ministry of Land, Regional Government and Religious Affairs
MoFEA	Ministry of Finance and Economic Affairs
MRV	Monitoring, Reporting, and Verification
MtCO _{2e}	Million Tons of Carbon Dioxide Equivalent
NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action
NAWEC	National Water and Electric Company
NCCP	National Climate Change Policy
NDC	Nationally Determined Contribution
NDP	National Development Plan
NEA	National Environment Agency
NRA	National Roads Authority
PES	Payment for Environmental Services
PFM	Public Financial Management
PIM	Public Investment Management
PPA	Power Purchase Agreement
PPP	Public Private Partnership
PURA	Public Utilities and Regulatory Authority
RCP	Representative Concentration Pathways
REDD+	Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
RFF	Resources for the Future
SLR	Sea Level Rise
SPCR	Strategic Programme for Climate Resilience
SSP	Shared Socioeconomic Pathways
TDA	Tourism Development Area
TWNP	Tanbi Wetland National Park
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
VAT	Value Added Tax
WACA	West Africa Coastal Areas Management
WB	World Bank

Preface

In response to a request from Mr. Seedy K.M. Keita, Minister of Finance and Economic Affairs (MoFEA), for capacity development (CD) for a comprehensive diagnostic of climate fiscal policies, a CD mission visited Banjul during May 20-31, 2024. This mission of the International Monetary Fund's (IMF) Fiscal Affairs Department (FAD) was led by Ms. Dora Benedek and comprised, Mr. Alberto Garcia Huitron, Ms. Danielle Minnett, Ms. Junko Mochizuki (all FAD), and Ms. Alice Tianbo Zhang (SPR).

The mission had several rounds of productive discussions with Mr. Abdoulie Jallow and Mr. Baboucarr Jobe, Permanent Secretaries of the MoFEA, Mr. Bubacar Zaidi Jalow, Deputy Permanent Secretary of the Ministry of Environment and Climate Change and Natural Resources (MECCNAR), and their staff, as well as senior officials from the MoFEA, MECCNAR, Ministry of Petroleum and Energy, Ministry for Agriculture, Ministry for Transport, Works and infrastructure, Ministry of Fisheries and Water Resources, Ministry for Land and Regional Development, Ministry of Gender, Children and Social Welfare, National Social Protection Secretariat, National Disaster Management Agency, National Water and Electric Company (NAWEC), and Public Utilities and Regulatory Authority (PURA). The mission also met with Mr. Kouame Wilfried Anicet Kouakou and Ms. Anne Hilger from the World Bank, Mr. Daniel Joel Muzima, Ms. Edith Ofwona and Ms. Patience Ekoh from the African Development Bank, Mr. Momodou Shaka Noof from the United Nations Development Programme (UNDP), Ms. Atifa Kassam of the United Nations Environment Programme (UNEP), and Mr. Jean-Charles Allard of French Embassy.

The mission is grateful for Ms. Isatou Camara for her efficient support provided in organizing and facilitating the discussions. In addition, the mission is grateful to the IMF Resident Representative, Mr. Patrick Gitton and his staff, Mr. Bernard Mendy, and Ms. Isatou Njie for the efficient support and coordination provided before and during the mission.

Executive Summary

The Gambia's economic and social development is highly impacted by climate change. Sea level rise poses substantial risks, and the country is exposed to natural disasters. Recurring droughts and floods impose large economic and welfare losses. With increasing temperature and decreasing rainfall, The Gambia will face a significant challenge due to the heavy reliance on rain-fed agriculture. Salinization and degradation of soil is expected to intensify, that, together with declining agricultural productivity, leads to increased deforestation. Groundwater depletion is an emerging risk, and water access, as well as agricultural expansion are the main drivers of climate related challenges. The lack of efficient land policy, planning and forest protection lead to the expansion of agricultural and livestock activities to forest areas. Demand for water and electricity is expected to grow, but private investment in these sectors is lacking. The mission reviewed the current fiscal policies supporting climate action and provided recommendations to support the long-term climate resilience of The Gambia's economy.

Climate Adaptation Policy

The Gambia has the foundation of an overarching climate adaptation policy environment, but linkages and coordination should be strengthened. Adaptation challenges are multi-faceted and existing efforts to include longer-term impact of climate change are not sufficient. Adaptation strategies rely heavily on public sector investment, with little private sector participation, in the longer term the authorities need to strengthen the environment for private actors to contribute to adaptation efforts. Building coastal resilience is a key challenge, and managing coastal risks are complicated by the lack of clear institutional framework, absence of land-use policy, and limited institutional and technical capacity. The lack of systematic land use policy and planning compromises climate adaptation and mitigation efforts, cutting across most sectors: the lack of land tenure security and zoning is driving expansive agricultural practices, deforestation, and a lack of incentives to borrow and invest. Salinization, soil degradation and sea level rise will increase water stress in the future, and climate change will worsen water access problems. Water access and water management seem to be underlying most climate issues, therefore addressing shortcomings is top priority. Currently there is no cost associated with directly drawing on groundwater, while the economic cost is large and increasing. Current practices reduce the availability of groundwater for the water network, lead to health hazards, and exacerbate the impact of sea level rise. Water insecurity leads to an increasing pressure on internal migration, that increases deforestation through agricultural expansion and increased charcoal demand.

The authorities need to do an inventory of existing drills of groundwater immediately, and give priority to installing monitoring stations, while exploring the option of charging for ground water permits, potentially starting with certain consumer classes, or based on usage levels, while vulnerable households should be compensated through the social protection system. Inefficiencies and waste in the water network and lack of rainwater harvesting practices also need to be addressed to mitigate water shortage.

Other measures to support resilience building include developing a disaster risk (DR) financing strategy and completing the social registry to link to the DR management system. The delayed approval process for budget execution following disasters could also be improved. Considering that agricultural productivity is declining, while the sector is a major driver of deforestation, the authorities should identify options to

accelerate the uptake of Climate Smart Agriculture practices, nature-based solutions and ecosystem-based adaptation and to increase lending to the agricultural sector, through opportunities for farmers to participate in options such as index-based insurance scheme. Establishing a comprehensive land policy, completing the land registry and cadaster, and enhancing land security and zoning are priorities.

Climate Mitigation Policy

The Gambia's conditional NDC target is ambitious to reduce greenhouse gas (GHG) emissions. Deforestation and agriculture (including livestock) are the largest contributor to the Gambia's GHG emissions at 56 percent, followed by waste management. The majority of households depend on charcoal and firewood for cooking and using biomass for energy is a major driver of deforestation.

Mitigation measures in the agriculture and livestock sectors are limited, forcing the focus on increasing productivity in these sectors. Addressing deforestation however is possible. The main causes of deforestation are agriculture, water problems, including saline intrusion, and urbanization. Lack of zoning and monitoring of land need to be addressed immediately, and enforcement of clear rules on permitting for clearing forests is needed. Community ownership seems to lead to better forest management, with the potential of profit-sharing as financial incentive. The authorities should target to transfer ownership to community of forests with high revenue potential, with potential private participation. Where profit sharing is limited, the introduction of the Payment for Environmental Services in the forestry sector should be considered, potentially financed by recycling some of the revenues raised from carbon pricing. Introduction of environmental taxes to provide incentives for waste reduction, such as through a deposit and refund system on single-use containers, while using revenues for waste cleanup should also be considered, together with increased enforcement, including on a plastic ban.

Energy is not a main contributor to emissions, but electricity generation is not diversified and providing universal access to electricity is a strategic objective. Tariffs are below cost recovery level and financial situation of the electricity company hinders private investment in renewable projects, as well as lack of land rights. Tariffs should be aligned with cost recovery level. Carbon pricing as a cross cutting policy should be considered, building on existing fossil fuel taxes. The authorities should remove all existing exemptions on fossil fuel excise duties and introduce a modest USD 5 carbon price per ton of CO₂e in 2025 and increasing linearly by 2030 until it reaches its efficient level at around USD 25. This should be accompanied by compensating vulnerable households through the social protection system.

Enabling Institutions

The government is incorporating climate change considerations into development objectives and planning, supported by development partners. Climate change management is part of the government's vision and has various strategic plans and pieces of legislation regarding key sectors, but implementation and monitoring is often pending or missing. Managing climate change effectively and efficiently requires taking a long-term view and involves close coordination of players across sectors and layers of government. Both of these aspects need strengthening in The Gambia. Stakeholders need to take a long-term view consistent with climate change impacts by aligning the policy planning and assessment horizon with climate impact. The institutional framework needs to be strengthened to create accountability with respect to climate objectives. This requires clearly defined roles and responsibilities of all actors, and strengthening their coordination, while long term plans need to fully incorporate climate challenges.

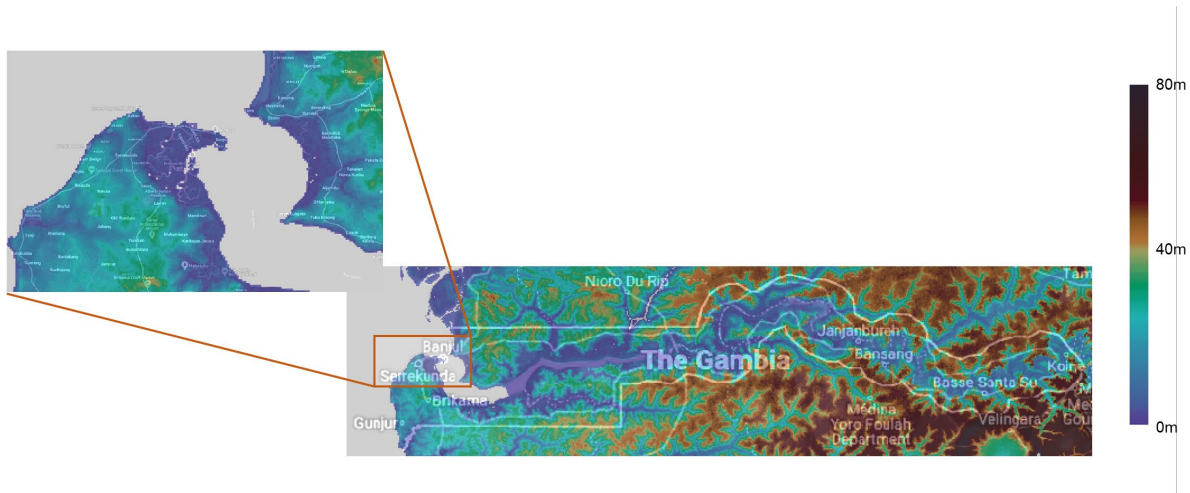
Table 1. Summary of Recommendations

Recommendations	Timing: ST/MT/LT	Priority: H; M; L
Climate Adaptation Policy		
Identify and prioritize policy options to foster financial inclusion of small farmers as part of the National Disaster Risk Financing Strategy	ST	H
Develop and adopt the National Disaster Risk Financing Strategy, covering key aspects such as 1) sustainability of DRF financing, 2) linking of DRM/DRF/social protection actions, and 3) risk management of small farmers	ST	H
Strengthen disaster related budget request, execution and reporting through the development of guidelines and in-depth disaster budget analysis.	ST	H
Establish an inventory of boreholes and groundwater abstraction licensing, and in a longer-term move towards groundwater abstraction fees, reflective of full economic cost of groundwater	ST-LT	H
Finalize, enact, and enforce the Integrated Coastal Zone Management Bill and Integrated Coastal Zone Management Policy	MT	H
Conduct land surveys and build a cadastral map	MT	H
Complete the development and adoption of the National Land Policy, clarifying roles and responsibilities of relevant agencies and outline national priorities to strengthen land management	MT	H
Implement measures to address Non-Revenue Water and monitor its progress	MT	H
Achieve full financial cost recovery of water with tariff adjustment	LT	M
Climate Mitigation Policy		
Add conditionality to social programs in the agriculture sector based on good environmental practices, agroforestry and conservation agriculture	ST	H
Building on community forests and Community Public Private Partnerships (PPP), create the appropriate regulatory and legal framework to establish and operationalize a Payment for Environmental Services (PES) scheme, while identifying stable revenue sources to finance it, including through carbon taxation.	ST	H
Create a regulatory framework for LPG to increase legal certainty for potential suppliers	ST	M
Include mechanisms to ensure the social license to operate for renewable energy projects, and mechanisms to properly compensate households and communities in case of resettlement	ST	M
MoFEA should consider providing a guarantee to private sector investors in renewable energy projects and fixing long-term power purchasing agreements in USD to mitigate exchange rate risks.	ST	M
Operationalize a Monitoring, Reporting and Verification system, to allow for proper emission accounting and provide data to evaluate the impacts of environmental and climate policies	MT	H
Implement environmental taxes, including a deposit-refund system (DRS) on single-use containers	MT	H
Eliminate the 15-year exemption for the most relevant taxes and replace with an accelerated depreciation framework to recover capital costs	MT	M
Consider implementing an increasing feed-in tariff to protect fiscal consolidation efforts	MT	L
Conduct a comprehensive study on cost recovery tariffs for NAWEC and revise tariffs accordingly, while using the social registry to provide targeted support for vulnerable households	LT	M
Enabling Institutions		
Develop a National Adaptation Plan	ST	M
Deepen coordination with neighboring countries to ensure upstream dams properly account for downstream environmental and climate change impacts	ST	M
Establish long-term climate scenarios and hazard vulnerability maps and disseminate them to line ministries to improve public sector planning	MT	M
Incorporate The Gambia 2050 Climate Vision and the Long-Term Climate-Neutral Development Strategy 2050 into up-coming National 2050 Vision and other long-term national plans.	MT	H
Allocate roles and responsibilities for climate change management clearly among actors and legitimize the institutional structure, responsibilities and targets through legislation (ex. a Climate Change Bill or NEMA update)	MT	M
Mainstream adaptation and mitigation into all updated sectoral plans and regulatory frameworks including mainstreaming climate change management into the core functions of the MoFEA	LT	H
Recommendations that are characterized as short-term (ST) may be undertaken quickly by the authorities (in a year) if agreed. Proposals that require longer time to implement are labeled medium (2-3 years, MT) or long-term (3+ years, LT).		

I. Context

1. **The Gambia is highly vulnerable to the impacts of climate change.** A small country located on the eastern seaboard of the Atlantic Ocean, The Gambia forms a narrow enclave into the Republic of Senegal with around 80km of coastline and 200km of sheltered shoreline. It has a unique topography characterized by its namesake river, the Gambia River, that runs east to west through the entire country. With an average elevation of only 34m above sea level (Figure 1), its landscape is predominantly a flat flood plain with mangroves near the coastline and savanna further inland.

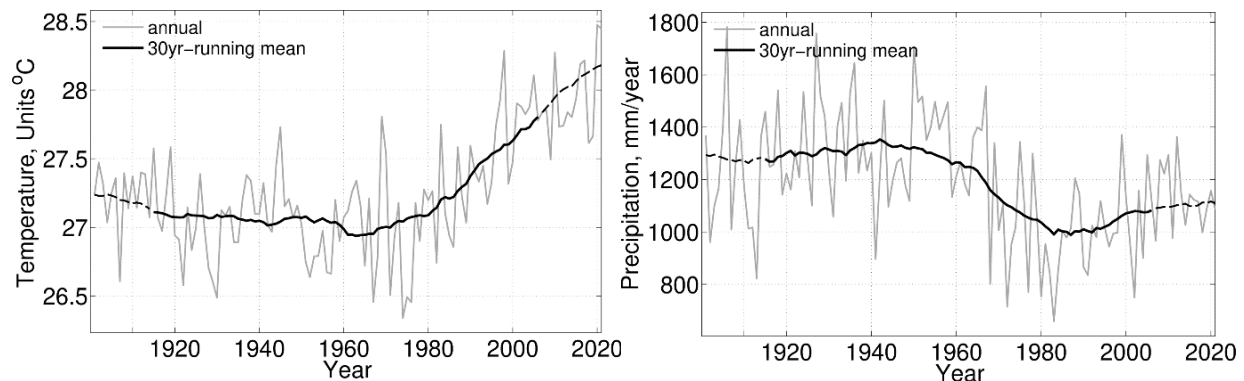
Figure 1. Digital Elevation Map of The Gambia and the Greater Banjul Area



Source: IMF Staff using digital elevation model data from the Global Multi-resolution Terrain Elevation Data 2010 (GMTED2010).

2. **The Gambia has a tropical savannah climate characterized by a short rainy season between June-September and a longer dry season between October-May.** Annual average temperature ranges from 26°C near the western coastline to 30°C in the eastern inland. Since the 1960s, annual average temperature has risen by around 1.0°C relative to 1901-1930 levels, while average precipitation has declined by more than 100mm per year (Figure 2) – together exacerbating existing frequent droughts.

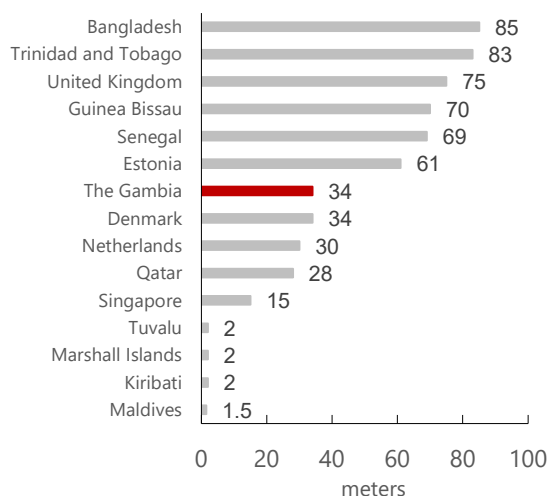
Figure 2. The Gambia's Historical Climatology – Temperature (left) and Precipitation (right)



Source: IMF Staff. FADCP Climate Dataset (Massetti and Tagklis, 2023), using CRU data (Harris et al., 2020).

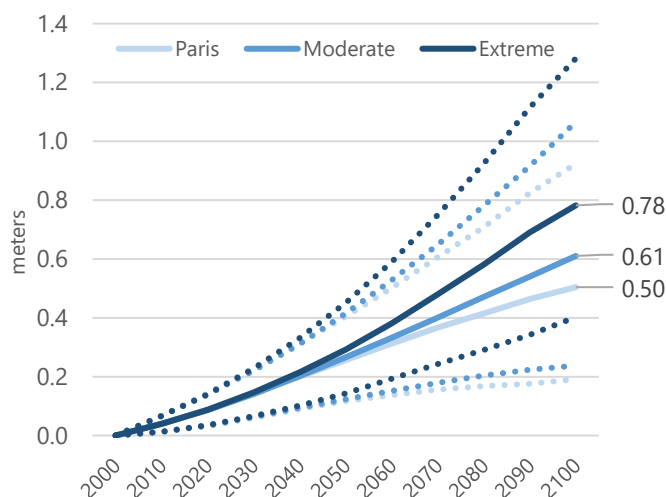
3. As most of the country lies below 20m, sea level rise (SLR) poses substantial risks. The Gambia has one of the lowest elevations in the world (Figure 3), and its unique geography makes it susceptible to coastal erosion, flooding, and saltwater intrusion. The capital city, Banjul, and the Greater Banjul area – home to around 1.4 million residents or more than 60 percent of the country’s population – is located at sea level (Figure 1). Global mean sea level rose by 0.2m between 1901 and 2018 and the pace of increase is accelerating (IPCC 2023). Even under a moderate warming scenario with current policies (RCP 4.5), average sea level is projected to rise 0.12-0.41m by 2050 and 0.24-1.07m by 2100 relative to 2000 levels in The Gambia (Figure 4).

Figure 3. Countries by Average Elevation



Source: IMF Staff calculations based on World Atlas.

Figure 4. Projected Sea Level Rise in The Gambia



Source: IMF Staff based on SLR projections from Diaz (2016) and data from Kopp et al. (2014).

Notes: Local Sea-Level Rise (SLR) probabilistic projections until 2100 under three emission scenarios (Paris - RCP 2.6; Moderate - RCP 4.5; Extreme - RCP 8.5). Solid lines depict median SLR and dotted lines depict the 5th and 95th percentiles for each scenario.

4. Building climate resilience in the coastal area is a national development priority and a long-term adaptation challenge for The Gambia. The Gambia’s coastline of 80km is home to most of its population and the center of its social, economic, and political life. Under 0.2m of future SLR (Figure 5), the Tanbi Wetland National Park (TWNP) – covering an area of around 6300 hectares (ha) and connecting the three main urban population centers within the Greater Banjul Area, including Banjul City, Kanifing Municipality and Brikama – will be submerged. TWNP consists mostly of mangroves that acts as hydrological buffer zones (Ramsar Convention 2007) and serve as important nursery grounds for fish species (Ceessay et al. 2016). Under greater SLR of 1.0m, corresponding to the anticipated SLR under current policies by 2050-2100, critical coastal infrastructure¹ and ecosystems will be at risk, including 6,500ha of woodland and 40,900ha of mangroves within the North Bank, West Coast, and Central River regions (RMSI and MECCNAR 2019).

¹ Within the inundated area, key infrastructure include the National Assembly Building, Banjul water treatment plant, Banjul pumping station, ports, schools, cultural sites, and tourism development areas along the beach. By some estimates, 60% of mangrove forests, 33% of swamp areas and 20% of rice-growing areas will be inundated with 1m rise of sea levels (The Gambia 2050 Climate Vision 2021).

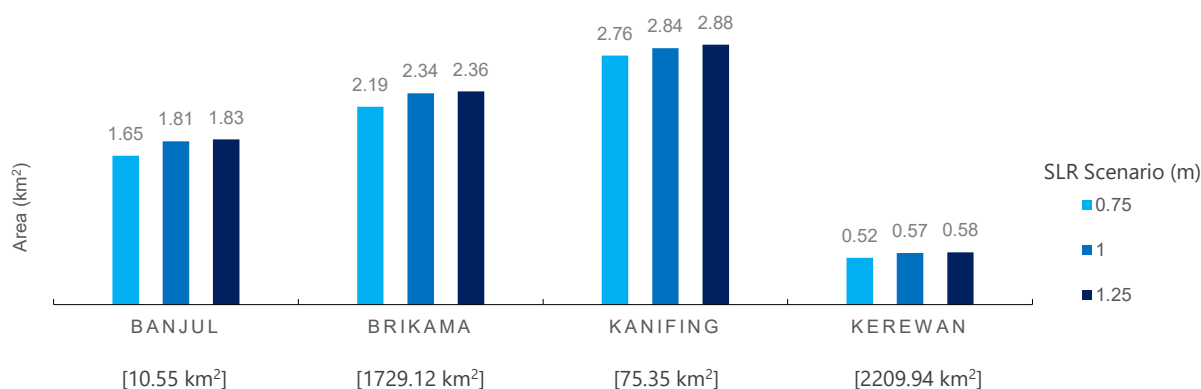
Figure 5. Map of Coastal Inundation Risk for the Greater Banjul Area



Source: IMF Staff based on [Climate Central](#).

Notes: These figures show the land areas in the Greater Banjul Area that would be inundated under a given water level at 0.2 and 1.0 meters. Water levels above the high tide line could be reached through combinations of sea level rise, tides, and storm surge. The shaded areas indicate the water surface above the local tideline, which denotes the recent historical average of the highest daily local tide level or the mean higher high-water line.

Figure 6. Inundated Area from SLR in Selected Regions of The Gambia



Source: IMF Staff based on RMSI and MECCNAR (2021).

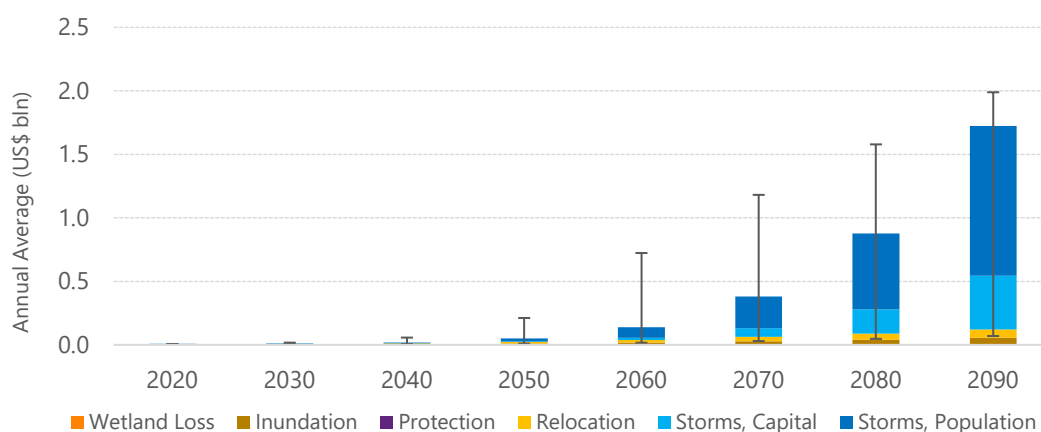
Notes: This figure shows the estimated inundated area (including mangroves) under three SLR scenarios, 0.75m, 1.0m and 1.25m. The total area of each region is shown in brackets.

5. Beyond the inundation of natural and built capital along the coast, SLR will exacerbate the salinization of freshwater aquifers and accelerate coastal erosion. Recent estimates show that 200,000 to 300,000m of sediment is lost annually through coastal erosion between Banjul Point and Sanyang Point (RMSI and MECCNAR 2019). The rate of land loss is estimated to be 2.5-3ha per year, and the total land loss could reach 7.65km² along the coastal stretches of selected regions, including Banjul, Kanifing, Brikama, and Kerewan (Figure 6). Conservative estimates² show that the cost of SLR-induced storms could reach USD 2 billion by 2090 without adaptation (Figure 7) and the cost of coastal erosion would be much higher.

² The model is not granular enough to fully account for the cost of coastal inundation and wetland loss. Due to limited resolution, The Gambia's coastline is divided into 12 segments that vary in length from 1.2km to 171.9km, with a median length of 11.1km.

6. In addition to risks from the gradual onset of SLR, The Gambia is exposed to disasters that could become more frequent and intense with climate change. Since 1950, The Gambia has experienced 33 climate-related disasters, including drought, epidemic, flood, infestation, storm, and wildfire (Figures 8-9). Even though the frequency of disasters is low, more than 1.5 million people have been affected, injured, or made homeless and 442 lives have been lost. Recurring droughts and floods impose large economic and welfare losses. The 2011/2012 and 2014/2015 droughts, for instance, led to a 50 percent drop in crop output and threatened food security (IFAD 2019). The risk of compound disasters is also on the rise, such as the concurrent windstorm and flash floods in July 2011 that affected more than 100,000 Gambians and cost more than ten lives (UNOCHA 2011).

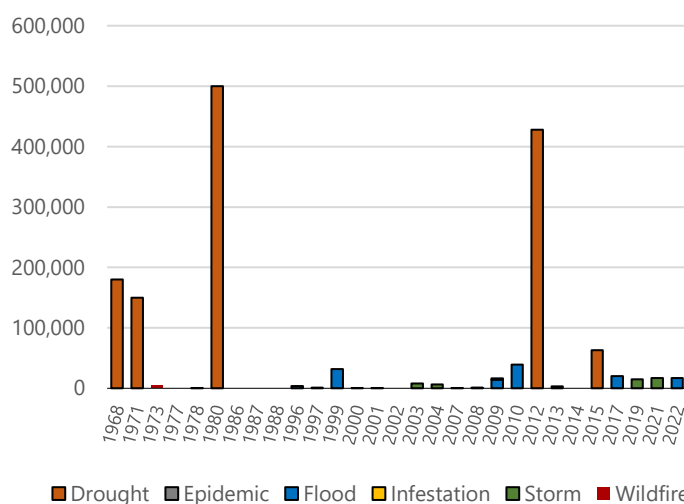
Figure 7. Estimated Cost of Sea Level Rise – No Adaptation



Source: IMF Staff using the CIAM model (Diaz 2016).

Notes: Average annual cost in each decade. Whiskers on top of each bar indicate the range of total cost using the 5th and 95th percentile of the probabilistic distribution of sea-level rise. Due to the highly non-linear nature of coastal impacts, adaptation costs, and effectiveness of adaptation measures, ranges are not always symmetric around total costs.

Figure 8. Distribution of Natural Disasters in The Gambia, 1950-2024



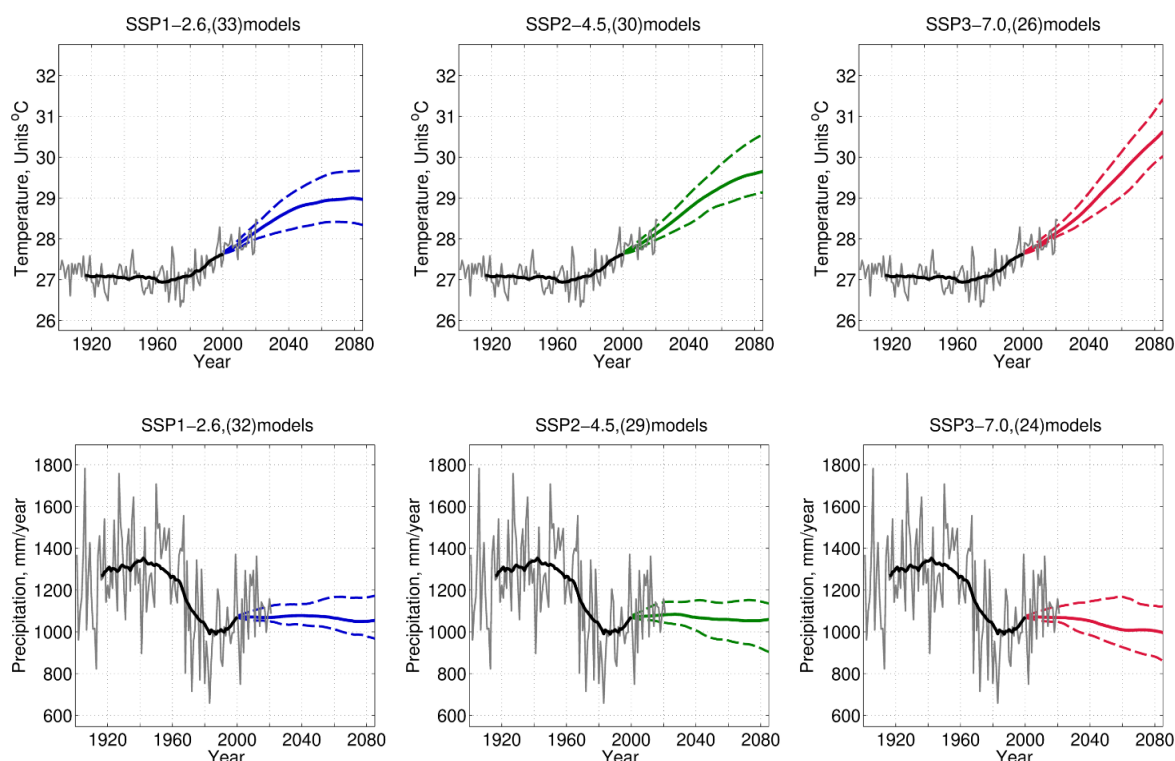
Disaster Type	Event Count	Total Deaths	Total Affected
Drought	7	-	1,321,100
Epidemic	4	341	909
Flood	11	82	130,670
Infestation	4	-	-
Storm	6	19	48,856
Wildfire	1	-	5,000
Total	33	442	1,506,535

Source: IMF Staff calculations based on EM-DAT (2024).

Notes: Total affected includes people injured, affected, or made homeless.

7. Under plausible climate change scenarios, The Gambia will face increasing temperature and decreasing rainfall over the next 50 years. The first Global Stocktake ([UNFCCC 2023](#)) estimates that current policies and commitments will lead to a global mean temperature increase of 2.1-2.8°C by 2100 with the full implementation of the latest nationally determined contributions (NDCs). This is largely consistent with the SSP2-4.5 scenario, under which The Gambia will experience an average warming of 1.0-1.6°C by 2030 and 1.5-2.3°C by 2050, relative to 1901-1930 levels (Figure 9, top panels). Projected precipitation patterns are more erratic, falling by 11-21 percent by 2030 and 10-26 percent by 2050, relative to the historical baseline (Figure 9, bottom panels). As the country becomes hotter and dryer, the lives and livelihoods of millions of Gambians could be at risk due to the heavy reliance on rain-fed agriculture that provides about one-quarter of gross domestic product (GDP) and employs close to half of the population (Table 2).

Figure 9. The Gambia’s Projected Climatology – Temperature (top) and Precipitation (bottom)



Source: IMF Staff. FADCP Climate Dataset (Masseti and Tagklis, 2024), using CRU data (Harris et al., 2020), and CMIP6 data (Copernicus Climate Change Service, Climate Data Store, 2021: CMIP6 climate projections).

8. Rising temperature and erratic rainfall compounds recurring natural hazards and long-term economic development challenges. The Gambia is a Least Developed Country with a small economy that is largely dependent on rain-fed agriculture, tourism, and remittance. In 2022, the GDP was USD 2.19 billion and 53.4 percent of the population lived below the national poverty line (Table 2). With a young and growing population of 2.71 million and more than 250 people per squared kilometer, The Gambia faces mounting resource constraints with significant implications for food, water, and energy security. The Gambian economy is undiversified and highly vulnerable to external shocks. The country relies on imports to meet 63 percent of its energy needs (Table 2) and close to 50 percent of its food demand ([FAO 2022](#)).

Inflation has been persistently higher than 10 percent since 2022, driven by high global food, energy and fertilizer prices ([Nachegea et al. 2024](#)).

9. Notwithstanding these challenges, the Government of The Gambia (GoTG) is proactively incorporating climate change considerations into its development objectives and planning. Supported by bilateral and multilateral development partners, the GoTG established a National Climate Change Policy of The Gambia (NCCP, 2016), a Strategic Programme for Climate Resilience (SPCR, 2017), a Low Emissions Climate Resilient Development Strategy (LECRDS, 2017), a 2050 Climate Vision (2021), a Second Nationally Determined Contributions (NDC2), and a Long-Term Climate-Neutral Development Strategy 2050 (LTS). Recently, the GoTG has embarked on the formulation of a National Adaptation Plan (NAP) funded by the Green Climate Fund (GCF).

Table 2. Selected Climate and Development Indicators of The Gambia

Indicators	Average 2019-2023
Geography	
Forest area (% of land area)	24.0
Arable land (% of land area)	43.5
Agricultural land (% of land area)	62.6
Land area (sq. km) *	10,120.0
Demographics	
Population density (people per sq. km of land area)	254
Population growth (annual %)	2.5
Population, total (million) *	2.71
Rural population (% of total population)	37.1
Economic	
Agriculture, forestry, and fishing, value added (% of GDP)	21.6
Employment in agriculture (% of total employment) (modeled ILO estimate)	48.2
GDP (current USD billion) *	2.19
GDP growth (annual %)	3.9
GNI per capita, PPP (current international \$)	2,240.0
Inflation, GDP deflator (annual %) *	10.4
Poverty headcount ratio, national poverty lines (% of population)	53.4
Energy & Environment	
Access to clean fuels and technologies for cooking (% of population)	1.8
Access to electricity (% of population)	62.7
Annual freshwater withdrawals, agriculture (% of total freshwater withdrawal)	38.6
Electric power transmission and distribution losses (% of output)	27.0
Energy imports, net (% of energy use)	63.0
PM2.5 air pollution, exceeding WHO guidelines (% of total)	100.0
Total greenhouse gas emissions (% change from 1990)	289.4

Source: IMF Staff calculations based on data from the [World Bank](#), [IRENA](#), [NAWEC](#).

Notes: Indicators marked with * reflects the latest available year in 2022.

II. Climate Adaptation Policy

10. The Gambia's climate adaptation priorities rest on three pillars namely: (a) climate-resilient food and landscape: agriculture, food security, forestry and natural resources (including water, biodiversity and wildlife); (b) climate-resilience people: health, education, equitable social development and human settlement and (c) managing coasts in a changing environment: climate-aware integrated coastal zone management. Previous efforts on adaptation planning include the National Adaptation Programme of Action (NAPA) 2007³ and the SPCR. The Gambia has also begun developing the NAP.

11. Closer cross-sectoral coordination, alignment with the macro-fiscal framework and institutional strengthening towards effective policy implementation will be a key to enable The Gambia's climate change adaptation. As The Gambia embarks on the implementation of its national development plan (NDP) focused on resilient recovery, common themes emerge as critical gaps to ensuring resilience against climate change. These are (a) high inter-dependency across natural resources, namely land, forest and water, along with their feedback with climate change; (b) increasing human pressure on natural resources driven by population growth and urbanization; and (c) a lack of appropriate institutional and legislative frameworks and implementation capacities to effectively manage the pressure exerted on natural resources. Climate adaptation has thus far been primarily driven by the public sector, and private sector engagement remains limited. With limited fiscal space and high external financing dependence, greater national coordination, alignment of climate change adaptation objectives with macro-fiscal framework, and creation of enabling environment for private sector engagement will be critical. This section outlines key adaptation challenges, their interlinkages and options for institutional strengthening and reforms. It covers all adaptation-relevant sectors, with an emphasis on fiscal policies to support coastal resilience, land use management, water management, climate-smart agriculture, and disaster risk management, financing and adaptive social protection.

A. Coastal Resilience and Management

Current State and Challenges in Coastal Management

12. The GoTG has made progress to define the vision for coastal adaptation and resilience building under a changing climate. Since 2013, a process for Integrated Coastal Zone Management (ICZM) has been established with the support of the European Union through the Global Climate Change Alliance Plus (GCCA/GCCA+). The first GCCA+ funded project from 2013 to 2016 has developed the National Climate Change Policy of The Gambia (NCCP 2016), which identifies “climate-aware Integrated Coastal Zone Management” as one of four strategic focus areas for priority policy intervention. Echoing this, The Gambia 2050 Climate Vision (2021) envisions a Gambia where coastal communities and ecosystems are protected from climate-induced coastal erosion, inundation, and flooding. The first GCCA+ funded project also identified priority coastal zone adaptation measures by assessing coastal vulnerability and conducting feasibility and cost-benefit analysis. Following this, a second GCCA+ project started in 2018 with the goal of consolidating and implementing ICZM recommendations from the first project. In parallel and building upon the NCCP, the Strategic Programme for Climate Resilience (2017), funded by the African

³ [ProposedcoverpageV2.0 \(unfccc.int\)](https://unfccc.int/ProposedcoverpageV2.0)

Development Bank (AfDB) in collaboration with the World Bank (WB), has developed a coastal infrastructure vulnerability study to inform coastal adaptation strategies.

13. While existing strategies and assessments have clearly established the climate-related coastal vulnerabilities in The Gambia, managing these risks are complicated by the lack of clear institutional framework, outdated land-use policy, limited institutional and technical capacity, and lack of domestic and international investments on coastal adaptation infrastructure. To date, coastal management in The Gambia has been undertaken through an ad hoc and project-based approach that lacks long-term planning and institutional oversight. This has resulted in expensive and nearsighted coastal protection projects that could become stranded assets. For instance, a large-scale sand replenishment project was undertaken in 2003 at Kololi Beach, but six years later, the shoreline had gone back to its original condition and lost all the sand replenished⁴ (Pook and Fanneh 2015). If longer-term impacts of adaptation options are not taken into account, coastal management actions that focus on sectors or risks in isolation and on short-term gains often lead to maladaptation ([IPCC 2022](#)).

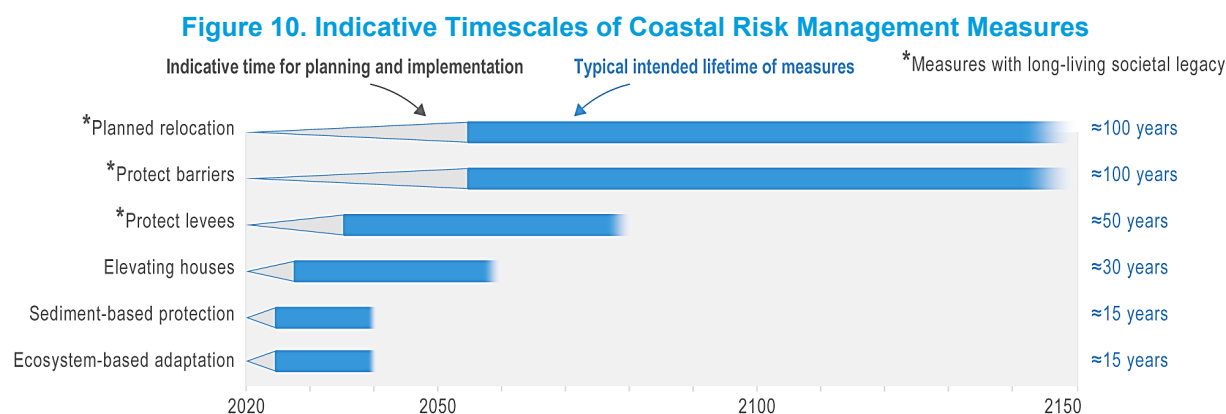
Key Policy Gaps and Opportunities for Building Coastal Resilience

14. Given unavoidable future inundation from SLR, existing policies have not adequately considered the full range of adaptation options and their corresponding time horizons. Climate change impact studies conducted on the coastal zone of The Gambia recommended both non-structural soft adaptation options – the implementation and enforcement of land use regulations, urban planning, wetland preservation, and public outreach – and hard structural adaptation options – the construction of coastal defense structures like seawalls, breakwater systems, and embankments (Jallow et al. 1996; Joshua et al. 2018). To avoid locking into coastal protection measures that could become stranded assets, an integrated and multi-sectoral approach would account for the time horizon of different adaptation options (Figure 10), the uncertainty of the rate and magnitude of climate-related coastal risks, and the cost and benefit of adaptation actions ([IPCC 2022](#)) (see also Box 1). Following these principles, coastal management in The Gambia should ensure that the full range of adaptation options are being considered, including managed retreat or relocation and the creation of no-development zones to avoid maladaptation or costly overprotection of stranded assets.

15. In the short to medium term, climate-resilient coastal management would ensure that existing infrastructure and communities are protected while accounting for the long-term impact of potential adaptation measures and their costs and benefits. Near-term adaptation options include engineered, sediment, and ecosystem-based protection (Figure 10). For instance, MECCNAR is collaborating with the UNEP to implement a large-scale ecosystem-based adaptation project that will restore and rehabilitate more than 10,000ha of degraded forests, savanna, and mangroves, the latter serving as a protective hydrological barrier against flood risks. More recently, the GoTG in collaboration

⁴ The sand replenishment project did not implement the recommended hardware measures needed to stabilize the sand that was dumped on the beach due to inadequate funds and the fact that some donors do not support hard adaptation measures. Hence, the GoTG/IDB/Royal Haskoning Beach Nourishment Project (2003-2004) was the worst maladaptation on the coastal zone of The Gambia.

with the Green Climate Fund (GCF) and UNDP is working on a proposed USD 30 million project⁵ on enhancing coastal infrastructure resilience against sea level rise and coastal erosion. As these soft and hard protection measures do not remove the coastal risks in the coming decades, their net-benefits should be carefully evaluated to avoid overprotecting habitat and infrastructure that will be irreversibly lost in the future.



Source: [IPCC AR6 WGII \(2022\)](#)

Notes: Typical time scales for the planning, implementation (grey triangles) and operational lifetime of current coastal risk-management measures (blue bars).

16. In the medium term, land-use planning and land reclamation could help reduce coastal vulnerability. For instance, the coastal impact of SLR could be minimized by classifying coastal land based on projected flooding and erosion risks and creating a no-development zone in exposed locations. Jallow et al. (1996), for instance, recommended a no-development zone of 150 meters inland from the high-water mark. The assessment would be informed by and be incorporated into the coastal land use policy and zoning regulations, and it requires the availability of geospatial mapping on coastal land and land use. To conduct coastal risk projections and analysis, The GoTG should develop and apply consistent long-term climate change scenarios and projections across sectoral ministries. Existing plans, strategies, and commitments often refer to projected climate change impact without specifying the scenario considered, making it difficult to compare and harmonize analysis across projects and ministries.

17. Given the long lead time of coastal adaptation measures, it is critical to build the institutional and technical capacity and governance structure now to ensure a sufficient solution space going forward. In the long term, the principle of managed coastal realignment, as suggested by the GoTG in the SPCR (2017), could help initiate a deliberate process that allows the shoreline to find a new alignment naturally, rather than attempting to control coastal erosion or flooding by engineering interventions at specific sites. The challenge of this approach is that it would entail the loss of some assets and the relocation of some communities, but it would help to minimize coastal risks in the long run.

⁵ In particular, the proposed project aims to protect the lowland rice cultivation areas around in the estuary of The Gambia River, which make up 64% of all the crop land area. These areas are experiencing increased saltwater destruction of rice fields and fishponds, making farming households extremely vulnerable. The project also aims to reverse the decline in coastal and riverine ecosystem functioning, such as mangroves, and slow the coastal erosions of beaches that are critical to the tourism industry. The GoTG should prioritize the revision and resubmission of this Coastal Zone Adaptation Project to enable its approval by the GCF Board.

Recommendations

- MECCNAR and MoFEA, working with other relevant lines ministries and local governments, finalize, enact, and enforce the Integrated Coastal Zone Management Bill and Integrated Coastal Zone Management Policy that: 1) Define institutional framework for implementation; 2) Integrate long-term climate change projections; 3) Produce and maintain geospatial data on coastal land and land use; 4) Identify potential stranded assets and communities at risk under projected climate change scenarios and natural hazards in coastal areas; and 5) Consider the full range of coastal adaptation options, including but not limited to, no-development zone, managed relocation, and coastal protection.

Box 1. Rationale for Government Intervention in Climate Adaptation

Individuals and private firms have incentives to adapt to climate change because many adaptation benefits tend to be local and private. However, there is a clear role for the government when adaptation has large externalities.

Goods with large positive externalities and public goods. For example, information about climate change, emergency preparedness plans, seawalls, basic research in new materials and technologies fall into this category.

Network effects. When resilience depends on networks, such as a system of dikes, a water network, or a transportation network, adaptation in each component of the network has impacts on the rest of the network that may not be captured. Private adaptation will tend to be underprovided and government coordination may be needed to internalize all the benefits for society.

Other market imperfections. Market inefficiencies and policy failures may also limit private adaptation or create distortions. They affect the broad functioning of the economy and make adaptation to climate change inefficient. For example, a poor business environment and inefficient credit markets, or lack of clarity or documentation of land ownership can prevent investment due to lack of incentives or due to lack of collateral, hampering opportunities for farmers to invest in new capital to grow crops that are more suitable to the new climate.

Compared to other types of capital, infrastructure is more likely to be subject to market failures for three main reasons.

- First, many infrastructure projects often entail large, capital-intensive investments and, therefore, tend to be “**natural monopolies**,” which means that it is more cost-effective for services to be provided by a single entity.
- Second, projects have **significant upfront costs**, but the returns accrue over long periods of time, often several decades, and may be difficult to assess over such a long horizon.
- Third, infrastructure investments generate **positive externalities**, so that the social return of a project for the whole population can exceed the private returns generated for the investor.

Source: IMF Staff Climate Note, 2022 and Eyraud, et al. 2021, Private Finance for Development 69.

B. Land Management

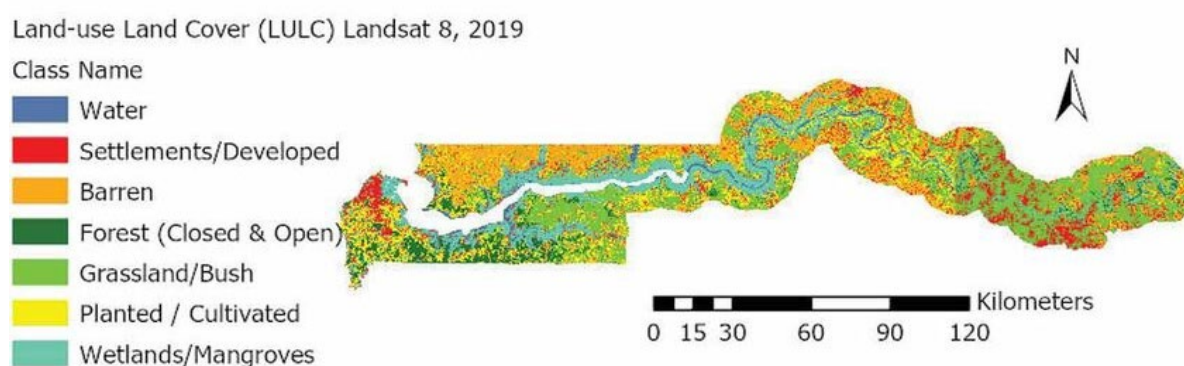
Current State and Challenges

18. The success of climate adaptation and mitigation actions hinges on effective land management in The Gambia. Clarity of land tenure and appropriate management of land is a crucial enabling factor for a number of sectors including agriculture, forestry, renewable energy and coastal management. Current gaps in land management are key drivers of agricultural practices that lead to deforestation, and contribute to lack of private investment, including in the renewables energy sector,

agriculture, water management, and coastal management. In the agricultural sector in The Gambia, individualized rights to land are associated with higher propensity to make investment hence increased yield.⁶ Overlapping legal jurisdictions and weak enforcement of property rights pose significant challenges to coastal management. Cost benefit analysis of coastal protection measures is difficult due to the lack of national data on property values. In the forestry sector, there are no well-defined rules on the permitting to clear forests for agricultural use. The lack of clarity on land tenure also poses significant constraints for renewable energy investment as will be elaborated in the mitigation section.

19. The Gambia has a dual land institution.⁷ Whereas all land is officially classified as public land, approximately 90 percent is also under customary tenure. The recent years have seen rapid expansion of urban settlements including high informality, growth of agricultural land, deforestation and forest degradation, all generating an increasing pressure on the country's scarce land resources (Figure 11). Disputes over land are common and difficulty in land acquisition has thwarted private investment. As The Gambia foresees doubling of its population by 2050, appropriate management of land resources will be crucial to enable climate resilient development and renewable energy deployment.

Figure 11. Land Use and Land Cover Classification in The Gambia



Source: Dampha, 2020.

Key Policy Gaps and Opportunities

20. The Gambia is taking important steps to strengthen the legal, policy and institutional frameworks of land management. The Gambia's legal framework for the land sector is defined in Lands Act of 1980, Physical Planning and Development Control Act of 1990, Survey Act of 1990, Land Acquisition and Compensation Act of 1991 and Land Commission Act of 2007. The Ministry of Land, Regional Government and Religious Affairs (MLRGRA) is responsible for land administration. The relevant mandates are also held by the Ministry of Agriculture (MoA) which reviews agricultural land leases, the Ministry of Environment Climate Change and Natural Resources (MECCNAR) which manages forest resources, and The Gambia Tourism Board which oversees the Tourism Development Area (TDA).

⁶ [Tenure Security, Investment and Productivity in Gambian Agriculture: A Generalized Probit Analysis \(jstor.org\)](https://www.jstor.org/stable/2344444)

⁷ The Gambia is the smallest country in the Africa mainland, with the total land area of 11,300km². According to The Gambia's Third National Communication (2020), dominant land covers include forest (52%, of which 84% is savanna woodland) and crop area (32%). Protected area covers 352 km² (3.3% of country).

21. According to the WB's Land Governance Assessment Framework conducted in 2013, The Gambia scores high on legal recognition of land rights and existence of formal and informal systems of land disputes resolution. At the same time, significant gaps are present on the lack of national land use policy, overlap and unclarity of mandates across different agencies, weakness of planning and land administration capacities including land surveys, registration and property tax collection.⁸ Under the WB-funded West Africa Coastal Areas Management (WACA) project, The Gambia has set up a series of technical working groups to review the legal, policy and institutional backgrounds and plans to develop the country's first comprehensive land policy. A technical needs assessment is also ongoing to build institutional capacity for aspects such as land administration, digitalization and use of satellite-based information.

22. The Gambia lacks a cadastral map, and zoning demarcation established in the urban areas have been disregarded due to lack of enforcement The Greater Banjul Area (GBA) 2040 Development Plan is a comprehensive urban plan, guiding urban climate resilient and low-carbon transition through prudent land use planning. Whereas the legal framework is present for physical planning and land management, the lack of implementation led to haphazard development and sprawling of the GBA, contributing to a rise in climate-related disaster risk such as pluvial floods and increasing carbon footprint and air pollution. Besides the GBA, the most recent Land Use Plan was created in 1985 covering Brikama, Basse and Farafenni. Thus far, land information in these jurisdictions has not been systematically collected, digitized, maintained, or analyzed, undermining the institutional capacity to implement and enforce urban and coastal land management policies.

23. Opportunities exist to improve land administration using appropriate geo-spatial information and technology. The GoTG's use of satellite information and geo-spatial technologies such as drones have thus far been limited. However, international experience shows that the use of geo-spatial technology significantly reduces the cost of necessary surveys, monitoring and inter-operability of land-related information. Digital information on parcel boundaries combined with satellite imagery of historical land use, for example, may be used to establish a record of creditworthiness to farmers. Risks such as deforestation and forest fire could also be monitored on a regular basis using satellite information.⁹

Recommendations

- MLRGRA, working with relevant line ministries, to conduct land surveys and build a cadastral map.
- MLRGRA, working with relevant line ministries to complete the development and adoption of the National Land Policy, clarifying roles and responsibilities of relevant agencies and outline national priorities to strengthen land management.

C. Water Sector Policy

Current State and Challenges

24. The Gambia is situated within the transboundary Gambian River Basin, shared across the neighboring countries of Senegal, Guinea and Guinea Bissau. Both green and blue water¹⁰ are critical

⁸ [Issues and Options for Improved Land Sector Governance in The Gambia \(worldbank.org\)](#)

⁹ [World Bank Document](#)

¹⁰ Blue water is generally surface/ground water resources, and green water refers to soil moisture.

natural resource input underpinning fiscal and macro-critical sectors in The Gambia, hence linked to the country's fiscal variables and balance of payments under climate change. Rainfed agriculture accounts for 80 percent of the total grain production in The Gambia¹¹. As of 2020, the largest water withdrawal takes place for municipal usage (41.2 million cubic meters (MCM)/year) providing drinking water for the country's 2.7 million residents. This is followed by agriculture (39.2 MCM/year) used for irrigation, mainly for domestically produce rice (rice is also the primary food import item)¹². The industrial withdrawal (21.2 MCM/year) underpins approximately 17 percent of the country's GDP¹³. The Gambia relies on groundwater for most of drinking water in both rural and urban areas. Approximately 70 percent of the country's irrigated area is equipped with groundwater abstraction.¹⁴ The country's access to total renewable water resources is estimated at 8.5 billion cubic meters (BCM) in 2020, composed of 8.0 BCM of renewable groundwater (FAO Aquastat). On a per capita basis, this translates to the average per capita renewable water availability of 3,310 cubic meters (cum)/inhabitant/year, below the Sub-Saharan regional average of 10,695 cum/inhabitant/year. Whereas the country's level of water stress, measured as the ratio of total water withdrawal to renewable water availability is presently considered low (<10 percent), the water stress is projected to increase to medium-high (20 – 40 percent) towards the latter 21st century under the projected high climate scenario (SSP3 RCP7.0)¹⁵. The increased stress on absolute renewable water availability combined with deteriorating water quality, salinity poses major concerns on water resources under climate change.

25. Major climate change risks in the water sector include erratic rainfalls, droughts, and saline water intrusion, which in turn generate follow-on consequences such as declining agricultural productivity and encroachment of forests. Due to its low-elevation, the Gambia River is permanently saline in the western part of the country where the majority of population resides (Figure 12). Saline water intrusion is exacerbated by factors including tidal flooding, groundwater abstraction, increased temperatures, reduced rainfalls, and SLR. According to The Gambia Poverty and Gender Assessment 2022, soil salinity increases within 10 km of The Gambia river and within 50 km from the Atlantic Ocean¹⁶ and yields of major crops including millet, groundnuts, maize and sorghum and rice are all negatively affected.^{17,18} In recent years, rising salinity has led to abandonment of fields¹⁹ and wells, contributing to deforestation as farmers seek new fields. The Gambia is also highly exposed to drought risk with the annual average losses expected to increase for major crops such as groundnuts (1.6 percent presently to 7.9 percent of production by 2050), millet (2.9 percent presently to 12 percent by 2050) and rice (3.9 percent presently to 13.7 percent in 2050) under climate change.²⁰ The combined effects of these multiple water-related risks hence pose major concerns for The Gambia.

¹¹ Imputed value for 2020 based on the Aquastat.

¹² The Gambia aims for self-sufficiency in rice by 2030. <https://thepoint.gm/africa/gambia/headlines/gambia-targets-2030-for-rice-self-sufficiency-agric-minister>

¹³ Withdrawal per sector is based on the Aquastat. Sector contribution to GDP is based on the World Development Indicators.

¹⁴ Imputed value for 2018 as per the FAOAquastat.

¹⁵ [Water Stress by Country | World Resources Institute \(wri.org\)](#)

¹⁶ [World Bank Document](#)

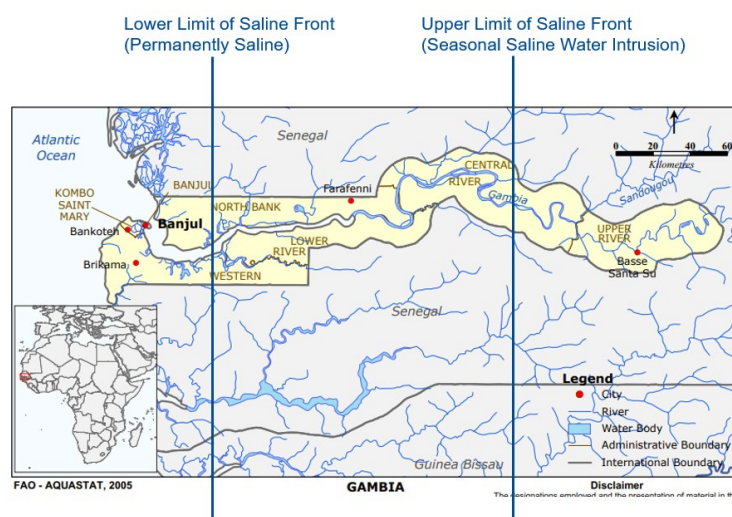
¹⁷ [World Bank Document](#)

¹⁸ [The Impacts of Saline-Water Intrusion on the Lives and Livelihoods of Gambian Rice Growing Farmers | Open Access Journals \(roj.com\)](#)

¹⁹ ["Taste this, it's salty": how rising seas are ruining The Gambia's rice farmers | Global development | The Guardian](#)

²⁰ Under RCP 8.5 [GMB: Gambia Risk Profile - Floods & Droughts \(2019\) — GeoNode \(riskprofilesundrr.org\)](#)

Figure 12. The Gambia's Water Body and Regions Prone to Permanent and Seasonal Salinity



Source: Adapted from UN Water and [M'koumfi et al. 2018](#)

26. The Gambia has made mixed progress on the water sector Sustainable Development Goals (Table 3). According to the IMF technical assistance “Expenditures in 2030 to Support the Sustainable Development Goals”, The Gambia’s overall performance on SDG is slightly above the median for low income and developing countries. The water sector’s underperformance is a source of concern as climate change adds further pressure including drought and saline intrusion. The IMF technical assistance estimates that The Gambia can provide universal safely managed access to water and sanitation at an annualized cost of 1.5 percent of GDP by 2030. The additional cost to improve the climate resilience of water infrastructure against floods and storms has been estimated at 0.1-0.2 percent of GDP.

Table 3. Progress on Selected SDG 6 Indicators in The Gambia

	2020	2022
6.1.1 Proportion of population using safely managed drinking water services	22 %	48 %
6.2.1a Proportion of population using safely managed sanitation services	43%	25%
6.3.1 Proportion of wastewater flow (safely) treated	n.a.	11%
6.4.2 Freshwater withdrawal as a proportion of available freshwater resources	2%	2%

Source: [Sustainable Development Report Dashboard](#).

Key Policy Gaps and Opportunities

27. The Gambia’s water sector is fraught with systematic challenges and the strengthening of legal, policy and institutional frameworks is imperative to manage the risk of climate change. The legal basis for water resources management rests upon the National Water Resources Council Act (1979). The act gives the Department of Water Resources (DWR) of the Ministry of Fisheries and Water Resources limited mandates to implement water resources management planning, hydromet monitoring, forecast and provision of water supply to the rural areas. The sector is managed by multiple agencies sharing relevant mandates including but not limited to the National Environment Agency (NEA) (water quality); National Water and Electricity Company (NAWEC) (urban water supply and sewerage); the Public Utilities and Regulatory Authority (PURA) (regulator of urban water supply and sanitation), and local governments. Relevant laws governing these institutions give limited mandates, clarifying roles and responsibilities. The

recent decades have seen continued efforts to reform the water sector including the enactment of an overarching Water Bill. The latest version of Water Bill is pending review by the Ministry of Justice.²¹

28. In the area of urban water supply, building effective regulatory frameworks and improvement of service providers performance will be crucial. While the urban water demand has continued to grow in recent years, building of urban supply capacity has lagged behind. NAWEC currently provides urban water to 92,000 customers (85,000 of which are active) to Banjul and major cities, along with limited sewage service primarily for tourist facilities within GBA. Urban water supply is fully based on ground water extraction. Due to significant infrastructure capacity limitations, water supply must be rationed throughout the service area, where some areas may experience routine service outage of hours or even days. The lack of reliable water supply has led to widespread and unregulated private drilling of boreholes and the lack of sewage services in the urban areas leads to concerns over health risk.

29. The Non-Revenue Water (NRW) – that is water that is produced but lost or unaccounted for²² - estimates range between 20-40 percent between 2011-2020²³. The likely causes of NRW include leakages, theft and commercial losses with faulty meters prevalent throughout the system. With the lack of appropriate regulatory oversight, expansion of the water supply network currently occurs on an ad-hoc basis, whereby a new customer may choose an alternative pipe size, independent of the optimal system requirement. NAWEC currently aims to phase out faulty meters to reduce NRW. Regulatory strengthening by PURA is also ongoing such as the development of technical guidelines and updating of the quality of service framework for water supply and sanitation. Going forward, the involvement of local government will be crucial for the provision of water sanitation and effective planning and monitoring of urban water supply.

30. Urban water supply tariff is currently set below financial cost recovery and not reflective of full economic cost (Box 2). The Gambia adopts tariff rates differentiated across alternative end-users (Table 4). Domestic rate is further divided per an increasing block rate. The Gambia has received WB support for tariff adjustment in 2018, the current tariff setting is guided by the need for financial cost recovery covering staffing cost, operation and maintenance, interest, return on equity and depreciation as per the PURA guideline. The full financial cost recovery rate is initially

Table 4. Urban Water Tariff in The Gambia

Water (per cubic meter)	Demand	GMD
Domestic	0-10 cum	6.84
	11-25 cum	14.15
	26-40 cum	18.86
	Balance	23.58
Commercial		28.5
Hotel/Industries		40.09
Agriculture		14.15
Area Council/Central Government		19.79

Source: [PURA](#)

calculated by the NAWEC including costs need to cover NRW, which was adjusted downwards based on the PURA's review. A portion of NRW cost (estimated as 35-40 percent) is currently included in the financial cost recovery calculation of the water tariff, which will gradually be phased out to incentivize investment in NRW reduction. The estimated revenue gaps incurred by NAWEC are GMD²⁴ 1.4 million in 2022 and GMD

²¹ The need for a comprehensive law covering the aspects of water resources management, water supply and sanitation is widely recognized. Yet in what exact form this should translate as a set of (or a single comprehensive) water laws remains contested. With regards to the current Water Bill. Deliberation is also ongoing as to the appropriate inclusion of water supply and sanitation aspects and if a creation of new water agency is necessary.

²² <https://blogs.worldbank.org/en/water/what-non-revenue-water-how-can-we-reduce-it-better-water-service> A WB study estimates the average NRW for developing countries is approximately 35%.

²³ [Statistics - Public Utilities Regulatory Authority \(pura.gm\)](#)

²⁴ 1 United States Dollar (USD) equals 67 Gambian Dalasi (GMD) as of May 29, 2024.

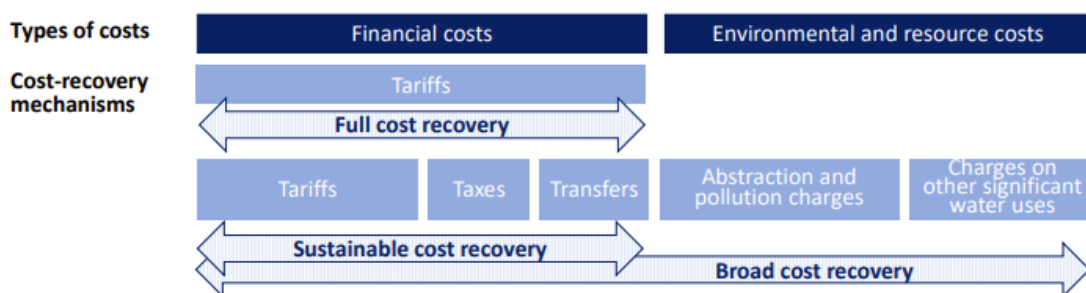
1.6 million in 2023. NAWEC’s capacity to provide effective longer-term planning – both engineering and financial - is significantly constrained by multiple factors including the lack of proper metering, limited staff capacity (e.g. limited understanding of the underlying tariff setting model) and NAWEC is currently receiving the support of Agence Française de Développement (Afd) to strengthen system and planning capacities.

Box 2. Alternative Approaches to Price Water

For effective management of water resources, water economics encourage the recovery of three cost components namely (a) financial costs, (b) resources costs (opportunity costs) and (c) environmental costs.

Financial costs include the costs borne by the utilities in supplying water services such as operation and maintenance, capital cost of new investments, depreciation and cost of capital. **Resource (or opportunity) costs** are reflective of scarcity value, i.e. the cost of depriving the possible users of today or in the future. **Environmental costs** reflect the cost of environmental damages caused by water use, such as acceleration of saline intrusion due to groundwater depletion and biological and chemical pollution due to agricultural and industrial water use.

In order to meet alternative water pricing objectives such as financial cost recovery, affordability and environmental sustainability, a government may move from the conventional full cost recovery based on tariff as a single pricing mechanism to a combination of fiscal instruments such as tariff combined with tax to correct for externalities and transfer to ensure affordability of water to the poorest. The Gambia is currently developing the national social registry, which may be used as a basis to extent needed transfers to meet the affordability criteria (beginning from supporting the urban poor where water pricing is in place). Finally, the strategy of broad cost recovery aims for recovery of financial cost, together with environmental and resources costs.



Note: "Charges on other significant water uses" are charges on water uses other than abstraction and pollution charges, such as taxes on pesticides and / or nitrates.

Source: [OECD](#)

31. In the area of rural water supply, provision of safe drinking water remains a major challenge. Rural water supply relies primarily on groundwater extraction. Borehole drilling is primarily undertaken by private companies and water quality division is tasked with oversight on proper siting and testing of groundwater quality. However, illegal and inappropriate siting of boreholes, including those located in close proximity to sanitation sites, pose a major health hazard in rural communities. Moreover, borehole drilling contributes to the worsening of saline intrusion.²⁵ The Kombo Peninsula and the valley

²⁵ Time spent on water fetching is also a concern based on regional evidence, though this mission did not collect specific information related to this aspect for the Gambia. See for example ["Economy-wide effects of reducing the time spent for water fetching and firewood collection in Ethiopia"](#)

areas in North Bank and West Coast Regions are almost at the tipping points and some of the water points will need to be relocated.

32. The Gambia currently has limited regulatory framework in place to guide the private drilling of boreholes. The Gambia has around 40 observational boreholes for groundwater quality monitoring, of which around half are located in the GBA.²⁶ The Gambia currently does not have a complete inventory of boreholes in the country and unauthorized drilling remains rampant, particularly in the peri-urban areas of the GBA and the West Coast Region where NAWEC supplies are not available. According to the Integrated Water Resources Management roadmap developed in 2008, demand versus recharge rate of groundwater was expected to surpass 1 (i.e. unsustainable groundwater use) by 2020 in the urban areas within the Kombos, while the absolute abstraction remained below the recharge in the rest of The Gambia. The mission did not obtain more updated information on the current abstraction rates. DWR has taken efforts to manage health and environmental risks including the development of guidelines for private drilling and sensitization of health risk. The National Water Policy of 2006 calls for the introduction of abstraction and impounding licensing for ground and surface water, but this has not been implemented. Further efforts are urgently needed to strengthen the regulatory framework around groundwater. The Gambia needs to build an appropriate inventory of existing boreholes, setting up permitting system, and introducing charges reflecting environmental externalities and opportunity costs. The introduction of permitting systems can be phased, beginning from a flat licensing fee²⁷, segmenting end-users across sub-sectors such as urban/rural consumers, industrial/commercial, agricultural, and household end-users, and moving towards pricing based on usage level, which will require additional measurement of abstraction.²⁸ A priority should be given to management of urban groundwater usage.

33. The Gambia could further explore alternative options to supplement freshwater including rainwater harvesting. The Gambia currently does not have explicit policy and regulatory frameworks for rainwater harvesting though work has begun by the MECCNAR to explore locally appropriate options to introduce rainwater harvesting and groundwater recharge²⁹.

34. The Gambia's hydrometeorological monitoring system faces multiple challenges including the lack of appropriate maintenance budget and staffing capacity. DWR in The Gambia provides hydrological, metrological and agro-metrological information. All information is currently provided free and no distinction is made on data between those of public, club and private goods in nature.³⁰ While the country's meteorological network is currently fully functioning, its hydrological monitoring system, on the other hand, is fully down due to the lack of appropriate maintenance, this constraints the country's capacity to provide effective climate change impact assessment and early warning. Key constraints in the hydromet maintenance include the lack of budgetary resources, inability to keep abreast of new technologies

²⁶ [The Gambia leads #OpenWaterData commitment by example | International Groundwater Resources Assessment Centre \(un-igrac.org\)](#)

²⁷ This results in a marginal cost of consuming water of 0, preferable to the current system. Then the Gambia should move toward metering, as this is important to incentivize efficient use of water.

²⁸ For alternative options to manage/price groundwater please for example [Taxes on groundwater use/number of wells | Water pricing I.](#)

²⁹ Under a WB funded project, rainwater harvesting policy is being developed and also runoff and rooftop water harvesting systems will be tested in the Kotu Stream Catchment Areas.

³⁰ [Public and Private Engagement in Hydromet Services: From Rivalry to Coproduction in Meteorological and Hydrological Service Delivery | GFDRR](#)

introduced from abroad and general lack of staffing capacity. The Gambia should build on international good practice, improving planning and maintenance of hydromet networks using the Total Cost of Ownership approach³¹ to choose the fit-for-budget system and explore alternative ownership/partnership models to achieve sustainable hydromet services including potential to engage private sector partners.^{32,33}

Recommendations

Effective inter-agency coordination is an important pre-requisite to sector recommendations. Please refer to enabling institutions chapter.

- NAWEC to implement measures to address NRW as per their current NRW reduction target and PURA to monitor its progress. PURA and NAWEC to achieve full financial cost recovery of water with tariff adjustment
- DWR, working with relevant line ministries and local governments, to establish an inventory of boreholes and groundwater abstraction licensing, as outlined in the National Water Policy 2006 reflecting updates as necessary, and in a longer-term move towards groundwater abstraction fees , reflective of full economic cost of groundwater.

D. Agriculture

35. Agriculture is the mainstay of The Gambian economy, providing approximately half of the

total employment, while generating over 22 percent of GDP in 2022 (WB WDI).

The agricultural sector production in The Gambia includes (a) crop, (b) horticulture (c) livestock, (d) forestry³⁴ and (e) fishery, though the country currently lacks robust statistics on horticultural contribution to the GDP. The country's crop system is characterized by subsistence rainfed production of cereals (e.g., millet, maize, sorghum) and irrigated rice, which are prone to the impact of climate change.³⁵ Small scale productions of cash crops including groundnuts, cashew and horticulture, all susceptible to climate change, are also prevalent. Due to partly declining productivity of irrigated rice, driven by saline water intrusion. Rice remained as the primary food import item (USD 38.4 million) and groundnuts (USD 2.0 million) and cashew nuts (USD 1.3 million) were major export items in 2021 (WITWB). The

Table 5. Projected Climate Change Impact on Yields Relative to 2020

	2030		2050	
	RCP 8.5 Median	RCP 8.5 Optimistic	RCP 8.5 Median	RCP 8.5 Optimistic
Groundnuts	-5.04%	+3.9%	-15.14%	-6.53%
Millet	-2.43%	+6.54%	-8.56%	-3.63%
Rice (no irrigation)	-3.23%	+1.03	-14.77%	-7.56%
Rice (with irrigation)	-2.77%	-1.15%	-9.62%	-4.85%

Source: IMF staff analysis using IFAD Climate Adaptation in Rural Development Assessment Tool

³¹ A modern hydromet network's total costs include capital costs; infrastructure costs; operating costs of stations, information and communication technology (ICT), data storage and archiving, and manpower including necessary technical training; costs of maintenance and replacement of spare parts; and business operating and administrative costs including cost of quality management. All of these costs should be accounted upfront, when investing in the update of hydromet system.

³² Public and Private Engagement in Hydromet Services: From Rivalry to Coproduction in Meteorological and Hydrological Service Delivery | GFDRR

³³ Charting a Course for Sustainable Hydromet Observation Networks | GFDRR

³⁴ The forestry sector priorities are discussed in details in the mitigation section.

³⁵ [World Bank Document](#).

Gambia's groundnuts sector has experienced an export ban to the European market due to the high level of aflatoxin in the recent years.³⁶

36. The Gambian agriculture is significantly affected by the multiple drivers of climate risk. The sector's climate vulnerability stems from a number of factors including high rainfall dependency, declining land productivity, disruption of seasonal calendar, increasing temperature/evapotranspiration, SLR, loss of agricultural lands due to saline water intrusion - all of which are expected to worsen under climate change. In addition, as The Gambia is located at the downstream of the transboundary Gambia River Basin coordinated by the Organization for the Development of the Gambia River³⁷, upstream development activities such as the construction of hydropower have significant implications to The Gambia's agriculture, as it will decrease the flow of fresh water downstream. The existing global modeling outputs indicate that the yields of main crop such as rice, millet and groundnuts are expected to decline by 2050 under the high emissions scenario (Table 5), however, this likely represents the lower bound of climate change impacts under this radiative forcing scenario given the lack of interactions with salient local drivers of risk such as saline water intrusion. Climate change also adversely impacts agriculture value chains including the risk of aggravating aflatoxin contamination³⁸. Abnormally wet-conditions have also led to resurgence of Food and Mouth disease outbreak in animals.³⁹

Key Policy Gaps and Opportunities

37. The legal, policy and institutional frameworks for the agricultural sector are generally well-established yet fragmentation is present at the level of sub-sector planning and project development. The underlying legal basis for the agricultural sector mandates are derived from the constitution, while no umbrella law exists for the sector. The agricultural sector plan is guided by the NDP, with the Agriculture and Natural Resource (ANR) Policy 2017-2026 providing a set of strategic priorities covering agriculture, forestry, fishery, water, biodiversity and environmental management. The sector policy landscape is characterized by a dense set of sub-sector policies, incorporating climate change to varying degrees (Annex I). Fragmentation is present across sub-sector planning.⁴⁰ The lack of effective planning presents a major challenge, especially when approximately 80 percent of the agriculture sector funding is donor-financed.⁴¹

38. Low agricultural sector productivity leads to alternative livelihood activities such as charcoal making, contributing to deforestation as will be elaborated in the mitigation chapter. The Gambia has experienced a significant decline in cereal yield and subsequent expansion of cultivated land since 2000 and this trend seems subsiding in the recent years⁴² (Figure 13). The prevalence of under-

³⁶ [Gambia's groundnut trade value depreciates due to aflatoxin - The Point](#)

³⁷ <https://www.omvg.org/>

³⁸ [Frontiers | Effect of climate change on Aspergillus flavus and aflatoxin B1 production \(frontiersin.org\)](#)

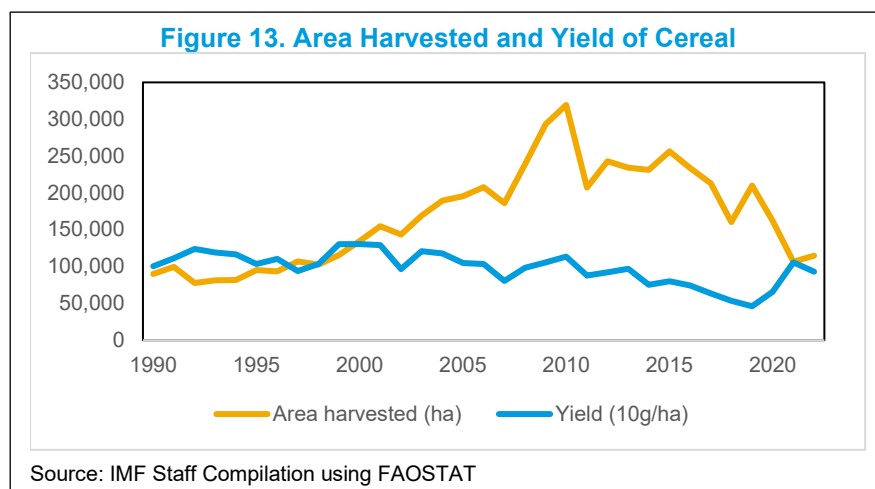
³⁹ Based on the mission interview conducted with DWR experts.

⁴⁰ For example, while The Gambia Agricultural Transformation Programme 2020-2030 aims for an increase in 3-7 times yields in main crops by the use of 100-200 kg of NPK fertilizer, the National Fertilization Policy for The Gambia 2023-2033 aims for the use of 10 kg/ha of fertilizer in the next few years.

⁴¹ UNEP 2022 Scoping Report - Development of Strategic Approach and Workplan for Mainstreaming EbA into Domestic Budgets in The Gambia

⁴² As per [FAO definition](#) "Cereals are annual plants, generally of the gramineous family, yielding grains used for food, feed, seed and industrial purposes, e.g., ethanol. They exclude legumes, such as pulses, but include rice, canary seed, buckwheat and triticale."

nourishment⁴³ has also risen since 2010. Low land productivity is driven by multiple factors including limited access to modern inputs, prevalence of inappropriate farming techniques, and weak producer organizations,⁴⁴ together with environmental pressure such as erratic rainfall and saline water intrusion. In order for The Gambia to move away from this vicious cycle of declining agricultural productivity, food insecurity and environmental degradation, concerted efforts must be taken on cross-sectoral adaptation options including improvement of water resources planning and land management and sectoral efforts to improve productivity, climate resilience, financial inclusion and safety-nets provision of small farmers.



39. Scaling up of climate smart agriculture will be key to enhancing climate resilience. According to The Gambia’s third national communication in 2020, priority technologies for the agricultural sector include conservation agriculture (CA) and tidal irrigation to supplement rainfed agriculture⁴⁵. Planning and implementation of publicly-funded programs such as agricultural extension services and subsidies for agricultural inputs should prioritize scaling up of climate smart solution options including drought resistant crops, tidal irrigation and other means to address salt intrusion and livestock resilience.⁴⁶

40. Bundling of risk management and credit access, along with the provision of appropriate technical knowledge, could unlock the potential of climate smart agriculture. The Technological Needs Assessment (2018) identified financial and non-financial barriers for climate smart agriculture. These include high initial cost, lack of access to credit, high interest rate by commercial banks, limited incentives for the adoption of climate smart technologies, high staff attrition rate, and incongruent government support for non-climate smart technologies. The agricultural sector financing in Gambia is comprised of the (a) formal sector – commercial banks, non-bank financial institutions, microfinance institutions – all regulated by the Central Bank of The Gambia and the (b) informal sector in which financing primarily from development partners is channeled via projects/agents or rotating savings and credit schemes. The agricultural sector lending in the formal sector is low, with commercial banks lending only 4 percent of their portfolio across the five years ending in 2017/2018.⁴⁷ The informal sector likewise faces constraints with high donor dependency. To address these bottlenecks, The Gambia, with the seed funding support of AfDB, plans for an establishment of The Gambia Incentives-based Risk Sharing System for Agricultural Lending

⁴³ The prevalence of undernourishment (PoU) is an estimate of the proportion of the population whose habitual food consumption is insufficient to provide the dietary energy levels that are required to maintain a normal active and healthy life. It is expressed as a percentage.

⁴⁴ [World Bank Document](#)

⁴⁵ [Gambia. National communication \(NC\). NC 3. | UNFCCC](#)

⁴⁶ [Tailoring rice varieties to consumer preferences induced by cultural and colonial heritage: Lessons from New Rice for Africa \(NERICA\) in The Gambia](#)

⁴⁷ MoA 2019 Consulting Service for Gambia Agricultural Transformation Program, Final Report.

(GAMIRSAL), a non-financial institution dedicated to de-risking of agricultural financing by commercial banks and Micro-Finance Institutions (MFIs). The Gambia plans to implement a number of relevant strategic planning activities for agricultural risk management including the development of disaster risk financing strategy and implementation of feasibility studies for index-based insurance as part of the National Social Protection Policy (please see section on Social Protection). Feasibility of alternative options to support financial inclusion and risk management – including credit guarantees, index-based insurance and/or other risk sharing options existing within the formal and informal financial institutions - should be evaluated and scaled (Box 3).

Box 3. Bundling of Risk Management, Credit, and Agronomical Knowledge/Inputs to Foster Climate Resilience

Small scale, rainfed agriculture is especially prone to adverse impacts of climate change. Small scale farmers often lack means necessary to invest in appropriate technology such as credits, inputs, knowledge that may reap high productivity enhancing investment. In order to address these common challenges, many countries are working with private and civil society organizations on effective bundling of risk management, credit and other necessary information and inputs including agronomic services, fertilizers and improved seed varieties.

A Kenya-based agricultural insurance service provider PULA for example, helps design area-yield index (covering multiple perils of weather and non-weather risks) and weather-index based insurance products bundled with agricultural inputs (e.g. seeds and fertilizers). It also offers agronomic advisory. PULA operates on a unique business model in which insurance premium is paid by private input producers who are willing to pay extra in order to achieve product differentiation. Insurance products are then under-written by third party insurers. Index-based insurance along bundled with inputs are used by agencies such as the Central Bank of Nigeria to insure 543,000 farmers in 2020, 10,000 farmers have been insured with WFP support in Kitu, Kenya. Bundled insurance-input products by PULA are available for 14 food and cash crops along with livestock and the company aims for a customer-base of 8 million farmers by 2025.

Source: [CGAP](#); [Mercy Corp](#)

Recommendations

- MoFEA and MoA, working with relevant agencies, to identify and prioritize policy options to foster financial inclusion of small farmers (such as credit guarantees, access to tailored savings accounts, index-based insurance and bundling of inputs etc) as part of the National Disaster Risk Financing Strategy.

E. Disaster Risk Management, Disaster Risk Financing, and Social Protection

41. The Gambia is exposed to multiple hazards, including riverine, pluvial, and coastal floods, droughts, wildfire, storm and epidemic, many of which are expected to worsen with climate change. The annual average losses related to riverine floods is estimated at USD 3.2 million. On average, 350,000 people (19 percent of population) are affected by severe droughts annually. The number of drought-affected population is expected to increase over 50 percent by 2050 under the high emissions scenario (RCP8.5).⁴⁸ As 2022 floods amply illustrated, the successful management of disaster risk is closely linked to sound development planning (Annex II).

⁴⁸ [GMB: Gambia Risk Profile - Floods & Droughts \(2019\) — GeoNode \(riskprofilesundrr.org\)](#)

Key Policy Gaps and Opportunities

IMF's disaster resilience framework emphasizes the need to strengthen structural, financial, and post-disaster and social resilience.

Structural Resilience Pillar (Disaster Risk Management (DRM))

42. The Gambia has well-established legal, policy and institutional frameworks for DRM⁴⁹ yet implementation remains a challenge. The mission identified key gaps including the training of emergency managers, first responders and communities on the effective use of contingency plans, the need for building of multi-purpose shelters, lack of effective capacity building opportunities, and the need for further use of technologies such as geospatial information (e.g. satellite) and improved coordination on early warning system⁵⁰ (Annex III).

Financial Resilience Pillar (Disaster Risk Financing (DRF))

43. The Gambia has taken significant steps to strengthen financial resilience against disasters. For disasters of alternative magnitudes, the MoFEA currently draws on multiple instruments to finance response, recovery and reconstruction (Figure 14). As a risk retention instrument for recurring disasters, the national budget includes fiscal buffer (a line item for unforeseen event). As per the Public Finance Management (PFM) Act, line ministries may request (a) line ministry budget reallocation or (b) budget augmentation. While both options will require MoFEA approval, The Gambia currently has no regulatory ceiling on virement. The Gambia has access to USD 20 million under the WB Development Policy Loan with the Catastrophe Drawdown Option (CATDDO) between 2024-2027⁵¹. In addition, the country has a drought coverage of USD 3.76 million under the African Risk Capacity (with 50 percent financing from AfDB). The payout was channeled via a cash transfer program to farmers.⁵² The Gambia is currently conducting DRF Diagnostics as part of AfDB's African Disaster Risk Financing Programme (ADRFi). Upon completion of the DRF Diagnostics in June 2024, it will begin developing a DRF strategy.⁵³ Going forward, ensuring the continued access to disaster financing beyond the current donor-supported arrangement will likely be a key challenge. The planned development of disaster risk financing strategy should explore options to ensure the sustainability of DRF financing along with options to improve DRF operation such as scale up of DRF instruments which have worked well in the context of Gambia, evaluating/adjusting the size of fiscal buffers, reviewing the eligibility criteria and disbursement mechanisms for the contingent line

⁴⁹ In response to drought in 2023, USD 187,641 each has been disbursed the government, and its ARC replica partner WfP.

⁵⁰ NDMA should continue to operationalize the Disaster Call Centre (including all the Road Side Display Boards) that was established through financial and technical support from the GoTG/GEF-LDCF/UNEP Early Warning Project under the Department of Water Resources.

⁵¹ Development Projects : Gambia First Boosting Resilience and Unlocking Productive Potential DPF with Cat DDO - P177748 (worldbank.org)

⁵² The ARC Group announces an insurance payout to the Republic of The Gambia towards recovery from drought | African Risk Capacity Group

⁵³ Multinational - Africa Disaster Risk Financing (ADRFi) Programme in The Gambia (afdb.org)

in the budget, along with potential to include retirement limits and exploring options to raise additional concessional loans.⁵⁴

44. Opportunities exist to strengthen the implementation efficiency of disaster risk financing.

In case of a large disaster, the current operational procedure for augmentation budget request relies on ex-post rapid situational assessment. An approval of augmentation request may take up to several days, delaying the onset of immediate post-disaster relief efforts. Likewise, while ARC insurance payout may be triggered by satellite imagery-based assessment, known as the AfricaRisk View, delivery of cash transfer requires further ex-post arrangements. For the 2023 drought, ground-truthing, community-based targeting for identification of beneficiaries and other administrative procedures took approximately 120 days. For the use of virement and contingency budget, the MoFEA should develop an official guideline and standard operating procedure for advanced financing request along with budget execution and reporting, clarifying a pre-defined list of essential humanitarian/emergency preparedness and response goods and services. The availability of forecast-based request, combined with a prudent approval using real-time monitoring of hazard condition or pre-defined approval trigger, could overcome the existing operational bottleneck. For the full-fledged use of forecasted-based financing, The Gambia should weight the pro and cons based on international experience. To facilitating the speed of cash-transfer program, The Gambia currently has a technical working group to define the Minimum Expenditure Basket (MEB). Integration of the national social registry with the National Disaster Management Agency (NDMA) cash transfer program is also being planned.

Figure 14. Disaster Risk Financing Instruments in The Gambia

	Pre-arranged instruments	Post-arranged instruments
Risk transfer	<div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 2px;">ARC insurance*</div> <div style="border: 1px solid black; padding: 2px;">ARC Replica*</div> </div> <div style="border: 1px solid black; padding: 2px; margin-top: 2px;">Insurance against other hazards</div> <div style="border: 1px solid black; padding: 2px; margin-top: 2px;">Meso/Micro level insurance</div>	<div style="border: 1px solid black; padding: 2px; margin-top: 20px; background-color: #4a5558; color: white; text-align: center;">Humanitarian aid</div>
Risk retention	<div style="border: 1px solid black; padding: 2px; margin-top: 2px;">Anticipatory humanitarian finance</div> <div style="border: 1px solid black; padding: 2px; margin-top: 2px; background-color: #e85c34; color: white; text-align: center;">CAT draw-down option</div> <div style="border: 1px solid black; padding: 2px; margin-top: 2px;">Contingency fund</div>	<div style="border: 1px solid black; padding: 2px; margin-top: 2px; background-color: #e85c34; color: white; text-align: center;">Recovery loan</div> <div style="border: 1px solid black; padding: 2px; margin-top: 2px; background-color: #e85c34; color: white; text-align: center;">Budget reallocation</div>

SOVEREIGN

NON-SOVEREIGN

*limited to drought coverage

Opportunity upscaling
Government's protection

Opportunity upscaling non-sovereign protection

Source: Center for Disaster Prevention (2024)

Post-Disaster and Social Resilience Pillar (Social Protection)

45. The Gambia has embarked on an effort to build national social protection schemes. The National Social Protection Policy (NSPP) 2015-2025 is aimed at establishing by 2035 “an inclusive,

⁵⁴ The government should review their experience of the CATDDO as well as ARC payout, including the attachment and exhaust points of the latter. For ARC, the government should be mindful of the basis risk of the product.

integrated and comprehensive social protection system.” To begin coordinating the otherwise fragmented social protection sector, The Gambia has established the National Social Protection Secretariat (NSPS) in 2019. The Gambia Social Registry (GamSR) is being developed under the WB assistance. Data has been registered for 200,533 households across 40 districts except Banjul and full completion is expected by end 2024. At the moment, social registry includes vulnerability information based on multidimensional asset information and the dataset can be enhanced by inclusion of climate hazard exposure information. In parallel, The Gambia is also building the comprehensive legal framework necessary for the effective management of the social protection sector. Social Protection Bill currently under deliberation plans to include the aspect of adaptive social protection. To ensure sustainable financing of social protection schemes, The Gambia is currently conducting a social protection expenditure review. The NSSP 2015-2025 further calls for the development of a revenue mobilization strategy aimed at allocating 10 percent of GDP to social protection by the end of the policy period.

46. As the national social protection system develops, an important next step is inclusion of shock-responsiveness (Box 4). The NSPS, together with NDMA, are well aware of the need to integrate the social protection scheme with DRM and financial preparedness. A technical working group is established to draft a guideline on cash transfer, which is expected to be completed in Q2/2024. NSPS and NDMA share a common view that social registry combined with existing damage assessment/community targeting methodology used in by NDMA will provide an effective mean to identify beneficiaries in case of disasters. While the penetration of mobile phone is relatively high (88.8 percent in 2020), The Gambia has not fully transitioned to mobile cash transfer and WB is currently supporting the evaluation systematic barriers and enablers for mobile cash-transfer as part of financial inclusion assessment. As has been elaborated in the agricultural sector assessment in the previous sub-section, effective building of safety net which foster resilience and productivity of small farmers will be an important component of The Gambia’s post-disaster social resilience pillar going forward. Given adaptive social protection cuts across mandates of multiple agencies, The Gambia will benefit from the development of national adaptive social protection policy clarifying the roles and responsibilities to move towards adaptive social protection.

Recommendations

- MoFEA, working with relevant line ministries, to develop and adopt the National Disaster Risk Financing Strategy, covering key aspects such as 1) sustainability of DRF financing, 2) linking of DRM/DRF/social protection actions, and 3) risk management of small farmers.
- MoFEA, working with relevant line ministries, to strengthen disaster related budget request, execution and reporting through the development of guidelines and in-depth disaster budget analysis.

Box 4. Development of Adaptive Social Protection (ASP)

Developing adaptive social protection requires a systematic approach to build (a) institutional frameworks, (b) sustainable financing, (c) programs and delivery systems and (d) data and information. The Gambia has embarked on foundational activities necessary for ASP and it should continue consolidating these efforts along the international good practice namely:

- (a) **Appropriate institutional framework** typically includes clarity of legal mandate for ASP, ASP policy/strategy (either standalone or as part of broader social protection policy), disaster contingency plans clarifying the role of ASP, single agency or multiple agencies with clear roles and responsibilities formally tasked with leading ASP and an effective coordination mechanism between DRM and SP agencies.
- (b) **Sustainable financing** includes the availability of the National Disaster Risk Financing Strategy, legal and financial instruments with commitment to ASP, quantification of ASP resources needs per historical data or projections including climate change, standard operating procedures and timeline for timely release of financial resources for ASP.
- (c) **Effective program and delivery system** include coordinated government-run non-contributory cash/in-kind transfer programs, sufficient benefit provided to compensate for consumption impact as defined by formal guidelines/standards, existence of a communication strategy using multiple sources (e.g., a mix of cell phone, tv/radio, newspaper and other print media, and local community leaders) to inform beneficiaries, automatic enrollment or use of multiple enrollment mechanisms, digital payment mechanisms with capacity to scale as per realized needs.
- (d) **Data and information** include a functional multi-hazard early warning system, hazard risk and vulnerability assessments, pre-defined/automatic early warning triggers that lead to relevant agencies initiating the shock response, which includes guidelines on amount and coverage for shocks, social registry with appropriate coverage, existence of a protocol for regular and/or automatic registry updates, sufficient data is collected for targeting against all relevant shocks, access to registry by government and development partners, data privacy regulations and their effective implementation.

Source: [WB](#) (2021) Stress Testing Social Protection

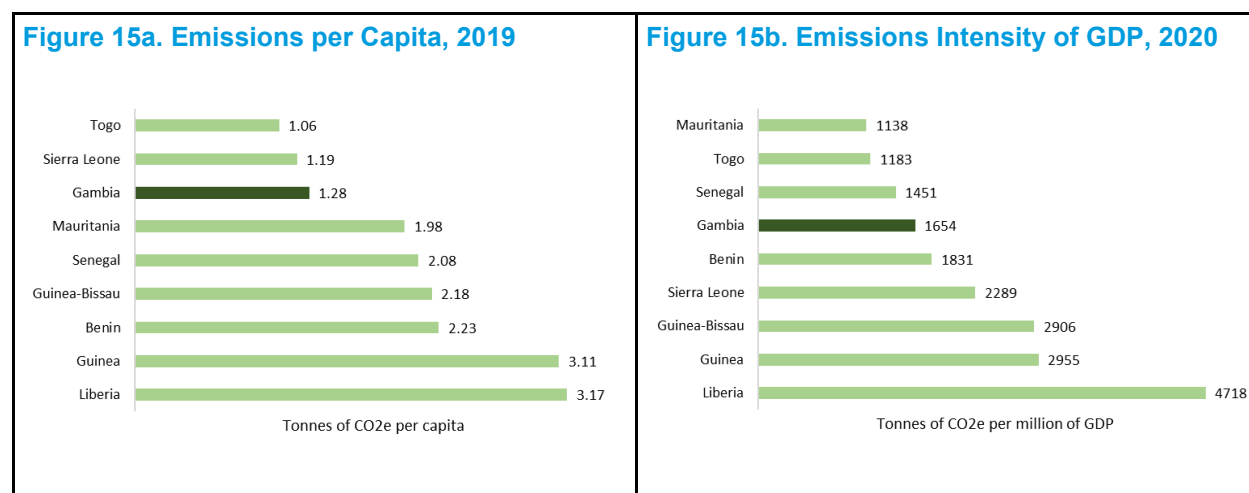
III. Climate Mitigation Policy

47. **Even though The Gambia is a small emitter globally, there are climate mitigation opportunities well aligned with its development strategy.** This section makes a diagnosis of sectors that contribute the most to GHG emissions in The Gambia, mainly on non-energy sectors (agriculture, forestry and waste), followed by energy emissions in the power sector. In addition, it presents an overview of current policies, the interaction between them, and their consistency with emission reduction goals and the broader development agenda. Finally, it identifies public policy gaps and proposes reforms, highlighting the benefits of tax revenues, economic growth, and co-benefits that would result from reform implementation.

A. GHG Emissions and Emissions Reduction Targets in The Gambia

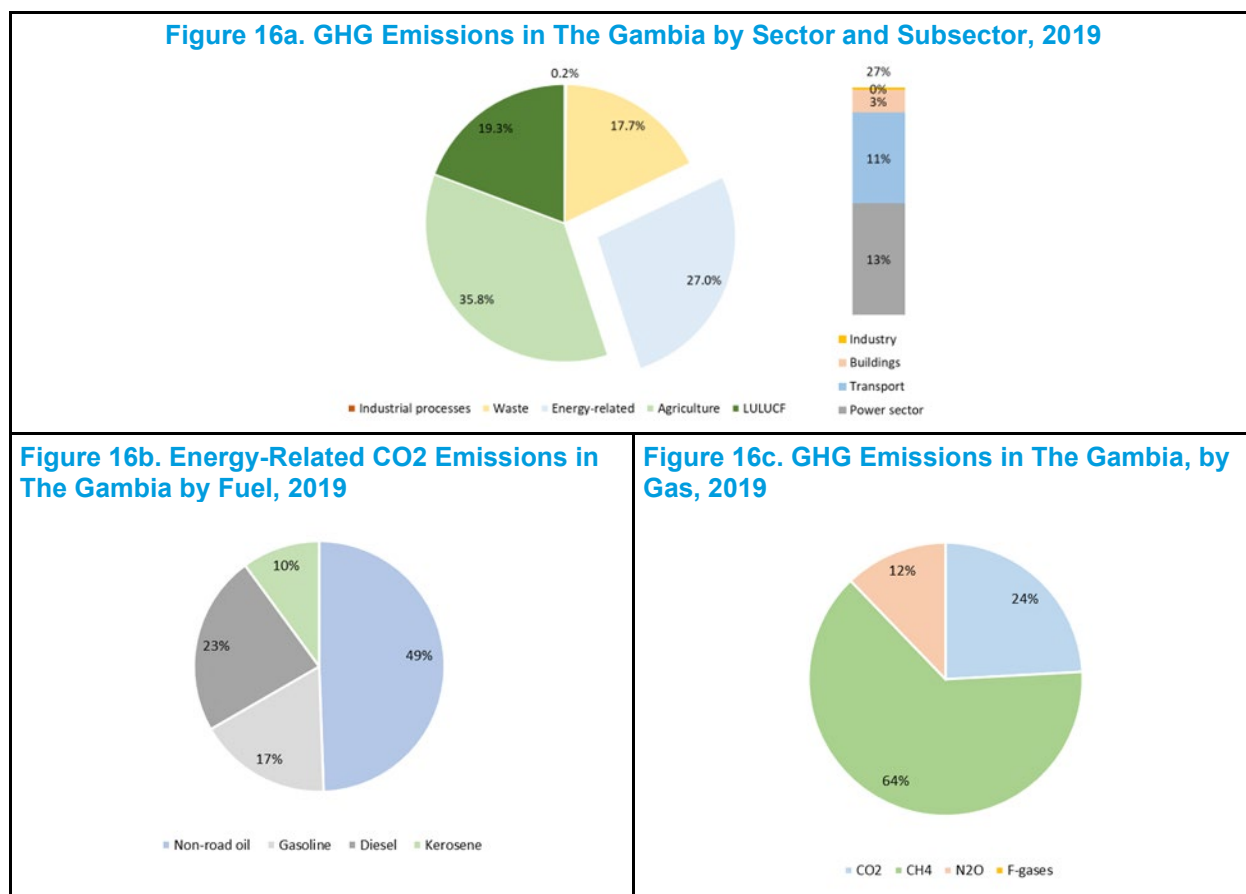
48. **Energy consumption in The Gambia is dominated by biomass and fossil fuels.** Estimates from the International Energy Agency (IEA) suggest that 53 percent of total energy consumption comes from biomass, mainly consumed by households. The rest of consumption relies on fossil fuels, entirely imported, of which diesel accounts for 22 percent of energy consumption, roughly divided equally between those used for power generation and transport. Heavy fuel oil used for power generation accounts for 10 percent and gasoline for transportation 8 percent of energy consumption. Kerosene, mainly used by households for lighting, accounts for the remaining 5 percent of energy consumption.

49. **The Gambia’s emissions per capita and emission intensity of GDP are slightly below the regional average.** IMF estimates suggest that The Gambia emitted 2.74 million tons of carbon dioxide equivalent (MtCO₂e) in 2019 and 2.76 MtCo₂e in 2020, accounting for less than 0.01 percent of global emissions. Similarly, with 1.28 tons of CO₂e emissions per capita, The Gambia is below the regional average (Figure 15a) and well below the global average of 6.5 tCO₂e per capita. Regarding emission intensity of GDP, The Gambia is slightly below the regional average with 1,654 tons of CO₂e per million of GDP (Figure 15b), although above the global average of 560 tons of CO₂e per million of GDP.



Source: IMF Staff based on Climatewatch.

50. Most emissions in The Gambia come from non-energy sectors, such as agriculture, land use, land use change and forestry (LULUCF) and waste. Of the 2.74 MtCO₂e emitted in The Gambia in 2019, 35.8 percent came from agriculture, 19.3 percent from LULUCF, 17.7 percent from waste (Figure 16a). The energy sector contributes 27 percent of total emissions with the power sector accounting for 13 percent of emissions, followed by 11 percent from transport and 3 percent from buildings. The composition of emissions by fuel and gas are presented in Figure 16b and 16c, respectively.



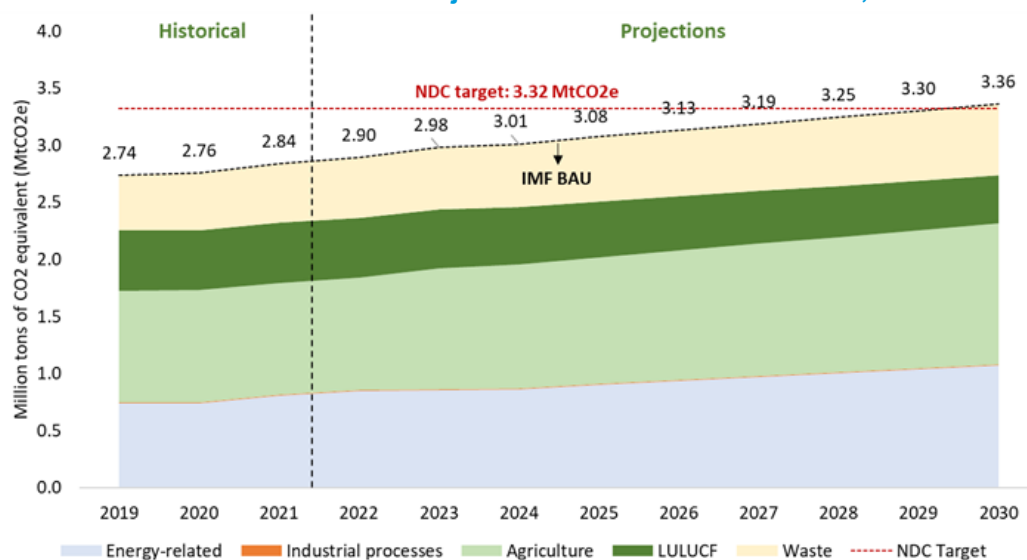
Source: IMF Staff using CPAT.

51. In 2021, The Gambia submitted its revised NDC (NDC2) to the United Nations Framework Convention on Climate Change (UNFCCC) increasing the ambition of their climate mitigation target and incorporating adaptation as a key pillar. All NDC2 objectives – including a reduction target of 49.7 percent with respect to business as usual (BAU) - are conditional on financial support from the international community, as well as appropriate technology transfer. Authorities also delineated comprehensive policies to reduce emissions in every sector, including CO₂-related emissions and other gases. Nonetheless, IMF BAU emissions estimates differ from those submitted by authorities. The IMF BAU scenario projects an emission path that will be only slightly above the absolute emission target established in the NDC2.

52. According to IMF estimates, The Gambia needs relatively small effort to achieve the mitigation target established in its NDC2 (Figure 17). As such, the mitigation target is deemed as feasible considering that by 2030, The Gambia’s emissions are projected to be 1.2 percent above the target by 2030. Changing the trend in emissions, however, will require targeted policy implementation in areas

where most progress can be made considering The Gambia's development level, such as in forestry, waste and energy-related emissions.

Figure 17. IMF Estimates of Historical and Projected Emissions in The Gambia, Relative to NDC



Source: IMF Staff using CPAT.

B. Agriculture and Livestock

Current State and Challenges in Agriculture and Livestock Sectors

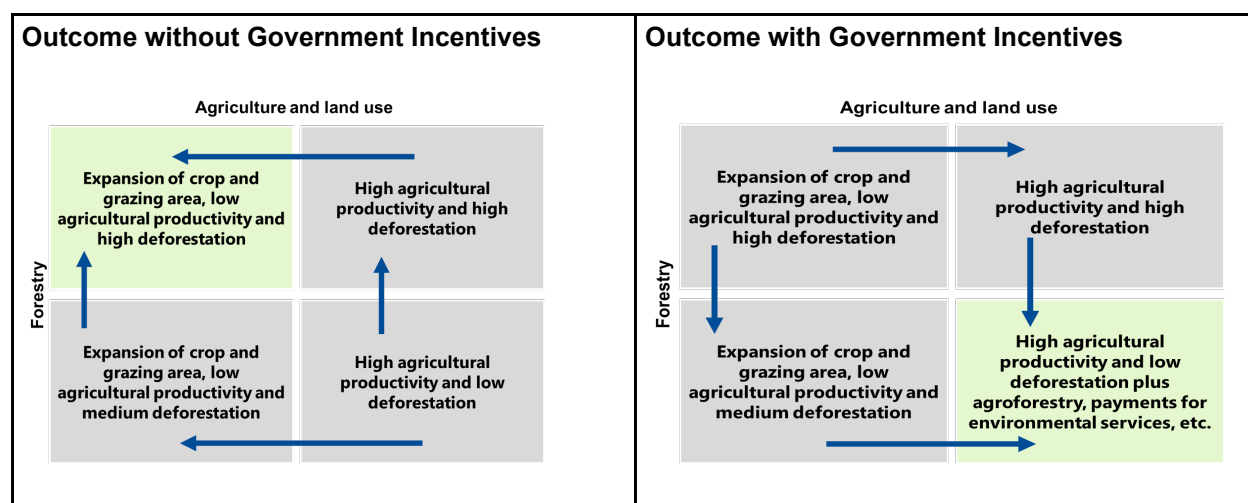
53. Emissions in the agriculture sector in The Gambia are substantial, but mitigation opportunities are limited given the development challenges the country faces. Agriculture emissions in The Gambia constitute 36 percent of total emissions in 2019, mainly stemming from livestock and rice cultivation. Nonetheless, as described in the adaptation section, The Gambia is facing critical challenges in the sector, including food security and loss of land to saline intrusion and coastal erosion, rendering investment in mitigation not a priority. Beyond a few selected non-pricing mitigation options, such as improving livestock feed quality, fiscal instruments to properly tackle methane emissions would require comprehensive data collection and monitoring. Pricing policies in this sector are not feasible at this stage given The Gambia's development level, as they would tax farmers based on their asset ownership, harming farmer's livelihoods and threatening social stability.

54. As discussed in the adaptation chapter, productivity-enhancing investments in agriculture have mitigation co-benefits, as increases in productivity decrease the need to expand crop area to satisfy food needs. Conversely, the presence of forests increases agricultural productivity. On the one hand, declines in agricultural productivity can lead to deforestation. According to [FAO](#), agricultural expansion is responsible for almost 90 percent of global deforestation. To the extent that land productivity decreases, the pressure to convert more land area into arable or grazing areas increases. On the other hand, higher productivity in shade crops and shade grazing, increases the incentive for conservation and coordinated management between the agricultural and land use sectors. For example, cattle grazing under shade (from trees) are less prone to heat stress and are more productive—they generate a higher volume

of milk (Collier et al., 1981, Roman et al., 2017). Agroforestry, a method that promotes the coexistence of crops and trees or their rotation, has a potential for carbon sequestration of at least 14 years after its establishment (Kim, Kirschbaum, & Beedy, 2016). In The Gambia, three of the four main agricultural crops are suitable for agroforestry, including sorghum, peanuts and millet. However, agroforestry is harder to integrate for crops typically grown in flooded conditions, such as rice, although the upland varieties are more suitable for agroforestry practices.

55. The above dichotomy creates a dynamic with two opposing outcomes. The first outcome is characterized by higher agricultural productivity and resilience, with less deforestation pressure (see Figure 18 right panel). At the same time, the increased forest cover, following agroforestry practices, increases land fertility, increasing yields of crops and livestock. The second outcome is one in which the impacts of climate change and the lack of adoption of climate-smart technologies, including agroforestry practices, can decrease agricultural productivity, increasing pressure for deforestation and expanding arable and grazing area to meet increasing food needs (see Figure 18 left panel).

Figure 18. Interaction Between Agricultural and Forestry Sectors for Land Use



Source: IMF Staff

Policy Gaps and Opportunities in the Agriculture and Livestock Sectors

56. Government intervention via corrective incentives can lead the economy towards the low deforestation and high agricultural productivity outcome. The right incentives created by the government for sustainable practices in the agricultural sector can lead to productivity increase, that in turn would reduce the pressure on deforestation. Similarly, government incentives for forest conservation and restoration promote fundamental services for the agricultural sector, such as climate regulation and hydrological services. For this reason, it is necessary for the State to play an active role, not only because of the positive (or negative) externalities that the agricultural sector can exert on the forestry sector, and vice versa, but also as a catalyst for greater coordination between actors from the private sector, communities, various other public and civil society organizations (see also Box 2). In addition, the government has at its disposal policy tools from a fiscal point of view, such as Payments for Environmental Services (PES), which can align incentives, in addition to promoting support programs for farmers, conditioned on sustainable practices in terms of land use and forest resource management.

57. The Gambia developed guidelines for the implementation of agroecology, but the policy is not being implemented. There is a National Consultation Framework on Agroecology, developed under the coordination of the ECOWAS Agroecology Program, aiming to promote sustainable and socially equitable agricultural practices. The plan highlights the need to shift from conventional subsistence and industrial agriculture, which has led to environmental degradation and social inequities, to diversified agroecological systems that enhance resource efficiency, biodiversity, and resilience against climate change. Key components of the plan include stakeholder identification and consultation, capacity building for farmers and extension agents, and the establishment of governance structures to ensure effective implementation and monitoring. The plan also emphasizes the integration of indigenous knowledge with scientific innovation, the development of climate-smart agricultural practices, and the promotion of agroforestry, organic farming, and other sustainable practices. Financial constraints have been the major obstacle for the plan's implementation.

58. The government is currently subsidizing fertilizers and groundnuts and could introduce environmental conditionality for payout. Conditionality could include engaging in agroforestry, avoiding slash and burn techniques, grazing livestock under the shade and conservation agriculture practices. While this would serve as an incentive to align agricultural practices with environmental challenges, it would also increase administrative costs as authorities would need to verify that the conditionality is being complied with. The authorities should consider and analyze options to reduce administrative costs, including through randomized verification. Considering The Gambia is vulnerable to extreme weather events, the conditionality would need to be revised in times of drought or floodings. The conditionality, however, could be lifted as appropriate in case of extraordinary circumstances such as during interventions during a drought or flood.

Recommendations

- Continue to actively promote climate-smart agriculture practices to generate synergies between food security, productivity, the environment, and preparedness against natural disasters.
 - Add conditionality to social programs in the agriculture sector based on good environmental practices, agroforestry and conservation agriculture.
 - Conduct capacity development activities to increase awareness creation about the positive impact of using smart agricultural practices, including agroforestry.

C. Forestry

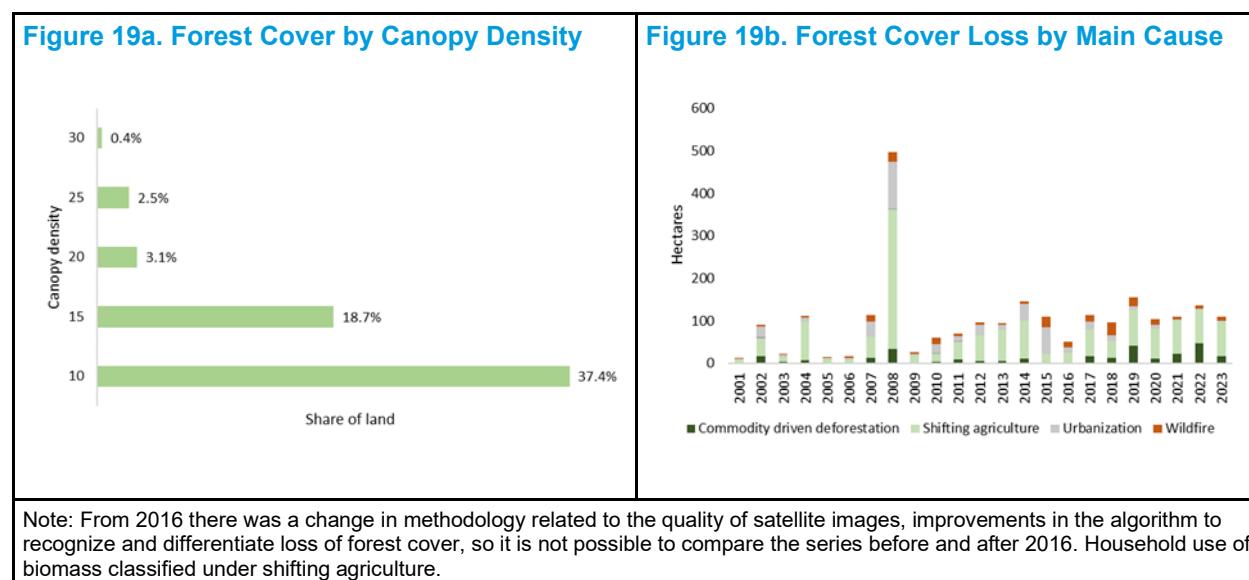
Current State and Challenges in Forestry

59. Biomass represents the main source of energy consumption in The Gambia, while LULUCF emissions are the second most important emission source. Biomass represents 78 percent of household energy consumption, followed by kerosene (21 percent), mainly used for lighting. Only a very limited number of households, mostly high-income and in urban areas, have access to LPG. Biomass is mostly used for cooking, exacerbating the negative health impact of exposure to PM2.5, PM10, carbon monoxide and nitrogen oxides increasing the risk of respiratory and cardiovascular diseases and creating negative externalities for others in the community and country.

60. More than a third of The Gambia’s territory is covered by woodlands and forests, but deforestation rates have been high in recent decades. The Gambia has a rich variety of woodland ecosystems, including forests, closed and open woodland, tree and shrub savannah, mangrove and riparian and fringing savannah, covering about 40 percent of its territory (Figure 19a). However, according to FAO, forest cover in the 1960s was around 60 percent of total land area. This means that in 60 years, The Gambia has lost one third of its total forest cover. Additionally, the share of highly dense forests, shown by canopy densities higher than 20 in Figure 19a is low, increasing the relevance of their protection given their carbon sequestration potential.

61. Main reasons for deforestation include agriculture expansion, use of biomass as cooking fuel, urbanization, wildfires, and saline intrusion (Figure 19b). Looking ahead, forced migration from the GBA could play an even larger role than any other cause considering coastal erosion and sea-level rise. Finally, authorities pointed out saline intrusion as having a direct impact, as increased salinity is by itself generating deforestation, and an indirect effect, as increased salinity is decreasing the suitable land for growing crops, displacing farmers who then search other lands to farm, increasing forest cover loss.

62. The absence of a land policy at the national level heavily impacts deforestation. There are no well-defined rules on the permitting to clear forests for agricultural use and the MLRGRA lacks the enforcement capacity to ensure that land is being used according to its approved use. The lack of monitoring and enforcement is, therefore, an important constraint for forest conservation in The Gambia.



Source: IMF Staff based on Global Forest Watch and World Resources Institute.

Opportunities and Policy Gaps in the Forestry Sector

63. The Gambian Forestry Act, approved in the 1990s, recognizes different types of forests: forest parks, community forests, private forests and state parks. According to the MECCNAR, The Gambia has 38 thousand hectares of forest parks, 43 thousand hectares of community forests, around 20 thousand hectares of private forests, while the rest 300 thousand hectares are state parks that are not protected nor properly managed and where most deforestation takes place. The community forest concept was developed to provide ownership rights of forest resources to local communities (Box 5). The

MECCNAR introduced the Market Analysis and Development methodology in 2000 with FAO, with the objective of assessing the revenue potential of different activities, focused on the sustainability of forest resources and income opportunities for local communities, increasing their incentives for community-owned forest conservation. The MECCNAR has a target of reaching 200 thousand hectares of forest given to communities.

Box 5. Challenges and Opportunities for Community Forest Management (CFM)

[A recent study](#) examines 314 forest commons across 15 tropical countries in Africa, Latin America and Asia and suggests that forests can play different roles: they can provide carbon sequestration, conservation benefits, economic opportunities for communities; they can provide benefits in all three when they are sustainably managed or none when they are allowed to degrade. The study found that the presence of a formal community forest management association and local participation in rulemaking are consistent predictors of multiple positive outcomes. Forests with formal community management are more likely to be sustainable, carbon, or subsistence forests rather than degraded. In terms of policy implications, empowered local governance through formal recognition and local rulemaking is crucial for achieving multiple forest management objectives.

Success Factors:

Forest Size and Boundaries: Successful CFM involves forests that are medium to large in size with clearly defined and easily monitored boundaries.

Predictable Benefit Flows: The benefits derived from the forest must be predictable to ensure community support and ongoing participation.

Local Autonomy: Communities need local autonomy to design and enforce clear rules for forest access and use. Effective monitoring and sanctioning of rule violations are essential for maintaining forest integrity.

Stable Environment: A stable technological and policy environment, low levels of intergroup conflict, and forest-dependent user groups with management experience are vital for successful CFM.

Challenges:

Institutional and governance challenges: ensuring these governance structures are in place and effective can be challenging, especially in areas with weak institutional frameworks.

Community capacity building: Local participation in rulemaking is essential, but this requires substantial capacity-building efforts to ensure that communities can effectively engage and make informed decisions.

Balancing multiple objectives: Achieving synergies between carbon storage, biodiversity conservation, and livelihood improvements often involves navigating trade-offs. For example, activities that enhance carbon storage might not always align with immediate livelihood needs.

Technical and financial resources: Implementing and sustaining community-based forest management requires significant technical and financial resources. Limited access to these resources can hinder the effectiveness of forest management practices.

Monitoring and evaluation: Regular monitoring and evaluation of forest outcomes are necessary to adapt management practices and ensure long-term benefits. This can be resource-intensive and requires local capacity and infrastructure.

Source: IMF Staff based on ICRAF and linked papers.

64. The Gambia has one successful experience of the establishment of a PPP with strong community participation in a community forest. The initiative, known as Community-PPP, creates synergies between private investment, public support and community participation. Through it, the private sector created an eco-touristic zone and wildlife sanctuary along the river Gambia. The project involves a

profit-sharing formula, in which excess profits are shared based on agreed criteria: 50 percent are allocated to the local community, enhancing local development and increasing incentives for conservation; 35 percent go to the Biodiversity Fund, whose main objectives is to support parks and wildlife conservation; and 15 percent are allocated to the Forest Fund.

65. Community forests, coupled with Community PPPs, can be the foundation of an ambitious conservation policy, integrated into a broader Payments for Environmental Services (PES) scheme.

Community forests have well-defined property rights and are usually better protected than other forest areas, mainly because the community is also involved in its protection and benefits from the income opportunities of non-timber revenue generation, such as fruit, nuts and mushroom harvesting, beverages, and eco-tourism. When properly designed and managed, community involvement in forestry management can lead to positive outcomes and create synergies between economic opportunities and conservation.

66. The PES scheme can be used to incentivize forest conservation and restoration programs.

International experience has shown the effectiveness of PES schemes in other African countries (Annex IV). Under the scheme, landowners submit bids for restoration and conservation projects, with payments tied to environmental services such as carbon sequestration, ecosystem value, and water protection. [A recent study](#) of 40 REDD+ projects in nine countries showed that PES schemes can reduce deforestation by 47 percent in the first five years, although the effect becomes somewhat smaller for projects operating for 8 to 10 years. [A study](#) in Uganda using randomized controlled trials showed similar results: the deforestation rates in treatment villages decreased to 2-5 percent, compared to 7-10 percent in the non-participating villages. Slowing down deforestation by 40 percent for five years in The Gambia would amount to approximately 0.25 MtCO₂e of avoided emissions. As a reference, estimates show that this would be enough to meet the NDC objective under IMF's estimates of BAU emissions.

67. The PES in The Gambia should include community forests with high revenue potential and provide payments to forests under high risk of deforestation based on vulnerability assessments.

The revenue potential of community forests will need to be assessed depending on the type of forest, its proximity to export markets, and potential private sector investment. Simultaneously, the Forestry Directorate within the MECCNAR needs to assess the vulnerability of community forests based on proximity to urban centers and other criteria, building on international good practices to assess vulnerability in the sector, some of which have been used for The Gambia in [academic papers](#).

68. The PES can then be scaled to cover additional community forests as they are gazetted to achieve the 200 thousand hectares target, as well as lower-revenue potential forests.

To do so, the government might consider bringing in additional stable funding sources and leveraging on donor funds. Initially, higher-revenue forests can finance the payments made to communities in lower-revenue forests, using the profits contributed to the Biodiversity and Forestry Funds generated by activities in high revenue community forests. As the scheme expands into forests with lower revenue potential (i.e., forests farther away from Banjul), the government will need to mobilize additional sources of funding from domestic taxes and catalyze additional donor funding based on its ambitious conservation objectives. A potential revenue source is the carbon pricing proposed later in this section.

69. The MECCNAR, in partnership with other agencies in the government, would need to define the appropriate payment level, balancing effectiveness and coverage.

Payments in PES schemes are calculated based on the ecosystem value or the opportunity cost. In this case, payments could equal the

amount of revenues the community would obtain if they cleared the forest and used it for agricultural production. Authorities could compare the revenues from such activities in neighboring farmlands, close to the community forest. The government will face a trade-off between effectiveness and coverage given limited fiscal space to fund the payment scheme. The higher the payment the stronger the incentive for conservation, but the less community forests can be incorporated in the scheme.

70. Establishing a Monitoring, Reporting and Verification (MRV) system is a condition for the PES's success, along with scaled up technology and satellite data. The MRV system would allow to assess whether environmental services paid for by the PES scheme are actually in place. The government can employ a variety of complementary activities including using satellite data to monitor changes in land use, using new technologies such as drones to monitor forests and issue deforestation warnings, and hire additional rangers to patrol and monitor compliance. The MRV system would also allow for proper emission accounting in energy sectors, agriculture and waste. Finally, this policy would also benefit from close coordination with other government departments, such as the Ministry of Tourism for ecotourism promotion, and donor-funded projects, especially those aimed at integrating local markets with export markets through the Gambia river.

71. The government would need to be mindful of potential risks, such as over-exploitation from communities and deforestation leakages to other types of forests. Inclusive decision making and transparency on revenue-sharing and use are critical to avoid over-exploitation of community forest resources, as they increase the ownership and agency of communities. Additionally, authorities pointed out that while deforestation in community forests generally decreases once the forest has been gazetted, deforestation in other types of forests increase as a result. While gazettement and making progress in achieving the 200 thousand hectares target is relevant, the Directorate of Forestry would need to scale up monitoring in other types of forests as the amount of community forests increase. Addressing the main drivers of deforestation is critical to ensure the success of the PES scheme, including raising agricultural productivity, water availability, land tenure challenges and providing access to clean cooking devices to 98 percent of The Gambian population.

72. Less than 5 percent of The Gambian population has access to clean cooking, which constitutes a health hazard and a threat to forests if not managed sustainably. The International Energy Agency has identified several barriers, including higher costs vis-à-vis biomass, which is unsustainably sourced for free, and the lack of infrastructure and distribution networks of more efficient fuels such as LPG (IEA). In addition, LPG lacks a regulatory framework in The Gambia, constituting a relevant constraint for any private investment in this sector. Other challenges relate to the awareness of risks and benefits, attitude toward technology, location (urban vs rural) and social and cultural influences.

Recommendations

- Building on community forests and Community PPPs, create the appropriate regulatory and legal framework to establish and operationalize a Payment for Environmental Services (PES) scheme, while identifying stable revenue sources to finance it, including through carbon taxation.:
 - Reach 200 thousand hectares of forests whose ownership rights have been transferred to communities and gazette them to ensure their legal protection.

- Build a vulnerability index for community forests based on risk of deforestation, including criteria like proximity to urban settlements, population growth, projected increase in arable land to meet food needs, water access, among others.
- Assess the revenue generation potential in community forests based on the type of forest, proximity from Banjul or export markets, potential for private sector participation, potential to develop ecotourism, among others.
- Ramp up capacity to use technology, hire additional park rangers for community forests and other types of forests (to decrease leakage risks), and improve capacity to collect and process data.
- Operationalize a MRV system, which would allow for proper emission accounting and provide data to evaluate the impacts of environmental and climate policies, including the PES.
- Create a regulatory framework for LPG to increase legal certainty for potential suppliers.

D. Waste Management

Current State and Challenges of Waste Management

73. The waste sector is a top contributor of GHG emissions in The Gambia, and emissions are expected to grow over the next decade. GHG emissions from the waste sector, including solid waste and wastewater, represent 17.7 percent of total emissions in 2019 and are expected to grow⁵⁵ by 28 percent from 2019 to 2030 (IMF-WB CPAT 2024). The SPCR (2017) identifies integrated waste management as a top priority for enhancing the climate resilience of urban areas in The Gambia, namely the GBA and population growth centers. The management of solid waste and wastewater is a long-standing development challenge in The Gambia, due to lack of or poorly functioning water, sanitation, and waste service chains. For solid waste, the service chain would include collection, transportation, storage, processing/recycling, and safe disposal. For wastewater, inadequate and poorly functioning linkages between water, sanitation and solid waste services hinder wastewater collection, treatment, disposal, and reuse.

74. Currently, The Gambia does not have a proper waste management system despite a rapidly growing urban population that produces as much as 400,000 tons of waste annually (SPCR 2017). Plastic waste, in particular, is estimated to be 22,800 tons in 2021 with more than 70 percent leaked into the environment ([Common Seas 2024](#)). Solid waste is not systematically collected or transported, and waste often ends up in drainage channels and illegal dumpsites, some of which are located on waterways. The GBA has only two legal dumpsites – the Bakoteh and Mile 2 dump sites – and both are reaching their capacity. Blocked drainage exacerbates flooding hazards during the rainy season. During the dry season, municipal solid waste (MSW), estimated at 702 tons per day with 9 percent plastics ([UNDP 2023](#)), is often openly burned and produces substantial amount of CO₂ and particulate matter ([Wiedinmyer, Yokelson and Gullett 2014](#)). Uncontrolled dumping⁵⁶ also releases methane, a GHG with a much higher global warming potential.

⁵⁵ The Gambia NDC2 (2021) has a higher estimate for waste sector GHG emissions, growing from 506 GgCO₂e in 2020 to 1,184 GgCO₂e in 2030 – a 134 percent increase.

⁵⁶ In many countries, methane emissions from the waste sector mainly comes from food waste commingled with inorganic waste in dumps. Solutions to this problem include organic waste separation (composting) and/or methane capture at the landfill site for flaring or energy production. An integrated waste management system could provide better quantification of the emissions from organic waste in The Gambia.

75. For wastewater treatment, the sewage system is sparse and inadequate. The GBA has two sewerage systems with one serving Banjul and operated by NAWEC and another located in Kotu serving the TDA and operated by Agua Gambia Ltd. Only the Kotu system includes the treatment of sewage before dumping the wastewater at sea, but defective pipes and the lack of overflow management result in the discharge of raw sewage into the Kotu Stream. The Banjul system disposes raw sewage directly through a diffuser to the ocean at around 1km offshore, and the system suffers from blockage, infiltration, and overflow. The remainder of the country lacks sewage treatment and relies on septic tanks and pit latrines. In addition to wastewater from domestic sources, industrial wastewater from power plants could leak or spill into the environment. The discharge of untreated wastewater contaminates surface and groundwater sources and marine ecosystems, threatening drinking water quality and the tourism and fishery industries. Inadequate sewage systems also compound the fiscal cost of natural disasters, such as the historic flashflood of 2022 (Annex II), and create a public health hazard.

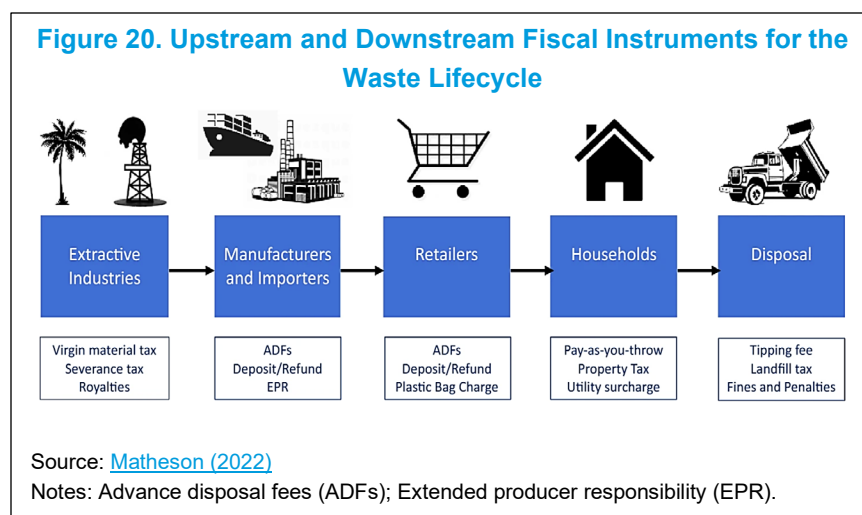
76. The current waste management system poses imminent threat to public health and the environment, and these risks are expected to worsen with climate change. The GoTG has enacted various legislations to improve waste management, but the implementation and enforcement responsibilities are fragmented. The framework for waste management has been established in the National Environmental Management Act (NEMA 1994) and the NEA is responsible for its enforcement. Municipalities and Local Government Areas (LGAs) are responsible for the implementation of the NEMA, including the collection of rates and taxes, provision of water and solid waste disposal facilities, management of waste collection system, and prosecution of offenders. A series of legislations followed, including the Waste Management Bill (2007), which was designed to complement the NEMA by filling in enforcement gaps; the Anti-Littering Regulation (2008), which made indiscriminate littering a public offense and introduced a monthly national cleanup exercise; the Ban on Plastic Bags Order (2015); and a new draft Waste Management Bill, which is currently being considered by the Cabinet. Most recently, the NEA has partnered with Common Seas to tackle plastics pollution with the goal of reducing plastic waste by 86 percent by 2033 ([Common Seas 2024](#)). Despite these legislative efforts, however, incentives and enforcement mechanisms across the waste management lifecycle are missing.

Key Gaps and Opportunities in Waste Management

77. In view of the infrastructure and institutional capacity constraints, fiscal instruments are key to address the mounting negative externalities from the waste sector in the short to medium term. Upstream and downstream fiscal instruments could internalize the negative externalities in the waste sector, while helping to finance waste management (Figure 20). Since The Gambia is a net importer of plastics, tires, and consumer durables ([UN Comtrade 2024](#)), fiscal instruments at the import, retail, household, or disposal stages are the most relevant. For consumer durables and other highly polluting products, such as batteries, tires, plastic packaging, and vehicles, an excise tax could be imposed at the import stage. For instance, advance disposal fees (ADFs) and advance recycling fees

(ARFs) could be imposed to prepay the cost of disposal or recycling (Matheson 2022). ADFs levied on importers are easier to administer than that at the consumption/retail stage, especially for The Gambia where enforcement and compliance could be challenging. On the downside, ADFs could reduce consumer salience and not sufficiently incentivize recycling. The fee could also be passed directly to consumers. Past ADFs are often poorly designed, such that fees are set at very low

levels and numerous exemptions limit coverage. While ADFs and ARFs could help finance the proper disposal of waste, they may not be fully effective for waste reduction.



78. A well-designed and functioning deposit-refund system (DRS) is one of the most effective ways to facilitate waste collection, encourage recycling, and reduce littering. A DRS imposes a surcharge on a product at purchase and offers a rebate when it is returned. It has been implemented in around 40 countries as of 2020 with many more countries and jurisdictions considering its feasibility (Statista 2020). For single-use containers made of recyclable materials, such as plastic, glass and aluminum, a DRS has been shown to substantially increase the return rate (OECD 2020; TOMRA 2021) and reduce plastic waste (RFF 2011). Unlike ADFs that could increase prices for all consumers of a given product, DRS raise prices mainly for consumers that do not recycle. To the extent that wealthier consumers have a higher opportunity cost for returning the empty containers, a DRS on single-use beverage containers could be progressive. The DRS could also provide a source of income for urban scavengers and create incentives for the establishment of microenterprises on recycling. The appropriate deposit fee could follow international best practices to reflect the estimated social cost of disposal, while accounting for the distributional impacts on vulnerable individuals and households. To minimize administrative and compliance costs, the deposit could be collected at the import stage, while consumers receive the refund at designated collection locations. IMF staff calculation⁵⁷ shows that a nominal deposit fee of GMD 0.1-0.5 on plastic bottles could generate USD 1.1-5.4 million in unclaimed revenue annually. In the near term, revenues could be used to strengthen the Anti-Littering Regulation (2008) by creating designated waste collection sites and offering a small incentive for waste collected, measured by volume or weight, during the monthly national cleanup exercise. Unclaimed refund could also help strengthen the 2015 plastics ban with stronger monitoring and enforcement mechanisms. Over the medium to long-term, unclaimed refund could be used to finance an integrated waste management system.

79. Over the long term, waste management should be integrated with overall climate-resilient infrastructure planning to strengthen the interlinkages between water, sanitation, and solid waste

⁵⁷ The calculation assumes that The Gambian bottled water market size is around USD 22 million each year (Statista 2024) and 50 percent of bottles are returned, which is very conservative based on prior experiences with DRS in other countries.

service chains. Reducing emissions, protecting public health, and restoring ecosystem functioning requires a systematic approach to waste management that goes beyond isolated efforts or marginal improvements ([IRC 2023](#)). For The Gambia, the institutional and technical capacity of the LGAs and area councils to execute the various national strategies and deliver public services is a binding constraint. It is therefore critical to ensure that sufficient financial and human resources are allocated for LGA's provision of public services, including but not limited to, the collection of rates and taxes, the provision of water and solid waste disposal facilities, the management of waste collection system, and the prosecution of offenders. In addition, accountability frameworks should be established with measurable benchmarks to evaluate LGA's performance and results should be published at regular intervals. Where feasible, civil engagement and participation should be encouraged, such as through a hotline, to allow for the early identification of waste issues, hazardous conditions, and incidents.

Recommendations

- Analyze options, design and implement environmental taxes, including a deposit-refund system (DRS) on single-use recyclable beverage containers with the following features to facilitate waste collection, encourage recycling, and reduce littering.
 - The deposit could be collected at the import stage, while consumers receive the refund at designated collection locations.
 - Revenues from the DRS could be used to strengthen the Anti-Littering Regulation (2008) by creating designated waste collection sites and offering a small incentive for waste collected, measured by volume or weight, during the monthly national cleanup exercise.
 - Unclaimed refund would be earmarked to finance an integrated waste management system over the medium to long-term.

E. Power Sector

Current State and Challenges in the Power Sector

80. In 2021, 37 percent of the Gambian population lacked access to electricity (Figure 21a). The government set the objective of achieving universal access by 2025. Despite progress in coverage during the previous decades, the government estimates that progress after 2021 has been stagnant. While the government is exploring the use of mini grids to bridge the gap in electricity access, including through private participation for the areas deemed to be profitable, achieving the universal access target by 2025 seems unlikely.

Figure 21a. Electricity Coverage

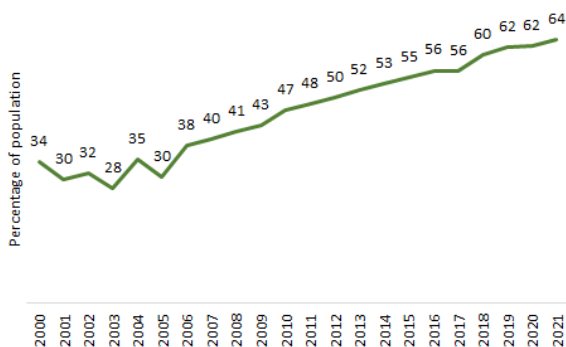
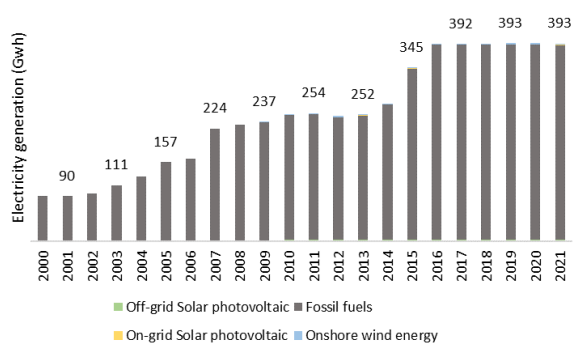


Figure 21b. Electricity Generation

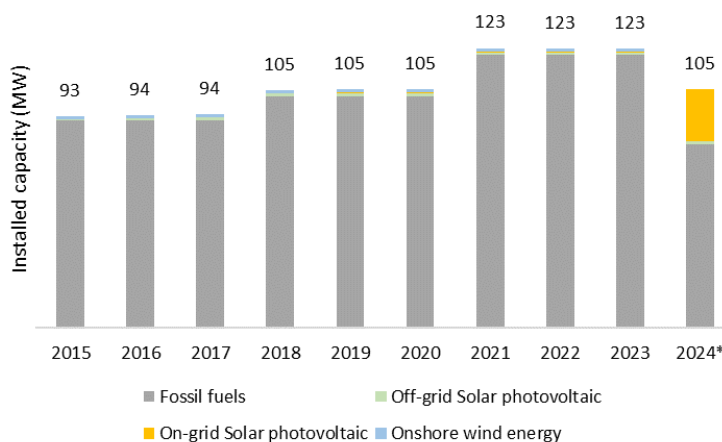


Source: IMF Staff based on WDI and IRENA.

81. The Gambia had a non-diversified electricity generation matrix entirely dependent on fossil fuels until 2024 when a major solar plant started operating. The Gambia has been historically reliant on fossil fuel imports to produce electricity domestically (Figure 21b), except for a windmill that operated for some years but is no longer operational and a 23 MW solar plant inaugurated in March 2024. According to NAWEC, 36 percent of the electricity generation in the first quarter of 2024 comes from renewable sources. However, NAWEC only supplies 15 percent of total electricity consumption, which means that renewables only represent about 5 percent of total electricity consumption in The Gambia.

82. The Gambia's interconnected electricity system does not have the required generation capacity to reliably meet the country's demand. In addition to NAWEC's own production, 33 percent of electricity consumption is supplied through a power purchasing agreement (PPA) with a power ship and half the electricity consumption in The Gambia is imported, mainly from Senegal. NAWEC's generation capacity has suffered from insufficient maintenance provoking the decommissioning of several heavy and light fuel engines in NAWEC's main power plants in Kotu and Brikama, decreasing their installed capacity to 81MW, complemented by the 23MW solar plant in Jambur (Figure 22). It is worth noting that increasing the share of electricity supplied through PPAs worsens NAWEC's financial situation, as the average cost per kwh provided through PPAs is 0.2 USD cents higher than NAWEC's own production cost.

Figure 22. Electricity Installed Capacity



Note: The information in 2024 includes the forced decommissioning of engines in Brikama and Kotu due to insufficient maintenance and removed the onshore wind energy capacity as it is no longer operational.
Source: IMF Staff based on IRENA and NAWEC.

83. NAWEC's financial situation has been worsening due to a combination of high generation costs, increasing technical and commercial losses and a tariff system that does not reflect its real costs. The non-audited net loss of NAWEC in 2023 was 2.7 billion GMD or around 45 million USD using the average exchange rate for 2023. According to NAWEC, its average cost per kwh is 20 USD cents per kwh, compared to the regional average of 10 USD cent per kwh according to ECOWAS estimates. On the transmission and distribution side, technical and commercial losses increased to 27 percent in 2023, signaling a concerning trend in losses, heavily impacting the company's financial performance. There is a widening gap between tariffs and cost recovery, as the gap increased from 18 million USD in 2021 to 32 million USD in 2023. NAWEC's financial situation is set to worsen as the country moves towards universal access to electricity given that current tariff situation.

84. The electricity tariffs have only been revised twice in the last ten years and are insufficient to cover current costs. Electricity tariffs were reviewed in 2014 and 2023, but tariff increases were not enough to catch-up with cost recovery. The methodology to calculate cost recovery tariffs incorporates efficiency parameters for transmission and distribution losses of 18 percent-- any loss beyond 18 percent is not included in the estimate provided above of 32 million USD in 2023. Additionally, the tariff revision methodology does not consider payment of debt and arrears nor a component on the required investment in generation or transmission and distribution in the future. Additionally, PURA is yet to achieve full institutional independence in tariff review and setting.

85. In 2018, NAWEC faced a crisis in which the national government had to assume a large share of its debt as Independent Power producers threatened to stop supplying electricity. MoFEA assumed an important share of NAWEC's debt in an attempt to restore certainty. A tariff compensation mechanism was created but has not been used. As a result, accumulated arrears as of March 2024 added up to 3 bn GMD or 2.28 percent of GDP, of which 46 percent are owed to foreign producers and 33 percent to IPPs.

Opportunities and Gaps in the Power Sector

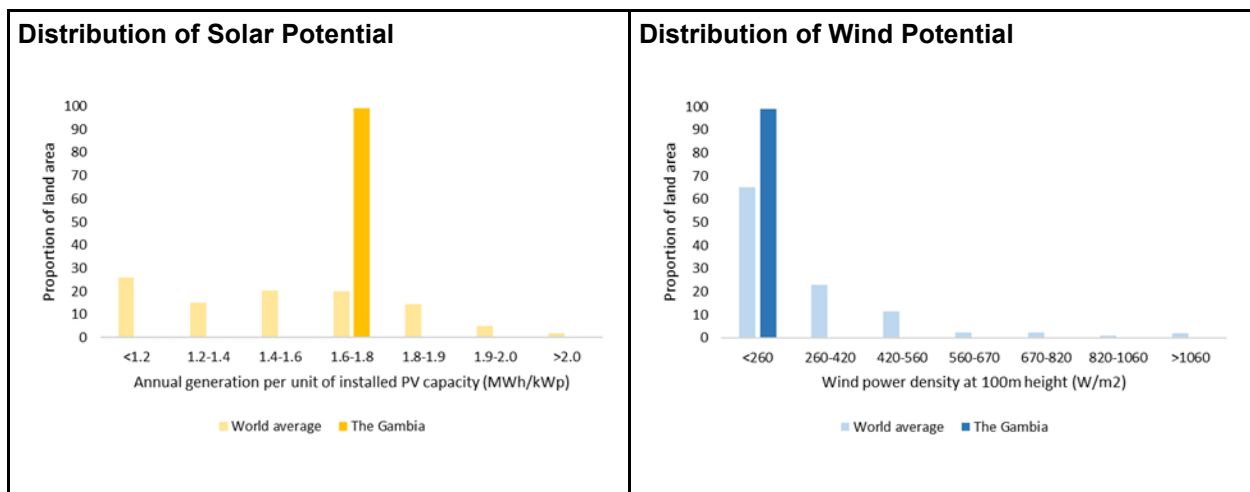
86. Based on its relatively high renewable energy potential, The Gambian government pledged to increase the share of renewables in the energy mix to 50 percent by 2030. According to the International Renewable Energy Agency (IRENA), most of The Gambian territory has good solar potential (Figure 23 left panel). In contrast, wind potential is more limited (Figure 23 right panel), however, certain areas along the coast could have enough potential for wind power. Given The Gambia's low elevation, it has no hydroelectric potential. How ambitious the renewable energy target that the government pledged to is depends on whether the target is based on domestic generation or on electricity consumption. As of today, NAWEC is relatively close to achieving the 50 percent renewable penetration target in its production, but NAWEC only supplies 15 percent of total consumption. Additionally, the government has an ambitious plan of building a 150MW solar plant, which would be enough to supply local demand during the day and export excess electricity.

87. Renewable energy deployment in The Gambia would have multiple benefits, including decreasing NAWEC's generation cost while contributing to close the gap in electricity coverage. With that objective in mind, the government adopted the Renewable Energy Act in 2013, which established a comprehensive legal, economic and institutional framework to promote the use of renewable resources. The Act also created a Renewable Energy Fund which has not been operationalized and defined fiscal

incentives for operators of renewable energy facilities, including import, value-added and corporate tax exemptions for 15 years. It also sets the ground for the introduction of a feed-in tariff and of off-grid renewable energy systems.

88. Despite relatively high renewable energy potential and generous incentives for renewable development, renewable energy deployment has been limited mainly due to the uncertainty caused by NAWEC's financial situation and land property rights. The uncertainty that the private sector faces around NAWEC's financial capacity to honor power purchasing agreements is compounded by uncertainty around land ownership in The Gambia. In the past, the government tried to attract private sector investment, but found little investment appetite. The government started a tender for a renewable project but only a handful of bidders submitted bids. The tender was ultimately canceled because land property rights had not been secured. This experience highlights the need to have proper planning and stakeholder engagement when it comes to land policy and tenure, as well as the need to develop guidelines to obtain social license to operate from communities (see Box 6). Additionally, the government might consider extending a guarantee to NAWEC to increase economic certainty and fixing the price in long-term power purchasing agreements in USD to mitigate exchange rate risks. The guarantee, however, would create additional liabilities for the government, which needs to be carefully revised in a context of fiscal consolidation and competing priorities.

Figure 23. Renewable Energy Potential in The Gambia



Source: IMF Staff based on IRENA.

Box 6. Social License to Operate for Renewable Energy Projects

Social License to Operate (SLO) refers to the ongoing acceptance and approval of a project or company by its stakeholders, particularly the local community and other affected parties. Unlike formal regulatory licenses, SLO is an informal and intangible social contract that is earned and maintained through continuous engagement, trust-building, and addressing community concerns.

For renewable energy projects, SLO is crucial because these projects often involve significant changes to local environments and economies. Securing SLO can help prevent conflicts, reduce delays, and ensure the long-term success of the project.

In Colombia, for example, the government created an 'Electricity Transfer' through which renewable energy producers pay a royalty of 1 percent of their revenues (sales value). If there is an indigenous community in the region surrounding the renewable energy project, then 60 percent of the royalty is distributed equally among the indigenous communities and the rest is transferred to the local government(s). In case there are no indigenous communities, 100 percent of the royalty is transferred to the local government(s) to support infrastructure or water, sanitation, and hygiene investment.

89. The government should also consider reforming the fiscal incentives provided to renewable energy companies. On the one hand, fiscal incentives for renewable energy deployment are costly and inefficient, including a 15-year exemption of CIT. Current incentives reward profitable projects unnecessarily, instead of targeting the projects that, on the margin, need a push to be implemented. If and when the constraints to private participation in renewable energy have been lifted, private sector participation should follow. By that time, it would be desirable to reform the fiscal incentives which, in their current shape, would take a heavy toll in terms of tax expenditures. Instead, the government should consider an accelerated depreciation regime to allow for a quick recovery of capital costs or provide refundable investment tax credits

90. The RE Act also paved the ground for the adoption of a feed-in tariff. However, its implementation has lagged due to its potential impact on NAWEC's financial situation. The regulations and framework for the implementation of a feed-in tariff at the utility scale to promote renewable energy deployment is already in place, but there have been political challenges that have impeded its adoption. Specifically, NAWEC opposed the introduction of a feed-in tariff as it would worsen its financial situation in the short term. This creates a unstable equilibrium because renewables would decrease NAWEC's generation cost in the medium term. Therefore, one potential solution to bridge this mismatch is to design an increasing feed-in tariff, well specified in long-term contracts to provide the certainty its designed to provide, while limiting the impact on NAWEC's financial situation in the short term and, therefore, aligned with authorities' fiscal consolidation efforts.

Recommendations

- Ensure that there is certainty around land rights for renewable energy projects.
 - Include stakeholder engagement and other mechanisms to ensure the social license to operate for renewable energy projects, and mechanisms to properly compensate households and communities in case of resettlement.
 - The Ministry of Petroleum and Energy, in coordination with the Ministry of Land, to publish an assessment of the status of land rights and tenure in the territory where future renewable projects are expected to be built.

- Improve NAWEC's financial situation.
 - Conduct a comprehensive study on cost recovery tariffs for NAWEC and revise tariffs accordingly, while using the social registry to provide targeted support for vulnerable households.
 - In the short term, MoFEA should consider providing a guarantee to private sector investors in renewable energy projects, as well as fixing future long-term PPAs in USD to mitigate exchange rate risks.
- Reform the Renewable Energy Act of 2013 and change the structure of fiscal incentives: eliminate the 15-year exemption for the most relevant taxes and replace with an accelerated depreciation framework to recover capital costs.
- Consider implementing an increasing feed-in tariff.

F. Cross Cutting Policies: Carbon Pricing Options

91. This section evaluates the potential for the introduction of economy-wide carbon pricing in The Gambia. First, it provides a description of the energy prices in The Gambia and a regional comparison, both regarding the implicit carbon pricing already embedded in existing taxes, as with efficient prices. Second, it delineates two reform options, which are evaluated against several criteria, including its fiscal revenue potential, impact on economic growth, energy prices, emissions, distributional impact and development co-benefits. The evaluation was performed using the IMF-WB Climate Policy Assessment Tool (CPAT) (see Annex V).⁵⁸

Energy Prices

92. Fuels are subject to different taxes, most of which are earmarked for specific purposes, but there is a share of fuels exempt from duty and value added tax (VAT). Overall, fuels have a combination of specific and ad-valorem taxes (Table 6). Notably, the excise tax was introduced in 2021 to increase revenue and better reflect the externalities of fuel consumption. However, the excise is an ad-valorem tax rather than a specific tax, which is an international best practice. A specific tax facilitates the internalization of costs related to

Table 6. Fuel Price Breakdown, 2024

Variable	Petrol	Diesel	Kerosene
CIF Banjul	48.4	53.5	52.2
Importer costs and margin	4.7	5.6	4.0
Price Exdepot	53.2	59.0	56.2
Dealer Margin	5.1	5.1	5.1
Fuel Levy:	1.0	1.0	0.0
Motor Vehicle License	0.5	0.5	
Road Tax	0.3	0.3	
Car Park Fees (Area Councils)	0.2	0.2	
Processing Fees	0.7	0.8	0.8
Fuel Levy (for NRA)	3.0	3.0	0.0
PURA Petroleum Retail Fees	0.1	0.1	0.1
Excise (5% of Price ExDepot)	2.7	3.0	2.8
Duty Free Price	65.7	71.9	64.9
Duty	3.1	1.4	0.1
Value Added Tax	8.8	9.5	8.9
Calculated Pump Price	77.6	82.8	73.8

Source: IMF Staff based on MoFEA.

⁵⁸ CPAT makes it possible to estimate the use of fuels and emissions by sector – electricity, industry, transport, buildings, agriculture and waste, as well as to estimate the impact that different policies have on emissions. The change in fuel consumption in response to price changes is parameterized to be consistent with the empirical literature and with the results of energy models (in general, the price elasticity of fuels and electricity is around -0.5 and -0.8, respectively)

fuel consumption, which are not proportional to the supplier costs. Based on information provided by MoFEA and fuel consumption estimates from the International Energy Agency, the mission estimates that about 20 percent of fuel consumption is exempted from duty and VAT, encouraging fuel consumption and introducing unnecessary distortions in the tax system. Exemptions include fuels used in donor-funded projects, including through contractors.

93. Electricity pricing follows two distinct structures, depending on whether households are connected through pre-payment or conventional meters, but in effect all households pay according to the pre-payment meters. Households using conventional meters would be subject to an increasing block pricing scheme, which would charge a higher price to large consumers. All households are charged the price for the initial block when under pre-payment meters. Importantly, electricity prices are heavily regulated and do not reflect market changes, limiting passthrough of any increase in input costs (see Table 7).

94. Implicit carbon prices for gasoline and diesel in The Gambia are well below the regional average (see Figure 24). Carbon implicit prices for motor fuels are calculated using fuel excises and other non-VAT taxes. The regional average, excluding countries with a negative implicit carbon price, is higher for gasoline than for diesel, standing at USD 99 per ton of CO₂eq and USD 65 per ton of CO₂eq, respectively. The Gambia is USD 56 below average for gasoline, and USD 23 below average for diesel, indicating that there is room to increase the carbon price in the country.

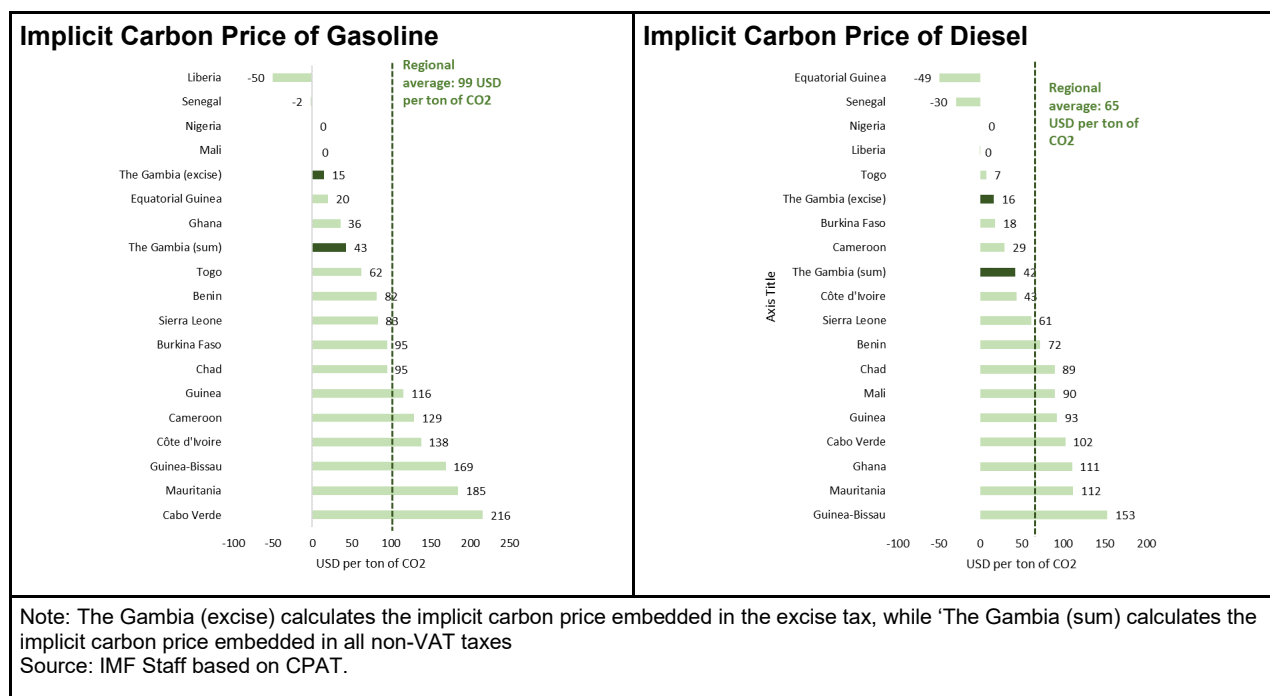
Table 7. Electricity Prices, 2024

CREDIT METER ELECTRICITY: (per kwh)				
Domestic		Consumption Range	Old Tariff 2015	New Tariff
	1	0-300 kwh	10.14	13.85
		301-600 kwh	10.49	14.06
		601-1000 kwh	10.77	14.43
		Balance	11.54	15.46
Commercial	2		10.9	14.9
Hotel/Club/Industries	3		11.65	15.9
Agriculture	4		10.14	13.89
Area Councils	5		10.9	16.2
Central Government	6		10.9	16.2
PREPAYMENT METER: ELECTRICITY: (per kwh)				
Domestic	1	Flat	10.14	13.85
Commercial	2		10.9	14.9
Hotel/Club/Industries	3		11.65	15.9
Agriculture	4		10.14	13.89
Area Councils	5		10.9	16.2
Central Government	6		10.9	16.2

*All units are in GMD per kwh.

Source: NAWEC.

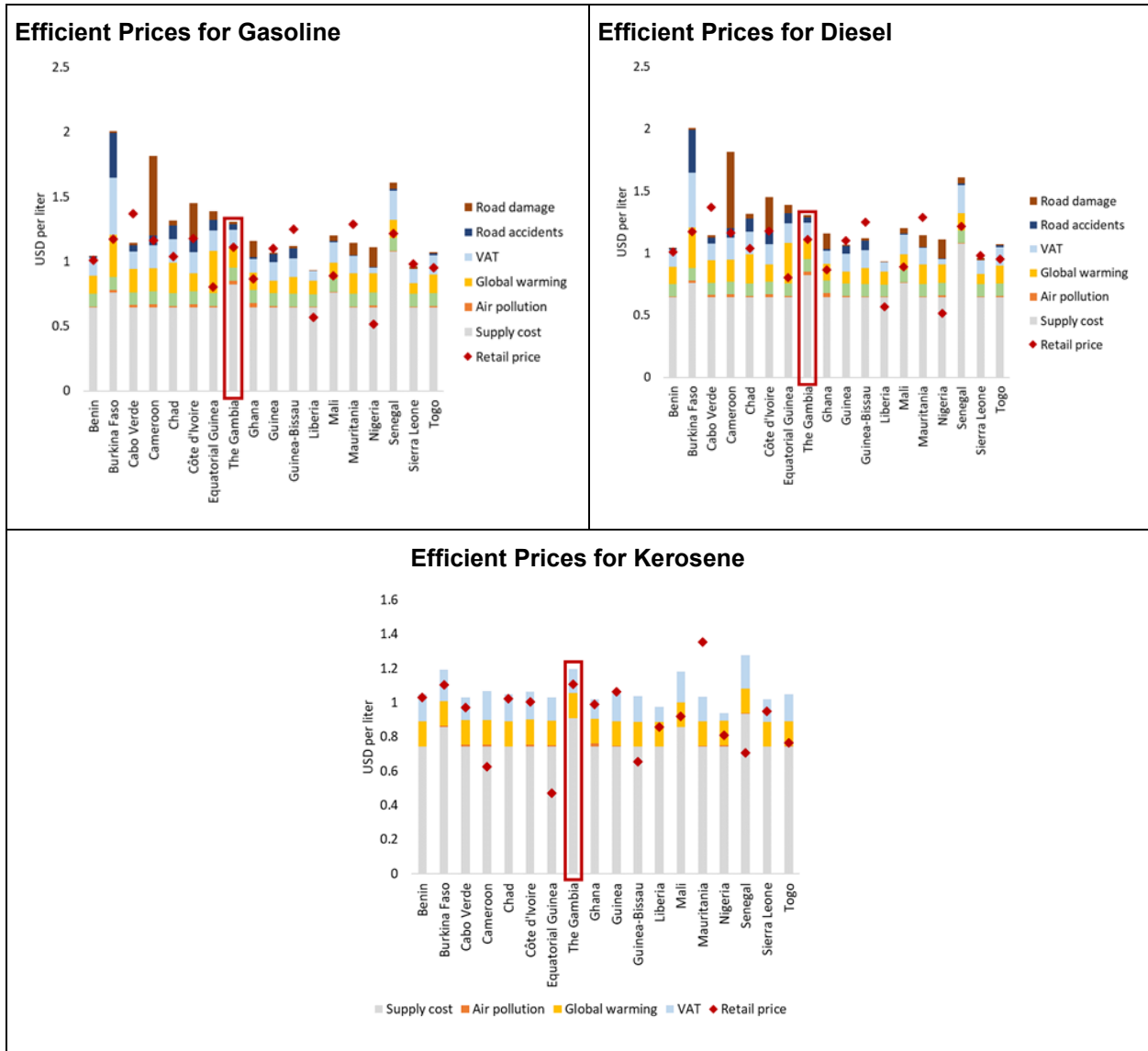
Figure 24. Implicit Carbon Price of Fuels in The Gambia and Peer Countries, 2024



95. **Fuel prices can also be compared with efficient prices.** Efficient fuel prices include 1) the international cost of producing the fuel, 2) externalities related to the use of the fuel, such as increased emission of GHGs or local pollutants, and 3) the consumption tax, through excise taxes and VAT (see [Parry et al. 2023](#) for more detail). Charging at the efficient price ensures that revenues are greater than all costs associated with consumption, including environmental costs, therefore fuel consumption increases the level of efficiency and social welfare. Efficient prices vary across countries reflecting the specific externalities for each country.

96. **The price of most fuels in The Gambia is below the efficient level, although final prices are within the regional average (see Figure 25).** The efficient price for diesel is higher than for gasoline, reflecting higher emission factors for diesel. Therefore, despite the price for diesel being higher, the gap with efficient prices is higher for diesel than for gasoline. For kerosene, given that it creates fewer negative externalities, the gap with efficient prices is lower than for the other fuels.

Figure 25. Fuel Prices in The Gambia vs. Peer Countries and their Efficient Levels 2024



Source: IMF Staff based on CPAT

Potential Reforms of Energy Prices

97. Carbon pricing is a cross-cutting policy to address emissions that can build upon the progress made on taxing fossil fuels. The main design feature of carbon pricing is that it changes the taxable base from liters of consumption to the carbon content of each fuel. As such, fuels with higher carbon content will be taxed more, such as coal and heavy fuel oil, than fuels with lower carbon content, such as natural gas. One of its benefits is that countries that already have excises in place only need to adjust the rates based on carbon content, minimizing implementation costs. According to a meta study on the effects of carbon pricing, its effectiveness has been tested and validated, yielding immediate and substantial emission reductions for at least 17 of the 21 jurisdictions in which it has been implemented. Box 7 presents some of the design principles as well as advantages versus other instruments.

Box 7. Carbon Pricing Principles

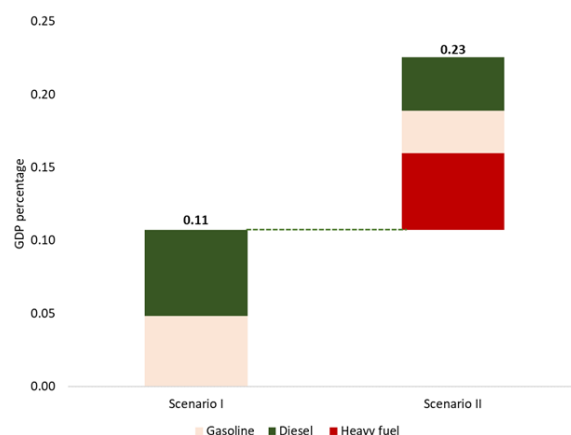
Carbon pricing would require polluters to pay for the costs they impose on others when releasing CO₂. Ideally carbon pricing would be the centerpiece of a country's mitigation strategy to address energy–and combustion–related emissions. Carbon pricing is usually implemented as a carbon tax on the carbon content of fossil fuel supply or through an Emission Trading System (ETS) and has several key attractions as it:

- Promotes the full range of responses for reducing energy use and shifting to cleaner energy sources across all covered sectors by reflecting the cost of carbon emissions in the prices of fuels, electricity, and goods,
- Automatically minimizes the costs of these responses by equalizing the cost of the last ton reduced across fuels and sectors,
- Levels the playing field for clean technology investments by establishing a clear price signal,
- Mobilizes a valuable source of revenue which can be used to help meet climate, social, or broader fiscal objectives,
- Generates domestic environmental co-benefits such as reductions in local air pollution deaths, and
- Is straightforward to scale-up from an administrative perspective, building off already established capacity for fuel excise taxes.

98. The mission modeled two reform scenarios: removing exemptions and the implementation of a carbon tax. The first reform scenario would entail removing all fuel exemptions, as currently donor-funded projects do not pay duty on fuels, nor VAT. The second reform would entail, in addition to removing exemptions, the implementation of a USD 5 per ton of CO₂e carbon price in 2025, rising gradually to USD 25 per ton of CO₂e carbon price by 2030.

99. Removing exemptions would generate additional tax revenues of about 0.11 percent of GDP, while the implementation of a 5 USD per ton of CO₂e carbon price in 2025 would generate an additional 0.12 percent of GDP (Figure 26). Its worth noting that the additional fiscal revenues in the case of a carbon tax are based on full pass-through to electricity prices. Otherwise, while MoFEA would receive some additional tax, NAWEC will assume financial loss on the price increase that is not passed through to consumers. Additionally, fiscal stability clauses with IPPs might limit the extent to which the carbon price can be passed on until new capacity contracts are signed.

Figure 26. Additional Tax Revenues in 2025 by Reform Scenario



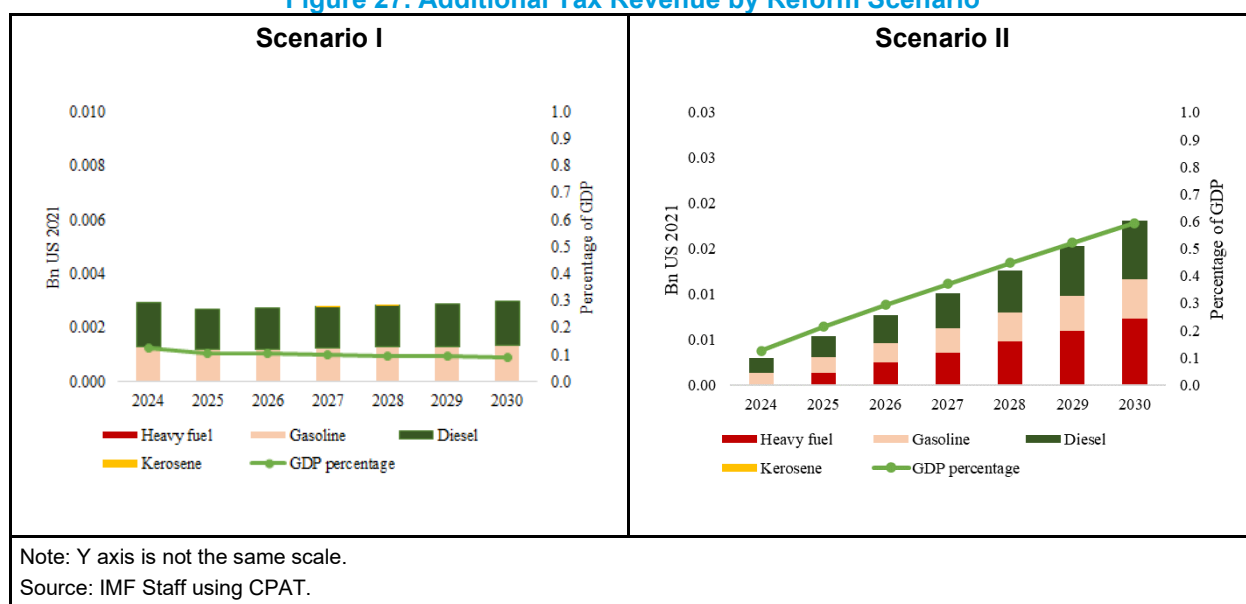
Source: IMF Staff using CPAT.

Table 8. Change in the Price of Energy in 2030 Due to Reform Scenario

Fuel	Unit	Baseline 2024	Baseline 2030	Scenario I	Scenario II
Gasoline	USD per liter	1.08	0.81	0.84	0.91
Diesel	USD per liter	1.18	0.89	0.92	0.99
Kerosene	USD per liter	1.08	1.00	1.00	1.07
Heavy fuel oil	USD per barrel	71.60	62.80	62.80	74.50
Electricity	USD per kwh	0.23	0.17	0.17	0.19

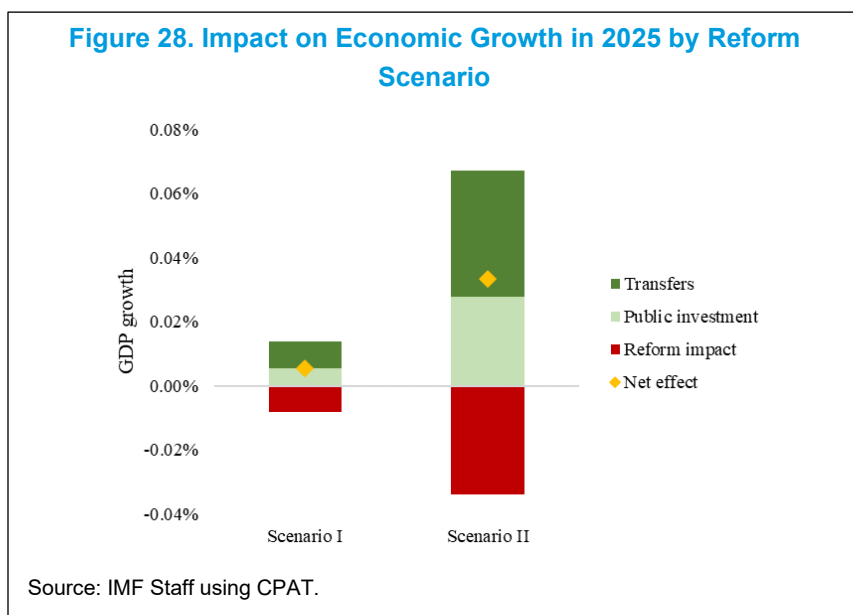
Source: IMF Staff using CPAT.

Figure 27. Additional Tax Revenue by Reform Scenario

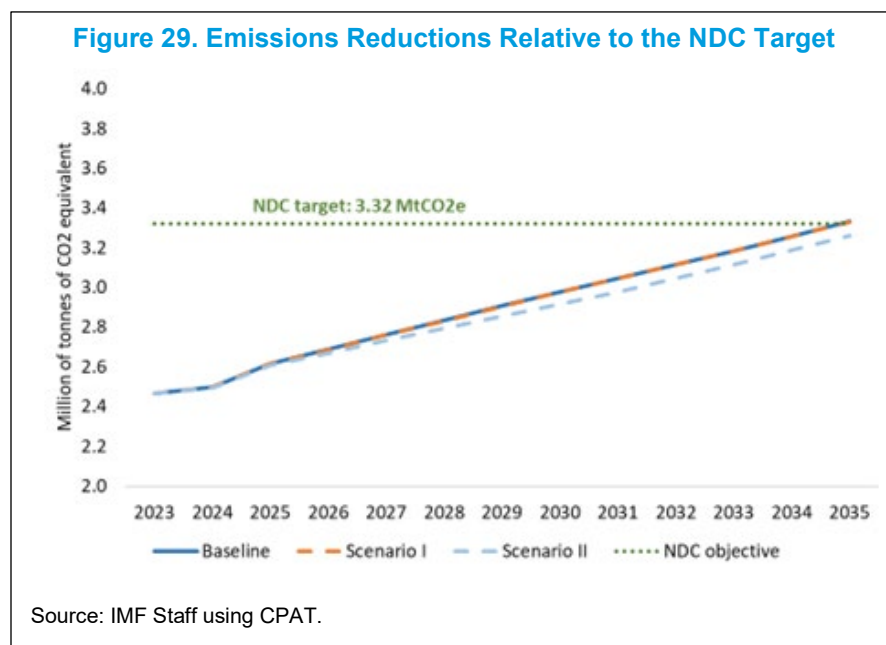


100. Scenario II would cumulatively raise 1.7 percent of GDP in additional revenue from 2025 to 2030 (Figure 27). The higher tax revenues collected from the carbon tax can then be used to mitigate negative impacts on households and economic growth and finance the PES scheme proposed in the forestry section. (See also Annex VI on recycling carbon tax revenues)

101. Carbon pricing is likely to put upward pressure on energy price (Table 8). However, considering that international fuel prices are projected to decrease, prices in 2030 are expected to be lower than current prices despite the implementation of the reforms. Specifically, although energy prices would increase in the short term, in 2030 gasoline prices would be below 2024 levels even under the introduction of the carbon tax. The same is true for diesel, although for kerosene the price would be roughly the same. The electricity price is less sensitive to carbon pricing than other fuels because of the presence of renewable energy in the electricity generation mix and the large share of imports that are not affected by domestic policy (Table 8).



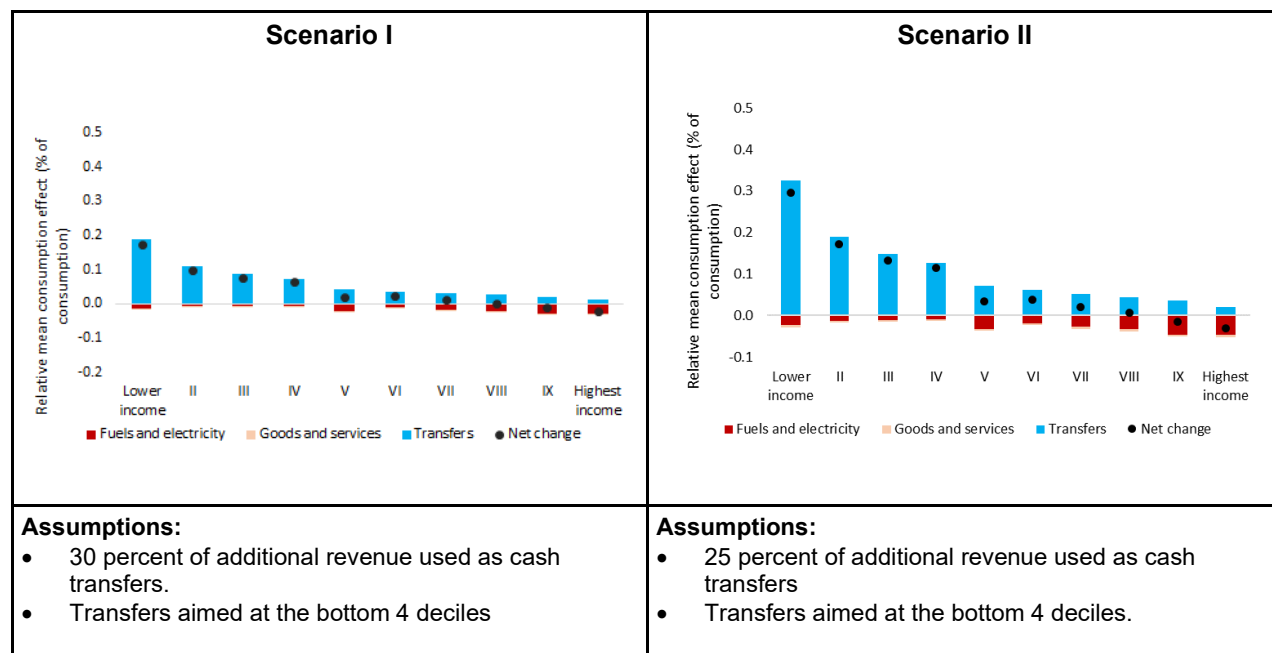
102. In the absence of revenue recycling, increases in energy prices due to carbon pricing would have negative effects on economic growth (Figure 28). However, appropriate use of additional tax revenues can mitigate or offset the negative impact on the economy. The impact on economic growth of exemption removal in 2025 is minimal and could be offset by productive public investment. Scenario II involves a larger increase in fuel prices, so the impact of the reform on economic growth is also larger. The model predicts an impact of -0.04 percent of GDP in Scenario II, which could be offset using 30 percent of the additional revenues as productive public investment.



103. Given that most emissions in The Gambia originate from non-energy sectors, such as agriculture, forestry and waste, total emissions are not highly responsive to carbon pricing. Figure 29 shows that the impact on emissions of removing exemptions is minimal, mainly from the transport

sector. For scenario II, despite the impact on emissions is relatively small, it is enough for the country to remain below the NDC target by 2035. In this case, most emission reductions take place in the power sector, followed by transport.

Figure 30. Distributional Impact at the Household Level by Reform Scenario

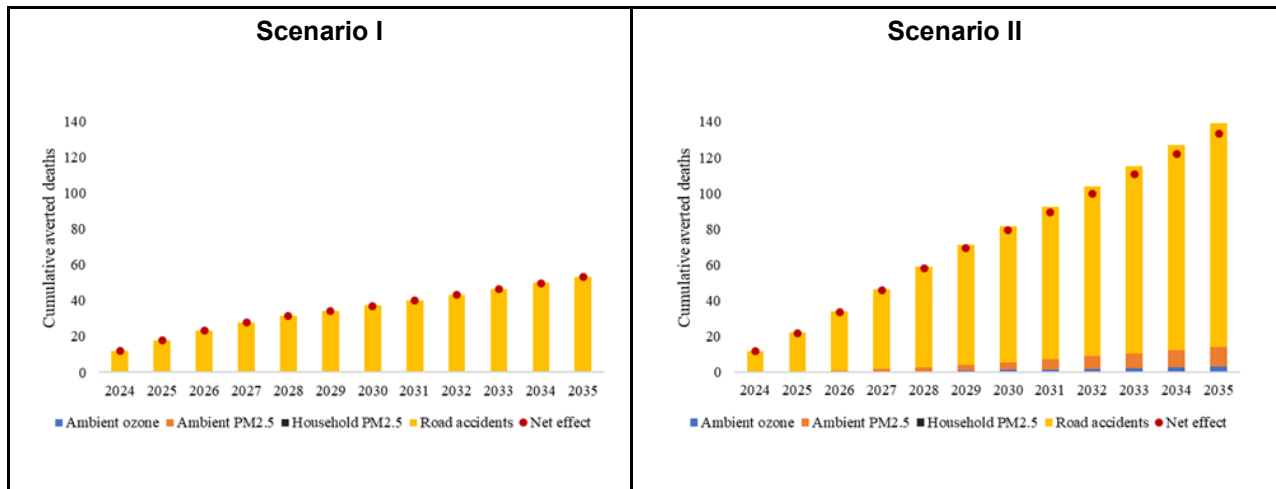


Source: IMF Staff using the 2015 Household Budget Survey.

Distributional Impact and Co-Benefits

104. Higher energy prices will impact households, therefore, evaluating the household incidence from carbon pricing is important, and measures should be taken to counter these burdens. Climate mitigation policy packages can be designed to be progressive, despite the initial impact on fuel prices. Distributional impacts at the household level depend on how much energy is consumed by households, as well as on the fuels and electricity used in the production of goods and services consumed. While at an absolute level, high-income households tend to spend more on energy than low-income households, low-income households spend a higher proportion of their income than high-income households. Therefore, it is necessary that, through programs such as the Family Strengthening Program or RISE, the most vulnerable households receive economic support from the government to be able to face the increase in the prices of the goods and services they consume. As can be seen in the distributional analysis, fuel and electricity consumption does not represent a high share of total consumption in The Gambia. Figure 30 suggests that using 30 percent of additional revenues as transfers for households in the bottom four deciles is enough to counter the average losses stemming from price increases. There might be significant variance within deciles, so authorities need to be mindful about extreme cases. Finally, the proposed reforms will have a positive impact on averted deaths due to reduced air pollution (Figure 31 and Table 9).

Figure 31. Impact of Reforms on Health Care and Road Accidents



Source: IMF Staff using CPAT.

Table 9. Summary of the Main Impacts of Modelled Policies

Scenario	Elimination of exemptions	+ carbon tax
Reduction of GHG emissions in 2030, % compared to BAU	0.1	2.1
Cumulative reduction in GHG emissions in 2024-2030, MtCO2	0.006	0.23
Net additional tax revenue collected in 2030, % of GDP	0.09	0.58
Cumulative tax revenue collected in 2024-2030, bn USD	0.02	0.07
Impact on economic growth in 2030, deviation from inertial growth in % points	0.01	0.03
Increase in the price of electricity in 2030, % compared to inertial scenario in 2024	-26.1	-18.4
Increase in the price of gasoline in 2030, % compared to inertial scenario in 2024	-22.3	-15.8
Increase in the price of diesel in 2030, % compared to inertial scenario in 2024	-22.1	-14.2
Cumulative Avoided Deaths Due to Lower Air Pollution and Road Accidents by 2035, Absolute Figure	40	120

Source: IMF Staff using CPAT.

Recommendations

- Remove duty exemptions and apply VAT for all fuel consumption.
- Reform the ad-valorem excise tax and replace it with a specific tax.
- Introduce a modest carbon price in 2025 with rising ambition towards 2030 building on the existing fuel excise structure.
 - Use the social registry to identify households that would be most impacted by the reforms and compensate them appropriately.

IV. Enabling Institutions

105. This chapter explores strategies for The Gambia to establish stronger and more forward-looking institutional structures necessary for achieving its climate mitigation and adaptation goals.

It delves into the critical roles of government agencies, policy and legislative frameworks, and financial mechanisms in driving effective climate action. By examining current gaps and proposing robust solutions, the chapter aims to provide a roadmap for enhancing institutional capacity and ensuring coordinated efforts.

A. Considerations for an Efficient Institutional and Legal Framework

106. Mainstreaming climate change involves integrating climate considerations into existing systems and processes, enhancing them without compromising their efficiency. The management of climate change should be integrated in the public sector management cycle of policy assessment, design, prioritization, funding, implementation, and monitoring and evaluation (Figure 27). In the context of climate change, the process needs to take into account the long-term perspective of climate change implications and climate change management, particularly for planning and coordination.

107. Well-designed institutional frameworks provide a clear unambiguous structure that motivates and enables all actors to make their coordinated contributions towards the common goal.

To this end key factors include:

- **Creating a common understanding of the challenge and the objective.** To enable and incentivize all actors to consider the long-term implications of climate change when planning and deciding on their respective activities, they need to understand the nature and relevance of climate change and their contribution to the management of climate change implications. For this purpose, relevant information on climate change projections and their impacts, (including climate hazards) is a key precondition for designing climate sensitive policies. In addition, the government’s high level goals and objectives related to climate change mitigation and adaptation should be clearly defined in line with climate change projections (in coordination with implementing entities as discussed below) and would also need to be communicated.
- **Allocating roles and responsibilities clearly among all actors.** In the context of climate change, actors that are traditionally involved in the public sector management cycle as well as new actors that are involved in and required to contribute to the process.
 - The *entity(ies) responsible for climate change projections and assessment* (this could be a meteorological authority / university / research institute) would be tasked to generate and disseminate information on the nature and implications of climate change as is needed by the various stakeholders throughout the climate change management process. This could include relatively high-level information needed by the entity responsible for national planning when defining the national level adaptation and mitigation objectives, sector specific indicators that will support sectoral planning, as well as detailed and specific information as needed by local governments in the context of urban planning.

- The *entity responsible for national development planning* would need to understand the implications of climate change on the country and its economy and would define high level adaptation objectives as part of the national development plan. The adaptation and mitigation goals need to be coordinated with the sectors to ensure consistency with the adaptation needs and mitigation potential at the sectoral level. The entity would review sectoral plans and ensure their long-term and cross sectoral consistency with the national mitigation commitments and adaptation ambitions. It would also collect implementation information from sectors, agencies and local governments and report on national progress against national commitments and plans.
 - *Sectoral ministries, agencies, and local governments* would be responsible for taking the long-term implications of climate change into consideration when designing their policies, including policies related to adaptation and mitigation. They provide inputs for the formulation of the national development plan and ensure that their policies are consistent with the country's overall development ambition and with their expected contribution to the country's overall mitigation efforts.
 - The *Ministry of Finance* would be responsible for mainstreaming climate change considerations into fiscal policy formulation, including long-term macro fiscal projections, taxation, expenditure planning, and financing and debt management. It would also incorporate climate change aspects in the budget planning and execution process to ensure that climate change is duly taken into consideration in the policy prioritization and resource allocation process, and to enable the monitoring and reporting of climate change related allocations and spending (see Box 8 for the Coalition of Finance Minister for Climate Action guidance on how to mainstream climate change into the core functions of Ministries of Finance).
- **Designing and implementing procedures that enable actors to fulfil their roles and responsibilities.** Mainstreaming climate change management into the existing procedures for planning, policy prioritization and financing, and implementation requires integrating climate change considerations into the public investment management (PIM) and budget processes. With respect to the core steps of these processes, this would imply adding the aspect of climate change into project design, appraisal, and selection, while ensuring that national level objectives and ambitions are taken into consideration at the planning level. Integrating climate change related information into the budget planning and execution process would allow to monitor and evaluate the implementation of climate change related policy measures.
 - **Making the structures and procedures binding by reflecting them in the regulatory framework.** The legal framework ensures that the processes are implemented as foreseen and that actors have the power to fulfil their roles and responsibilities and can be held accountable if they don't do so. Enshrining the climate change related objectives, e.g., the emission reduction target, as well as the responsibility for their achievement in law shows a strong commitment and provides clarity at the national and international level. In the spirit of mainstreaming, the procedures empowering the various actors to make their respective contributions should, as far as possible, be reflected in the legislation supporting existing processes and procedures. For example, in the law providing for national development planning, the PIM legislation, and the organic budget law, as applicable in the national context.

Box 8. Strengthening the Role of Ministries of Finance in Driving Climate Action

The proposed framework for mainstreaming climate into the core functions and capabilities of Ministries of Finance, which has been prepared by the Coalition of Finance Ministers for Climate Action to strengthen the role of Ministries of Finance in driving climate action is summarized in this box.

Ministries of Finance can mainstream climate into their three typical core functions:

Economic strategy and vision: using their responsibility for oversight or involvement in national development strategies, sector plans and capital investment planning to participate in the development of national climate strategies, greening national development and sector plans, shaping industrial and innovation strategies, and assessing investment needs for the transition—in partnership with relevant line ministries.

Fiscal policies and budget management: using their primary responsibility for fiscal policy, taxation, and budget planning and execution to design carbon taxation and new forms of environmental taxation, reform fossil fuel subsidies, introduce new fiscal incentives for green sectors, reform multi-annual expenditure frameworks and annual budgets, and green public investment and procurement strategies. The Ministry of Finance's central role in the budget formulation process is a particularly important entry point for driving climate action and investment.

Financial policy and regulation and oversight of the financial system: using their core responsibility for the regulation of state-owned banks and enterprises, sovereign wealth funds, financial institutions and debt markets, interfaces with central banks, and shareholdings and relationships with the international finance institutions and multilateral development banks to green the entire financial system, improve financial resilience and stability, and mobilize finance into sustainable investments. This can be achieved through frameworks for green bonds, catalyzing private capital, adaptation and disaster risk finance and insurance, and international climate finance—in partnership with central banks and the private sector.

To enhance these core functions, three capabilities are critical:

Leadership capability: strengthening the range of champions for climate action at the political and officials' level, strengthening the Ministry's vision, mission and mandate to drive climate action, and creating clear responsibilities and organizational structures for climate leadership.

Coordination capability: driving effective collaboration across government and with the private sector, civil society and international financial institutions, and multilateral platforms and processes supported by effective strategies for consultation and communication.

Human and analytical capability: ensuring dedicated staffing resources for climate action, upgrading expertise in climate policy, and revamping tools and analytical approaches for data collection and economic decision-making.

A more detailed description of the Framework is provided in the [full report](#), which is designed to guide and support Ministries of Finance to understand how they can enhance their core functions and capabilities. It describes their critical role in each area, barriers and strategies to overcome them, inspiring real-world examples, and opportunities for action.

Source: Coalition of Finance Ministers for Climate Action

B. Assessment of the Current Institutional and Legal Framework

108. The GoTG is currently considering a re-draft of the constitution which may recognize climate change and the need for building resilience. The 1997 Constitution of The Gambia, amended over 52 times, is the foundation of country's legislation. Currently, the Constitution includes notions of protecting the environment and co-operating with other nations and bodies to protect the global environment.⁵⁹ A 2020 draft attempted to move beyond this and mandated 'recognition of the adverse

⁵⁹ Constitution - MoFEA

effects of climate change on the sustainable use of land, environment and natural resources and the need to build resilience and increase adaptation to these effects.⁶⁰ However, the government sponsored bill was rejected at the first reading of the National Assembly. ⁶¹ In 2023, the President of The Gambia announced the development of a new draft. A referendum is expected to take place by the end of the year, with a target deadline of 2027.

109. To date, the institutional environment has been largely shaped by line ministries and development partners with national climate policies aiming to mainstream climate change considerations into government processes and establish a long-term perspective. Main policies and their contributions are summarized below:

- **The National Climate Change Policy (NCCP, 2016)**, led by DWR, aims to mainstream climate change into national planning, budgeting, decision-making, and program implementation, through effective institutional mechanisms, coordinated financial resources and enhanced human resources by 2025. There are four strategic focal areas for the policy: (1) climate resilient food and landscapes, (2) low emission and resilient economy, (3) climate resilient people, and (4) managing coastlines in a changing environment.
- **The Strategic Programme for Climate Resilience (SPCR, 2017)** was supported by the AfDB and the WB, with MECCNAR serving as the national focal point. The SPCR establishes a comprehensive implementation plan building on the NCCP. It outlines five key priorities for climate resilience, adding 'Infrastructure and waste management' to the four priorities identified in the NCCP. The SPCR also provides cost estimates for short-, medium-, and long-term financing, which serve as valuable information for international donors.
- **The Low Emission Climate Resilient Development Strategy (LECRDS, 2017)**, co-drafted by MECCNAR and MoFEA, complements the NDC and the SPCR by identifying key priority actions to facilitate the transition to a low-emission and climate-resilient economy. These actions are categorized into administrative and cross-cutting measures, GHG mitigation strategies, and initiatives for climate-resilient development.
- **Second Nationally Determined Contribution (NDC2, 2021)** outlines the country's updated commitments to reduce GHG and enhance climate resilience as part of the Paris Agreement. Under the NDC2, all climate policy issues have been entrusted to MECCNAR, meanwhile DWR serves as the UNFCCC Focal Point.
- **The 2050 Climate Vision of The Gambia (2021)**, led by MECCNAR and MoFEA, sets the government's vision to meet commitments made under the Paris Agreement and defines the long-term vision for climate resilience and net zero emissions by mid-century. It covers the same four strategic focal areas as the NCCP.
- **The Gambia's Long -Term Climate-Neutral Development Strategy 2050 (LTS, 2022)**, builds on the ambitions of the NDC2 and the 2050 Climate Vision to estimate the funding needs for climate mitigation

⁶⁰ Gambia (The) 2020 Constitution - Constitute (constituteproject.org)

⁶¹ The 2020 Draft received support from 31 out of 54 members. Three-quarters majority is required to pass.

and adaptation actions across five sectors – Energy, Agriculture, Waste Management, Transport, and LULUCF – to reach net-zero emissions by 2050. The LTS was spearheaded by MECCNAR with the MoFEA acting as the co-chair of the steering committee, and the Directorate of Development Planning (DDP) from the MoFEA co-chairing the technical working group.

110. These strategies require cross-sectoral participation however building stakeholder ownership has been difficult and implementation has been slow. Given MECCNAR’s leadership role for developing these national strategies, building stakeholder ownership and accountability to pursue the national climate change policies and long-term vision across ministries is missing. Instead, national strategies are largely seen as the responsibility of the MECCNAR.

111. Meanwhile, the institutional framework to uphold national climate policies have overlapping functions and have been sparsely operationalized, contributing to gaps in implementation and a lack of coordination between sectors. National climate policies have established four upper-level institutional bodies with key responsibilities to support the climate agenda.

- **The National Climate Change Council (NCCC)** is the principal body responsible for climate change decision-making and policy formulation in The Gambia, made up of members from a variety of relevant ministries.⁶² Core functions differ by documents. The 2021 NDC sets the NCCC's key functions to include implementing the NCCP, coordinating related policy initiatives, enhancing international cooperation on transboundary climate issues, and managing The Gambian Climate Change Fund (GCCF). This excludes the roles of ensuring coherence with national development goals and strategies as well as monitoring overall progress of the NCCP as mentioned in the earlier 2016 NCCP.
- **The Inter-ministerial Climate Committee (IMCC)** is chaired by the Permanent Secretary of MECCNAR⁶³ and the Permanent Secretaries for the Ministries of Planning and Finance. Membership includes the Permanent Secretaries and Directors of the line ministries reflected in the NCCC, with the role of promoting the integration of climate change impacts into sectoral strategies, policies and actionable plans, reporting on these integrations, as well as creating short and medium-term goals and incentives/disincentives in cases of non-compliance. The group is supposed to meet every three months.
- **The Climate Change Secretariat** is housed under MECCNAR but was originally established under DWR. Similar to the IMCC, their mandate is to help sectors integrate climate change into national and sub-national plans, coordinate the implementation of the NCCP, build capacity on climate change, regularly track adaptation and mitigation progress using participatory monitoring and evaluation methods and develop a network of Expert Thematic Groups as well as a network of Climate Change Focal Points in each sector Ministry. These Focal Points are also tasked with the mission to integrate national climate change policies into sectoral planning.

⁶² Ministries includes are from the following sectors: foreign affairs, planning, finance, climate change, environment, water, health, social welfare, basic and higher education, food security and agriculture, forestry and natural resources, energy, disaster management, local governance, gender and youth.

⁶³ Originally, the NCCP chair was assigned to the Permanent Secretary of MoECCWWF. However, this ministry has since separated and MECCNAR was established in 2017.

- **The National Climate Committee (NCC)** includes stakeholder representatives from civil groups and advise the Climate Change Secretariat on relevant topics. The NCC was established under DWR, with the NEA serving as the secretary. The group is supposed to meet twice a year.

While functions overlap, limited funding has hindered the consistent operation of these bodies (with the exception of the Secretariat) resulting in gaps on monitoring current climate change policies and a lack of forum for ministries to coordinate on climate change. This makes it difficult for sectoral policies, like the Forestry Sector, which aims to coordinate with the NCCC as part of their policy's mandate, to integrate their goals and strategies with those of the NCCP. Meanwhile, Climate Change Focal Points in some sectors have been selected but selection is ongoing for others, creating a gap of those responsible for ensuring that climate change is considered when implementing sectoral policies and developing new ones.

112. As a result, while there are several sectoral policies that contribute to the country's climate agenda as listed in Annex VII, the quality of mainstreaming climate change management into these policies varies. Climate Change components have been somewhat integrated into many updated sectoral plans as mentioned above. However, defining clear roles for climate change management and coordination structures are often missing. Additionally, some sectoral policies, exclude climate change completely.

113. Without legislative provisions, reflecting a coherent institutional setting for the management of climate change issues, an efficient climate change management process cannot be established. The NEMA from 1994 remains the central legislation in dealing with the environment. The MECCNAR is hoping to develop a Climate Change Bill as called for in a variety of government plans including the NCCP, the LTS, and Vision 2050. This Bill would provide the legal framework for the imposing measures required to meet The Gambia's climate-related ambitions. Funded by the WB, a Terms of References has been issued by the MECCNAR for a consultancy to help draft the Bill. Destitute of a Climate Change Act, the NCCP's legal backing is currently "extrapolated" from the "authority of the Ministry of Environment, Climate Change, Water, Forest and Wildlife" (which no longer exists) or "similar government ministry".⁶⁴ Without enshrining the country's mitigation targets and adaptation objectives and clearly assigning the responsibility for their management, there is no accountability for achieving key climate change related objectives.

114. As a result of these challenges, incorporation of climate change policies into sectoral strategies, planning and monitoring are largely determined on their integration with the National Development Plan, which maintains stronger institutional structures, but lacks a long-term vision. The DDP under the MoFEA is the body responsible for the coordination, formulation and implementation of the country's NDP, as well as mid-term reviews and annual reports regarding the plan's implementation. An updated NDP was recently established for 2023 to 2027 titled the Recovery Focused NDP (RF-NDP). Pillar five of the update includes climate change and provides a much more detailed account of climate change related goals in the forestry, waste, coastline, chemical, energy, water resource management, and DRR sectors than previous NDPs. Meanwhile, climate change management is also included in the governance section, highlighting the country's efforts to mainstream climate priorities. Climate Change Planning Officers, established in each line ministry, report to the DDP on progress of implementing the NDP in sectoral work. The government is also developing a web-based database that would house key development indicators and improve efficiency of their monitoring and annual reporting. However, the NDP

⁶⁴ NCCP, 2016, GoTG, Final Draft, pg. 17.

plan is limited to a 5-year horizon and the DDP is still developing a Gambia 2050 vision and long-term NDP strategy.

115. A lack of long-term projections of climate change impacts and missing data hinder public sector planning. DWR's meteorological division provides seasonal weather forecasts for the government and civil society with up-to one-year horizons. These forecasts are useful for short-term planning for a variety of ministries. Meanwhile, the MoFEA's resource envelop is determined through the medium-term expenditure framework that relies on trends (for example, the framework uses 4-year historical cycles of drought to predict agricultural productivity, and ten-year cycles of big floods). Key data, like horticulture production, is missing. Additionally, there are no longer-term macro-fiscal horizons assessed. Regarding long run climate change projections, MECCNAR created climate scenarios in their Second National Communications for the UNFCCC in 2012. Temperature and rainfall scenarios were assessed until 2100 and select indicators⁶⁵ were projected for forestry, agriculture and fisheries. Other topics, like health and the costal zone are discussed but indicators are not provided. This was very different from the approach of the Third National Communication (2020) which focused more on a literature review to look at the impact of climate change on key sectors. Without detailed information on the expected future implications of climate change (e.g., hazard risk mapping), it is difficult to build a common understanding of the severity of climate change impacts and the need to harmoniously address them by making informed long-term decisions and understanding spill-over implications between sectors. Given the uncertainty around climate projections, defining methodologies and building capacity for making decisions under uncertainty (Annex VIII) will be an important task for policy design and policy assessment.

116. Despite The Gambia's efforts to incorporate climate change considerations in national development planning, the current budget does not align itself to RF-NDP goals. The RF-NDP and the budget are acting in silo. This implies that even climate objectives included in the RF-NDP risk being ignored by the budget. To align national financing resources to the RF-NDP and the SDGs, the GoTG is working on developing an Integrated National Financing Framework. Additionally, the MoFEA has hired a consultant to support a climate budget tagging process, under funding from Canada, to better understand climate expenditure.

117. There are multiple climate-related funds that aim to mobilize resources from domestic and external sources, however, coordination of climate finance is absent. The National Climate Change Fund, housed under the MoFEA and governed by NCCC was established with hopes to disburse the funding to support Local Government Action Plans. While the fund has been established, financing has never operationalized the fund. The GoTG also maintains sectoral funds, including the National Forestry Fund, the Biodiversity Trust Fund, the Renewable Energy Fund, and DRM Funds (at the national, regional and district level). With respect to international climate financing sources, the government has accessed the Global Climate Fund (GCF), Climate Investment Fund (CIF), Special Climate Change Fund (SCCF), the Adaptation Fund, as well as those from bilateral and multilateral development partners. Yet, the country does not have a National Climate Finance Policy and lacks a coherent overarching climate finance strategy to coordinate across funds and link with the planning and budgeting process.

⁶⁵ Indicators include biomass production, dry weights for rice, nitrogen uptake of irrigated rice, river productivity, natural mortality, and shrimp yield.

118. The substantial investment needs identified under the government’s climate policy plans, against the backdrop of fiscal constraints, highlight the importance of establishing an enabling environment for private investment. The SPCR expects projects requiring USD 315 million, whereas the LTS to reach vision 2050 is costed at USD 4 billion (at of time of publication). The plans widely note that the government will not be able to implement all the envisaged measures from the budget and that private sector investment is required. While the plans give clear indications of project costs which could serve as an entry point for various financiers (i.e., donors, development banks, and private investors) to develop an interest in supporting the country’s climate agenda, more efforts are needed to incentivize large- and small-scale private investors in key sectors. Some elements to unlock private sector climate investments involve providing the right incentives, de-risking investments, improving access to finance, removing regulatory barriers to investments and improving macroeconomic stability to reduce currency and inflation risk, with many of these opportunities mentioned above.

119. However, the institutional framework does not require investors to preform climate change impact assessments or climate vulnerability assessments. Environmental Impact Assessment Regulations of 2014, under authority of the National Environmental Management Act (NEMA), provides a framework for evaluating potential environmental effects of development projects. As a result, various factors, including air and water quality, biodiversity, and socio-economic effects are assessed before the approval of the project. There is no formal requirement to assess key climate-related impacts or their alignment with national climate change objectives (such as emissions) or the project’s resilience to climate change.

120. Lastly, The Gambia’s has a coordination platform to address transboundary river challenges, however, challenges persist. The Gambia River Basin Organization and the Senegal River Basin Organization have united under the Transboundary River Basin Organizations to provide a vessel to coordinate and facilitate the management of water resources across international boundaries. However, concerns about downstream impacts from neighboring country projects, like sediment blockage from an upstream hydro plant which impacts waterflows and downstream erosion, remain.

C. Assessment of Policy Gaps

Understanding of Climate Change and Climate Change Risks within Government

121. Establishing long-term climate scenarios and hazard vulnerability maps and disseminating them to line ministries will improve public sector planning. First, an assessment should be done to understand the needed inputs that each line ministry requires to effectively plan for climate change. Ideally, as the central agency on national planning, the DDP would harmonize the list of needed inputs and identify an agency to establish these projections (ex. the Metrological Division, a university, MECCNAR, a consultancy, etc.). Then, the DDP would take on the leadership role in ensuring projections are created, disseminated, and updated when appropriate. The DDP would also take on the role of ensuring projections are incorporated into sectoral plans under supervision and support from the line ministries’ Planning Officers.

122. Incorporating The Gambia 2050 Climate Vision and the Long-Term Climate-Neutral Development Strategy 2050 into upcoming long-term national plans can help to mainstream climate

ambitious and monitor progress. By aligning the upcoming national 2050 vision with the already established climate specific long-term plans, these climate plans will benefit from the strong institutional structure of the DDP and build ministry ownership. Additionally, this integration would mean that climate change related data necessary to measure progress on the long-term climate vision would be collected by DDP (hopefully using the upcoming online database) for reporting and oversight purposes. As a result, ministries would be more aligned on confronting climate challenges expressed in the national strategy and progress towards the climate agenda could be better monitored.

123. Encouraging a long-term, forward-looking perspective in policy and project planning is essential for addressing the extended impacts of climate change. This involves aligning the planning and assessment horizons for policies and projects with the timeframe over which their effects will be felt, such as the entire lifespan of infrastructure assets. By adopting this approach, decision-makers can ensure that long-term risks and opportunities are adequately considered, leading to more resilient and sustainable outcomes. This alignment helps to anticipate future conditions, integrate climate projections, and implement adaptive measures that safeguard investments and public welfare over time. One way to formalize this is to move beyond the environmental impact assessment requirement under the NEMA, and also require a climate change impact assessment and a climate vulnerability assessment to determine the impacts and resilience of large projects. This would involve an update the regulatory framework, either through NEMA or a Climate Change Bill.

Institutional Framework for Managing Climate Change and Procedures for Coordination

124. Allocating roles and responsibilities for climate change management clearly among actors and legitimizing the structures and procedures through regulatory framework can expedite implementation of national climate policies. Defining roles and establishing targeted areas of collaboration can improve stakeholder ownership of climate change objectives and re-establish a cross-sectoral approach to national climate change strategies. As the overseeing body, the DDP should take leadership to establish these roles and expectations. Legalizing these responsibilities, including the incorporation of climate change impacts into planning and NDC commitments, will signal to line ministries the importance of their involvement on climate action and provide the legal framework to pursuing needed measures to meet climate ambitions. Legalizing can be done through the potential Climate Change Bill or by including these features in an updated Environmental Management Act.

125. Reviving a consistent high-level structure to assist in implementing national climate strategies, monitoring climate action and establishing cross-sectoral collaboration would help to ensure sectoral strategies are aligned with climate change ambitions. Line ministries need a forum to discuss climate related challenges and actions, to collaborate on cross-sectoral climate issues, and to align planning. Re-operationalizing the IMCC can create the conversation platform and reporting structure required to fulfill these goals. Additionally, re-operationalizing the NCCC as the main policy body responsible for setting policy, helping sectors implement national climate plans, and monitoring their progress is essential to ensuring national climate change strategies are up-to-date and enforced. An assessment should be done of the funding required to maintain consistent IMCC and NCCC efforts and adequate funding should be considered to help improve the operationalization of these bodies.

126. Developing a NAP will help transition the country from a project-based adaptation planning system to an integrated approach across all vulnerable sectors. A costed adaptation strategy can help

align national, sub-national and sectoral adaptation related plans and identify national adaptation priorities. It can help to coordinate efforts across various government agencies and establish a comprehensive and cohesive approach to adaptation, avoiding fragmented and inefficient responses. A NAP can also help facilitate access to international funding and technical support by demonstrating a clear commitment to adaptation.

127. Establishing a climate finance policy can help coordinate resource mobilization in a project-finance oriented environment. Given the dominating nature of project-financing in The Gambia, defining a climate finance policy provides a clear framework for funding mitigation and adaptation projects and ensuring that investments are strategically aligned with national climate goals. A robust climate finance policy also enhances transparency and accountability, ensuring that financial flows are monitored and used efficiently. The policy can also include provisions for strengthening institutional and technical capacities to manage and deploy climate finance effectively.

128. Building an enabling environment for the private sector is crucial for unlocking climate investments and driving sustainable economic growth. Providing the right incentives, such as tax breaks and subsidies, can stimulate private sector engagement in climate-resilient projects and green technologies. De-risking investments through mechanisms like guarantees make climate projects more attractive by mitigating financial risks. Improving access to finance ensures that businesses have the necessary capital to invest in sustainable initiatives. Establishing land rights enhances investment security. Removing regulatory barriers streamlines the investment process, making it easier for the private sector to participate in climate action. Additionally, building macroeconomic stability can reduce currency and inflationary risks. By fostering a supportive environment, private sector resources can be better mobilized, spur innovation, and accelerate the transition to a low-carbon, climate-resilient economy.

129. Coordinating with neighboring countries can ensure upstream dams properly account for down stream environmental and climate change impacts. This coordination can happen through the Transboundary River Basin Organizations or from a higher level, such as the NCCC (who is responsible for international coordination on transboundary climate issues). Maintaining formal corporative forums with neighboring upstream countries will be essential for ensuring sustainable water resource management, mitigating shared climate risks, and fostering regional resilience.

Mainstreaming Climate Change into National and Sub-National Agendas

130. Continuing to mainstream climate change ambitions into upcoming NDPs and leveraging the strong institutional structure of the DDP will help embed climate change into national priorities and sectoral plans in the medium term. Since the NDP sets national priorities, it is imperative that climate change continues to be mainstreamed through the plan. Additionally, Climate Change Focal Points (i.e. those determined to be responsible for ensuring that climate change considerations are taken into account in the implementation of existing sectoral policies and the development of new ones) should work closely with DDP officers to ensure climate change planning related to the NDP are actioned.

131. Mainstreaming climate change management into the core functions of the MoFEA will help adequately address risks, minimize potential economic losses, build resilience and incentivize activities to achieve climate targets. This means integrating climate consideration into policies, planning and decision-making, including, incorporating climate change implications in macro-fiscal forecasting, tax

policy, expenditure planning, and debt management, and developing the capacity for handling aspects of green and climate change financing.

132. Harmonizing adaptation and mitigation into sectoral plans and regulatory frameworks will mainstream climate ambition and resilience throughout vulnerable sectors as well as build coordination on climate change management and disaster relief. For example, when defining upcoming sectoral legislation (ex. the Water Bill or the Social Protection Bill) or policies (ex, the Integrated Coastal Zone Management Strategy under review) the GoTG should also ensure agencies have clearly defines roles and responsibilities to address climate change issues, the authority to impose climate change related mechanisms, and vessels for collaboration on climate challenges.

Recommendations

- Establish long-term climate scenarios and hazard vulnerability maps and disseminate them to line ministries to improve public sector planning.
- Incorporate The Gambia 2050 Climate Vision and the Long-Term Climate-Neutral Development Strategy 2050 into up-coming long-term national plans (ex. National 2050 Vision) to mainstream climate ambitious and monitor progress.
- Allocate roles and responsibilities for climate change management clearly among actors and legitimize the institutional structure, responsibilities and targets through legislation (ex. a Climate Change Bill or NEMA update)
- Develop a National Adaptation Plan to help transition the country from a project-based adaptation planning system to an integrated approach across all vulnerable sectors.
- Deepen Coordination with neighboring countries to ensure upstream dams properly account for downstream environmental and climate change impacts.
- Harmonize adaptation and mitigation into upcoming sectoral plans and regulatory frameworks including mainstreaming climate change management into the core functions of the MoFEA (i.e., incorporate climate change implications in macro-fiscal forecasting, tax policy, expenditure planning, and debt management, and develop the capacity for handling aspects of green and climate change financing).

Annex I. Mainstreaming of Climate Change in Agricultural Policies

Policy Documents	Priorities	Reference to Climate Change
Agriculture and Natural Resource Policy 2017-2026	Optimizing resources use; accelerating Agro-based industries, enhancement of R&D, Private sector engagement, reform of marketing strategy, human resources development and development of self-reliant farmer/fishermen's institutions.	***
Second Generation National Agricultural Investment Plan- Food and Nutrition Security (GNAIP II-FNS) 2019-2026	Main investment framework for agricultural development in The Gambia aimed at: production and value chain promotion on: (a) food crops and vegetables, (b)livestock husbandry and pastoralist, (c) fishery and aquaculture, (d) forestry and environment (e) nutrition security, resilience and social protection, (f) good governance of the agricultural and natural resources sector.	***
National Seed Policy (2018-2028)	Aimed at ensuring (a) availability of quality seed to farmers, (b) viability and the contribution of the seed industry and (c) food security through seed security.	**
National Horticulture Sector Strategy – NHSS (2020-2024)	Aimed at transforming the sector by (a) market-led production of high-quality horticultural produce, (b) agro-processing and value addition, (c) strengthen support services, (d) build capacities for farmers' associations and cooperatives and (e) build supportive policy environment.	*
National Fertilization Policy of The Gambia 2023-2032	Development of privately driven and liberalized fertilizer importation and distribution system; Promoting fertilizer use via extension, fertilizer subsidies and agricultural and rural finance. Fertilizer quality control, R&D, Environmental sustainability and climate change.	**
The Gambia Livestock Master Plan 2023	Roadmaps to attract more targeted investment by government, development partners and private sectors on three sub-sectors namely, cattle, small ruminants (sheep and goats) and chickens.	*
National Cooperative Strategy	Aimed at establishing and enforcing the legal and regulatory environment, help cooperatives set up efficient rules, mandates, mechanisms, and build capacity for a vibrant, autonomous, and economically viable cooperative movement.	N
Fisheries and Aquaculture Policy of The Gambia 2018	Aimed at ecologically and economically sustainable fisheries (a) conservation and sustainable resource use, (b) small-scale fisheries (c) aquaculture and inland fisheries, (d) fish trade and marketing and (e) industry fisheries, (f) regional/international cooperation(g)human capital development (h)food fish and nutrition security (i) institutional reform (j) sport fishing and (k) cross-cutting issues.	***

Source: IMF Staff Compilation Note: N: CC is not mentioned. * CC is recognized as a challenge only, **CC is recognized as a challenge and solution options are proposed within a sub-section, *** CC is recognized as a challenge and CC aspects are mainstreamed across multiple sub-sections or introduced as a cross-cutting theme.

Annex II. 2022 Flood in The Gambia

July-August Flashflood of 2022 was the largest rainfall event recorded in more than 30 years in The Gambia. The preliminary analysis indicated the direct damage costed approximately USD 82 million (or equivalent of 4.3 percent of The Gambia's 2020 GDP), including buildings and contents in the Greater Banjul Area alone. In addition to causing significant destruction of the built environment across Greater Banjul, North Bank, Central River Region and Upper River Regions, the lack of appropriate waste collection and hazardous waste management led to secondary disasters including oil spill at the NAWEC's Brikama Power plants. Gambia has undergone a significant expansion of the built-up areas in the recent decades. The Gambia's settlement areas exposed to hazard risks have subsequently increased (Figure A1).

Figure A1. Areas Affected by 2022 July-August Floods

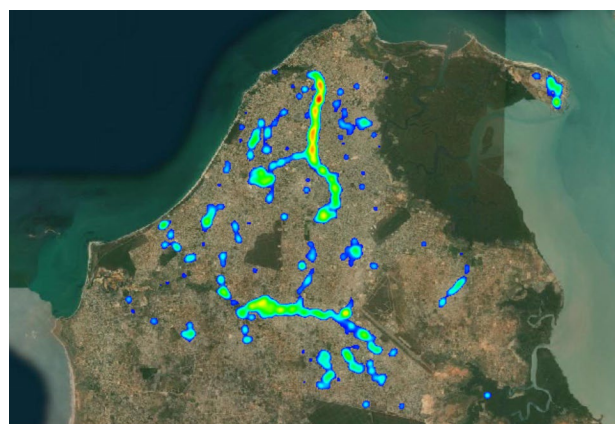
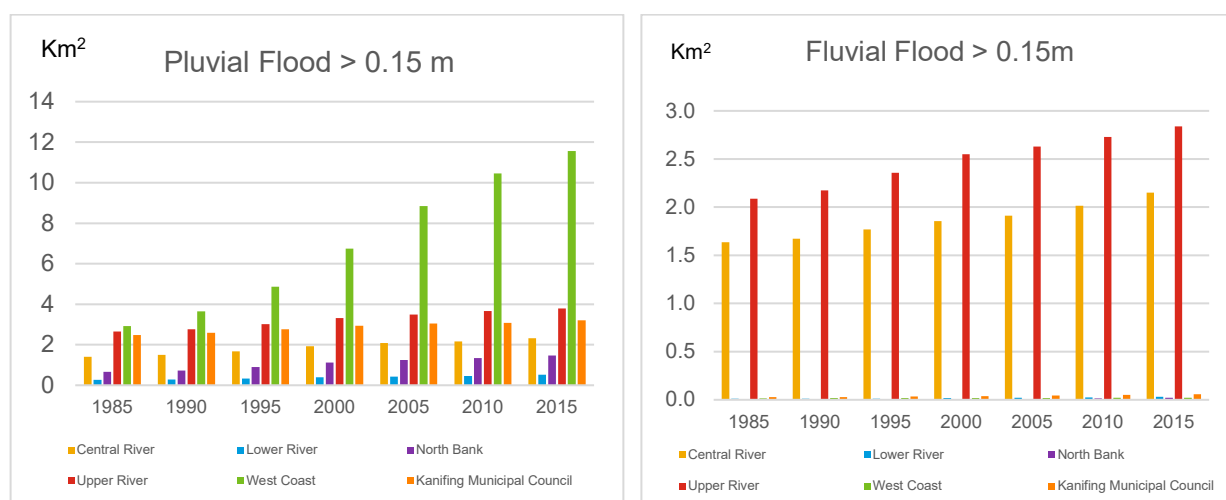


Table A1. Estimated Damages to Buildings/Contents

Direct damage due to flooding	Flood damage cost estimate (USD mln)
Residential	70.2
Commercial	10.3
Industrial	0.9
Total damage all buildings and contents	81.5

Figure A2. Increased of Built-up Areas Exposed to Pluvial and Fluvial Floods in Gambia



Source: IMF Staff Analysis based on [Rentschler et al. \(2023\)](#)

Annex III. DRM Coordination in The Gambia

The National Disaster Management Act 2008 established multi-level disaster risk management institution, headed by the National Disaster Management Council, chaired by the Vice President. The National Disaster Management Agency (NDMA) serves as the secretariat and disaster management committees are established at the regional, district and village levels. The Gambia National Contingency Plan covers five major hazards, which are updated periodically, including floods, bushfires, oil spill, disease outbreak and population movement. NDMA has further facilitated the development of seven regional contingency plans, 18 community action plans, health contingency plan and oil spill contingency plan, yet training of emergency managers, first responders and communities on the effective use of contingency plans remains a challenge. The Gambia's National Disaster Management Policy is currently being updated, including salient policy priorities such as disaster risk financing, social protection and alignment with the Sendai Framework for Disaster Risk Reduction.

The Gambia's DRM sector has built an effective partnership with development partners, strengthening institutional capacity to manage disasters. NDMA routinely implements humanitarian and development operations with partners such as IOM, WFP, UNICEF, AfD and WB. In the area of risk identification, the NDMA is currently working with the Catholic Relief Service on the development of comprehensive risk assessment. In the area of post-disaster damage assessment, NDMA has received partner support to build the multi-hazard assessment tool with geocoding capacity using the Kobo toolkit. Lessons learned of 2022 floods were translated to hard and soft measures to improve preparedness such as creation of waterways, ponds and clearing of drainage systems prior to the subsequent flood season. While a significant progress is made in strengthening of operational disaster management capacity, a number of gaps have been expressed including the need for building of multi-purpose shelters, lack of effective capacity building opportunities, and the need for further use of technologies such as geospatial information (e.g. satellite).

The Gambia's National Early Warning Strategy 2021-2026 is aimed at building the national early warning system (EWS) that is well integrated "to achieve food security, reduce poverty, generate wealth through disaster prevention." While the formal mandate for the coordination of the national EWS rests within the National Disaster Management Agency as per the DRM Act 2008, a wide range of agencies share relevant mandates including the Department of Water Resources, tasked with meteorological and hydrological monitoring and forecast, the Ministry of Agriculture Planning Services Unit, tasked with collection on crop, livestock production estimates, Ministry of Health and Social Welfare, tasked with surveillance of health risk. Under the guidance of ECOWAS, the National Early Warning and Response Mechanism Coordinating Centre (NCCRM) of The GAMBIA, was also created by Executive Order No. 88 in 2019. The NDMA also plans for the creation of coordinating center for early warning. The mission did not obtain sufficient information to verify the effective implementation of The Gambia's National Early Warning Strategy 2021-2026.

Annex IV. Payment for Environmental Services – Case of Tanzania

Payment for Environmental Services (PES) schemes to conserve forests are gaining popularity around the world, with an increasing number of African countries implementing them. PES schemes were originally introduced in Costa Rica and are common across countries in Latin America, including in Bolivia, Brazil, Colombia, Guyana and Peru. In Africa, Kenya, Burkina Faso, Rwanda, South Africa, Tanzania and Uganda have all implemented to some extent a PES scheme. In addition, the PES scheme could send an important signal about commitment to conservation, catalyzing external funding related to forest protection.

In Tanzania, PES schemes started in 2009, where NGOs started piloting in several districts to increase forest conservation. The villages received tangible benefits (construction of the village offices and grants on phones and bicycles in Kilosa district) and development benefits (introduction of conservation agriculture, field school, and improved charcoal stoves and bee-keeping). Some challenges of the pilots include:

- *Land rights*: obtaining land certificates and demarcation of village borders were the first step in the program since many participants didn't have land certificates. The process was very slow (6 years in some cases), and demarcation led to border conflicts in some villages. Some villagers were afraid to lose land to the program, while others equated land ownership to the right to use resources.
- *Land use planning*: each participating village was required to have land use plan or forest management plan and set aside land for productive and protective purposes. In some cases, there were internal conflicts over land use planning, especially in cases when some residents had to be relocated from forest reserves to villages.
- *Leakage*: NGOs that facilitated the program did not have power to prevent leakage (increased deforestation in areas outside pilots). The government will need to step in if the by-laws are not respected and need to be enforced.
- *Long-term effects*: the pilots run by NGOs were limited in time, and no studies were carried out to see the long-term impact of the projects. Absence of the long-term sustainability of the payments might reverse the positive impact on protecting the forest.
- *Compensation*: misunderstanding of the compensation structure dissatisfied some of the participants since they assumed they would be compensated for lost income from reduced access to the forests. There were also conflicts between charcoal burners, who more heavily relied on forest resources, and other villagers.

Source: Kulindwa, K. ed., 2016. Lessons and Implications for REDD+: Implementation Experiences from Tanzania. Chapters 4, 15.

Annex V. Climate Policy Assessment Tool

The IMF-World Bank (WB) Climate Policy Assessment Tool (CPAT) is a spreadsheet-based ‘model of models’. It allows for the rapid estimation of effects of mitigation policies for over 200 countries.⁶⁶

CPAT helps governments design and implement climate mitigation strategies. It allows for:

- **Quantification of many impacts...** This includes impacts on energy production, consumption, trade, and prices; emissions of local and global pollutants including reductions needed to achieve NDCs; GDP and economic welfare; revenues; industry incidence (across many sectors); household incidence (across deciles, urban vs. rural samples, and horizontal equity); and development co-benefits (local air pollution and health impacts). This allows for assessment of tradeoffs (e.g., among efficiency, equity, or administrative burden) and, hence, **tailoring of policy design to each country’s context**.
- **...for many climate mitigation policies...** CPAT can evaluate mitigation policies including carbon taxes, ETs, fossil fuel subsidy reform, energy price liberalization, electricity and fuel taxes, removals of preferential VAT rates for fuels, energy efficiency and emission rate regulations, feebates, clean technology subsidies, and, most importantly, combinations of these policies (‘policy mixes’).
- **...for many countries...** CPAT covers over 200 countries accounting for more than 95 percent of global GHG emissions. CPAT’s input data is complete and **there is no need for external data inputs**.
- **...in a transparent, user-friendly, and consistent framework.** Results are presented rapidly via a chart-driven interface, allowing for experimentation (and sensitivity analyses) in designing new policies or assessing existing proposals and quick incorporation of results into reports.

Additionally, CPAT contributes to national and global analysis by:

- **Emphasizing the importance of a ‘just transition’ through estimation of impacts on poverty, equity, and welfare across income groups and between urban and rural households.** It is increasingly recognized that mitigation policies should support vulnerable households. CPAT estimates impacts on households from changes in energy and non-energy prices, both across consumption deciles (vertical equity), within deciles (horizontal equity), and between urban and rural sub-groups.
- **Approximating the best available science.** CPAT is parametrized to be broadly in the mid-range of ex ante models and parameterized to ex post empirical literature. The model is streamlined, with transparent underlying parameters which are readily adjustable for sensitivity analyses.
- **Allowing for cross-country analysis, including through quantitative comparisons of all NDCs.** The model allows for consistent comparisons of mitigation ambition for over 200 countries, including all signatories of the landmark 2015 Paris Agreement (194 countries). Most signatories of the Paris Agreement have quantifiable emissions targets and CPAT converts these to a single, comparable metric (required emissions reductions vs. BAU).
- **Collating new, comprehensive datasets:** CPAT contains and contributes to new global datasets, including energy consumption and prices; GHGs; local air pollutants; price and income elasticities; environmental costs; and NDCs. It also includes comparable decile-level data on household consumption of energy and non-energy goods for 84 countries—one of the largest household budget survey (HBS) harmonization efforts to date. Lastly, CPAT includes new datasets from the IMF’s Climate Change Indicators Dashboard and spreadsheets accompanying IMF products.

⁶⁶ CPAT is being made available to governments for internal use – more details can be found at www.imf.org/cpat.

Annex VI. Options for Recycling Carbon Tax Revenues

Instrument	Metric		
	Impacts on income distribution	Impact on economic efficiency	Administrative burden
General Revenue Uses			
Environmental investment	May disproportionately benefit low-income households (for example, if their vulnerability to natural disasters is reduced)	May be less efficient than broader uses of revenues	Modest
General investments	May disproportionately benefit low-income households (for example, if basic education, healthcare, and infrastructure provided)	Potentially significant	Modest
Universal transfers	Highly progressive (disproportionately benefits the poor relative to higher income)	Forgoes efficiency benefits	New capacity needed (but should be manageable)
Payroll tax	Benefits are largely proportional across working households	Improves incentives for formal work effort	Minimal
Personal income tax	Typically, benefits are skewed to higher-income groups	Improves incentives for formal work effort, and saving reduces tax sheltering	Minimal
Consumption tax	Largely proportional to households' consumption	Some improvements in incentives for formal work effort	Minimal
Corporate income tax	Benefits are skewed to higher-income groups	Improves incentives for investment	Minimal
Deficit reduction	Benefits accrue to future generations	Significant (lowers future tax burdens and macro-financial risk)	Minimal
Targeted assistance			
Means-tested cash, in-kind transfers	Effective in helping low-income groups if social safety nets are comprehensive	Efficiency impacts unclear but likely modest	Low, if builds on existing capacity, otherwise significant
Assistance for household energy bills	Provides partial relief for all households (for example, does not help with indirect pricing burden)	Modest reduction in environmental effectiveness	Low, if builds on existing capacity, otherwise significant

Source: IMF staff.

Annex VII. Current Institutional Framework

Enabling Institutions: Current State of The Gambia

Legal Framework	Constitution (1997), National Environmental Management Act (1994), Renewable Energy Act (2013), Electricity Act (2005), Environmental Quality Standards (1999), Environmental Impact Assessment Regulations (2014), Public Utilities Regulatory Act (2001), National Disaster Management Act (2008), Forest Act (2008), Gambia Public Procurement Act (2022), Public Finance Act (2014), Local Government Act (2002) the Petroleum Act (2004), Mines and Quarries Act (2005), Fisheries Act (2007), Information and Communications Act (2009), Petroleum Products Act (2016), Petroleum Products Emergency Supply Plan Regulations (2017), Physical Planning and Development Control Act (1990), Energy Act (2005), Water Resources Council Act (1979), Hazardous Chemicals Act (1994), Biodiversity and Wildlife Act (2003), Lands Act (1980), Physical Planning and Development Control Act (1990), Survey Act of (1990), Land Acquisition and Compensation Act (1991) and Land Commission Act (2007).	Climate-relevant agencies Energy: NAWEC, PURA Disaster: NDMA, NDRMA, NDRMC Water: PURA, DWR, NEA Transport: NRA, GMA, GCAA, GPA, Agriculture: MoA, MLRGRA Other: TDA	National Energy Policy, Strategy and Action Plan (2014 – 2018), National Renewable Energy Action Plan (NREAP)(2015-2020/2030), National Energy Efficiency Action Plan (2015-2020/2030), National Investment Program on Access to Energy in The Gambia (2013 – 2020), Sustainable Energy for All Action Agenda and Investment Prospectus (2015 – 2030), NAMA for Rural Electrification with Renewable Energy in The Gambia (2015), Energy Sector Road Map (2021), National Disaster Management Policy (2007), Second Generation National Agricultural Investment Plan (2017-2026), National Biodiversity Strategy Action Plan (2015-2020), MECCNAR Strategic Plan (2019-2022), National Public Private Partnership Policy (2015-2020), National Agroforestry Strategy (2022-2032), ANR Policy (2017-2026), National Forest Policy (2023-2032), National Fertilizer Policy (2023-2032), National Seed Policy (2018-2028), National Social Protection Policy (2015-2025), National Social Partnership Policy (2015-2020), Land Use Plan (1985), Strategic National Action Plan (2014-2017), National SEA Policy (2017-2021), National Early Warning Strategy (2021-2026), National Drought Plan (2020), National Adaptation Plan for Agriculture (2016).	National Forestry Fund, Biodiversity Trust Fund, , Renewable Energy Fund, DRM Funds (national, regional and district funds).	
Institutional Framework	Climate policy and investment MECCNAR, DDP, MoFEA, DWR NCCC, IMCC, NCC, NAO	Planning and budgeting PIM and budget process (MoFEA, Sector Ministries)	RF-NDP, Medium-Term Expenditure Framework, Sector Plans	National and sub-national budgets, social programs	
Policy Framework	Climate finance MoFEA, MECCNAR	N/A	GCF, GEF, CIF, Adaptation Fund, EU Global Climate Change Alliance Programme, the Scaling Up Renewable Energy in Low Income Countries Programme, The WB's Carbon Funds and Facilities; UN-REDD Programme, Multinational and Bilateral Donors, Least Developed Countries Fund.	National Climate Change Policy (2016), Strategic Programme for Climate Resilience (2017), NDC2 (2021), 2050 Climate Vision (2021), Long-Term Climate-Neutral Development Strategy 2050 (2022), Low Emission Climate-Resilient Development Strategy (2017), Recovery Focused- National Development Plan (2023/2027), National Adaptation Programme of Action (2007), National Appropriate Mitigation Actions (2008)	National Climate Change Fund
Funding Framework	National Climate Change Fund	National Climate Change Fund	Notes: N/A = not available		

Annex VIII. Investment Decision Under Increasing Uncertainty

When designing climate-sensitive investments, it is usual to use historical weather and climate data. Engineers use it in the design of infrastructure and buildings, the insurance industry to calculate premiums and capital needs, and farmers depend on it to choose crops and scheduling. Even national governments base their assessments of energy security requirements on such data. With the projected changes in climate, however, historical data is no longer as useful for planning.

Ideally, there would be well-behaved climate models that allow to produce climate statistics for the future. Unfortunately, two problems make it impossible to provide the equivalent of historical climate data for future climates:

First, there is a scale misfit between what can be provided by climate models (resolution of ~50 km for physical downscaling and ~ 10 km for statistical downscaling) and what is needed by decision-makers.

Second, and most importantly, climate change uncertainty is significant, due to both the inherent uncertainty of the earth's climate system and the limited understanding of that system as represented in climate model projections.

However, many decisions come with a long-term commitment and can be very climate sensitive. Examples of such decisions include urbanization plans, risk management strategies, infrastructure development for water management or transportation, and building design and norms. These decisions have consequences over periods of 50 to 200 years (see table). Urbanization plans influence city structures over even longer timescales. And infrastructure and urban plans influence the spatial distribution of activities even beyond their lifetime.

Annex Table. Illustrative List of Sectors with High Inertia and High Exposure to Climate Conditions

Sector	Time scale	Exposure
Water infrastructures (e.g., dams, reservoirs)	30–200 yr	+++
Land-use planning (e.g., in flood plain or coastal areas)	>100 yr	+++
Coastline and flood defenses (e.g., dikes, sea walls)	>50 yr	+++
Building and housing (e.g., insulation, windows)	30–150 yr	++
Transportation infrastructure (e.g., port, bridges)	30–200 yr	+
Urbanism (e.g., urban density, parks)	>100 yr	+
Energy production (e.g., nuclear plant cooling system)	20–70 yr	+

Source: World Bank

Forecasting long-term climate conditions

Climate models cannot predict with certainty climate projections and their implications. It is therefore essential not to over-interpret the results of these models over the short-term, and not to use their output as forecasts, without considering natural variability.

Reflecting uncertainty in project selection

Accepting uncertainty mandates a focus on robustness. A robust decision process implies the selection of a project or plan which meets its intended goals – e.g., increase access to safe water, reduce floods, upgrade slums, or many others– across a variety of plausible futures. As such, an initial step is to identify the vulnerabilities of a plan (or set of possible plans) to a field of possible variables. Then a set of plausible futures should be identified, incorporating sets of the variables examined, and evaluate the performance of each plan under each future. Finally, those plans that are robust to the more likely futures or otherwise important to be considered are identified and project design and selection can then be based on cost benefit considerations.