Document of

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Report No: PAD3664

### INTERNATIONAL DEVELOPMENT ASSOCIATION

#### PROJECT PAPER

ON A

PROPOSED ADDITIONAL GRANT

IN THE AMOUNT OF SDR 31.5 MILLION (US\$43.0 MILLION EQUIVALENT)

TO THE

#### **REPUBLIC OF THE GAMBIA**

FOR THE

GAMBIA ELECTRICITY RESTORATION AND MODERNIZATION PROJECT

June 10, 2020

Energy and Extractives Global Practice Africa Region

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# CURRENCY EQUIVALENTS

Exchange Rate Effective April 30, 2020

Currency Unit = Gambian Dalasi (GMD) US\$1= 51.50 GMD US\$1 = SDR 0.73185

> FISCAL YEAR January 1 - December 31

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# ABBREVIATIONS AND ACRONYMS

AFD	Agence Française de Développement (French Development Agency)
AfDB	African Development Bank
AMR	Automated Meter Reading
ATC&C	Aggregated Technical Commercial and Collection
AWPB	Annual Work Plan and Budget
BADEA	Banque Arabe pour le Développement Economique en Afrique (Arab Bank for Economic
	Development in Africa)
BESS	Battery Electricity Storage System
CAPEX	Capital Expenditure
СВА	Cost Benefit Analysis
CEN	Country Engagement Note
CERC	Contingent Emergency Response Component
CIF	Climate Investment Funds
COVID-19	Coronavirus disease 2019
CPI	Climate Policy Initiative
CPS	Country Partnership Strategy
DA	Designated Account
DMA	District Metered Areas
DPO	Development Policy Operation
DSCR	Debt Service Coverage Ratio
DSM	Demand-Side Management
EBITDA	Earnings Before Interest, Tax, Depreciation, and Amortization
EIB	European Investment Bank
EIRR	Economic Internal Rate of Return
EMS	Energy Management System
EPC	Engineering, Procurement, and Construction
ERR	Economic Rate of Return
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
EU	European Union
FIMIS	Financial Management Information System
FIRR	Financial Internal Rate of Return
FM	Financial Management
FMA	Financial Management Assessment
FSM	Fecal Sludge Management
GBA	Greater Banjul Area
GBV	Gender Based Violence
GDP	Gross Domestic Product
GERMP	Gambia Electricity Restoration and Modernization Project
GESP	Gambia Electricity Support Project
GHG	Greenhouse Gas
GMD	Gambian Dalasi

GoTG	Government of The Gambia
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
GWh	Gigawatt Hours
HFO	Heavy Fuel Oil
HV	High Voltage
IC	Individual Consultant
IFI	International Financial Institution
IFMIS	Integrated Financial Management Information Systems
IFR	Interim Financial Report
IMF	International Monetary Fund
IMS	Information Management System
IPF	Investment Project Financing
IPP	Independent Power Producer
IT	Information Technology
KPI	Key Performance Indicator
kWh	Kilowatt Hour
LCPDP	Least Cost Power Development Plan
LED	Light-Emitting Diode
LFO	Light Fuel Oil
lpd	Liters per capita per day
M&E	Monitoring and Evaluation
MFWR	Ministry of Fisheries and Water Resources
MIS	Management Information System
MoFEA	Ministry of Finance and Economic Affairs
MoPE	Ministry of Petroleum and Energy
MoU	Memorandum of Understanding
MV	Medium Voltage
MVA	Megavolt Ampere
MW	Megawatt
MWp	Megawatt Peak
NAPA	National Adaptation Plan of Action
NAWEC	National Water and Electricity Company
NDP	National Development Plan
NEA	National Environment Agency
NGO	Nongovernmental Organization
NPV	Net Present Value
0&M	Operations and Maintenance
OE	Owner's Engineer
онѕ	Occupational Health and Safety
OMVG	Organisation pour la mise en valeur du Fleuve Gambie (Gambia River Basin Organisation)
OPEC	Organization of the Petroleum Exporting Countries
РАР	Project-Affected Person
PDO	Project Development Objective
PEFA	Public Expenditure and Financial Accountability
PFM	Public Financial Management

PIE	Project Implementing Entity
PIM	Project Implementation Manual
PIU	Project Implementation Unit
PPA	Power Purchase Agreement
PPF	Project Preparation Fund
PPSD	Project Procurement Strategy for Development
PSP	Private Sector Participation
PURA	Public Utilities Regulatory Authority
PV	Photovoltaic
QCBS	Quality- and Cost-Based Selection
RAP	Resettlement Action Plan
RFB	Request for Bid
RFP	Request for Proposal
RFQ	Request for Quotation
RPF	Resettlement Policy Framework
SC	Service Contractor
SCADA	Supervisory Control and Data Acquisition
SCD	Strategic Country Diagnostic
SDR	Special Drawing Rights
SEA	Sexual Exploitation and Abuse
SE4ALL	Sustainable Energy for All
SENELEC	Société nationale d'éléctricité du Sénégal (National Electricity Utility of Senegal)
SH	Sexual Harassment
SOE	State-Owned Enterprise
SPC	Shadow Price of Carbon
SPD	Standard Procurement Document
SVC	Social Value of Carbon
STC	Standard Testing Condition
T&D	Transmission and Distribution
ToR	Terms of Reference
VAC	Violence Against Children
VRE	Variable Renewable Energy
WAPP	West African Power Pool
WASH	Water, Sanitation and Hygiene
WASIB	Water Supply & Sanitation in the Greater Banjul Area
WB	World Bank
WTP	Willingness to Pay

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# BASIC INFORMATION – PARENT (Gambia Electricity Restoration and Modernization Project - P163568)

Country Gambia, The	Product Line IBRD/IDA	Team Leader(s) Christopher Philip Trimble		
Project ID	Financing Instrument	Resp CC	Req CC	Practice Area (Lead)
P163568	Investment Project Financing	IAFE2 (9258)	AFCF1 (6550)	Energy & Extractives

Implementing Agency: National Water and Electricity Company NAWEC

Bank/IFC Collaboration

No

Approval Date	Closing Date	Expected Guarantee Expiration Date	Original Environmental Assessment Category	Current EA Category
18-May-2018	31-Dec-2023		Partial Assessment (B)	Partial Assessment (B)

Financing & Implementation Modalities				
[] Multiphase Programmatic Approach [MPA]	[ ] Contingent Emergency Response Component (CERC)			
[ ] Series of Projects (SOP)	[√] Fragile State(s)			
[] Performance-Based Conditions (PBCs)	[√] Small State(s)			
[] Financial Intermediaries (FI)	[] Fragile within a Non-fragile Country			
[] Project-Based Guarantee	[ ] Conflict			
[ ] Deferred Drawdown	[] Responding to Natural or Man-made disaster			
[ ] Alternate Procurement Arrangements (APA)				



#### **Development Objective(s)**

The Project Development Objectives are to (i) improve the operational performance of the Project Implementing Entity; and (ii) improve the capacity of the Project Implementing Entity to dispatch variable renewable electricity.

# **Ratings (from Parent ISR)**

		Latest ISR		
	30-Aug-2018	08-Jan-2019	07-Aug-2019	30-Jan-2020
Progress towards achievement of PDO	S	S	S	S
Overall Implementation Progress (IP)	S	S	S	S
Overall Safeguards Rating	S	MS	MS	MS
Overall Risk	Н	Н	Н	S

# BASIC INFORMATION – ADDITIONAL FINANCING (Gambia Electricity Restoration and Modernization Project - Additional Financing - P173161)

Project ID	Project Name	Additional Financing Type	Urgent Need or Capacity Constraints
P173161	Gambia Electricity Restoration and Modernization Project - Additional Financing	Cost Overrun, Scale Up	No
Financing instrument	Product line	Approval Date	
Investment Project Financing	IBRD/IDA	01-Jul-2020	
-			
Projected Date of Full Disbursement	Bank/IFC Collaboration		
Projected Date of Full Disbursement 30-Apr-2025	Bank/IFC Collaboration		



 No

 Financing & Implementation Modalities

 [] Series of Projects (SOP)
 [√] Fragile State(s)

 [] Performance-Based Conditions (PBCs)
 [] Small State(s)

 [] Financial Intermediaries (FI)
 [] Fragile within a Non-fragile Country

 [] Project-Based Guarantee
 [] Conflict

 [] Deferred Drawdown
 [] Responding to Natural or Man-made disaster

[] Alternate Procurement Arrangements (APA)

[✓] Contingent Emergency Response Component (CERC)

#### **Disbursement Summary (from Parent ISR)**

Source of Funds	Net Commitments	Total Disbursed	Remaining Balance	Disbursed
IBRD				%
IDA	41.00	7.45	31.13	19 %
Grants				%

**PROJECT FINANCING DATA – ADDITIONAL FINANCING (Gambia Electricity Restoration and Modernization Project** - Additional Financing - P173161)

FINANCING DATA (US\$, Millions)

#### **SUMMARY (Total Financing)**

	Current Financing	Proposed Additional Financing	Total Proposed Financing
Total Project Cost	121.50	43.00	164.50
Total Financing	121.50	43.00	164.50
of which IBRD/IDA	41.00	43.00	84.00
Financing Gap	0.00	0.00	0.00



#### **DETAILS - Additional Financing**

#### World Bank Group Financing

International Development Association (IDA)	43.00
IDA Grant	43.00

#### IDA Resources (in US\$, Millions)

	Credit Amount	Grant Amount	Guarantee Amount	Total Amount
Gambia, The	0.00	43.00	0.00	43.00
National PBA	0.00	43.00	0.00	43.00
Total	0.00	43.00	0.00	43.00

# COMPLIANCE

#### Policy

Does the project depart from the CPF in content or in other significant respects?

#### [ ] Yes [ ✔ ] No

Does the project require any other Policy waiver(s)?

### [ ] Yes [ ✔ ] No

#### INSTITUTIONAL DATA

Practice Area (Lead) Energy & Extractives

#### **Contributing Practice Areas**

Water

#### **Climate Change and Disaster Screening**

This operation has been screened for short and long-term climate change and disaster risks



# **PROJECT TEAM**

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Name	Role	Specialization	Unit
Christopher Philip Trimble	Team Leader (ADM Responsible)	Energy Specialist	IAFE2
Dambudzo Josephine Muzenda	Team Leader	Water Supply and Sanitation	SAFW1
Manuel Jose Millan Sanchez	Team Leader	Power Engineer	IAFE4
Mouhamadou Kabir Ndoye	Procurement Specialist (ADM Responsible)	Procurement	EA2RU
Mohamed El Hafedh Hendah	Procurement Specialist	Procurement	EA2RU
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Gina Cosentino	Social Specialist (ADM Responsible)	Social Development	SAFS4
Ruma Tavorath	Environmental Specialist (ADM Responsible)	Environment	SAFE3
Aminata Ndiaye Bob	Team Member	Program Assistance	AFCF1
Anta Tall Diallo	Procurement Team	Procurement	AFCF1
Daniel Alvaro Diez	Team Member	Energy specialist	ILCE1
Georges Comair	Team Member	Water Supply	SAFW1
Marie-Claudine Fundi	Team Member	Program Assistance	IAFE4
Natalie Tchoumba Bitnga	Team Member	Program Assistance	IAFE2
Serdar Jepbarov	Team Member	Operations	IAFE2
Seynabou Thiaw Seye	Procurement Team	Procurement	AFCF1
Yassin Saine Njie	Team Member	Program Assistance	AFMGM
Extended Team			
Name	Title	Organization	Location



#### I. BACKGROUND AND RATIONALE FOR ADDITIONAL FINANCING

#### A. Introduction

1. This Project Paper seeks the approval of the Executive Directors to provide an additional International Development Association (IDA) grant in the amount of SDR 31.5 million (US\$43.0 million equivalent) to the Republic of The Gambia for the Gambia Electricity Restoration and Modernization Project (GERMP, P173161). The parent project, financed through an IDA grant in the amount of SDR 28.4 million (US\$41 million equivalent), was approved by the Board of Executive Directors on May 18, 2018, and became effective on November 20, 2018. This would be the first Additional Financing (AF) for GERMP, bringing total IDA financing under the project to US\$84 million equivalent. The proposed AF will scale up activities under the well-performing parent project, address a funding gap of US\$5 million, and finance new activities.

#### B. Country Context

2. The Gambia is a fragile country experiencing a major political and economic transition following a 22-year long autocratic rule that left the country impoverished and highly indebted. The country is ranked the 47 most fragile country out of 178 countries in the Fragile States Index in 2019, scoring particularly low on the state of its economy, human flight and brain drain, state legitimacy, and human rights. There are multiple drivers of fragility at play: institutional weaknesses, weak public-sector governance, inequitable and poor quality of public services, a challenging macro-fiscal situation, and vulnerability to exogenous shocks.

3. Three years into transition, the Government of The Gambia (GoTG) has taken important steps to lay the foundations for democracy and set the country on a new development path. Following Parliamentary elections in 2017, local elections were conducted in April 2018. The GoTG has allowed for a free press, rejoined the Commonwealth, and rebuilt relations with Senegal and international financial institutions. Further, it has taken critical measures to restore independence of the judiciary, strengthen the governance and operational independence of the Central Bank, establish a treasury single account, and audit the civil service, uniformed services, and strategic state-owned enterprises (SOEs). In February 2018, the Government adopted a National Development Plan (NDP) 2018-2021 for more inclusive and private sector led growth, with strong financial support from donors.

4. **Poverty incidence remains high and is associated with low endowment in human capital and assets.** Due to lack of growth in per capita income, the proportion of the population living in poverty— measured using the national poverty line—remained unchanged between 2010 and 2015, at about 48 percent. In absolute terms, however, the number of poor people grew from 0.79 million in 2010 to 0.93 million in 2015. Poverty remains concentrated in rural areas, with almost 70 percent of the rural population being poor. Inequality has been low and stable since 2010 with a Gini coefficient of 35.9 percent. Marked improvements have been achieved in literacy, especially among the youth (15-24 years) whose literacy rates doubled from 31.8 percent in 2010 to 67.2 percent in 2015.

5. **Despite the commitment of the GoTG towards gender equality, women still make up the majority of the poor and extremely poor**<sup>1</sup>. In 2018, The Gambia was ranked 174 out of 189 countries on the Human Development Index (HDI)<sup>2</sup>. The Gender Inequality Index (GII) rank of the country decreased from 128 in 2012 to 150 in 2018<sup>3</sup>. Women are faced with disparities, especially those in rural areas, in literacy, access to education, healthcare, and salaried employment, among others. In addition, women have limited access to resources such as land and financing and their rate of participation in the labor force is only 37.8 percent as compared to 53.2 for men<sup>4</sup>.

6. **Important progress has been made in restoring macroeconomic stability and reigniting growth.** Following strong performance under the 2019 International Monetary Fund (IMF) Staff-Monitored Program (SMP), with a sharp reduction in the fiscal deficit, and debt relief from key plurilateral and bilateral creditors, The Gambia was able to exit from debt distress paving the way for an Enhanced Credit Facility (ECF) approved by the IMF Board on March 23, 2020. The fiscal deficit was reduced from 6.2 percent of Gross Domestic Product (GDP) in 2018 to 2.6 percent of GDP in 2019, supported by increased tax revenues and strong donor inflows. Growth has remained robust at around 6 percent despite the fiscal adjustment and external shocks, including in the tourism sector. International reserves have been brought closer to prudential levels, interest rates have eased, and inflation has remained stable.

7. The unfolding global Coronavirus Disease 2019 (COVID-19) pandemic is expected to have severe socioeconomic consequences and slow efforts to consolidate public finances and enhance debt sustainability as well as the pace of poverty reduction (see Box 1). The tourism sector, which represents roughly 10 percent of GDP and drives overall economic performance, will be affected by travel restrictions in Europe - The Gambia's largest market. This will drag down tourism-related services and industries. Weakened remittances will delay construction activities given the importance of investment in the sector by the diaspora. Agricultural commodity exports may experience a price decline given subdued demand in the Eurozone, but on the upside, lower oil prices will improve terms of trade as The Gambia is a net oil importer. Trade and supply disruptions will also delay project implementation. Domestically, private consumption will be affected by containment measures, while reallocation of government resources to emergency health and social expenditure will curb public investment. As a result, growth is expected to temporarily decline to 2.5 percent in 2020 while the external current account and fiscal deficits will temporarily widen. To mitigate the impact of the ongoing pandemic, the IMF is providing additional support through its US\$21.2 million Rapid Credit Facility (RCF), and the World Bank is doing the same through its US\$10 million COVID-19 Emergency Response Project (P173798). This addresses the additional financing needs in 2020. The medium-term outlook assumes a V-shaped recovery and remains broadly favorable.

# C. Climate Change Vulnerability Context

8. **The Gambia is one of the most vulnerable countries to the adverse impact of climate change in Africa**. Currently, 10-20 percent of the country is flooded per annum and any significant global warminginduced sea level rise could potentially submerge much of the country since approximately one half of the total land area is less than 20 meters above sea level and about one third of that total land area is below

<sup>&</sup>lt;sup>1</sup> http://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/GAMBIA%20Gender%20Profil%20final%20(2).pdf.

<sup>&</sup>lt;sup>2</sup> UNDP's 2018 Global Human Development Report 2018.

<sup>&</sup>lt;sup>3</sup> AfDB: http://comstat.comesa.int/wiqcbkg/afdb-socio-economic-database-1960-2019?tsId=1443440.

<sup>&</sup>lt;sup>4</sup> Ibid.

10 meter above mean sea level. In this sense, The Gambia National Adaptation Plan of Action (NAPA), which provides a policy framework to address the impact of climate change at national and local levels and prioritizes the identification of key adaptation activities, identifies both the energy and water sector as country priorities to effectively develop adaptation activities that can contribute to smoothen the severe effect of climate change in the country.

9. **Overall predicted climate change and variability will present important short-term and longterm challenges to development efforts in The Gambia.** In the short-term extreme climate events including windstorms, rainstorms, droughts and dust storms will become more frequent with increased severity. Land use and land cover change, sea level rise, and coastal erosion present significant long-term challenges. Accordingly, the whole of the capital city of Banjul will be lost due to the fact that the greater part of the city is below 1 meter. Effective adaptation to climate change and its mainstreaming into national development is a pre-condition for sustainable development.

10. **Climate change will magnify natural disasters' severity in terms of intensity and frequency in The Gambia.** Substantial increases in the frequency of days and nights that are considered 'hot' in current climate are expected from climate change projections. Hot days will occur on 22-48 percent of days by the 2060s, and 25-69 percent of days by the 2090s. Days considered hot by current climate standards for their season may increase most rapidly during the rainy season of July to September. Projected increases in hot days and nights are more rapid in the east of the country than the west. The proportion of total annual rainfall that falls in heavy events tends towards increases in the ensemble projections. It is expected that there will be increasing frequency of extreme weather events evident in terms of floods and drought in the country<sup>5</sup>.

# D. Electricity Sector Context

11. The energy sector has registered solid improvements in supply and efficiency, representing positive first steps in sector reform. Power supply has been stabilized through an emergency plan implemented under the new Government. Available generation in the Greater Banjul Area (GBA) increased from 25 MW in October 2017 to 80 MW in November 2019, sufficient to meet peak demand of 70 MW. In parallel, the National Water and Electricity Company (NAWEC) implemented a number of short-term measures to improve grid stability. Taken together, these measures helped to increase power supply from 2-3 hours per day in October 2017 to almost 24/7 power in October 2019. In addition, NAWEC has been aggressively tackling Transmission and Distribution (T&D) losses, through prepayment meters financed by the World Bank, which helped to reduce network losses from 28 percent in 2015 to 19 percent in 2019. Table 1 presents key performance indicators for the sector.

12. **Important steps have been taken to support the turnaround of NAWEC into an efficient, creditworthy, financially viable utility.** NAWEC remains financially unviable, accruing around GMD500 million (around US\$10 million, or 1 percent of GDP) in yearly losses, and is a major source of fiscal risk. The cost of electricity in The Gambia is estimated at US\$0.27 per kWh on a cash-needs basis (i.e. cash needed to cover immediate operating costs and debt servicing of the utility) vs average tariff of US\$0.23 per kWh in 2019, one of the highest in Sub-Saharan Africa. The parent project and the First Fiscal Management and State-Owned Enterprise Performance Development Policy Financing (P164545) have been supporting

<sup>&</sup>lt;sup>5</sup> The Gambia Country Climate Fact Sheet, IDA and ADB Joint Partnership Strategy 2016.

several key reforms to address the financial viability of NAWEC including (i) debt restructuring, which will remove 75 percent of the debt from NAWEC's balance sheet; (ii) addressing the stock and flow issue of arrears from public sector customers; and (iii) implementation of a new tariff mechanism to introduce a number of important changes including an automatic fuel pass-through to reduce NAWEC's exposure to international oil price shocks.

13. To make electricity affordable and NAWEC financially viable, the emergency roadmap developed in 2017 aimed to diversify the energy mix and promote a shift towards more affordable electricity imports and renewable energy. Currently, The Gambia relies on heavy fuel oil (HFO) for all of its electricity generation, meaning that the cost of service of electricity is heavily dependent on global oil prices and subject to price shocks. As a result, the GoTG seeks to add 40 percent of renewable energy by 2025 and complement that with electricity imports from the emerging regional power market. The Gambia is expected to be connected to Senegal through the high voltage OMVG<sup>6</sup> interconnector as soon as mid-2021, and to Guinea and the wider West Africa Power Pool (WAPP) around 2022. Once completed, the OMVG interconnector will enable the import of up to 200 MW of affordable and clean energy from neighboring countries. Finally, through the parent project, the ECOWAS Regional Access Project (P164044) and other access projects, The Gambia is on track to achieve universal access by 2025, five years ahead of the target set out in the Sustainable Development Goals. The 2020 roadmap, under preparation, will provide an opportunity to review demand forecasts, and set goals on energy security and renewable energy.

14. **To underpin NAWEC's turnaround, a performance contract was signed between the Ministry of Finance and Economic Affairs (MoFEA) and the NAWEC Board of Directors**. This performance contract defined clear targets for indicators such as plant availability, technical losses, bill collection rates, and fuel efficiency of generation, with appropriate incentives to meet those targets. Through the World Bank supported Development Policy Financing series<sup>7</sup>, the GoTG has pursued a competitive recruitment of NAWEC's management team, which is critical to ensure that the improvements in the sector are sustained, and the reform process can continue.

15. Sustainability of these improvements, however, remains uncertain due to serious technical, organizational, and financial challenges faced by NAWEC. While energy supply has improved, it has been bolstered partly by short-term power rental in the form of a 36 MW power barge, which is due to expire in September 2020. In the short run, it is critical for NAWEC to deliver in a timely manner new plants under construction and complete the repair of old engines. In parallel, given the long lead times on generation projects, which typically take 2-4 years to realize, NAWEC must continue preparations for modernization and expansion of its generation fleet over the medium term. These planning efforts are being supported through the parent project, which is financing the update to the least cost power development plan, a key part of the 2020 energy sector roadmap update.

16. Several independent assessments and audits have identified serious deficiencies in the NAWEC organization. In particular, the financial and commercial departments have severe weaknesses in their

<sup>&</sup>lt;sup>6</sup> The Gambia River Development Organization (in French, Organisation pour la mise en valeur du Fleuve Gambie, or OMVG).

<sup>&</sup>lt;sup>7</sup> Gambia First Fiscal Management, Energy And Telecom Reform Development Policy Financing (P164545) was approved on May 14, 2020.



systems, processes and skills which may undermine the progress that has been made in the sector. The activities in the proposed AF are targeted to address these weaknesses.

Parameter	Value
Electricity Access rate	Increased from 35% (2012) to 56% (2017) <sup>8</sup>
Number of electricity customers	Increased from 155,000 (2016) to 180,000 (Sep 2019)
Installed capacity	Country: 150 MW of which 90 MW is available (November 2019)
	Banjul: 139 MW of which 80 MW available (November 2019), up
	from 25 MW available October 2017
Peak Demand	Approximately 80 MW, of which 70 MW in the GBA (2019)
Energy mix	100% HFO (2019)
Share of private sector in generation	Approximately 50% of energy generated (2019)
Average cost of service (cash needs)	US\$0.27 / kWh (2019 estimate)
Average tariff	US\$0.23 / kWh (2019)
Average T&D losses	19% (2019), down from 28% in 2015
Electricity bill collection rate	93% (2019), up from 88% in 2016
Utility debt (electricity water and	Stock of debt was approximately GMD2.5 billion (approximately
sewerage)	US\$50 million) in May 2020

#### Table 1. Snapshot of Electricity Sector Performance

#### Water Sector Context

17. **Management of the water sector is fragmented and uncoordinated**. The Ministry of Fisheries and Water Resources (MFWR) is responsible for the overall management of water resources as well as for rural water supply and sanitation services, while NAWEC is a public utility responsible for provision of water supply and sanitation services for the urban centers and provincial growth centers with more than 10,000 inhabitants, in addition to the generation, transmission and distribution of electricity. NAWEC reports to the Ministry of Petroleum and Energy. There is no direct reporting line between NAWEC and MFWR, which complicates the coordination in terms of sector policies and investments.

18. The Gambia is endowed with ample water resources whose economic value is not fully exploited. About 11.5 percent of The Gambia's surface area is covered by water and 20 percent is considered as wetland. Virtually all of the drinking water is derived from groundwater. The transboundary Gambia River flows through The Gambia and its basin fully covers the country, but the water is too saline to exploit. The River basin is managed by the OMVG, which was established in 1978 and manages several river basins among the riparian countries: Senegal, The Gambia, Guinea-Bissau and Guinea. The economic use of the water resources remains limited despite their abundance. As for groundwater, many residents in the GBA drill wells without a clear understanding of the hydrology of the area, such as the quality of the water and the sustainability of the source. No authority is clearly responsible for monitoring boreholes and sanctioning illegal wells. While the Department of Water Resources within MFWR is responsible for monitoring groundwater resources, it does not have the resources to do so.

<sup>&</sup>lt;sup>8</sup> Source: Sustainable Energy for All (SE4ALL) Global Tracking Framework.

19. Water resources management is weak, undermining the country's resilience to future, climate change-related shocks. According to Intergovernmental Panel on Climate Change's Representative Concentration Pathway 8.5 pathway, The Gambia is expected to face a sea level rise by 35 cm by 2050. A third of the country's surface area is located at or below 10 meters above sea level, and 10 to 20 per cent is seasonally or diurnally flooded.<sup>9</sup> Potentially-damaging waves are expected to flood coastal areas at least once in the next ten years.<sup>10</sup> Droughts are another climate change related risk, and they are expected to occur on average every 5 years.<sup>11</sup> While surface water resources are well understood thanks to the OMVG, and there have been some limited studies on groundwater, there has not been any modeling of the coastal and deep aquifers. Modeling will be critical in the future to increase resiliency and adaptation to climate chocks such as droughts and reduced groundwater levels.

20. **Urban water supply, which is under NAWEC's responsibility, is in crisis**. In urban areas, about 69 percent of the population has access to safely managed water, but the quality of services is weak due to frequent service outages, with some neighborhoods not receiving water for days, weeks or even months at a time. Preoccupied by emergency measures to contain the water cuts, NAWEC has not been able to extend services in urban areas at a time when urbanization has been growing at a rate of 4.5 percent a year between 2000 and 2017, and many areas still lack access to water. In addition, water quality is a challenge in terms of high levels of nitrates, iron and salinity in drinking water. Drinking water salinity is expected to further increase due to climate change and the consequent rise in sea level.

21. **NAWEC does not have essential tools necessary to run its water business properly, which represent approximately 10 percent of its revenues**. These tools include: a functioning geographical information system (GIS) to manage its assets; a hydraulic model to monitor water flow; and hydraulic zones that could help it deliver water in an organized and systematic way. In addition, NAWEC loses an estimated 33 to 50 percent of all the water it produces, either through physical losses in the distribution network or through illegal connections, commercial losses due to faulty meters, poor billing practices. About 20,000 of the current 80,000 metered connections are faulty. In addition, NAWEC does not have enough bulk water meters and thus cannot accurately measure water production and distribution through its network, hence creating the need for district metered areas (DMAs).

22. **Daily water production (112,000 m<sup>3</sup> per day) is not enough to meet demand.** Currently, Greater Banjul is dependent on boreholes tapping into a sub-shallow aquifer, but this water source is prone to contamination from untreated sewerage, as well as saline intrusion from climate change related rising sea levels. Because of this increasing salinization of the aquifer, there will be less freshwater available in the future, unless alternative water sources are developed. One option is to exploit the deep Maastrichtian aquifer, which could provide good quality deep water sources for future needs.<sup>12</sup> There is also a pressing need to improve NAWEC's storage capacity, which is currently estimated at about three hours a day. Only eight of the 29 elevated tanks are in good condition and the storage capacity is hampered by frequent power cuts and insufficient pressure to fill up.

<sup>&</sup>lt;sup>9</sup> UNDP Profile of Gambia's National Adaptation, *https://www.adaptation-undp.org/explore/western-africa/gambia*.

<sup>&</sup>lt;sup>10</sup> Think Hazard, Gambia, http://thinkhazard.org/en/report/90-gambia/CF.

<sup>&</sup>lt;sup>11</sup> Ibid.

<sup>&</sup>lt;sup>12</sup> A new project funded by the French Development Agency (Agence Française de Développement, or AFD) plans to model the aquifer and develop new deep well fields to serve Greater Banjul.



23. Dilapidated sewerage infrastructure and poor sanitation across the board are a looming health and environmental crisis. There is only one wastewater treatment plant in Greater Banjul, located in Kotu and serving mostly tourists. While there are stabilization ponds, they are overloaded, resulting in the regular discharge of inadequately treated sewage into natural receiving bodies. The second challenge is poor fecal sludge management. Many unconnected residents of GBA resort to poorly constructed septic tanks, or soak-aways constructed in areas with high water tables, with infrequent or inadequate collection and disposal of fecal sludge, which is often dumped in the open or in waterways that border agricultural zones. Poor fecal sludge management is already undermining water quality, and by extension water availability, mainly through nitrate contamination. Flooding events are expected to exacerbate the volume of untreated sewage and fecal sludge leeching into groundwater.

24. While there are several promising initiatives, together these are not enough to address the scale of the water challenge. For instance, NAWEC's SC has had a positive impact on the electricity business but did not include water in its original scope so there is an opportunity to scale this work up to increase its impact. Moreover, the legal framework is currently being updated and could bring important clarity concerning roles and mandates across different sector institutions, including a licensing regime for wells and provide the legal foundation for other crucial water sector policies. As of May 2020, the revised Water Bill was drafted and awaiting review in the President's Cabinet.

25. **Role of the World Bank and development partners**. To date, there has not been a project supported by IDA in The Gambia's water sector. This makes The Gambia an outlier in the sub-region, as the World Bank has been a leader in the water and sanitation sectors in most countries in West Africa, with significant insights and modalities generated from its diverse operations, advisory and analytical work and partnerships. Active development partners in The Gambia's water sector include the French Development Agency (in French, Agence Française de Développement, or AFD), the African Development Bank (AfDB), the European Union (EU), Japan International Cooperation Agency (JICA), and India's Eximbank. Table 5 provides more information on their activities. A rapid scoping shows that the World Bank has a strategic value added to bring in this context, notably on urban water supply, off-site sanitation, ground water resources modelling/management, and utility reform.

# E. Overall Performance of Parent Project

26. The GERMP was approved on May 18, 2018 and became effective on November 20, 2018 and is co-financed with the EU and the European Investment Bank (EIB). Implementation has been progressing well and ratings have consistently been 'Satisfactory'. The project is currently ahead of its disbursement forecasts at 19.3 percent. The GERMP builds on the success of The Gambia Electricity Support Project (GESP, P152659) which fully disbursed and closed 1.5 years ahead of schedule (March 2020). A Principles of Collaboration (PoC) agreement was signed with the EIB in November 2019 to delegate supervision of procurement of co-financed activities to the World Bank. Procurement of the solar plant (main co-financed activity) was launched in December 2019.

27. The project development objective (PDO) of the parent project are to improve (i) the operational performance of the Project Implementing Entity (PIE); and (ii) the capacity of the PIE to dispatch variable renewable electricity. The PDO will remain unchanged. The proposed AF will address a financing gap of US\$5 million and make additional investments to further improve the operational performance of NAWEC



(including adding water activities to the project scope), as well as scale up measures to address losses by improving NAWEC's commercial performance and in turn improve service quality to customers.

28. The PDO indicators for the objective to improve the operational performance of the utility are largely on track, in part due to the rapidly deployed support to the turnaround of NAWEC through the GERMP, and in part due to positive results from activities undertaken through the GESP.

#### Project components and status

29. **Component 1. On-grid solar PV with storage (US\$28.4 million of which IDA grant US\$1.7 million, EIB credit US\$26.7 million)**. This component finances a greenfield 20 MW solar PV plant with battery storage. The feasibility study has been finalized and the procurement process has been launched, with commissioning expected late 2021. The Environmental and Social Impact Assessment (ESIA) for the plant was published in January 2020. The Resettlement Action Plan (RAP) has been drafted and is under review. The RAP is expected to be completed and published in August 2020, before construction activities comment (expected late 2020/early 2021).

30. **Component 2. T&D restoration and modernization (US\$77.3 million of which IDA grant US\$25.1 million, EIB credit US\$33.6 million, and EU grant US\$18.6 million)**. The component finances T&D upgrades needed to (i) absorb renewable generation capacity; (ii) reduce T&D losses and power cuts; (iii) extend distribution network throughout the country. With respect to the GBA T&D modernization activity, the feasibility study has been completed and expects a US\$5 million financing gap. The pre-qualification process has been completed, with the request for proposals launched in February 2020. The ESIA for the activity has been drafted and is under review, and the RAP is under preparation, with both studies expected to be completed by September 2020.

31. Other activities under this component include (i) 31,000 prepayment meters, which have been delivered in the country and implementation is ongoing; (ii) 2,000 LED lightbulbs which have been installed to replace incandescent streetlights in the GBA; and (iii) MV backbone lines in the provinces. On the latter, the first line will be the Laminkotu-Diabugu corridor, where the procurement process has launched and the ESIA published April 2020, and the RAP is under preparation. The procurement process for other MV lines in the provinces is expected to kick off by December 2020.

32. **Component 3. Urgent institutional support for sector turnaround (US\$15.8 million of which IDA grant US\$14.3 million, counterpart funds US\$1.5 million).** Activities under this component are also on track. This component finances critical activities to support the turnaround of NAWEC into a financially viable and efficient utility and has strong complementarity with the energy sector related prior actions included in the Gambia First Fiscal Management, Energy and Telecom Reform Development Policy Financing (P164545).

33. The NAWEC Service Contractor (SC) was appointed in November 2017 and has a mandate to advice NAWEC's new Board and senior management of key areas of NAWEC reform. The SC has been performing strongly. It has developed a comprehensive set of diagnostics across the business, providing the analytical foundation for NAWEC's Strategic Development Plan (SDP). The Board has approved the SDP, including Key Performance Indicators (KPI) targets. A Performance Contract has been signed on the basis of a subset of KPIs in the SDP. The organizational restructuring of NAWEC has begun with recruitment



at director level. System stability issues, which were a matter of crisis during project preparation, have been substantially addressed through the implementation of key recommendations from the SC to reduce and manage outages.

34. The SC is also supporting the procurement and implementation process of the Integrated Management System (IMS; contract signed in May 2020). The IMS will provide a complete overhaul of NAWEC information systems, including separation of financial and commercial accounts for water and electricity<sup>13</sup>. Activities that will underpin the implementation of the IMS project are ongoing, including data cleaning (particularly financial data), data collection (GIS based infrastructure and customer data), reconfiguration of networks, hardware site selection, and preparation of a methodology to allocate shared-service costs between the water and electricity businesses.

35. Other activities under Component 3 include strategic studies such as the energy sector roadmap (launched December 2019), a new communications program which has helped NAWEC better engage with its customers, an important part of the citizens engagement activities supported by the project.

#### Project Management

36. The Project Implementation Unit (PIU) is well staffed, with all positions filled, including key functions such as project coordinator, safeguards, and fiduciary aspects. The Request for Proposals for the Owner's Engineer (OE) has been launched. OE will supervise the implementation of key activities under Components 1 and 2 (the solar plant and the GBA transmission modernization upgrade).

37. All key loan covenants have been met or are in course to be met soon (see Table 2). Recruitment of OE is underway, which was delayed due to the time required to process PoC resulting in postponement of the launch of the procurement for the solar plant and the transmission line. The debt service coverage ratio will be assessed once NAWEC's audited 2018 accounts are available (expected September 2020). Financial Management ratings have been consistently rated as 'Satisfactory'. Safeguards performance has consistently been rated as "Moderately Satisfactory" given the effective management of safeguards risks. Monitoring and evaluation is led by NAWEC and is satisfactory, with monthly monitoring reports regularly prepared and used to inform project implementation.

#### Table 2. Summary of Status of Legal Covenants

Covenant	Status
No later than three (3) months after the Effective Date, the Recipient shall cause its existing	Complied with
accounting software (FIMIS) to be customized by an expert firm engaged under terms of	
reference acceptable to the Association to take account of the Project's design and	
components, Schedule 2, Section IV.1 of Financing Agreement.	
No later than six (6) months after the Effective Date, the Recipient shall recruit an external	Complied with
independent auditor for the Project with qualifications and experience, and under terms of	
reference, acceptable to the Association, Schedule 2, Section IV.2 of Financing Agreement.	

<sup>&</sup>lt;sup>13</sup> NAWEC will remain as one company, but with separate accounts for the different business lines. The AF will provide further technical assistance to assess the organization options for NAWEC, including an assessment of potential benefits and risks of remaining one company versus unbundled electricity and water companies.



Covenant	Status
The Recipient shall ensure that the PIE, at all times during the implementation of the Project,	Expected soon
maintains a positive Debt Service Coverage Ratio, Schedule 2, Section IV.4. of Financing	
Agreement.	
NAWEC is publicly disclosing on a quarterly basis, within 30 days of the end of each quarter,	Not yet due
the balance of the escrow account established for the purposes of funding costs related to	
the Operations and Maintenance of the solar plant financed through the Project.	
No later than nine (9) months after the Effective Date, the Recipient shall recruit the Owner's	Expected soon
Engineer with qualifications and experience, and under terms of reference, acceptable to	
the Association, Schedule 2, Section IV.3 of Financing Agreement.	
No later than three (3) months after the effective date, the Recipient shall establish, and	Complied with
thereafter maintain throughout the implementation of the Project, a steering committee,	
with a composition, mandate, and resources satisfactory to the Association, Schedule 2,	
Section I.A.1. (a) of Financing Agreement.	
The Recipient shall ensure that the Project Implementing Entity regularly collects, compiles	Complied with
and submits to the Association on a semester basis reports in form and substance	
satisfactory to the Association on the status of compliance with the Safeguards Instruments,	
Schedule 2, Section I.E.4 of Financing Agreement.	

#### **Rationale for Additional Financing**

38. The proposed AF will allow the project to meet the PDO and increase the project's developmental impact. The proposed AF will address three issues: (i) a funding gap for Component 2; (ii) scale up investments in metering and energy efficiency; and (iii) funding gap for sector turnaround activities, which in the case of the water sector, represents a quick response to the current water crisis through targeted interventions. These actions would include reforms related to NAWEC's financial and commercial performance, measures to improve NAWEC's ability to reduce losses related to non-revenue water (NRW); actions to improve the efficiency of water pumping systems, storage and water treatment processes; and strategic studies for water, sanitation and energy and capacity building for NAWEC's water staff. Due to the limited funding envelope and short project preparation window, it is not possible to include sanitation investments in the context of this AF. However, strategic studies will be developed to lay the ground for future investments and targeted capacity building will be provided to NAWEC's sewerage arm.

- 39. There are five main axes that underpin the rationale for the proposed changes under the AF:
  - (a) NAWEC reform is at a critical moment and requires additional support to maximize the probability of success. Significant progress has been made in the NAWEC reform process. The new NAWEC Board and the GoTG are committed to the reform agenda. However, additional support is needed to complete the process, particularly on key aspects of the NAWEC organizational structure and corporate culture. The finance and commercial departments, which are critical to successful reform, require additional support. These two departments have been identified by the several independent studies as lacking capacity and requiring a change management process with significant capacity enhancement. In this regard, the proposed activities seek to support the completion of the reforms already underway and sustain the progress made. Lastly, there is strong Client demand for the AF, as confirmed by the request letter

for the AF submitted by the MoFEA and by subsequent missions and exchanges with both MoPE and NAWEC.

- (b) It is critical to incorporate NAWEC's water business into the reform process and address some urgent needs in urban water supply. The original project focused mostly on improvements in electricity supply, whereas NAWEC provides electricity and water services. While performance of the electricity business has seen some considerable improvements, the water service remains poor, with three main risks:
  - (i) Risk to the ability for NAWEC to become a financially viable utility: while the water business is a relatively small part of NAWEC's financial position (representing 10-15 percent of revenues), its poor financial performance undermines the overall business. Currently, NRW (commercial and physical losses) are conservatively estimated at 33 percent of water production due to the dilapidated distribution network, faulty meters or poor billing practices. Not only is the NRW level inefficient (as NAWEC pays for water for which it never receives revenues), but it also undermines NAWEC's ability to invest in long-term resilient infrastructure (e.g. deep aquifers and drainage to control flooding in urban areas).
  - (ii) Mismatch between NAWEC water and electricity service provision: while the electricity side of the company has greatly improved the quality and coverage of services, the water arm is struggling. Not only is service continuity down to a few hours a day, and some areas going without water for several days at a time, but there has been no expansion of coverage or new investments. Given the population growth in urban areas (4.5 percent per year during 2000– 17), this situation is untenable. NAWEC water also needs to modernize, in line with the electricity experience. For instance, while pre-paid meters and digital cash payments are now widespread for electricity, water is still billed through paper bills and in-store payments.
  - (iii) Minimal monitoring of the sanitation situation in The Gambia with health, social, environmental and economic implications: Untreated sewage and fecal sludge are regularly dumped into natural bodies, leading to sludge infiltration in the water table and increasingly contaminated groundwater as a result. Despite this alarming situation, sanitation has been relatively neglected with little knowledge and investment to address the worsening sanitary conditions in the country. While the AF will not finance investments related to sanitation, it will fund studies to assess the baseline situation, as well as feasibility studies for future investments (rehabilitating the Kotu wastewater treatment plant, building a fecal sludge management plant for Greater Banjul and reviewing the options for improving the functionality of the Banjul wastewater treatment plant).<sup>14</sup> The AF will also fund protective gear for NAWEC sewerage staff, as well as equipment to improve sewerage operations at the Banjul wastewater treatment plant. To support the GoTG's response to the COVID-19 pandemic, the project will include targeted Water, Sanitation and Hygiene (WASH) campaigns and outreach activities, the purchase of critical goods for NAWEC's operations (chemicals, spare parts, etc.), the provision of hygiene kits to the population, as well as communication on COVID-19 prevention from a WASH perspective.

<sup>&</sup>lt;sup>14</sup> It should be noted that strategic studies are proposed for sanitation and not for water as other development partners (notably AfD) are already undertaking studies or interventions in the water sector whereas the knowledge gaps in sanitation remain considerable.



- (d) The proposed AF will also help to address a financing gap that has been identified in the T&D modernization activity. A financing gap is expected on a critical activity related to the T&D modernization activity, in particular the new HV Transmission link connecting Brikama and Jabang. The proposed AF would help avoid a reduction in scope of work so that the PDO can be fully achieved.
- (e) The AF would leverage earlier results achieved on the Parent Project. For instance, drawing on (i) early results from the Parent Project such as those identified in the NAWEC SDP - loss reduction program - and (ii) success of pre-payment meters for electricity in The Gambia, the water activity will pilot water pre-paid meters for certain customers. There is also an opportunity for crossfertilization of experiences on energy efficiency and utility reform from both practices. In addition, while there are many shared corporate functions such as Human Resources, IT and accounting, so far they have been geared towards reinforcing the electricity side of the business rather than fully incorporating water. For instance, though the NAWEC SC has enabled a thorough understanding of the financial performance, human resources profile, process mapping and customer satisfaction of electricity services, this analysis has been largely missing for water. The AF is therefore an opportunity to align corporate governance between the two arms of the company and enhance the synergies among shared functions.

40. The proposed AF is strategically aligned with the World Bank Group's twin goals of reducing extreme poverty and promoting shared prosperity, the NDP, and the World Bank Group's Country Engagement Note (CEN, Report No. 123654-GM) FY18-21 for The Gambia. The AF activities are fully aligned with the NDP's Strategic Priority Five: Building our infrastructure and restoring energy services to power our economy, and one of the two objectives of the CEN, which is to restore macroeconomic stability and stimulate inclusive growth. As a key factor to address bottlenecks to growth and services, strengthening access to lower cost sustainable energy including renewables is one of the critical activities to achieve this objective. The GERMP responds to this need by improving the operational and financial performance of the utility, which will further be strengthened through the AF, and thereby improving the delivery of energy services and creating an enabling environment for growth.



Box 1. Alignment of the Proposed AF with the Operations Supported by the World Bank in The Gambia and in the Sub-region

The proposed AF is well aligned with the ongoing operations supported by the World Bank and the projects proposed for financing as follows:

- 1. The Gambia Electricity Support Project (P152659; IDA US\$18.5 million; approved in April 2016). The project provided basic investment support to NAWEC, including new generators, emergency fuel purchases, reinforcement of distribution substations, and prepayment meters. The project closed in March 2020.
- 2. **OMVG Interconnection Project (P146830; IDA US\$47 million; approved in April 2015).** The project will connect The Gambia to the WAPP, enabling HV imports, and provide the Western Transmission Backbone from Soma to Brikama.
- 3. ECOWAS Regional Electricity Access Project (Phase 1) (P164044; IDA US\$66 million; approved in December 2018). The project will build on the OMVG project to enable low-cost access through grid densification. The project is expected to enable The Gambia to achieve 80 percent to 100 percent access rates.
- 4. Regional Off Grid Electrification Project (P160708; IDA US\$150 million, Clean Technology Fund US\$74.7 million, other donors US\$40 million; approved in April 2019). This project for West Africa and Sahel countries is expected to accelerate the deployment of stand-alone PV systems for households, public services such as schools and health clinics, and productive uses.

The proposed AF is also well aligned and coordinated with, and draws lessons from the broader World Bank portfolio, in particular the Development Policy Operations (DPOs) under preparation, as well as water global initiatives:

- 5. DPO series. The Gambia Emergency DPO closed on December 31, 2017 (P163285; IDA US\$56 million) focused on NAWEC's competitive fuel contract. The FY2018–2021 Gambia DPO series under implementation such as Gambia First Fiscal Management, Energy and Telecom Reform DPO (P164545; IDA US\$30 million approved in FY20) and under preparation (a total of IDA US\$50 million is expected in the series) focuses on energy as one of the key sectors. The series will support increased bill collection from public entities and the NAWEC performance contract.
- 6. Integrated Financial Management and Information System Project Additional Financing (P132881; IDA US\$5 million; approved in September 2013) which among other activities is financing audits of five key SOEs including NAWEC. This will inform the strategic priorities for NAWEC and will support technical assistance to Public Utilities Regulatory Authority (PURA) to update the tariff methodology and tariff model.
- 7. The World Bank has undertaken several urban water supply projects in the West Africa region and around the world, which yields a rich body of technical knowledge from which to draw for the Gambian context. In particular, the World Bank's *utility turnaround framework* in the water sector offers a phased approach to utility reform that has been applied in several countries. This framework, and the experiences of other utility reforms, would be of great value to The Gambia. Lastly, the World Bank's initiative on *City-Wide Inclusive Sanitation* has generated analysis and operations to improve sanitation services in 35 urban contexts around the world.

**Finally, the proposed AF is well coordinated with the active pipeline of projects from other donors.** Table 5 outlines ongoing projects from other donors. There is effective coordination between donors active in the energy sector, achieved through regular donor meetings. The strategic roadmap was also developed through a consultative process involving all donors engaged in the sector.

# 41. In order to address effectively the increasing climate change-related challenges that The Gambia faces, this AF will support activities contributing to government priorities under the NAPA. In particular:

(a) **Energy**: The AF supports the integration of renewables, the reduction of T&D losses, as well as the development of an energy efficiency program. These activities will help the country achieve

its targets on climate change mitigation, since they aim to optimize and decrease the national electricity demand and therefore reduce GHG emissions.

(b) Water Sector: The AF will help increase access to clean water to thousands of residents of the GBA, through new connections and improvements in the quality of water treatment, which will bolster the resilience of the beneficiary population to climate change. Moreover, the rehabilitation of storage tanks will increase the back-up supply of water for the GBA during times of service disruption while the energy efficiency activities will lower the consumption of thermal energy in NAWEC's operations and facilities.

42. Electricity is a critical engine of economic growth, which is the most effective means of reducing poverty and boosting shared prosperity. Most economic activities will be impossible without electricity. Reliable, competitively priced electricity is essential for competitiveness, business development, job creation, and income generation. Electricity access is also a vital catalyst for wider social development, including the delivery of social services, such as health and education, which help lift populations out of poverty and enable economic growth. Lighting, refrigeration, and effective sterilization procedures enabled by electricity supply make health care far more effective, while electricity improves education by enabling superior lighting and powering of computers.

43. As for water, empirical evidence has shown a clear link with human capital development, especially for women. For instance, clean water supply and proper sanitation facilities increase school attendance for female students; reduce the amount of time that women spend collecting water; lower the rates of maternal mortality; and lead to lower incidents of water-borne diseases such as diarrhea and cholera. Water also has important economic benefits, as it is an important factor of production for enterprises and contributes to GDP through agriculture. Access to high quality water and sanitation services is also a good marker of the quality of overall governance in countries, as public services provide the crucial link between the government and citizens in terms of trust, citizen engagement, accountability and the strength of the social contract. Lastly, in a context of climate change, enhancing access to water services will be important given the risks of drought, sea level rise and the adverse impacts on groundwater availability.

44. The project intends to address climate vulnerability and enhance resilience to climate change by supporting energy efficiency measures and loss reduction activities related to the water and energy sectors. The AF will consider the vulnerability to climate change and disaster risks by factoring in climate effects in the design, including resilient solutions that will contribute to adaptation and mitigation. Enabling climate proofing of infrastructure, facilitating the integration of renewable energy to the grid will contribute directly to adaptation and mitigation. Activities related to improved access to and management of water supply services, retrofit thermal water pumps with solar pumps, NRW losses reductions, and water storage capacity enhancement will contribute to both adaptation and mitigation Co-Benefits. Rehabilitation of water tanks will consider the sea level rise due to climate change. Deployment of smarter technologies like SCADA and digitalization of water and energy businesses, all of which coupled with more responsive and efficient energy management, will increase resiliency to climate change.

#### **II. DESCRIPTION OF ADDITIONAL FINANCING**

A. Proposed Changes

45. The proposed activities are consistent with the current PDO. Additional indicators will be added to the Results Framework to capture the outcomes of the investments into water business (commercial losses in the water business), and targets related to the energy business will be increased. Table 3 provides a summary of the high-impact activities proposed through the AF. These activities are described in more detail below. The proposed AF would bring the total project financing to US\$164.5 million. Table 4 provides a summary of the total project financing considering the Parent Project and the proposed AF.

46. Since some activities under the AF depend on the ongoing work and results to be delivered under the parent project, the closing date of the original grant will be extended to ensure the completion of all activities to be financed under the original grant and additional financing. The closing date for both grants will be December 31, 2024. In order to build on the success of project activities thus far and increase the impact of ongoing investments, the AF will finance the activities outlined below.

# 47. **Component 2: T&D restoration and modernization (US\$12.5 million equivalent)**

**2.1 Financing gap in High Voltage modernization project in the GBA (US\$5.0 million equivalent)**: The feasibility study suggested a funding gap on the T&D restoration and modernization activity in the GBA which includes a new HV Transmission Line, dispatch center and SCADA system, to facilitate the integration of renewables. The AF will allocate additional resources to close this gap and avoid reduction in the scope (and subsequently the impact) of the investment.

**2.2 Loss reduction program (US\$5.5 million equivalent):** Through the support of its SC, NAWEC has developed a loss reduction strategy which targets reductions in aggregate technical, commercial and collection (ATC&C) losses, which will help to reduce Green House Gas (GHG) emissions in The Gambia:

- (i) With respect to technical losses, the AF will scale up activities to finance upgrades and replacement of dilapidated and overloaded 11/0.4 kV distribution transformers;
- (ii) With respect to commercial loss reduction, the AF will develop branch level energy accounting capabilities including energy audit teams, meter pillar boxes, and test equipment for field inspections;
- (iii) With respect to collection losses, given the strong impact of installed meters in reducing collection losses, the AF will scale up this activity to finance additional 30,000 prepaid meters and associated equipment, helping NAWEC to minimize its collection losses as it expands the customer base, including communication campaigns to effect behavior change on energy efficiency.

**2.3 Implementation of energy efficiency program (US\$2.0 million equivalent):** Given the strong impacts of the LED bulbs for streetlights financed under the parent project, which have helped to reduce electricity consumption of street lights by approximately 60 percent, and positive effect of the energy efficiency communication campaigns, the AF would scale up energy efficiency activities through

(i) Scale up street lighting and achieve universal coverage of LED bulbs in the GBA, requiring approximately 1,500 bulbs, replacing incandescent bulbs, and additional LED bulbs in the provinces, such as Basseh, to reduce the load in these regions;



(ii) Light retrofitting central government and central-government affiliated buildings (i.e., public buildings under central line ministries, such as schools and hospitals) with activities such as conversion to LED bulbs, installing energy efficient air conditioning units etc. It is expected that such activities will generate demonstrable energy cost savings and social co-benefits, which would form the basis for developing a national-level energy efficiency program. It is estimated the project could lightly retrofit approximately 20-30 buildings, depending on the building sizes and measures undertaken.

#### 48. **Component 3: Urgent institutional support for sector turnaround (US\$16.5 million equivalent)**

**3.1 Support for NAWEC turnaround (US\$10.0 million equivalent**): The NAWEC restructuring process is underway but its implementation has revealed the need to reinforce the ongoing support to ensure that the reform process is successful. Supported activities include:

- (i) Scale up of the NAWEC SC support, including adding water to the scope: the performance of the NAWEC SC has been highly satisfactory to date. The proposed AF would finance additional support from the SC to scale up the existing support to the electricity business such as (i) support the change management process to the reorganization to promote the sustainability of reforms, which would benefit both the water and electricity arms of the business; (ii) building fit-for-purpose financial, commercial and planning departments in NAWEC, which are shared functions by both the water and electricity arms of the business; (iii) building a regulatory affairs department including support for tariff applications under the new tariff methodology; (iv) support for the implementation of NAWEC's SDP including systems for tracking utility performance data and energy efficiency practices; and (v) activities to improve the Occupational Health and Safety (OHS) practices in NAWEC water and electricity operations. The SC will also provide capacity building support to NAWEC Water, which was not included in the SC's original scope of work. The integration of water business will introduce requirements to manage climate change risks such as desalinization and contamination. The energy audit for the water business will lead to improve in efficiency thus reducing GHG emissions at the utility level. Combined savings from efficiency standards, utility-run energy-saving programs and energy building codes will directly reduce carbon pollution and prevent the need to increase energy production. Energy efficiency increase will make the equipment able to do the same or more with less electricity which contributes to climate change mitigation.
- (ii) Scale up of IMS to include water: the AF would expand the scope of the IMS contract to include water modules, which were included in the bidding documents but not the negotiated contract due to lack of funds. These activities will improve efficiency of water management, thus reducing energy costs and GHG emissions which contributes directly to climate change mitigation. Reducing demand for energy by using SCADA system and digitalization will reduce the need for additional water supplies to meet the growing water demand.
- (iii) Change management: the GESP and parent project have focused substantially on building the network, and institutional changes are underway including a new NAWEC Board. To solidify the change process, the AF will finance consultants, on fixed term performance contracts, to advise and or be part of the NAWEC management team for key functions. The objective of



this support will be to facilitate the change process within NAWEC and establish fit for purpose departments within the business, with a corporate culture which supports a shared vision for a well performing utility amongst its peers.

(iv) Support to modernize NAWEC: with activities such as (i) new energy efficient office buildings for the newly formed projects and planning directorate (part of the new NAWEC reorganization), which will also host the PIU; (ii) light rehabilitation of approximately 40 customer service centers, expected to provide one stop shops for water and electricity customers, including actions to improve the energy efficiency of these buildings; (iii) support for modernizing the NAWEC customer call center for water and electricity complaints; (iv) capacity building for NAWEC water staff on technical and financial matters, including through study tours, workshops and ad hoc technical experts; (v) scale up communications activities from the parent project, to potentially include rebranding of NAWEC; and (vii) measures to promote gender equality in technical- and engineering jobs, as well as in the broader work environment.

**3.2 Strategic studies for energy and water (US\$4.0 million equivalent):** The recently launched energy sector roadmap is the key strategic reference point for the energy sector, while a similar reference document is under development for the water sector.<sup>15</sup> The scale up of activities will include additional strategic studies for NAWEC and the MoPE, such as:

#### (i) Joint energy and water

- Auditor for the monitoring and validation of the NAWEC Performance Contract;
- Gender gap assessment in the energy and water sectors, including assessment of the institutional dynamics of gender empowerment and implementing the associated action plan on gender equity;
- Study to assess the options to structure the water and energy businesses;
- Capacity building to modernize the MoPE, as well as study tours to facilitate south-south learning.

#### (ii) Energy

- Grid code to support dispatch of renewable energy and imports, and set quality standards;
- Update of the energy policy and development of an electrification policy for the MoPE;
- Studies required to scale up renewables and crowd-in private sector investment;

#### (iii) Water and sanitation

- A study on the Kotu wastewater treatment plant, including a feasibility study for improving its functionality in future (including an assessment of climate change risks such as sea level rise);
- A diagnostic on fecal sludge management (FSM) in the GBA as well as a feasibility study for the construction of a new FSM treatment plant (with scenarios for reuse of treated sludge or potential for electricity generation thus contributing to climate change mitigation);

<sup>&</sup>lt;sup>15</sup> The AfD is funding a water masterplan and a sanitation and drainage masterplan that will provide clarity on sector demand, supply and investment needs.



• A review of the Banjul wastewater pumping station, including an assessment of how to improve its functionality.

**3.5 Project management (US\$2.5 million equivalent):** Corresponding to the scale up of activities for water and electricity, the AF will finance associated project implementation costs including support to the PIU and scale up of funding for the preparation and implementation of safeguards instruments for activities under the parent project. The additional support will enable the PIU to hire a water engineer, scale up of the OE to include supervision for water civil works, and reinforce support on M&E and procurement for the water activities.

#### 49. Component 4: Short-term investments to address the water crisis (US\$11.5 million):

**4.1 NRW reduction plan (US\$4.2 million equivalent)**: A technical assistance firm will be hired to develop and implement a NRW plan, including developing hydraulic zones and DMAs; developing an active leakage detection program; installing bulk meters (85 percent of the bulk meters need to be replaced); purchasing and installing automated meter reading (AMR) systems (approximately 20,000) to replace faulty or outdated meters; piloting pre-paid meters for administrative and commercial customers; and constructing a new meter workshop on NAWEC's premises to calibrate and repair faulty meters. NAWEC also needs equipment and spare parts materials for water distribution network maintenance. Lastly, this activity will support the development of a study to assess the options for addressing NRW in future, including cost estimates and recommendations for the best implementation modalities. NRW activities will contribute to energy efficiency gains leading to lower emissions and reducing stress on existing water sources while maintaining or increasing the level of service which contributes to climate change mitigation and adaptation. More efficient water supply services will make the targeted communities less vulnerable to the growing climate change—related risk of droughts.

**4.2 New connections (US\$3.8 million equivalent)**: The AF will finance about 5,000 new household connections to extend NAWEC's customer base. This activity will entail minor works to connect households to the main distribution line, including installing unplasticized polyvinyl chloride pipes and polyethylene high-density pipes, as well as small pipes and fittings. In addition, the newly connected households will be fitted with AMR enabled retail meters, which should improve the accuracy of meter readings as currently NAWEC lacks the human and technical resources to ensure timely and accurate readings (e.g. three meter readers per sector serving thousands of customers). Higher coverage rates will increase the beneficiary communities' resilience to climate change.

**4.3 Rehabilitation of water storage tanks (US\$1.7 million equivalent)**: This activity will rehabilitate three storage tanks in Greater Banjul in order to improve NAWEC's water storage capacity. The tanks, built of steel in the 1960s, have deteriorated greatly over time, leading to corrosion and leakage of toxins into drinking water. Two of the tanks have been decommissioned. In addition, the poor condition of the tanks forces the pumping systems to work outside of the nominal operating points, thus decreasing the efficiency of pumps and increasing the energy consumption.<sup>16</sup> Rehabilitation of tanks will consider environmentally friendly methods and civil

<sup>&</sup>lt;sup>16</sup> According to the AfD Feasibility Study and based on an assessment of a selection of the tanks.

works will check for the structural integrity and resiliency to sea level rise and floods events due to climate change. Increasing storage will contribute directly to climate change adaptation.

**4.4 Improving water quality at selected NAWEC water treatment plants (US\$1.0 million equivalent)**: The AF will finance measures to remove iron and manganese from selected water treatment facilities (including either Gunjur or Bansang or both) in GBA. The iron levels have reached such high levels of contamination that one of the boreholes at Gunjur had to be decommissioned. The technical options for improving water quality will be explored (aeration, water softeners, iron filters etc.) and the project will finance the needed equipment, technical services and minor civil works that may be needed. This activity should help restore water services to up to 15,000 people.

**4.5 Energy efficiency measures for NAWEC's water business (US\$0.75 million equivalent)**: This activity will entail retrofitting current thermal water power pumps with solar pumps in order to lower NAWEC's electricity bill and ensure clean backup power in case of service disruptions. The energy audit will determine the exact pumps that can be replaced with solar.

50. **Component 5: Urgent actions to support the COVID-19 response (US\$2.5 million equivalent):** given the crucial role that clean water, hygiene, behavioral practices and sanitation can play in COVID-19 prevention and response, the AF will support GoTG's response by (i) providing key equipment, gear and other inputs to enable NAWEC to provide and extend water services to the population; (ii) installing handwashing facilities in public places; (iii) mobilizing water trucks and setting up water distribution points in neighborhoods without running water; (iv) providing hygiene kits (soap, cleaning materials, disinfectants etc.) to households and essential service providers – including health centers; (v) supporting WASH sensitization campaigns; and support to improve the OHS practices at NAWEC such as protective equipment and clothing for electricity, water and sewerage maintenance teams. These interventions will be led by NAWEC, working closely with health authorities and other partners in The Gambia.<sup>17</sup>

51. This component will also support NAWEC to respond to the COVID-19 pandemic including spare parts to ensure security of supply to critical health facilities, and IT equipment to enable NAWEC management and key staff to work remotely.

52. **Component 6: Contingent Emergency Response Component (CERC) (US\$0.0 million):** This component, with a provisional zero allocation, would allow for a quick reallocation of resources within the total project financing envelope to boost the country's response in the event of a national emergency. If triggered, paragraph 12 of the World Bank policy for Investment Project Financing, regarding "Projects in Situations of Urgent Need of Assistance or Capacity Constraints" would apply. Taking into account the COVID-19 pandemic, there is a moderate probability that during the life of the project, The Gambia would experience a natural or a man-made disaster, including a disease outbreak of high public importance or other health emergency. Triggers for the CERC will be clearly outlined in the project implementation

<sup>&</sup>lt;sup>17</sup> To ensure appropriate oversight over the leasing of water tanks, and all COVID 19 activities, the following measures will be taken: i) NAWEC will lease the tankers from private operators and supply the water directly from its boreholes; ii) the PIU will start monitoring the COVID 19 activities and reporting monthly; and iii) the supervision engineering firm will also contribute to activity monitoring.



manual (PIM) acceptable to the World Bank. Disbursements will be made against an approved list of goods, works, and services required to support crisis mitigation, response and recovery. All expenditures under this Component will be appraised, reviewed, and found to be acceptable to the World Bank before any disbursement is made. A CERC annex will be included in the PIM.

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Activity	Туре	Total
		US\$ million
Component 2: T&D restoration and modernization		
2.1 Financing gap on High Voltage modernization project in the GBA	Financing gap	5.0
2.2 Loss reduction program	Scale up	5.5
2.4 Implementation of energy efficiency program	Scale up	2.0
Component 3: Urgent institutional support for sector turnaround		
3.1 Support for NAWEC turnaround	Scale up	10.0
3.2 Strategic studies for the water and energy sectors	Scale up	4.0
3.5 Project implementation support	Scale up	2.5
Component 4: Urgent actions to address the water crisis		
4.1 Non-revenue water NRW reduction plan	New	4.2
4.2 New connections	New	3.8
4.3 Rehabilitation of water storage tanks	New	1.7
4.4 Improving water quality at selected water treatment plants	New	1.0
4.5 Energy efficiency measures for NAWEC's water business	New	0.75
Component 5: Short-term actions to support the COVID-19 response		
5.1 Urgent actions to support the COVID-19 response	New	2.5
Component 6: Contingent Emergency Response		
6.1 Contingent Emergency Response	New	0.0
Total AF		43.0

#### Table 3. Summary of Activities to be Financed through the AF

#### Table 4. Total Project Financing

Project Components	Total	IDA	IDA	EIB	EU	Counter-	IDA
	Cost		AF			part	
			US\$,	millions			Percent
1. On-grid solar PV with storage	28.4	1.7	0.0	26.7	0.0	0.0	6%
2. T&D restoration and modernization	89.8	25.0	12.5	33.7	18.6	0.0	42%
3. Urgent institutional support for sector	32.4	14.3	16.5	0.0	0.0	1.5	95%
turnaround							
4. Urgent actions to address the water	11.5		11.5				100%
crisis							
5. Urgent actions to support the COVID-19	2.5		2.5				
response							
6. Contingent Emergency Response	0.0	0.0	0.0				100%
Total	164.5	41.0	43.0	60.4	18.6	1.5	51%

#### **B.** Implementation arrangements

53. The AF will use the same implementation arrangements as the parent project. NAWEC will be the implementing agency of the GERMP, assuming all fiduciary and reporting responsibilities to the World Bank. The PIU for the Parent Project is well established within NAWEC. Dedicated positions include project coordinator, procurement specialist, financial management (FM) officer, two safeguards specialists, project accountant, and a T&D engineer. Part time positions include a generation engineer, and a monitoring and evaluation (M&E) specialist, as well as international consultants (procurement and safeguards) to support on these critical functions. The PIU has received specific training in World Bank fiduciary rules and guidelines. To accommodate the AF activities, a full-time water engineer will be recruited to the PIU, as well as a gender focal point. A supervising engineer firm will also be recruited to conduct quality control and supervision support for water civil works and equipment.

54. **The Steering Committee established under the Parent Project** includes representation of various ministries at the Permanent Secretary level. The Steering Committee includes the MoPE, MoFEA, Ministry of Local Government, Ministry of Gender, Office of the President, PURA, National Environmental Agency, and NAWEC. It meets regularly (usually quarterly) to advise on strategic questions related to the GERMP's implementation and monitor project progress and planning for subsequent periods.

55. **Additional implementation considerations:** the PIM shall be updated to take the AF activities into account (target September 2020).

# C. Results monitoring and evaluation

56. **Data for monitoring project outcomes and results indicators will be generated by NAWEC, with the support of the OE.** Updates on progress will be reported through biannual reports. The PIU includes a M&E specialist to track the indicators and provide support for data collection. Indicators have been added to the Results Framework to monitor the impact of additional investments and activities in the water sector under the AF.

#### D. Role of partners

57. The World Bank has been coordinating with other development partners to ensure complementarity of the AF activities. Tables 5 and 6 summarize the various interventions of each development partner (ongoing and pipeline) in energy and water respectively. Components 1 and 2 of the parent project will continue to be co-financed jointly with the EIB and the EU, but these partners will not contribute to the AF.

Development Partner		Activities
AfDB	•	Access project (approximately US\$17 million, approved December 2019);
	٠	Green mini grid study;
	٠	Legal advisory service to develop standard PPA documents etc.
Peoples Republic of China	•	Exploring T&D project (funding window to be confirmed).
ECOWAS BANK for Investment	•	US\$30 million line of credit: financing for the Rural electrification extension
and Development		project, including 5MW HFO engine plus access connecting 36 villages.
EU and EIB	•	GERMP co-financiers;

#### Table 5. Development Partner Activity in the Gambian Energy Sector (ongoing and planned)



Development Partner	Activities
	• Preparing off-grid solar-PV project for schools and health clinics.
German Foreign Ministry	Providing system control tools and TA.
Islamic Development Bank	• US\$25 million: financing a new 20 MW HFO plant at Brikama, expected to be commissioned early 2020;
	<ul> <li>US\$25 million: Credit Facility for HFO purchase by NAWEC;</li> </ul>
	Mini grids in the provinces.
India Exim Bank	• US\$22.5 million: financing T&D expansion and rehabilitation project in the GBA.
Millennium Challenge Corporation	• Program on hold (approx. US\$20 million Technical Assistance expected for energy sector).
Kuwaiti Fund	• US\$25 million: financing the two sub-stations in The Gambia for the OMVG interconnection project.
UNDP	• Financed a feasibility Study on rural hybrid systems (solar / diesel); tender for IPP launched in 2019, with support of NAMA facility.

#### Table 6. Development Partner Activity in the Gambian Water Sector (ongoing and planned)

Donor	Current activities in the Water Sector			
AfDB	AfDB approved a Rural Water Supply and Sanitation Project (US\$40 million) in 201			
	The project will construct 144 boreholes in rural areas, as well as some handpumps			
	and sanitation facilities.			
EU	The EU has not yet made major investments in Gambia's water sector. However, it			
	plans to do a scoping paper to document the various initiatives from the			
	Government, public authorities and development partners in the sector. This study			
	will likely begin early in 2020.			
AFD	AFD's Water and Sanitation in the Greater Banjul Project, approved in January 2020			
	and expected to begin in early 2020, is expected to increase water production in			
	Greater Banjul by 25 percent, extend the distribution network and improve some			
	commercial functions e.g. by purchasing meters. The project will also help establish			
	a Master Plan for Drinking Water, Sanitation and Solid Waste, an important exercise			
	for determining demand and planning investments in the sector. Groundwater			
	modelling is also planned. However, the needs far outstrip the AFD financing (EUR			
	16.5 million over 3 years) and the Master Plan will likely not be available until			
	sometime in 2021.			
India Exim Bank	The India Exim Bank is financing the replacement of 81 km of asbestos and obsolete			
	cast iron pipes with UPVC pipes in Greater Banjul and provincial cities through a			
	US\$22.5 million loan.			
JICA	JICA is currently preparing the Phase IV Rural Water Supply Project, which will cover			
	5 regions in rural Gambia. It will finance the construction of solar-powered water			
	systems in 20 sites. The project is estimated at US\$13 million to US\$15 million			

#### III. KEY RISKS

58. **The overall project risk rating is Substantial.** The ratings reflect the entire project. In addition, there remain several challenges, such as the overall governance risk in The Gambia; capacity of the public



utility, NAWEC, to manage transactions; and technical risks, such as generation and transmission capacity bottlenecks. The key risks and proposed mitigation measures are discussed below.

59. **Political and governance risks are High.** As a state-owned company, NAWEC is exposed to political and governance risks which could affect the project. While political and governance risks in The Gambia remain elevated, the new Government has made progress with the introduction of a fiscal stabilization program and reform measures to define institutional arrangements that enhance transparency and accountability in public sector procedures and promote Private Sector Participation. **Mitigation**: This risk is being closely monitored by the World Bank in coordination with the IMF and the wider donor community. The governance risk is partly mitigated through NAWEC's new Board (appointed in January 2019), the new Board Charter (adopted by the President's Cabinet in January 2020), and will further be mitigated through the introduction of the SOE Bill currently being developed. The high-level commitment of the GoTG to the energy sector will also mitigate the risk on political and governance.

60. Macroeconomic risks is High. The Gambia has gone through a difficult and prolonged process of establishing a positive track record on macroeconomic performance and securing financial support and debt relief needed to address its unsustainable debt. While the economic recovery strengthened further in 2019, external factors could still negatively impact the macroeconomic path and derail reforms. A prolonged global contraction (L-shaped recovery, for instance) particularly in Europe and a widespread domestic COVID-19 outbreak could have a severe impact on the economy and would delay the V-shaped recovery envisaged for The Gambia in 2021. It may also increase pressure on external and fiscal balances over the medium-term. This macroeconomic risk could potentially affect counterpart funds availability for the project. **Mitigation**: With the support of development partners, the GoTG is committed to proactive debt restructuring, fiscal discipline, reducing the reliance on domestic financing and maintaining a flexible exchange rate regime. It intends to implement reforms of the public sector, rationalize agencies, and pursue ongoing reforms of SOEs, which are a key source of fiscal risks, and further streamline the civil service and security forces based on recently completed audits. This risk is being closely monitored by the World Bank in coordination with the IMF and the wider donor community. The ongoing COVID-19 pandemic is likely to have a substantial impact on short-term growth prospects and will complicate the achievement of fiscal and reserve targets, but additional support from the IMF, the World Bank, and other donors will help mitigate these risks.

61. Sector strategies and policies risk is Substantial. The AF is built on confidence created by the parent project, the GESP, and the DPO series. Successful reform of The Gambia' electricity sector requires strong political commitment to a long-term reform vision, and a coherent sector wide strategy, as articulated in the Energy Sector Road Map. As for the water sector, a new Water Bill has been developed and sent to the President's Cabinet but the process has been lengthy and the timeline for the Bill to be approved and signed into law is unclear. Mitigation: This risk will be mitigated through the DPO series, which will have as one of its triggers the approval of the 2020 Energy Sector Roadmap, and establishment of the taskforce to monitor implementation. As for water, the activities have been confined to NAWEC rather than broadening the scope to other sector actors or segments, thus limiting the risk of policy or legislative changes as NAWEC's position is not part of the proposed Water Bill.

62. **Technical design of project risk is Substantial.** Th AF will use well-established technologies and there will be no complex construction that may result in operational challenges. However, since all risk



apply to the entire project and not just the proposed new activities, this risk has been rated as substantial taking into account the technical design risks in the parent project, especially the solar with storage plant. **Mitigation**: The proposed AF will support technical training and capacity building for NAWEC on installation and O&M of these systems.

63. **Institutional capacity for implementation and sustainability risk is High.** The AF scale up activities will be implemented with the support of a high performing PIU, but implementation challenges within NAWEC more broadly remain. While this risk remains high for activities in the parent project, the risk is lower for the activities supported in the AF. **Mitigation**: (i) continuity of dedicated staff in the key PIU functions (procurement, safeguards, and FM); (ii) consultant to support with procurement aspects of project implementation; (iii) continued strong capacity-building program for the PIU and NAWEC staff in procurement and safeguards and close supervision of safeguard aspects; and (iv) a change management process to promote the sustainability of reforms.

64. **Fiduciary risk is Substantial.** Although NAWEC has experience with the Parent Project, GESP, and other projects financed by other development partners, there is still a need for building a fully experienced implementing agency for IDA-financed projects. **Mitigation**: The PIU will continue to be staffed with dedicated procurement and FM staff. During implementation, the PIU will be also supported by the World Bank and individual consultants with expertise in procurement responsibilities.

#### IV. APPRAISAL SUMMARY

#### A. Economic and Financial analysis

65. The economic and financial analyses have been prepared for the following components: Component 2: T&D restoration and modernization and Component 4: Urgent actions to address the water crisis. Results of the Economic and Financial analyses are summarized in Table 7, with details provided in the text below. Additional details are presented in Annex 3.

	Economic NPV (US\$ million)	EIRR (percent)	Financial NPV (US\$ million)	FIRR (percent)
2.1 T&D upgrades in the GBA	20.7	19.4	11.1	13.4
2.2 Loss reduction program	40.8	55.5	69.0	83.7
2.3 Energy efficiency program	2.7	79.1	1.5	49.0
4.0 Short-term actions to address the water crisis	0.3	12.5	2.0	42.6

#### Table 7. Summary of Economic and Financial Analysis

66. **Rationale for public financing**. The energy investment component proposed for financing by the AF consists of construction of electricity T&D assets that will remain state owned. Hence, public sector financing is the most efficient and least costly financing mechanism under the existing institutional framework. Likewise, the water investment component, which consists of tertiary network assets for



additional water connections, equipment for NRW reduction and water distribution network maintenance, and rehabilitation of water storage tanks, will also remain state owned under the existing water institutional framework. Furthermore, while reform advances to improve institutional clarity in the water sector, public sector financing is the only feasible and the most efficient option at this time. The AF will help address priority water challenges including studies and support to help crowd-in future private sector participation in the sector. The targeted WASH interventions included in the AF in response to COVID-19 serve to ensure NAWEC's continued water operations, provide hygiene kits to the population and support communication efforts on COVID-19 prevention from a WASH perspective. Public sector financing of this proposed COVID-19 response is justified given that these interventions have been proven to reduce the spread of the coronavirus, thus safeguarding public health, which is a public good. Moreover, IDA financing will allow a rapid response to short-term needs to reduce the loss of life and the economic impact of the outbreak.

67. **Value added of the World Bank's support**. The GERMP leverages the World Bank's experience in neighboring countries and lessons learned from previous and ongoing projects in similar settings. The water component will be the first IDA financed operation in The Gambia's water sector and will benefit from the World Bank's leadership, evidence-based experience and lessons learned from its diverse water and sanitation support to other countries in West Africa, the rest of Africa and the world. For the emergency COVID-19 response, the World Bank brings its extensive WASH experience combined with its high standards in supporting client countries in emergency situations, which will help the GoTG's efforts to limit the spread of the current outbreak.

# Component 2: T&D restoration and modernization

68. **Project benefits**: The primary benefits from the AF activities, which improve the T&D network, come from increased consumption by existing and new customers, from transformer and lines loss reduction, and from outages reduction. The T&D component of the AF will connect new customers to the grid for whom the service of the utility would not be available without the project. The benefits of the electricity delivered to these customers are valued at what they would be willing to pay for the incremental energy supplied by the project.

69. The economic benefits of loss reduction are calculated using the 'with-without' project approach and evaluated at the willingness to pay since it is assumed that this reduction in losses would translate into an increase in sales. The economic benefits from the reduction of outages are valued at the costs of electricity to the end users (that is, the average opportunity cost of the energy when outages occur). The financial benefits are based on average tariff data and increased sales that derive from reduced T&D losses. The costs considered include investment costs and associated operations and maintenance.

70. **Economic analysis**: for the T&D upgrades in the GBA, the analysis done for the parent project has been updated to reflect the estimated cost increase. The revised economic net present value (NPV) is US\$20.7 million and the revised Economic Internal Rate of Return (EIRR) is 19.4 percent, still well above the hurdle rate. For the loss reduction program, the economic NPV is US\$41 million and the EIRR is 55.5 percent (discount rate of 6 percent). For the energy efficiency program, the economic NPV is US\$2.7 million and the EIRR is 79.1 percent. The switching values indicate that the project could sustain substantial variations in critical variables before the NPV becomes zero.
71. **Financial analysis**: for the T&D upgrades in the GBA, the financial analysis is also updated from the Parent Project. The financial NPV is US\$11.1 million and the Financial Internal Rate of Return (FIRR) is 13.4 percent. For the loss reduction program, the financial NPV is US\$69 million and the FIRR is 83.7 percent (discount rate of 6 percent). For the energy loss reduction program, the financial NPV is US\$1.5 million and the FIRR is 49.0 percent (discount rate of 6 percent). The switching values indicate that the project could sustain substantial variations in critical variables before the NPV becomes zero.

### Component 4: Short-term actions to address the water crisis

72. **Project benefits:** The primary economic benefits, specifically related to new water connections, rehabilitation of water tanks and recommissioning of wells sub-components, will accrue from access to piped water for 45,000, 4,000 and 15,000 people, respectively, or a total of 64,000 people in the GBA who are not currently served, or are only partially served, by NAWEC. It is estimated that these new NAWEC customers will increase their daily consumption from 20 to 60 liters per capita per day. Additionally, these new customers will also receive health benefits, especially the avoided costs of waterborne diseases, thanks to access to water of better quality. They will also benefit from time savings from water collection, especially for children and women who usually carry out these activities for their families, as they will have access to piped water connections at their homes.

73. Primary benefits expected from the commercial NRW reduction and billing efficiency improvements will be an increase in NAWEC revenues. These constitute mostly a financial benefit for NAWEC. There will also be a marginal economic benefit from the installation of meters as consumers will be more careful with their water use given that they will have to pay for water consumed that will be metered. Furthermore, the increased net financial benefits from this sub-component will ultimately turn into net economic benefits for society at large when NAWEC uses the increased revenues to continue investing in improving service quality and expanding water access.

74. In addition to the economic benefits that the increased water services will provide, NAWEC will also attain financial benefits as the AF will finance activities for the implementation of the NRW reduction plan that will reduce collection and commercial losses and increase NAWEC's revenues. Further financial benefits will accrue from connection fees and water provided to the new additional 5,000 households that will result in additional revenues to NAWEC. When NRW actions are fully implemented and all new connections are installed, NAWEC will receive additional revenues of about US\$1.1 million per year.

75. The benefits from AF activities which increase access to new customers to safe water through the network, for whom the service of NAWEC would not be available without the project, are valued at what the new customers would be willing to pay for the incremental water supplied by the project. This value, US\$0.55/m3, takes into account their willingness to pay (WTP) adjusted for health and time-savings benefits. The economic costs associated with this sub-component are the investments in the new 5,000 household connections, in the rehabilitation of the water tanks, in the recommissioning of wells, and the production cost of the additional water to be provided to these new customers. The financial benefits from AF NRW activities are estimated based on average tariff data and increased sales that derive from the commercial NRW reductions and billing efficiency improvements. The costs of this subcomponent are the investments in 20,000 AMR retail meters, 200 prepaid meters for institutional and commercial users, equipment and materials for the DMAs, and TA for the NRW reduction program.

76. There will be energy savings through the efficiency measures that the rehabilitation of water tanks and use of solar pumps will bring. These savings will amount to 627.8 GWH of electricity used to produce water per year by 2025. These energy savings not only constitute a financial benefit for NAWEC but also decrease the consumption of fossil fuels and therefore reduce GHG emissions and provide global social benefits as measured in Annex 3.

77. **Economic analysis:** The access to piped water sub-component is economically viable with an NPV of US\$0.3 million, an EIRR of 12.5 percent, and a benefit-cost ratio of 1.2. Moreover, when contributions of the water sub-components to the reduction of carbon emissions are taken into account, the EIRR goes from 12.5 percent up to a range between 16.5 and 20.4 percent and the economic NPV goes from US\$0.3 million to a range between US\$0.5 and US\$0.8 million. This means that these water sub-components are not only viable according to their own economic merits, but also contribute to global social benefits of mitigating GHG emissions through the reduction of energy use. The switching values of the economic analysis of these sub-components indicate that their economic benefits are robust for significant cost increases and implementation delays. There are risks associated with a smaller number of new household connections compared to baseline assumptions that will require close implementation support to ensure NAWEC carries out in a timely manner the actions needed to achieve expected targets and avoid the erosion of economic benefits.

78. With respect to Component 5, the emergency actions in support of the COVID-19 response included in the AF will increase the population's access to water services and, combined with the provision of hygiene kits, will enable better hygiene practices necessary to reduce contagion. Communication on COVID-19 prevention from a WASH perspective will help mitigate the spread of COVID-19. While the benefits from these activities are difficult to quantify, given the crucial role that WASH can play in COVID-19 prevention and response, the AF support will bring major benefits by helping reduce sickness and death and the economic impacts of this outbreak.

79. **Financial analysis:** The financial benefits for Component 4 are based on average tariff data and increased sales that derive from additional water billed due to commercial NRW reductions and billing efficiency improvements, as well as electricity costs savings due to the use of solar pumps and rehabilitation of water tanks. Fees for water connections and water supplied to the new additional 5,000 households result in additional revenues to NAWEC. The financial NPV is US\$2.0 million and the FIRR is 43.6 percent.

80. GHG accounting was conducted for relevant AF activities as part of the economic analysis for Components 2 and 4. The new activities in Component 2 will lead to a net emissions reduction of  $15 \text{ tCO}_2$  over the economic lifetime of 40 years. The adoption of solar pumping and more efficient use of electricity due to the improved storage tank capacity financed under Component 4 will lead to net emissions reduction of  $4,764 \text{ tCO}_2$ -e from solar pumps and  $2,611 \text{ tCO}_2$ -e from improved storage tank capacity over the economic lifetime of 10 years and 20 years, correspondingly. The assumptions behind this analysis are presented in Annex 3.

81. **Financial Analysis of NAWEC:** Many positive and necessary steps have been taken to improve the financial stability of NAWEC, such as debt relief, improving collections through pre-paid meters and MoFEA responsibility for central government bills and offsetting of arrears. Taking these developments



into account, NAWEC is expected to have a debt service coverage ratio of greater than one from 2021, and to meet the legal covenant on this (see Annex 3).

82. However, more needs to be done to control costs and manage cash flow. The purchase of fuel remains a critical issue until such time that the energy mix can be substantially modified, which will take place once the OMVG interconnector is operational, and renewable energy is contracted. The move to monthly budgeting and variance analysis by cost center should help to make directors more cost aware. In the meantime, reorganization of Finance Department, recruitment of missing skills, the catch up of accounts should all help in improving cash flow and better management. The review of tariffs due in 2020 should also help analyze where savings can be made and may help to improve revenue, depending on the outcome of that review.

## B. Technical

83. The technologies supported by the AF have been successfully implemented by NAWEC and other utilities in Sub-Saharan Africa to strengthen and increase capacity of the network and improve commercial performance.

84. The AF activities present no unusual construction or operational challenges. The equipment and the technologies used in construction and operation of distribution networks are well-known and proven, including in The Gambia. The AF will observe conventional electricity utility standards for these works and equipment specification will be based on European/international standards to ensure that proper quality standards are maintained. Similarly, water civil works will follow established protocols and technologies and NAWEC's capacity will be reinforced where needed by specialist firms and consultants where needed.

85. The AF costs are based on recent procurement of similar equipment and inputs from NAWEC. Considering the possibility of relative cost increases during the implementation, a contingency amount has been included in the estimated prices for investment activities under the AF.

### C. Financial Management

86. The FM arrangements for the AF will be the same as those under the parent project. The overall FM performance of the parent project was Satisfactory during the last FM supervision undertaken in November 2019. Staffing is adequate to handle additional activities; the interim audited financial reports for the ongoing project have also been submitted on time and the quality of the reports are satisfactory. The external auditor expressed an unqualified opinion on GESP 2018 financial statements and the external auditor for GERMP has been recruited.

87. In order to accommodate the AF in the existing FM system and ensure readiness for implementation, the accounting software used for GERMP will be updated for the bookkeeping of the AF activities and the external auditor contract will be amended to include the AF in its audit scope.

### D. Procurement

88. The procurement arrangements for the AF will also be the same as those under the parent project. The procurement risk is assessed as Substantial. To mitigate this risk, there will be continued training and



support to the PIU procurement staff from an international procurement consultant. The PIU will also ensure all information is available through the World Bank's online procurement system in a timely manner.

## E. Environment (including Safeguards)

89. The activities to be supported through the AF are expected to involve limited small civil works and will not increase the environmental footprint of the parent project. The Environmental and Social Management Framework (ESMF) has been updated to reflect the new water activities (all the energy activities are already included) and was published in-country and on the World Bank website March 24, 2020.

### F. Social (including Safeguards)

90. The activities to be supported through the AF are not expected to involve resettlement activities leading to physical or economic displacement. The GRM established under the parent project will be adapted to take into account the AF activities. Implementation of AF activities will be consistent with the Gender Based Violence (GBV) / Sexual Exploitation and Abuse (SEA) / Sexual harassment (SH) prevention, mitigation and response plans, part of the updated ESMF. A GBV risk assessment was conducted and rated the project as moderate risk.

### G. Citizen Engagement/Beneficiary Feedback

91. A Stakeholder Engagement Plan has been developed and will continue to be monitored closely. Projected Affected Persons have been heavily consulted through the preparation of activities in the parent project. Citizens engagement activities will be scaled up building on the two-way communications activities supported through the parent project, including through the use of social media for NAWEC to communicate and receive feedback from its customers, as well as through the customer call center being supported through the AF. Beneficiary feedback will be sought from project beneficiaries such as customers receiving electricity and water prepaid meters, and water customers receiving improved water services. The project will ensure follow up of the feedback with beneficiaries and ensuring its integration into project interventions to improve access and quality to the services. The project will also ensure inclusive CE processes that are accessible to vulnerable groups such as the elderly, women, and other disadvantaged groups. The PIU will ensure that feedback received is analyzed periodically and incorporated into the implementation of any subsequent project activities.

### H. Gender

92. Gender gaps for women in relation to employment and income generating opportunities are manifold in The Gambia, for example for accessing credit and financing to build a small business, training and developing technical skills or obtaining employment within the energy sector. The AF will explore specific ways in which the proposed components can reduce the identified gender gaps in The Gambia. An initial gender gap analysis is provided in Annex 4. In particular, the project is aiming to address the gender gap in women's employment in the energy sector in The Gambia as **women are underrepresented in both technical and non-technical roles:** the share of women's employment in the energy sector is 26



percent versus 74 percent for male<sup>18</sup> with less than 1 percent of women in technical and engineering jobs combined at NAWEC and with no women engineers in a number of energy sector institutions.

93. The project can be leveraged to close the identified gender gaps in The Gambia by funding technical assistance work focused on enhancing women's employment in the energy sector for example through a baseline assessment targeting existing bottlenecks in employment and related STEM education as well as through scholarships, internships, targeted coaching and hiring as well as by broadening internal carrier options.

94. The AF plans to build on the activities already ongoing under the parent project by (i) scaling up training to women to provide enhanced technical skills training, to facilitate their employment in the energy and water sector; (ii) scale up the recruitment of female staff at NAWEC for engineering and technical roles; (iii) continue collecting sex-disaggregated data to monitor progress and assess the impact of the gender-targeted interventions. Indicators will be included in the Results Framework and the PIM will set up mechanisms and measures to collect and report sex-disaggregated and gender-relevant data and results; and (iv) the project will conduct a mapping to GBV services, and a GBV action plan. Table 8 provides an overview of proposed gender action plan.

95. In the water sector, global experience shows that where there is inadequate water and sanitation service provision – as is the case in The Gambia - women bear the brunt of the impact. For example, women are charged with fetching water from alternative sources (neighbors, water vendors etc.) if piped water is not available, which represents time lost for them. As for the utility, NAWEC has very few women in technical roles although a gender action plan has been developed. An important part of modernizing the utility will be to help NAWEC increase its pipeline of female staff; offer career opportunities of its current staff and promote gender parity across the company as much as possible.

96. **Monitoring and evaluation**. Indicators will track progress towards reduced gender inequalities in women's employment at NAWEC. Specific indicators focused on tracking the percentage of female engineers at NAWEC as well as the outreach activities possibly with other numbers that indicate closing the gap in women's employment in the energy sector through skills-development. Other output and gender-related indicators will be included in the PIM.

	Table 8. Gender Action Plan						
Identified Gap		Proposed Action	Proposed Indicator <sup>19</sup>				
Information on:	a)	Baseline assessment of barriers for women to being hired	a) Gender strategies				
a) Barriers for women to		and employed in the energy and water sectors (hiring	/ policies in place				
join the energy and water		practices, school-to-work transition, workplace policies,					
sectors; and		work environment, etc.) as well as on gender dimensions	b) Number of staff				
b) Gender dimensions of		within the sector	trained on gender				
energy and water service	b)	Consultations and trainings on gender for					
delivery		management/staff of key institutions (NAWEC, PURA,	c) Number of studies				
		MoPE, GNPC, etc.), including HR focal points					
	c)	Inclusion of gender in all strategic studies under the project					
		project					

## **Table 8. Gender Action Plan**

<sup>&</sup>lt;sup>18</sup> <u>http://www.ecreee.org/sites/default/files/documents/news/gambia\_country\_presentation.pdf.</u>

<sup>&</sup>lt;sup>19</sup> Indicators not included in the Results Framework will be featured in the PIM



Identified Gap		Proposed Action	Proposed Indicator <sup>19</sup>
Low number of female	a)	Internship program and preferential hiring	a) 15 percent of
engineers and limited	b)	Training, stipends and mentorship opportunities for	women among
career opportunities for		female staff to boost internal promotion	NAWEC engineers
women in NAWEC	c)	Reserved places for female staff in any training offered	b) Number of women
		under the project	benefitting from
	d)	Women trained in SCADA energy management system	training on core
			aspects
Weak pipeline of	a)	Outreach activities to high schools, universities and	Number of
technical female staff		career fairs incl. promotional campaigns to enhance the	scholarships
joining NAWEC and other		interest in STEM subjects/energy sector employment	
institutions	b)	Scholarship fund	
Limited number of skilled	a)	Training program for installation and maintenance of	5 percent of female
women working in the		solar equipment	technicians at firms
renewable energy sector	b)	Partnerships with firms under the project to take up	participating in the
		women trained	project
No existing capacity to	a)	Recruit a gender focal point to the PIU	Gender focal point
run a gender program			recruited

### V. WORLD BANK GRIEVANCE REDRESS

97. Communities and individuals who believe that they are adversely affected by a WB supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.



# VI SUMMARY TABLE OF CHANGES

	Changed	Not Changed
Results Framework	$\checkmark$	
Components and Cost	$\checkmark$	
Loan Closing Date(s)	$\checkmark$	
Reallocation between Disbursement Categories	$\checkmark$	
Implementing Agency		$\checkmark$
Project's Development Objectives		$\checkmark$
Cancellations Proposed		$\checkmark$
Disbursements Arrangements		$\checkmark$
Safeguard Policies Triggered		$\checkmark$
EA category		$\checkmark$
Legal Covenants		$\checkmark$
Institutional Arrangements		$\checkmark$
Financial Management		$\checkmark$
Procurement		$\checkmark$
Other Change(s)		$\checkmark$

### VII DETAILED CHANGE(S)

## COMPONENTS

Current Component Name	Current Cost (US\$, millions)	Action	Proposed Component Name	Proposed Cost (US\$, millions)
On-grid solar PV with storage	28.40	No Change	On-grid solar PV with storage	28.40
Transmission and distribution (T&D) restoration and modernization	77.30	Revised	Transmission and distribution (T&D) restoration and modernization	89.75



Urgent institutional support for sector turnaround	15.80	Revised	Urgent institutional support for sector turnaround	32.40
	0.00	New	Urgent actions to address the water crisis	11.45
	0.00	New	Urgent actions to support the COVID-19 response	2.50
	0.00	New	Contingent Emergency Response Component	0.00
TOTAL	121.50			164.50

## LOAN CLOSING DATE(S)

Ln/Cr/Tf	Status	Original Closing	Current Closing(s)	Proposed Closing	Proposed Deadline for Withdrawal Applications
IDA-D3090	Effective	31-Dec-2023	31-Dec-2023	31-Dec-2024	30-Apr-2025

## **REALLOCATION BETWEEN DISBURSEMENT CATEGORIES**

Current Allocation	Actuals + Committed	Proposed Allocation	Financing % (Type Total)	
			Current	Proposed

IDA-D3090-001 | Currency: XDR

iLap Category Sequence No: 1	Current Expenditure Category: GD, WK, NCS, CS Part 1, 2bii & 2c					
2,240,000.00	0.00	2,240,000.00	6.00	6.00		
iLap Category Sequence No: 2	Current Expenditure Category: GD,WK,NCS,CS,IOC Part 2a,2bi,2d & 3					
23,620,000.00	2,358,764.59	23,620,000.00	100.00	100.00		
iLap Category Sequence No: 3	Current Expend	diture Category: PPF REFINA	ANCING			
2,540,000.00	1,234,641.71	2,540,000.00		100.00		
iLap Category Sequence No:	Current Expenditure Category: GD, NCS, CS Part 4					
0.00	0.00	0.00		100.00		



iLap Category Sequence No: Current Expenditure Category: GD, WK, NCS, CS Part 5					
0.00		0.00	0.00	) 100.00	
iLap Category	/ Sequence No:	Current Expend	diture Category: Emergen	cy Expenditures Part 6	
	0.00	0.00	0.00	) 100.00	
Total	28,400,000.00	4,043,505.02	28,400,000.00	)	
Expected Dist	oursements (in US	5\$)			
Fiscal Year		Annual	Cumula	tive	
2018		0.00	0.00		
2019		5,000,000.00	5,000,0	00.00	
2020		2,000,000.00	7,000,0	00.00	
2021		12,000,000.0	0 19,000,	000.00	
2022		17,000,000.0	0 36,000,	000.00	
2023		20,000,000.0	56,000,	000.00	
2024		15,000,000.0	0 71,000,	000.00	
2025		13,000,000.0	84,000,	000.00	
2026		0.00	84,000,	000.00	
2027		0.00	84,000,	000.00	
SYSTEMATIC	OPERATIONS RISI	K-RATING TOOL (SORT)			
Risk Category	/	Late	est ISR Rating Cu	rrent Rating	
Political and (	Governance		• High •	High	

Political and Governance	🗕 High	• High
Macroeconomic	<ul> <li>High</li> </ul>	• High
Sector Strategies and Policies	Substantial	Substantial
Technical Design of Project or Program	Substantial	Substantial
Institutional Capacity for Implementation and Sustainability	• High	• High



Fiduciary	Substantial	Substantial
Environment and Social	Moderate	Moderate
Stakeholders	Moderate	Moderate
Other	Moderate	Moderate
Overall	Substantial	Substantial

## LEGAL COVENANTS – Gambia Electricity Restoration and Modernization Project - Additional Financing (P173161)

### **Sections and Description**

E.2 of Section I of Schedule 2 of Financing Agreement: The Recipient shall undertake no activities under the CERC Part unless and until the following conditions have been met in respect of said activities: (a) the Recipient has determined that an Eligible Crisis or Emergency has occurred, has furnished to the Association a request to include said activities in the CERC Part in order to respond to said Eligible Crisis or Emergency, and the Association has agreed with such determination, accepted said request and notified the Recipient thereof; (b) the Recipient has prepared and disclosed all safeguards instruments required for said activities, in accordance with the CERC Operations Manual, the Association has approved all such instruments, and the Recipient has implemented any actions which are required to be taken under said instruments.

F.1 of Section I of Schedule 2 of Financing Agreement: The Recipient shall: (d) ensure that the CERC Part is carried out in accordance with the CERC Operations Manual; provided, however, that in the event of any inconsistency between the provisions of the CERC Operations Manual and this Agreement, the provisions of this Agreement shall prevail; and (e) not amend, suspend, abrogate, repeal or waive any provision of the CERC Operations Manual without prior approval by the Association.

Para 1 of Section IV of Schedule 2 of Financing Agreement: The Recipient shall, not later than one (1) month after the Effective Date, cause the PIE to update and thereafter adopt, the Project Implementation Manual in accordance with the provisions of Section I.C of Schedule 2 to this Agreement.

Para 2 of Section IV of Schedule 2 of Financing Agreement: To facilitate the proper maintenance of its financial management system referred to in Section 5.09 of the General Conditions, the Recipient shall, not later than one (1) month after the Effective Date, cause the PIE to amend, in accordance with terms of reference acceptable to the Association, the contract with the external independent auditor for the Original Project, to incorporate the additional activities under Schedule 1 to this Agreement.

Para 3 of Section IV of Schedule 2 of Financing Agreement: To facilitate the proper maintenance of its financial management system referred to in Section 5.09 of the General Conditions, the Recipient shall, not later than one (1) month after the Effective Date, cause the PIE to update its existing accounting software for the Original Project, to incorporate bookkeeping systems for the Project, in accordance with terms of reference acceptable to the Association.

E.2 of Section I of Schedule 2 of Financing Agreement: The Recipient shall: (a) prior to commencement of bidding for civil works, cause the PIE to: (i) prepare, in accordance with terms of reference and process acceptable to the Association, and thereafter adopt the Environmental and Social Impact Assessment ("ESIA") required for the civil



works and the Environmental and Social Management Plan ("ESMP"), in form and substance satisfactory to the Association; (ii) furnish said ESIA and ESMP to the Association for its review and approval; and (iii) adopt and disclose the ESIA and ESMP in the Recipient's territory; and (iv) incorporate said ESMP in the bidding documents; and (b) thereafter, implement, and cause the PIE to implement, the Project in accordance with such ESMP.

B.1(c) of Section III of Schedule 2 of Financing Agreement: No withdrawal shall be made under Category (5) for Emergency Expenditures under Part 6 of the Project, unless the Association is satisfied, and has notified the Recipient of its satisfaction, that all of the following conditions have been met in respect of said activities: (i) the Recipient has determined that an Eligible Crisis or Emergency has occurred, has furnished to the Association a request to include said activities in the CERC Part in order to respond to said Eligible Crisis or Emergency, and the Association has agreed with such determination, accepted said request and notified the Recipient thereof; (ii) the Recipient has prepared and disclosed all safeguards instruments required for said activities, and the Recipient has implemented any actions which are required to be taken under said instruments, all in accordance with the provisions of Section I.E of Schedule 2 to this Agreement; and (iii) the Recipient has adopted a CERC Operations Manual in form, substance and manner acceptable to the Association.

E.3 of Section I of Schedule 2 of Financing Agreement: The Recipient, prior to initiating the carrying out of any civil works, shall: (a) (i) cause the PIE to prepare, in accordance with terms of reference and process acceptable to the Association, and thereafter adopt any Resettlement Action Plan ("RAP") and Abbreviated Resettlement Action Plan ("ARAP") required for such activity and furnish said RAP and ARAP, as the case may be, to the Association for its review and approval; and (ii) adopt and disclose such RAP and ARAP in the Recipient's territory; (b) if any activity under the Project would involve Affected Persons, ensure that: (i) no displacement (including restriction of access to legally designated parks and protected areas) shall occur before resettlement measures under the applicable RAP and ARAP, including, in the case of displacement, full payment to Affected Persons of compensation and of other assistance required for relocation, have been taken; and (ii) provide from its own resources, any financing required for the Project; and (c) thereafter implement, and cause the PIE to implement, the Project, in accordance with such RAP and ARAP.

B.1(b) of Section III of Schedule 2 of Financing Agreement: No withdrawal shall be made under Categories (1) and (2) respectively, unless and until the Recipient has fully withdrawn (100%) the allocations under Categories (1) and (2) respectively, under the Original Financing Agreement;

### Conditions

Type Effectiveness

### Description

Financing Agreement, Article V, para 5.01: The Additional Condition of Effectiveness consists of the following, namely, that the Subsidiary Agreement has been executed on behalf of the Recipient and the PIE, and all conditions precedent to its effectiveness or to the right of the PIE to make withdrawals under it (other than the effectiveness of this Agreement) have been fulfilled.



## **VIII. RESULTS FRAMEWORK AND MONITORING**

### **Results Framework**

COUNTRY: Gambia, The

Gambia Electricity Restoration and Modernization Project - Additional Financing

### **Project Development Objective(s)**

The Project Development Objectives are to (i) improve the operational performance of the Project Implementing Entity; and (ii) improve the capacity of the Project Implementing Entity to dispatch variable renewable electricity.

## **Project Development Objective Indicators by Objectives/ Outcomes**

Indicator Name	PBC	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
Improve the operational performance of the Project Implementing Entity (Action: This Objective has been Revised)								
Transmission and Distribution losses in the Greater Banjul Area (Percentage)		22.00	22.00	21.00	18.00	17.00	16.00	15.00
Action: This indicator has been Revised	Rationale: Updated indicator definition.							
Technical distribution losses (Percentage)		14.00	14.00	13.00	12.00	12.00	11.00	10.00



Indicator Name	PBC	C Baseline		End Target							
			1	2	3	4	5				
Action: This indicator has been Revised	Ratior Defini	ationale: Definition updated.									
Non-technical distribution losses (Percentage)		8.00	8.00	8.00	7.00	6.00	6.50	5.00			
Action: This indicator has been Revised	Ratior Defini	itionale: ?finition updated.									
Number of blackouts in the GBA (Number)		45.00	25.00	22.00	19.00	17.00		15.00			
Action: This indicator is New	Rationale: This indicators replaces the outages indicator, which is being dropped. The Service Contractor has been supporting NAWEC to improve service quality through reduced number of system wide blackouts (rather than MV level outages, which is what the previous indicator was measuring). The baseline data used here is based on the data provided by the Service Contractor, following the methodology developed by the Service Contractor in consultation with NAWEC.										
Power outages in the GBA (Number)		536.00	536.00	500.00	425.00	325.00	300.00	300.00			
Action: This indicator has been Marked for Deletion											
People provided with access to improved water sources (CRI, Number)		0.00	5,000.00	20,000.00	20,000.00	40,000.00		64,000.00			
Action: This indicator is New											
Improve the capacity of the Project Implementing Entity to dispatch variable renewable electricity (Action: This Objective has been Revised)											
Generation dispatched from variable renewable generation (solar)	ו	0.00	0.00	0.00	0.00	26.00	26.00	26.00			



Indicator Name	PBC	Baseline		End Target				
			1	2	3	4	5	
(Gigawatt-hour (GWh))								
Action: This indicator has been Revised	Ratio Targe	nale: et revised upwards.						
Installation of a SCADA system (Yes/No)		No	No	No	Yes	Yes	Yes	Yes
Action: This indicator has been Marked for Deletion	Ratio Dropp	nale: oed since this is an outp	ut based indicator not	t outcome based one.				

# Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline			Intermedia	te Targets		End Target	
			1	2	3	4	5		
On-grid Solar PV with storage									
Installed solar generation capacity (Megawatt)		0.00	0.00	0.00	0.00	20.00	20.00	20.00	
Transmission & Distribution (T&D) Restoration and Modernization									
Transmission lines constructed or rehabilitated (Kilometers)	I	0.00	0.00	0.00	0.00	17.00	17.00	17.00	
Action: This indicator has been Revised									
Transmission substations		0.00	0.00	0.00	0.00	1.00	1.00	1.00	



Indicator Name	PBC	BC Baseline		End Target					
			1	2	3	4	5		
constructed or extended (Number)									
Action: This indicator has been Revised									
Distribution substations constructed or extended (Number)		0.00	0.00	0.00	5.00	20.00	40.00	50.00	
Action: This indicator has been Revised									
Increase in transmission capacity (Kilovolt- Amphere(KVA))		0.00	0.00	0.00	90,000.00	90,000.00	90,000.00	90,000.00	
Number of LED bulbs installed (Number)		0.00	2,000.00					3,500.00	
Action: This indicator is New	Rationale: This indicator refers to the introduction of Energy efficiency programs to replace inefficient light bulbs for LEDs and replaces other EE indicators more commonly used such as those that focus on energy saved. Rationale: Usually, when introducing EE program, the indicators that are more suitable to track progress are those that focus on the EE savings, such as MWh saved. However, for this case, establishing a base line to measure those savings accurately is very complicated (i.e. a substantial number of meters are faulty meters)								
Urgent Institutional Support	rt for S	ector Turnaround							
Number of prepayment meters installed (Number)		0.00	0.00	10,000.00	22,000.00	40,000.00	50,000.00	61,500.00	
Action: This indicator has been Revised	Ratio The to	Rationale: The target is being revised to add pre-payment meters for the water component of the project.							
Effective customer call center established and		No	No	No	Yes	Yes	Yes	Yes	



Indicator Name	PBC	Baseline		Intermediate Targets						
			1	2	3	4	5			
producing gender disaggregated data (Yes/No)										
Action: This indicator has been Marked for Deletion	Ratioı Revise	tionale: vised to change the scope of the indicator - which will now track the customer call center's tracking of gender disaggregated data.								
Percentage of customer call center staff who are female (Percentage)		0.00	20.00	30.00	50.00	50.00	50.00	50.00		
Action: This indicator has been Marked for Deletion										
Percentage of grievances addressed from total grievance received on the project (Percentage)		0.00	100.00	100.00	100.00	100.00	100.00	100.00		
Action: This indicator has been Revised										
percentage of grievances submitted by female clients that were addressed (Percentage)	5	0.00	0.00	100.00	100.00	100.00	100.00	100.00		
Action: This indicator has been Revised										
NAWEC have published reports on beneficiary feedback, including gender disaggregated data, and how it has been incorporated into the project (Yes/No)		No	Yes	Yes	Yes	Yes	Yes	Yes		



Indicator Name	PBC	Baseline		I	ntermediate Targ	ets		End Target	
			1	2	3	4	5		
Number of staff trained on SCADA disaggregated by gender (Number)		0.00	0.00	10.00	20.00	30.00	40.00	40.00	
Action: This indicator has been Marked for Deletion									
Number of male (Number)		0.00	0.00	8.00	12.00	20.00	28.00	28.00	
Action: This indicator has been Marked for Deletion									
Number of female (Number)		0.00	0.00	2.00	8.00	10.00	12.00	12.00	
Action: This indicator has been Marked for Deletion									
Number of gender-sensitive communications campaigns and outreach activities conducted that target women and include separate consultations with women (Number)		0.00	2.00	4.00	6.00	8.00	10.00	15.00	
Action: This indicator has been Revised	Ratio The to	Rationale: The target has been revised to incorporate activities related to water.							
Training on gender and energy provided to staff of the ministry of energy and NAWEC (Yes/No)		No	No	Yes	Yes	Yes	Yes	Yes	
Action: This indicator has been Marked for Deletion	Ratio	ationale:							



Indicator Name	PBC	Baseline		End Target						
			1	2	3	4	5			
	Targe	t revised to take into a	ccount training to be o	conducted to staff of t	he ministry of energy	and NAWEC on water	•			
People with new or improved access to electricity (Number (Thousand))		0.00	1,360.00	1,440.00	1,520.00	1,600.00	1,680.00	1,680.00		
Action: This indicator has been Revised	Ratio Indica	itionale: dicator wording changed slightly to make clear it refers to access to electricity, as there is a separate indicator on access to water.								
Separation of NAWEC accounts (Yes/No)		No	No	Yes	Yes	Yes	Yes	Yes		
Completion of three strategic sanitation studies (Yes/No)		No	No	No	No	No	Yes	Yes		
Action: This indicator is New										
Completion of energy audit of NAWEC's water business (Yes/No)		No	No	No	Yes	Yes	Yes	Yes		
Action: This indicator is New										
Percentage of women among NAWEC engineers (Percentage)		0.00						15.00		
Action: This indicator is New	Ratio Meas	Rationale: Measures impact of gender action plan.								
Scholarships provided for female students (Yes/No)		No						Yes		



Indicator Name	PBC	Baseline			Intermediate Targ	ets		End Target		
			1	2	3	4	5			
Action: This indicator is New	Ratior Measi	rtionale: leasures the implementation of the gender action plan								
Urgent investments to add	Urgent investments to address the water crisis (Action: This Component is New)									
Number of water storage tanks repaired (Number)		0.00	0.00	0.00	1.00	2.00	3.00	3.00		
Action: This indicator is New										
Number of water meters installed or replaced in NAWEC's coverage zone (Number)		0.00	0.00	5,000.00	10,000.00	15,000.00	20,000.00	20,000.00		
Action: This indicator is New										
Installation of DMAs completed (Yes/No)		No	No	No	No	No	Yes	Yes		
Action: This indicator is New										

Monitoring & Evaluation Plan: PDO Indicators										
Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection					
Transmission and Distribution losses in the Greater Banjul Area	Percentage of GWH lost between the point of dispatch onto the	Monthly, on a rolling average	NAWEC	Collect generation and sales data from relevant NAWEC departments as	PIU					
	distribution grid (33 kV and	over the		inputs to calculate						



	below) and the point sold to end customers in the previous 12 months.	previous 12 months.		losses.	
Technical distribution losses	Total losses which are technical i.e. resulting from the technical condition of the NAWEC network.	Monthly, on a rolling average over the previous 12 months.	NAWEC	Owners Engineer to estimate the breakdown of technical / non- technical losses based on available substation metering.	Owner's Engineer
Non-technical distribution losses	Proportion of total network losses which are non- technical, including electricity theft.	Monthly, on a rolling average over the previous 12 months.	NAWEC	Owners Engineer to estimate the breakdown of technical / non- technical losses based on available substation metering.	Owner's Engineer
Number of blackouts in the GBA	Average number of monthly system wide blackouts in the previous twelve months.	Monthly, on a rolling average over the previous 12 months.	NAWEC	Compiling data collected from generation and transmission monthly outages reports.	NAWEC PIU
Power outages in the GBA	Average number of outages per month at the primary and secondary substation level in the GBA, which provides a measure of service quality.	Annual	NAWEC	PIU will collect service quality data from the NAWEC T&D team based on substation operational data.	NAWEC
People provided with access to improved water sources	This indicator measures the cumulative number of	Annual	NAWEC/ Supervision	Supervision engineer reports validated by PIU,	PIU



	people who benefited from improved water supply services that have been constructed through operations supported by the World Bank.		engineer reports	which reports the final number in its progress reports.	
Generation dispatched from variable renewable generation (solar)	Measures GWH dispatched from solar variable renewable generation i.e. not just generated.	Annual	NAWEC	Generation data collected from the solar plant operator.	Owner's Engineer
Installation of a SCADA system	SCADA system will be installed as part of the dispatch center and will allow NAWEC to control energy flows from different sources onto the transmission and distribution system.	Annual	NAWEC	This is a yes / no indicator according to successful implementation of the contract to install the SCADA system.	Owner's Engineer

Monitoring & Evaluation Dlans Intermediate Results Indicators										
	wonitoring & Evaluation Plan: Intermediate Results indicators									
Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection					
Installed solar generation capacity	Mega Watt peak of installed solar capacity	Annual	NAWEC	Identify the MWp of solar PV installed through the project.	Owner's Engineer					
Transmission lines constructed or rehabilitated	Measures the KM of High Voltage transmission lines constructed.	Annual	NAWEC	Collect data from the Owners Engineer status reports.	Owner's Engineer					



Transmission substations constructed or extended	Number of primary substations constructed as part of the new Kotu- Brimaka transmission line.	Annual	NAWEC	Collect data from the Owners Engineer status reports.	Owner's Engineer
Distribution substations constructed or extended	Number of distribution substations constructed in the provinces.	Annual	NAWEC	Collect data from Owners Engineer status reports.	Owner's Engineer
Increase in transmission capacity	Difference in transmission capacity within the NAWEC network compared to the baseline.	Annual	NAWEC	Collect data from Owners Engineer status reports.	Owner's Engineer
Number of LED bulbs installed	Number of LED bulbs installed through the project (street lights and government offices)	Annual	NAWEC	Track number of bulbs installed	PIU
Number of prepayment meters installed	Number of prepayment meters purchased and installed for low voltage customers through the project (target = 30,000) and number of prepayment meters purchased and installed for selected NAWEC water clients (target = 5,000)	Annual	NAWEC	Collect meter installation data from responsible unit within NAWEC.	NAWEC
Effective customer call center established and producing gender disaggregated data		Annual	NAWEC	This is a yes / no indicator based on the existence of an effective customer call center within NAWEC - for both water and electricity	NAWEC



				customers.	
Percentage of customer call center staff who are female	Proportion of total call center staff who are female.	Annual	NAWEC	PIU to collect data from the NAWEC Human Resources Department.	NAWEC
Percentage of grievances addressed from total grievance received on the project	Indicator will track the percentage of grievances addressed through the grievance redress mechanism established through the project.	Annual	NAWEC	Grievance data to be collected from the complaints registry maintained by the PIU.	NAWEC
percentage of grievances submitted by female clients that were addressed	Proportion of grievances processed which are female. This indicator is designed to identify if there is equality in the treatment of grievances received between male and female.	Annual	NAWEC	PIU to collect gender disaggregated grievance data.	NAWEC
NAWEC have published reports on beneficiary feedback, including gender disaggregated data, and how it has been incorporated into the project	NAWEC have published reports on beneficiary feedback, including gender disaggregated data, and how it has been incorporated into the project.	Annual	NAWEC	Based on existence of reports published by NAWEC summarizing beneficiary feedback.	NAWEC
Number of staff trained on SCADA disaggregated by gender		Annual	NAWEC	PIU to track data on staff training on SCADA.	NAWEC
Number of male	Number of staff trained in SCADA which are male	Annual	NAWEC	PIU to track training data.	NAWEC



Number of female	Number of staff trained in SCADA which are female	Annual	NAWEC	PIU to track training data.	NAWEC
Number of gender-sensitive communications campaigns and outreach activities conducted that target women and include separate consultations with women		in Total	NAWEC	PIU to track of communications campaigns financed through the project.	NAWEC
Training on gender and energy provided to staff of the ministry of energy and NAWEC		Annual	NAWEC	PIU to track data on training provided through the project.	NAWEC
People with new or improved access to electricity	Number of people who have a new grid connection to electricity, or have an improved quality of service. Estimated by number of residential customers (baseline 160,000) and assume that NAWEC meets its target of adding 10,000 customer per year, and an average of eight people per household.	Annual	NAWEC	PIU to track number of people who get access through the lifetime of the project.	NAWEC
Separation of NAWEC accounts units of electricity, water and sewerage.		Annual	NAWEC	This is a yes / no indicator based on the existence of separated financial accounting for NAWEC's different business units.	NAWEC



Completion of three strategic sanitation studies	Completion of at least three of the following sanitation studies: i) fecal sludge management study ii) feasibility study for a fecal sludge treatment plant iii) assessment of the Kotu wastewater treatment plant and recommendations for improving its functionality and iv) assessment of the Banjul wastewater treatment plant and recommendations for improving its functionality.	Annual	NAWEC	PIU monthly progress reports	PIU
Completion of energy audit of NAWEC's water business	Energy audit of NAWEC's technical and administrative facilities completed	Annual	NAWEC	PIU progress reports	PIU
Percentage of women among NAWEC engineers	Percentage of female technicians at firms participating in the project	Annual	HR director		PIU
Scholarships provided for female students	Indicator confirms whether or not scholarships are being provided. Note indicator may be updated to a target number of scholarships once the program is designed.	Annual	PIU		PIU
Number of water storage tanks repaired	Tanks that are damaged or decommissioned due to	Annual	Supervision engineer	Supervision engineer submits reports to PIU,	PIU



	leaking, corrosion or poor structural design that are repaired or rehabilitated under the project.		reports/ NAWEC	which provides final numbers in its monthly progress reports.	
Number of water meters installed or replaced in NAWEC's coverage zone	This indicator captures the installation of new metered connections, the replacement of faulty meters and the installation of bulk water meters under the project.	Annual	Supervision engineer reports	Supervision engineer submits reports to PIU for verification and final reporting in its monthly progress reports	PIU
Installation of DMAs completed	Measures the completion of the district metered areas that the project will fund through TA, equipment and minor works.	Bi-annual	NAWEC	NAWEC reports on the progress of the NRW activity monthly to the PIU and the task team, including a status update on the DMAs.	PIU



### Annex 1. Implementation Arrangements and Support Plan

### Strategy and Approach for Implementation Support

- 1. The implementation support plan includes periodic missions with regular client interaction from both field-and-headquarters-based World Bank staff in between missions. During project supervision, the team will use the PDO and the Results Framework as primary lenses for monitoring progress, evaluating impact and effectiveness, and adjusting the project activities.
- 2. Implementation support will initially focus on advancing the preparation and implementation of the investment activities and NAWEC's improvement plans. Thus, the World Bank expects an intensive supervision agenda during the first two years. The World Bank will include headquarters and country office-based staff, as well as consultants.
- 3. The detailed support from the World Bank during project supervision is outlined below:
  - Environmental and social safeguards. The World Bank will provide implementation support for (i) implementation of safeguards requirements through regular supervision missions, including visits to the project sites; (ii) reviewing of environmental monitoring reports and following up on any safeguards issues that may arise during project implementation with NAWEC and relevant government authorities; and (iii) training on safeguards to NAWEC staff.
  - **Procurement and technical.** The World Bank will provide implementation support for: (i) reviewing procurement documents, including technical specifications, and providing timely feedback and 'no objection'; (ii) monitoring procurement progress against the Procurement Plan developed by NAWEC; and (iii) procurement training on World Bank guidelines to the PIU. The project will involve the procurement of goods and works contracts through international competitive bidding and service contracts through QCBS.
  - **FM.** The World Bank will provide implementation support for reviewing the project's FM system, including but not limited to accounting, reporting, and internal controls.
  - Implementation progress. The World Bank will closely monitor the overall progress of project implementation.



### Implementation Support Plan and Resource Requirements

4. The proposed implementation support requirements are listed in the tables below.

## Table 3.1: Implementation Support to be Provided by the World Bank

Time	Focus	Skills Needed	Resource Estimate
Years 1	Monitor and assist in the procurement of	Procurement specialist	1
to 4	main contracts	Solar generation engineer	1
		T&D engineer	1
	Monitor FM implementation and disbursement	FM specialist	1
	Supervise safeguards implementation	Environmental and social safeguards specialists	1+1
	Monitor project management and supervise	Team leader	1
	project implementation progress	Operations officer	0

### Table 3.2. Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Team leader	10	4	Based in the region
Power engineer (co-team leader)	5	2	Based in Washington, DC
Water specialist (co-team leader)	5	2	Based in Washington, DC
Procurement specialist	4	2	Based in the region
FM specialist	4	2	Based in the region
Environmental specialist	4	2	Based in Washington, DC
Social specialist	3	2	Based in the region
Gender specialist	2	2	Based in the region
Total	37	18	

### Annex 2. Financial Management and Auditing Arrangements

1. **Budgeting arrangements.** The budgeting process from elaboration to execution and control will be clearly defined in the manual of procedures including FM arrangements. The budget will be reviewed and adopted by the Project Steering Committee before the beginning of its execution. Annual draft budgets will be submitted to the World Bank for non-objection before adoption and implementation and no later than November 30 of each year. Periodic monitoring of budget execution and variance analysis will be prepared by the Project implementation Unit and included in the quarterly interim financial reports.

2. **Reporting and monitoring.** The unaudited interim financial report format of the ongoing project will be updated to include the AF. It will comprise sources and uses of funds according to project expenditures classification and a comparison of budgeted and actual project expenditures (commitments and disbursements) to date and for the quarter. NAWEC will submit the financial reports to the World Bank within 45 days after the end of each calendar quarter.

3. NAWEC will produce the project's annual financial statements. The Financing Agreement (FA) will require the submission of Audited Financial Statements for the project to IDA within six months after yearend. The external auditor hired for the parent project will also audit the AF financial statements. The terms of reference of the external auditor of the original project will be extended to include the additional activities and the auditor contract will be amended to include the AF in its scope of intervention. A single opinion on the Audited Project Financial Statements in compliance with International Federation of Accountant will be required.

4. The external auditors will prepare a Management Letter giving observations and comments and providing recommendations for improvements in accounting records, systems, controls, and compliance with financial covenants in the Financial Agreement.

5. In accordance with World Bank Policy on Access to Information, the Borrower is required to make its audited financial statements publicly available in a manner acceptable to the Association; following the World Bank's formal receipt of these statements from the borrower, the World Bank also makes them available to the public.

6. These financial statements<sup>20</sup> will include (a) a balance sheet and a statement of sources and uses of funds; (b) a statement of commitments; (c) accounting policies adopted and explanatory notes; and (d) a management assertion that project funds have been expended for the intended purposes as specified in the relevant financing agreements.

7. **Accounting arrangements.** The current accounting standards used for the ongoing project will be applicable. The accounting software used will be updated to take into account the additional financing. The accounting software will be updated to allow automatic generation of financial information.

<sup>&</sup>lt;sup>20</sup> The project financial statements will be all inclusive and cover all sources and uses of funds and not only those provided through IDA funding. It thus reflects all project activities, financing, and expenditures, including funds from other development partners.

8. **Internal control arrangements.** The existing manual of administrative financial and accounting procedures is adequate to be used for this AF. It clearly defines FM procedures and operations documentation. There are no internal control activities due to the lack of an internal auditor for the project. An internal auditor with qualification satisfactory to the World Bank will be recruited for the implementation period to strengthen the internal control of the project.

Category	Amount of the Grant Allocated (expressed in SDR)	Percentage of Expenditures to be Financed (inclusive of Taxes)
<ol> <li>Goods, works, non-consulting services, and consulting services for Parts 1, 2(b)(ii) and 2(c) of the Project</li> </ol>	0	6%
<ul> <li>(2) Goods, works, non-consulting services, consulting services, and Operating Costs for Parts 2(a), 2(b)(i), 2(b)(iii), 2(d) and 3 of the Project</li> </ul>	21,250,000	100%
<ul><li>(3) Goods, non-consulting services, and consulting services for Part 4 of the Project</li></ul>	8,420,000	100%
(4) Goods, works, non-consulting services, and consulting services for Part 5 of the Project	1,830,000	100%
(5) Emergency Expenditures under Part 6 of the Project	0	
TOTAL AMOUNT	31,500,000	

Table A1.1.	Disbursement	Table
	Dissuischiene	i abic

9. **Disbursement arrangements and flow of funds.** Disbursement for the AF will largely follow the existing disbursement arrangements for the original financing. Under the AF, disbursements will continue to be made using the Advance, Reimbursement, Direct payment and Special Commitment methods. Disbursement for goods, works or non-consulting services and consulting services contracts procured/selected in the international market through open competition, limited competition or through no competition, as set out in the Procurement Plan, will be made only through Direct payment or Special Commitment disbursements method. This requirement is reflected in the Disbursement and Financial Information Letter. A new segregated designated account (DA) will be opened at a commercial bank acceptable to IDA to facilitate payment for eligible project expenditures. The DA will be managed by Directorate of Investment of the Ministry of Economy and Finance, which is the entity in charge of managing the DAs in The Gambia, in coordination with NAWEC. The Ceiling of the DA has been set at US\$10 million. Upon effectiveness of the AF and receipt of a withdrawal application, an initial advance up



to the ceiling amount will be disbursed to the DA and subsequent advances will be made upon receipt Statements of Expenditures reporting on the use of the advance for eligible project expenditures.

10. **Covenants.** The Borrower shall establish and maintain the FM system, including records, accounts, preparation of related financial statements, in accordance with accounting standards, timely submission of audited financial statements, update the accounting software, update the PIM, and amend the external auditor contract to incorporate AF activities.

11. **FM action plan.** Based on the outcome of the FM risk assessment, the following FM plan is proposed. The objective of the plan is to ensure the project maintains a satisfactory FM system throughout the project's life. Table A1.1 summarizes the FM action plan agreed with NAWEC.

No	Action	Due Date	Responsible
1	Amend the external auditor contract to include the AF	one month after effectiveness	NAWEC
2	The customization of the existing accounting software to include the bookkeeping of the project	one month after effectiveness	NAWEC
3	Update the PIM	one month after effectiveness	NAWEC

## Table A1.2. FM Action Plan

### Table A1.3. FM Implementation Plan

FM Activity	Frequency
Desk reviews	
Interim financial reports review	Quarterly
Audit report review of the program	Annually
Review of other relevant information such as interim internal	Continuous as they become available
control systems reports	
On-site visits	
Review of overall operation of the FM system	Semi-Annual for NAWEC
	(Implementation Support Mission)
Monitoring of actions taken on issues highlighted in audit reports,	As needed
auditors' management letters, internal audit, and other reports	
Transaction reviews (if needed)	As needed
Capacity-building support	
FM training sessions	During implementation and when
	needed



## Annex 3. Economic and Financial Analysis

### Introduction

1. The economic and financial analysis is consistent with the revised 2016 Energy and Extractives Global Practice guidelines on economic analysis of power sector projects, good practice for economic analysis of water supply projects, the guidelines on Carbon Accounting and the Social Value of Carbon in Project Appraisal, and World Bank guidelines for economic analysis of investment operations.

### Summary of Economic and Financial Analysis

2. **Rationale for public financing**. The investment component of the project consists of construction of electricity T&D assets that will remain state owned. Hence, public sector financing is the most efficient and least costly financing mechanism under the existing institutional framework. Likewise, the water investment component, which consists of tertiary network assets for additional water connections, equipment for NRW reduction and water distribution network maintenance, and rehabilitation of water storage tanks, will also remain state owned under the existing water institutional framework. Furthermore, while reform advances to improve institutional clarity in the water sector, public sector financing is the only feasible and the most efficient option at this time. The AF will help address priority water challenges including studies and support to help crowd-in future private sector participation in the sector.

3. The targeted WASH interventions included in the AF in response to COVID-19 consist of the purchase of critical goods for NAWEC's operations to provide and extend water services to the population, including handwashing facilities in public places and water distribution points in neighborhoods without running water, the provision of hygiene kits to the population and communication on COVID-19 prevention from a WASH perspective. Public sector financing of this proposed COVID-19 response is justified given the public good nature of these interventions to reduce the spread of this infectious disease. Moreover, such financing is expected to reduce the loss of life and economic impact of the outbreak.

4. **Value added of the World Bank's support**. The GERMP leverages the World Bank's experience in neighboring countries and lessons learned from previous and ongoing projects in similar settings. The World Bank has been at the forefront in supporting The Gambia's efforts to reform its power sector and establish efficient commercial operations; thus, it is uniquely positioned to provide technical assistance on institutional, organization and regulatory aspects. The Bank's energy portfolio in The Gambia, including recently closed and ongoing operations, spans all energy sub-sectors, from generation, to transmission and distribution, to regional power trade. The proposed Project is well aligned with this vast and diversified portfolio and complements well some of the ongoing operations, notably the Parent Project, the OMVG interconnection project, and the REAP. As for the water component, this will be the first IDA financed operation in The Gambia's water sector and will benefit from the Bank's leadership, evidence-based experience and lessons learned from its diverse water and sanitation support to other countries in West Africa, the rest of Africa and the world. For the emergency COVID-19 response, the World Bank brings its extensive WASH experience combined with its high standards in supporting client countries in emergency situations, which will help the GoTG's efforts to limit the spread of the current outbreak.



### General methodology and assumptions

5. The economic benefits were identified for the three components being supported by the AF. The economic viability of the Project is assessed based on a traditional cost-benefit analysis (CBA). The CBA is restricted to the Project activities that generate benefits for which an economic value – intended as welfare gain accruing to the society as a whole – can be clearly identified and measured. This comprises the two main investment components that have such benefits that could be expressed in monetary terms, T&D (Component 2) and Water (Component 4). Components 3, 5 and 6 are excluded because of the difficulty to value the outcomes of a technical assistance activity, which in this case include improvements in terms of organizational performance; more efficient design and construction of electricity networks; better monitoring of service quality etc. However, intermediate indicators have been added to the project's results framework that will help track these benefits.

6. All main assumptions concerning electricity supply and demand are derived from the latest NAWEC performance indicators available, provided by the SC. In particular, the available energy supply is estimated based on the total energy dispatched to the GBA. Similarly, total and monthly consumption of electricity, including by class of consumers, is derived from NAWEC's electricity sales statistics. Load growth is assumed at seven percent per year. Likewise, the main assumptions concerning water operations are derived from the latest NAWEC performance indicators available as well as other relevant sources of water data for GBA such as the Water Supply & Sanitation in the Greater Banjul Area (WASIB) Project Feasibility Study<sup>21</sup>.

### Discount Rate

7. There is much debate about the appropriate value of the discount rate. The World Bank has now issued new guidelines on the choice of discount rate, which is grounded in the principles of welfare economics (based on the Ramsey formula). This states that the discount rate may be taken as twice the expected long-term average growth rate in per capita income.

8. The Gambia's real GDP growth rates show high volatility, with sharp variations from year to year. The Gambia's GDP growth rate fell from 4.3 percent in 2015 to 2.2 percent in 2016 because of the difficult political transition and exogenous shocks, and subsequently real GDP growth accelerated to 6.5 percent in 2018. The most recent World Bank and IMF staff estimated Forecast expected an average long-term growth rate approximately 5 percent.

9. Population growth rate has averaged 3 percent and is expected to continue at this rate. In the absence of significant improvement in economic performance, a per capita GDP growth rate forecast of 3 percent would seem prudent, leading to a 6 percent discount rate under the default assumptions of the latest World Bank guidelines for the choice of discount rates.

### Additional assumptions

10. The following additional assumptions are made for the economic analysis:

<sup>&</sup>lt;sup>21</sup> Feasibility Study for a WASIB – Final Report (NAWEC; January 2020).



- (i) The economic evaluation spans over a period of 20 years for T&D and water infrastructure, and 10 years for energy efficiency and water equipment;
- (ii) Investment costs are assumed to be incurred over a maximum period of five years, although the disbursement schedule varies across project components;
- (iii) Costs exclude price contingencies and interest during construction, as it is by definition in the economic analysis;
- (iv) Operation and maintenance costs are assumed at a standard 2 percent per year of the cost of electricity infrastructure procured under the Project and US\$0.38/m<sup>3</sup> of water produced<sup>22</sup> for the Project;
- (v) Both costs and benefits are estimated in economic terms at constant 2020 prices and set up as cash flows over the lifetime of infrastructure, including the construction and operation period;
- (vi) Tariffs are assumed to remain fixed for both electricity and water however water customers will be offered a payment plan for connection fees to increase affordability (see details below in CBA for Component 4);
- (vii) No taxes and duties are assumed in the investment cost (and hence the financial costs are assumed equal to the economic costs);
- (viii) No shadow pricing adjustments, corrections for foreign exchange rate distortions (using the standard correction factor, SCF), or adjustment for tax content in the local currency portion of the investment cost, are made. These would all tend to increase economic returns; their exclusion ensures a conservative result;
- (ix) All of the costs of social and environmental safeguards have been internalized in the investment cost estimates;
- (x) The local environmental benefits attributable to the avoided health impacts of avoided diesel self-generation have not been quantified. Likewise, the health benefits and time-savings from improved access to quality water made available through the Project have not been quantified. Again, this ensures a conservative result.
- (xi) The Shadow Prices of Carbon (SPCs) used in the GHG accounting for year 2020 are US\$40 and US\$80 per tCO<sub>2</sub>-eq for the lower-bound and higher-bounds correspondingly; both are assumed to increase at a 2.26 percent rate per year.

## Economic and Financial analysis for Component 2

11. The economic and financial analysis for Component 2 is presented for the three investment activities (i) T&D upgrades in the GBA; (ii) loss reduction program; and (iii) energy efficiency program.

### Economic and Financial analysis for the T&D upgrades in the GBA

12. The economic and financial analysis for the T&D upgrades in the GBA is updated from the parent project to represent the updated cost estimates, namely an increase in investment cost from US\$12 million to US\$17 million. All other input assumptions and approach remain the same as presented in the parent project.

<sup>&</sup>lt;sup>22</sup> WASIB Project Feasibility Study, p. 130.



13. The results of the cost increase reduce the economic NPV from US\$26.1 million to US\$20.7 million, and reduce the EIRR from 35.4 percent to 19 percent, still well above the hurdle rate of 6 percent.

14. The sensitivity analysis was updated to test the switching values of key assumptions. The switching value of an input assumption is the value that brings the ERR to the hurdle rate (NPV to zero). The analysis shows that the economic returns of the project remain robust.

Input assumption	Unit	Baseline Assumption	Switching Value (Original)	Switching Value (Revised)	Assessment
Transmission loss reduction	percent	2.5	0.52	0.94	A 2.5 percent loss reduction is already conservative. Transmission loss reduction through higher voltage lines is a well-established fact from experience around the world. It would be highly unusual for loss reductions to fall as low as 0.9 percent.
GWh through the new line	GWh	259	54	97.5	259 GWH is already a very conservative assumption for energy to be passed through the new line. With the pipeline of generation envisaged in the road map, as well as imports through the OMVG interconnection, it is highly unlikely that energy transmitted through the new line would be as low as 97.5 GWh per year.
Investment costs for alternative lines	US\$/km	25,000	n.a.	n.a.	The sensitivity analysis shows that even in the event that the alternative lines could be provided at zero cost, the higher voltage lines would still be a better option due to the reduced transmission losses.

Table	A2.1.	Switching	Values	for the	T&D	upgrades	in the	GBA
TUNIC	~~	Switching	values	ior the	I G D	appraces	in the	<b>UD</b> A

15. The results of the cost increase reduce the financial Net Present Value from US\$16.5 million to US\$11.1 million, and reduce the FIRR from 24.8 percent to 13 percent, still well above the hurdle rate of 6 percent.

### Economic and Financial analysis for loss reduction program

16. The loss reduction program envisaged under Component 2 is intended to reduce ATC&C losses from 26 percent in 2019 to 21 percent by 2023, including:

- Technical losses from 11 percent in 2019 to 10 percent by 2023;
- Non-technical losses from 8 percent in 2019 to 6 percent by 2023; and
- Collection losses from 7 percent in 2019 to 5 percent by 2023.

17. Two types of benefits can be associated to reducing nontechnical losses. First, as losses reduce, since The Gambia continues to be in a supply constrained environment, NAWEC revenues will increase as sales increase. This is primarily a financial benefit for NAWEC. It would generate a welfare gain to the society at large – and therefore also translate into an economic benefit – when NAWEC applies the increased revenues to continue investing in improving service quality and expanding electricity access. A



second effect associated with reducing non-technical losses is a potential marginal reduction in electricity self-generation. The associated savings constitute an economic benefit under this project component. Their value is calculated based on the levelized cost of generation in The Gambia, which is estimated at US\$0.19/kWh.

18. Economic costs include the investments such as replacing overloaded distribution transformers and installing AMR meters and of a meter control center etc., and the related operation and maintenance costs.

19. The no project energy balance is shown in Table A2.2. In a constrained supply system, the balancing item is unmet demand, some part of which may be served by self-generation (assumed at 50% of the demand unmet by the grid). Available supply and the unconstrained demand are fixed. Technical losses were estimated at 11 percent, commercial losses at 9 percent, and collection losses at 7 percent. Pilferage is the sum of commercial and collection losses.

Energy balance - without project			NPV	2020	2021	2022	2023	2024	2029	2034	2039
Supply to grid	GWH		8,229	397	437	477	517	557	766	977	1,247
Technical losses	GWH		905	44	48	52	57	61	84	108	137
Commercial losses	GWH		658	32	35	38	41	45	61	78	100
Sales	GWH		6,666	322	354	386	419	451	620	792	1,010
Uncollected sales	GWH		467	23	25	27	29	32	43	55	71
Billed & collected	GWH		6,199	299	329	359	389	420	577	736	940
Demand	GWH		6,908	400	420	441	463	486	621	792	1,011
Supply gap	GWH		240	78	66	55	44	35	0	0	0
Self generation	GWH		120	39	33	27	22	18	0	0	0
Unmet demand	GWH		120	39	33	27	22	18	0	0	0
Summary for WTP calculation											
Paying consumers	GWH		6,199	299	329	359	389	420	577	736	940
Pilferage	GWH		1,125	54	60	65	71	76	105	134	171
Self-generation	GWH		120	39	33	27	22	18	0	0	0
Economic benefit											
Paying consumers	USD million	\$0.23	\$1,451	\$70	\$77	\$84	\$91	\$98	\$135	\$172	\$220
Pilferage	USD million	\$0.12	\$132	\$6	\$7	\$8	\$8	\$9	\$12	\$16	\$20
Self-generation	USD million	\$0.36	\$43	\$14	\$12	\$10	\$8	\$6	\$0	\$0	\$0
Total economic benefit USD million		\$1,626	\$90	\$96	\$102	\$107	\$113	\$147	\$188	\$240	

# Table A2.2. Energy Balance Without the Project

20. Each of the three categories of consumption (paying, pilferers, and self-generators), are separately accounted for. The willingness to pay (WTP) of pilferers is assumed to be 50 percent of that of paying customers.

21. The corresponding with-project electricity balance is shown in Table A2.3. The main impact of the loss reduction program is that additional energy can be absorbed, and reduction of technical losses further increases the amount of additional energy available for consumption.


Energy balance - with project			NPV	2020	2021	2022	2023	2024	2029	2034	2039
Supply to grid	GWH		8,229	397	437	477	517	557	766	977	1,247
Technical losses	GWH		835	44	48	52	52	56	77	98	125
Commercial losses	GWH		513	32	35	33	31	33	46	59	75
Sales	GWH		6,882	322	354	391	434	468	643	821	1,048
Uncollected sales	GWH		360	23	25	23	22	23	32	41	52
Billed & collected	GWH		6,522	299	329	368	413	444	611	780	995
Demand	GWH		6,908	400	420	441	463	486	621	792	1,011
Supply gap	GWH		211	78	66	50	29	18	0	0	0
Self generation	GWH		106	39	33	25	14	9	0	0	0
Unmet demand	GWH		106	39	33	25	14	9	0	0	0
Summary for WTP calculation											
Paying consumers	GWH		6,522	299	329	368	413	444	611	780	995
Pilferage	GWH		873	54	60	57	53	57	78	100	127
Self-generation	GWH		106	39	33	25	14	9	0	0	0
Economic benefit											
Paying consumers	USD million	\$0.23	\$1,526	\$70	\$77	\$86	\$97	\$104	\$143	\$183	\$233
Pilferage	USD million	\$0.12	\$102	\$6	\$7	\$7	\$6	\$7	\$9	\$12	\$15
Self-generation	USD million	\$0.36	\$38	\$14	\$12	\$9	\$5	\$3	\$0	\$0	\$0
Total economic benefit	USD million		\$1,667	\$90	\$96	\$102	\$108	\$114	\$152	\$194	\$248

# Table A2.3. Energy Balance with the Project

#### Results

22. The results of the net economic flows are shown in Table A2.4. The economic NPV of the loss reduction project is US\$41 million, and the EIRR is 55.5 percent. Such high rates of economic return are to be expected for such loss reduction and debottlenecking projects. When the marginal in carbon emissions is taken into account (and valued at the baseline values in the World Bank's guidance), the EIRR does not change since the GHG emission reductions are so limited (15 tons reduction).



Economic flows	NPV	2020	2021	2022	2023	2024	2029	2034	2039
Economic flows, no project									
Consumer benefits	\$1,626	\$90	\$96	\$102	\$107	\$113	\$147	\$188	\$240
Cost of baseline generation 0.19	(\$1,564)	(\$75)	(\$83)	(\$91)	(\$98)	(\$106)	(\$145)	(\$186)	(\$237)
Cost of self-generation	(\$43)	(\$14)	(\$12)	(\$10)	(\$8)	(\$6)	\$0	\$0	\$0
Total economic flows, no project	\$19	\$1	\$1	\$1	\$1	\$1	\$2	\$2	\$3
Economic flows, with project									
Cost of baseline generation	(\$38)	(\$14)	(\$12)	(\$9)	(\$5)	(\$3)	\$0	\$0	\$0
Project investment cost	(\$5.1)		(\$4)	(\$1)	(\$0.5)				
0&M	(\$1)		(\$0.08)	(\$0.10)	(\$0.11)	(\$0.03)	(\$0.03)	(\$0.03)	(\$0.03)
Cost of baseline generation	(\$1,564)	(\$75)	(\$83)	(\$91)	(\$98)	(\$106)	(\$145)	(\$186)	(\$237)
Consumer benefits	\$1,667	\$90	\$96	\$102	\$108	\$114	\$152	\$194	\$248
Total economic flows, with project		\$1	(\$3)	\$1	\$4	\$5	\$7	\$8	\$11
Net economic flows	\$40.8	(\$0.0)	(\$4.1)	(\$0.1)	\$2.7	\$3.5	\$4.9	\$6.2	\$8.0
EIRR	55.5%								
Local environmental impacts									
Local environmental impacts		0	0	0	0	0	0	0	0
Net economic flows including local	<mark>\$41</mark>	(\$0.0)	(\$4.1)	(\$0.1)	\$2.7	\$3.5	\$4.9	\$6.2	\$8.0
EIRR	<mark>55.5%</mark>								
Global environmental impacts									
Net change, GHG emissions		0.0	0.0	-1.9	-6.2	-6.7	0.0	0.0	0.0
Value of GHG emissions reduction		\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Net economic flows including local and GHG	\$41	(\$0.0)	(\$4.1)	(\$0.1)	\$2.7	\$3.5	\$4.9	\$6.2	\$8.0
EIRR	<u>55.5%</u>								

## Table A2.4. Net Economic Flows

## Switching Values

23. The full set of calculated switching values are shown in Table A2.5. These illustrate that the results of the economic analysis for Component 2 are robust even under extreme conditions.

## Table A2.5. Switching Values for the Economic Analysis of T&D Loss Reduction Program

		<b>Baseline Assumption</b>	Switching Value	Assessment
Construction cost for loss reduction program	US\$, millions	5.5	47	A cost overrun of this magnitude is extremely unlikely.
Project implementation delays	Years	3	16	While capacity constraints at NAWEC could cause some implementation delays, a delay of this magnitude would imply a catastrophic failure rate of the project.

#### Financial analysis of loss reduction program

24. The financial benefits are based on average tariff data and increased sales that derive from reduced T&D losses. The financial NPV will be US\$69 million and the FIRR 83.7 percent.

Financial flows											
Project investment cost	USD			\$0.0	(\$4.0)	(\$1.0)	(\$0.5)	\$0.0	\$0.0	\$0.0	\$0.0
0&M	USD			\$0.0	(\$0.1)	(\$0.1)	(\$0.1)	(\$0.0)	(\$0.0)	(\$0.0)	(\$0.0)
Increase in collected bills	GWH			\$0.0	\$0.0	\$8.3	\$23.1	\$24.9	\$34.2	\$43.7	\$55.8
Increase in collected bills	USD	0.23		\$0.0	\$0.0	\$1.9	\$5.3	\$5.7	\$7.9	\$10.0	\$12.8
Net financial flows			<mark>\$69</mark>	\$0.0	(\$4.1)	\$0.8	\$4.7	\$5.7	\$7.8	\$10.0	\$12.8
FIRR			83.7%								

## Economic and Financial analysis for energy efficiency program (Component 2)

25. The scope of the economic and financial analysis on the energy efficiency program to be supported by the AF is limited to investment activities including (i) the LED bulbs for street lighting; and (ii) light retrofitting of public buildings that are expected to yield important energy savings. Due to data constraints (an energy audit will be undertaken under the component), the analysis does not include benefits from energy efficiency activities for the water business.

26. The AF will finance light retrofitting of eligible buildings to improve energy efficiency. Agreed building eligibility criteria include: (i) ownership by (or assigned to) the central government (excluding publicly-owned enterprises, private buildings with public agency tenants); (ii) must be structurally and seismically safe , with no high flood risk, not had a full energy efficiency renovation in the past 10 years and be at least 5 years old; and (iii) no plans for office moves, closure, building demolition or privatization.

27. The economic analyses cover the following project benefits: economic value of (actual) energy saved estimated by consumer willingness to pay. The project has several additional benefits that were not quantified for the purposes of the economic analyses, such as national benefits (enhanced energy security, reduced fiscal burden for fuel imports, job creation, better health), municipal benefits (urban renewal, improved social service quality), increased building operating lifetime, improved worker productivity, and some improvement in indoor conditions and comfort.

28. The financial benefit of the EE investments is the actual reduction in the energy bills of the facilities. Both the economic and financial costs of the EE investments are the capital investments. The economic costs and benefits of the investments were calculated exclusive of taxes and subsidies and the financial costs and benefits inclusive of taxes. Assumptions are detailed in Table A2.7.



# Table A2.7. Assumptions for the Energy Efficiency Program

Assumptions - retrofitting public offices		
	Unit	Value
Office space to be retrofitted through the AF	Square meters	10,000
Assumed office size	Square meters	20
Estimated number of offices to be retro fitted	Number	500
CoP AC units being replaced		2.5
CoP of new AC units		3.8
		Annual kWh
Activity	Cost per m2	savings per m2
AC replacement	\$40.0	32
LED bulb replacement	\$2.5	6
Plug loads	Ş4.1	7
AC		
AC cost per square meter	USD / m2	40
Investment cost	USD	\$400,000
Annual energy savings	kWh	320,879
Economic life	Years	10
Lifetime energy savings	kWh	3,208,791
Cost per kWh saved	USD / kWh	\$0.12
LED bulbs		
Bulb cost per square meter	USD / m2	\$2.46
Investment cost	USD	\$24,615
Annual energy savings	kWh	61,538
Economic life	Years	10
Lifetime energy savings	kWh	615,385
Cost per kWh saved	USD / kWh	\$0.04
Plug loads		
Plug cost per square meter	LISD / m2	\$4.13
Investment cost	USD	\$41,319
Annual energy savings	kWh	70.330
Economic life	Years	10
Lifetime energy savings	kWh	703.297
Cost per kWh saved	USD / kWh	\$0.06
Assumptions - LED Streetlight replacement		
Cost per LED street bulb	USD	\$105
LED Power rating	Watts	100
Indascent bulb rating	Watts	250
Hours per day	Hours	12
Annual savings per bulb	kWh	657
Number of bulbs to be financed through the project		1500
Annual savings	kWh	985.500
Economic life	Years	10
Lifetime savings	kWh	9,855,000
Investment cost	USD / kWh	158,228
Cost per kWh saved	USD / kWh	\$0.02
Total		
Investment	USD	\$624,162
Litetime energy savings	KWh	14,382,473
Average cost of Kwn saved	USD / KWh	ŞU.U4

29. The results of the economic analysis in Table A2.8 show attractive returns for the energy efficiency program. The economic NPV is US\$2.7 million, with an EIRR of 29 percent. The results of the financial analysis show a financial NPV of US\$1.5 million, and an FIRR of 49 percent.

## Table A2.8. Results of the Financial and Economic Analysis for the Energy Efficiency Program

	NPV	2021	2022	2023	2024	2025	2031
Costs							
Investment							
Retrofitting public offices		(\$232,967)	(\$232,967)				
Street lights		(\$79,114)	(\$79,114)				
0&M		(\$6,242)	(\$12,483)	(\$12,483)	(\$12,483)	(\$12,483)	(\$12,483)
Economic Benefits							
KWH saved			719,124	1,438,247	1,438,247	1,438,247	1,438,247
Economic value of kWh saved			\$258,885	\$517,769	\$517,769	\$517,769	\$517,769
Net economic benefit	\$2,699,979	(\$318,323)	(\$65,680)	\$505,286	\$505,286	\$505,286	\$505,286
EIRR	79%						
Financial benefits							
Financial value of kWh saved			\$165,398	\$330,797	\$330,797	\$330,797	\$330,797
Net economic benefit	\$1,484,945	(\$318,323)	(\$159,166)	\$318,314	\$318,314	\$318,314	\$318,314
FIRR	49%						

#### Switching Values

30. The full set of calculated switching values are shown in Table A2.9. These illustrate that the results of the economic analysis for Component 2 are robust even under extreme conditions.

#### Table A2.9. Switching Values for the Economic Analysis of Energy Efficiency Program

		Baseline Assumption	Switching Value	Assessment
Energy efficiency program cost overrun	US\$, millions	0.6	3.2	A cost overrun of this magnitude is extremely unlikely.
Project implementation delays	Years	2	8	While capacity constraints at NAWEC could cause some implementation delays, a delay of this magnitude would imply a catastrophic failure rate of the project.
WTP	USD / kWh	0.36	0.06	While it is difficult to get a precise willingness to pay estimate, it is almost certainly higher than \$0.06 per kWh



## **Economic and Financial Analysis for Component 4**

31. The short-term investments to address the water crisis (Component 4) are intended to (i) develop an NRW reduction plan that will enable installation of retail meters (approximately 20,000) to replace faulty meters and other measures that will help reduce commercial NRW from the current 30 percent to 25 percent by 2025. These NRW actions along with IMS and other related TA in Component 3 will improve billing efficiency from the current 90 percent to 95 percent by 2025; (ii) increase the number of connections for approximately 5,000 households by 2024; (iii) rehabilitate three water storage tanks in order to improve NAWEC's water storage capacity, increase pumping efficiency through the installation of solar water pumps and reduce energy consumption that along with energy efficiency measures and related TA in Component 3 will help reduce production cost of water and increase supply and quality of water.

32. Primary benefits expected from the commercial NRW reduction and billing efficiency improvements will be an increase in NAWEC revenues. These constitute mostly a financial benefit for NAWEC and are estimated based on average tariff data and increased sales that derive from the commercial NRW reductions and billing efficiency improvements detailed below in the financial analysis subsection. The costs of this subcomponent are the investments in 20,000 AMR retail meters, 200 prepaid meters for institutional and commercial users, equipment and materials for the DMAs, and TA for the NRW reduction program. There will also be a marginal economic benefit from the installation of meters as consumers will be more careful with their water use given that they will have to pay for metered water that they consume. Also, the increased net financial benefits from this sub-component will ultimately turn into net economic benefits for the society at large when NAWEC applies the increased revenues to continue investing in improving service quality and expanding water access.

33. Primary benefits from the access to piped water sub-component and from the additional water produced thanks to the rehabilitation of water tanks and recommissioning of wells will accrue from access to piped water for approximately 45,000, 4,000 and 15,000 people respectively in the GBA, or a total of 64,000, who are not currently served or are only partially served by NAWEC. Based on a consumer survey,<sup>23</sup> it is estimated that these new NAWEC customers will increase their daily consumption from 20 to 60 lpd. Additionally, these new customers will also receive health benefits, especially the avoided costs of waterborne diseases, thanks to access to water of better quality. They will also benefit from time savings from water collection, especially for children and women who are the one that usually carry out these activities for their families, as they will have access to piped water connections at their homes. For the estimation of economic benefits, the additional consumption of water is valued at US\$0.55/m<sup>3</sup> to take into account their WTP adjusted for health and time-savings benefits. The economic costs associated to this sub-component are the investments in the new 5,000 household connections, in the rehabilitation of the water tanks, in the recommissioning of wells and the production cost of the additional water to be provided to these new customers. There will be energy savings through the efficiency measures that the rehabilitation of water tanks and recommissioning of wells and use of solar pumps will bring; these savings will amount to 627.8 gWh of electricity used to produce water per year by 2025. These energy savings, not only constitute a financial benefit for NAWEC but also decrease the electricity demand from fossil fuels and therefore reduce GHG emissions and provide global social benefits as measured below.

<sup>&</sup>lt;sup>23</sup> WASIB Project Feasibility Study, p. 126 indicates that the daily consumption per capita of the population connected to NAWEC's network is approximately 60 lpd and for those that use other sources is 20 lpd.



34. Prospective customers will be able to afford piped water at the current tariff levels as expressed by their willingness to pay in a consumer survey recently carried out. <sup>24</sup> Only 40 percent of the nonconnected population, however, would be able to afford the water connection fee.<sup>25</sup> Therefore, NAWEC will offer a payment plan for connection fees (breaking down the connection fee into several installments) to increase affordability and therefore reach all 5,000 prospective households.

## Results

35. Given the above considerations, the results of the net economic flows for the access to piped water, rehabilitation of the water tanks and for the recommissioning of wells and installation of solar pumps, sub-components are shown in Table A2.10. The economic NPV of this sub-component is US\$0.3 million, the EIRR is 12.5 percent, and the benefit-cost ratio is 1.2. Moreover, when contributions of the water sub-components to the reduction of carbon emissions are taken into account, the EIRR goes from 12.5 percent up to a range between 16.5 and 20.4 percent and the economic NPV goes from US\$0.3 million to a range between US\$0.5 and US\$0.8 million. This means that these water sub-components are not only viable according to their own economic merits but also contribute to global social benefits of mitigating GHG emissions through the reduction of energy use.

Economic flows	NPV	2020	2021	2022	2023	2024	2025
Consumer benefits							
Benefits to consumers (new connections)		\$0	\$180,675	\$361,350	\$542,025	\$722,700	\$722,700
Benefits reflected in payments for connection fees		\$0	\$64,293	\$64,293	\$64,293	\$64,293	\$0
Total consumer benefits		\$0	\$244,968	\$425,643	\$606,318	\$786,993	\$722,700
Costs							
Total production costs (net of electricity savings)		\$0	\$76,825	\$153,651	\$230,476	\$307,301	\$307,301
Consumer benefits net of production costs	\$1,096,221		\$168,142	\$271,992	\$375,842	\$479,691	\$415,399
Future stream of consumer benefits net of producti	\$369,703					\$391,885	
Investment cost	(\$4,179,784)		(\$1,206,250)	(\$1,206,250)	(\$1,206,250)	(\$1,206,250)	
Salvage value	\$3,707,391					\$3,929,835	\$4,165,625
Net economic benefits	\$339,645		(\$1,038,108)	(\$934,258)	(\$830,408)	\$3,595,162	
EIRR	12.5%						
Global environmental impact							
Net emission change due to tanks and solar pumps (	(tCO2e)	0	-151.7	-303.5	-455.2	-607.0	-607.0
Upper bound value of GHG emmissions (at high SPC	in US\$/tCO2e)	0	-12,413	-25,387	-38,940	-466,978	-493,010
Lower bound value of GHG emmissions (at high SPC	in US\$/tCO2e)	0	-6,207	-12,693	-19,470	-233,489	-246,505
Upper bound net cost benefit (including GHG)	\$776,535	\$0	(\$1,025,694)	(\$908,871)	(\$791,469)	\$4,062,140	\$493,010
Lower bound net cost benefit (ncluding GHG)	\$558,090	\$0	(\$1,031,901)	(\$921,564)	(\$810,938)	\$3,828,651	\$246,505
EIRR upper bound (including GHG)	20.4%						
EIRR lower bound (including GHG)	16.5%						

## Table A2.10. Net Economic Flows for Access to Piped Water, Water Tanks, Wells and Solar Pumps Sub-Components

## Switching Values

36. The full set of calculated switching values for the economic benefits of this sub-component are shown in Table A2.11. These illustrate that the results of the economic analysis for the access to piped

<sup>&</sup>lt;sup>24</sup> Ibid, p. 129.

<sup>&</sup>lt;sup>25</sup> Ibid, p. 129.



water, water tanks, wells and solar pumps sub-components are robust for significant cost increases and implementation delays. There are risks, however, associated with a smaller number of new household connections compared to baseline assumptions. The risks associated with the latter will require close implementation support to ensure NAWEC carries out in a timely manner the actions needed to achieve expected targets and avoid the erosion of economic benefits.

# Table A2.11. Switching Values for the Economic Analysis of Access to Piped Water, Water Tanks and Wells Sub-Components

		Baseline	Switching	Assessment
		Assumption	Value	
Investment cost for	US\$,	4.8	6.4	A cost overrun of 32 percent indicates a risk that
access to piped water,	millions			economic benefits could erode and therefore the
water tanks and wells				need for close implementation support will be
sub-component				provided to NAWEC to minimize cost overruns.
New household	Number	5,000	2,975	Given the risk that 40 percent of customers would
connections				not be able to afford connection fee, NAWEC will
				offer payment plan for connection fees to ensure
				affordability by all 5,000 prospective households.
Project	Years	4	10	While capacity constraints at NAWEC could cause
implementation				some implementation delays, a delay of this
delays				magnitude would imply a major failure rate of the
				project.

# Financial Analysis of Component 4

37. The financial benefits are based on average tariff data and increased sales that derive from additional water billed due to commercial NRW reductions and billing efficiency improvements as well as electricity costs savings due to the use of solar pumps and rehabilitation of water tanks. Connection fees and water provided to the new additional 5,000 households and the additional supply of water to 4,000 and 15,000 people thanks to the water tanks and well rehabilitation result in additional revenues to NAWEC. The detailed financial flows are shown in Table A2.12. The financial NPV is US\$2.0 million and the FIRR is 43.6 percent.



Financial flows	NPV	2020	2021	2022	2023	2024	2025
Revenues							
Billed water		\$0	\$279,518	\$559,036	\$838,553	\$1,118,071	\$1,118,071
Other revenues (Connection fees)		\$0	\$152,695	\$152,695	\$152,695	\$152,695	\$0
Total revenues		\$0	\$432,213	\$711,731	\$991,249	\$1,270,767	\$1,118,071
Costs							
Total production costs (net of electricity savings)		\$0	\$206,200	\$412,400	\$618,600	\$824,800	\$824,800
EBITDA		\$0	\$226,013	\$299,331	\$372,649	\$445,966	\$293,271
Cash from operations	\$939,728		\$187,114	\$242,392	\$303,261	\$369,720	\$237,367
Future stream of cash from financed operations	\$211,256					\$223,932	
Investment cost	(\$3,621,902)		(\$1,045,250)	(\$1,045,250)	(\$1,045,250)	(\$1,045,250)	(\$1,045,250)
Salvage value	\$5,393,213					\$5,716,805	\$6,059,814
Net financial flows	\$2,023,446		(\$858,136)	(\$802,858)	(\$741,989)	\$5,265,207	
FIRR	43.6%						

## **Component 5**

38. With respect to the emergency actions in support of the COVID-19 response under Component 5, the main benefits include (a) provide key equipment, gear and other inputs to enable NAWEC to provide and extend water services to the population; (b) install handwashing facilities in public places; mobilize water trucks and set up water distribution points in neighborhoods without running water; (c) provide hygiene kits (soap, cleaning materials, disinfectants, etc.) to households and essential service providers – including health centers; and (d) support WASH sensitization campaigns.

39. As of mid-June 2020, there were more than two dozen confirmed COVID-19 cases in the country but there has already been loss of life due to the pandemic. The targeted WASH interventions included in the AF will increase access to the population to water services, including handwashing facilities in public places and water distribution points in neighborhoods without running water, that combined with the provision of hygiene kits, will improve hygiene practices necessary to reduce contagion. Communication on COVID-19 prevention from a WASH perspective will help mitigate the spread of COVID-19. While the benefits from these activities are difficult to quantify, given the crucial role that clean water, hygiene, behavioral practices and sanitation can play in COVID-19 prevention and response, the AF support to emergency actions in response to the COVID-19 pandemic will bring major benefits by helping reduce sickness and death and the economic impacts of this outbreak.

## Financial analysis of NAWEC

40. **Summary**: The financial analysis of NAWEC was prepared by the NAWEC SC. Data constraints make it difficult to make a reliable assessment of NAWEC's financial prospects. Many positive and necessary steps have been taken to improve the financial stability of NAWEC, such as debt relief, improving collections through pre-paid meters and MoFEA responsibility for central government bills and offsetting of arrears. However, more needs to be done to control costs and to manage cash flow. The purchase of fuel remains a critical issue. The move to monthly budgeting and variance analysis by cost center should help to make directors more cost aware as will the enterprise resource planning system when implemented. In the meantime, reorganization of Finance Department, recruitment of missing skills, the catch up of accounts should all help in improving cash flow and management and the review of

tariffs due in 2020 should also help analyze where savings can be made and may help to improve revenue, depending on the outcome of that review.

41. **Analysis of Accounts:** The last year of audited accounts available for NAWEC is year ending 2017 (2018 accounts are expected to be available September 2020). Key financial ratios for that year, compared to the previous year (2016) are shown on Table A2.13.

Financial Ratio	2017	2016
Current Ratio	0.92	0.90
Debtors Days	127	102
Creditor Days	318	212
Debt / Equity Ratio	-37.51%	-38.93%
Interest Cover	1.08	1.38
Net Profit Margin	0.64%	3.89%
Cost Recovery Variance	112.84%	117.19%
Cost Recovery Variance (including interest)	102.91%	104.51%
ROCE	5.12%	8.60%
Debt Service Ratio	0.45	0.52

## Table A2.13. Financial Ratios

42. The ratios show an insolvent company (current ratio of less than 1), an indication that NAWEC was unable to meet current liabilities when they were due, and a company which reported a very small profit of less than 1 percent of turnover (US\$0.4 million). Most key indicators disapproved with the company taking longer to collect its debts (increase in debtor days) and to pay its bills (creditors days) the later rising to just over 10 months (318 days). At the same time the company had a negative debt to equity ratio as a result of accumulated losses and rising debts more than wiping out all share capital input to the company by the main shareholder, the GoTG.

43. The only positive figures above relate to cost recovery which indicate NAWEC's Revenue exceed Operating costs plus depreciation and interest. While this figure fell during 2017 it suggests that NAWEC's tariff was, at that times, still sufficient to recover its costs and is an indication that improved collection rates and better cost management NAWEC should be able to remain solvent.

44. At the end of June 2019 actual revenue was under budget by 30 percent which would have serious implications for the 2020 budget if actual revenue for the second six months of 2019 is not significantly higher. Additional points:

- (i) Salaries & Wages were 17 percent over budget at the end of June 2019, the largest over expenditure in being in the Admin Department.
- (ii) HFO was under budget by 59 percent but this was partly as a result of fuel in stock at the start of the year;
- (iii) Lubricants expenditure was also 55 percent under budget;
- (iv) Revenue was marginally above expenditure.



#### Liabilities

## Debt

45. NAWEC registers, in its accounts, a total debt of approximately US\$18 million for 2017, up from approximately US\$12 million in 2014. Independent assessment of NAWEC's financial position by the World Bank during 2017 demonstrated the inability of NAWEC to service that level of debt and lead to a financial recovery plan being developed for the company.

46. To help resolve the financial distress of NAWEC, the company signed a Memorandum of Understanding (MoU) with the MoFEA in March 2018 which transferred responsibility for much of NAWEC's debt to the Government and which committed the MoFEA to taking responsibility for directly funding electricity and water bills of central government departments and agencies. Under the terms of the MoU, the debt for which NAWEC was to be liable for was reduced to US\$4 million (a reduction of over 75 percent). This MoU became fully effective at the end of December 2019. Since the signing of the MoU, additional drawdowns on the remaining NAWEC debt, leave NAWEC with a total debt outstanding at the end of 2019 of US\$6 million. This debt relates mainly to long term electricity loans and borrowings to pay for Heavy Fuel Oil.

47. Based upon the company's financial statements for 2017 and previous years, NAWEC's debt/EBITDA (Earnings Before Interest, Tax, Depreciation, and Amortization) ratio is summarized in Table A2.14. While 2019 financial statements are not available, Debt/EBITDA has been estimated based on total NAWEC debt after implementation of the MoU and estimates of EBITDA taken from the December 2019 NAWEC Management Accounts (this is a preliminary estimate of the financial position of the company at the end of 2019 and is likely to change as postings are closed and the 2018 accounts are finalized). The figure for EBITDA is included here as an indicative figure only and should be interpreted as such.

	2019 P	2017	2016	2015	2014
Total debt	3,887 <sup>26</sup>	9,244	9,138	8,867	6,336
EBITDA	392	658	736	792	46
Ratio (x)	10	14	12	11	138

Table A2.14. Historical Debt/EBITDA Ratio	o (GMD, thousands	;)
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48. This ratio is intended to illustrate the number of years that it would take for a company to pay its debt if all funds from operations are applied to pay it and no additional investments are made. A result higher than 5.5x indicates that a company is highly leveraged, while a ratio between 2.5x and 3.5x indicates an affordable level of indebtedness. As illustrated in Table A2.14, NAWEC's indebtedness level, according to the figures provided in 2017, was almost three times as high as the 5.5x threshold but this is expected to fall back sharply after the implementation of the MoU and to fall below the 5.5 threshold.

49. Agreement was reached with the MoFEA that, apart from repayment funding for HFO, servicing of NAWEC debt would be facilitated by the MoFEA until 2021 to give NAWEC time to regain financial strength.

<sup>&</sup>lt;sup>26</sup> Balance of drawdown of NAWEC debt remaining after implementation of MoU, GMD 3,273M + ITFC 2019 drawdown outstanding at year end GMD 614 million.



## Net Worth

50. This concept intends to determine whether a company's total assets are sufficient to pay the company's total liabilities and thus establish whether a company is solvent, or not. Table A2.15 illustrates NAWEC's net worth and solvency situation up to the end of 2017, the last year for which audited accounts are available. It should be noted that had the MoU been effective at the end of 2017, NAWEC's net worth would have become positive with a reduction in total liabilities of GMD 6,427K giving a positive difference between total assets and total liabilities of GMD 2,245K.

	2017	2016	2015	2014
Total assets	6,966	6,519	6,147	5,893
Total liabilities	11,148	10,658	10,434	9,577
Difference	(4,182)	(4,139)	(4,287)	(3,684)
Reduction in liabilities from MoU	(6,427)			
Difference after MoU	2,245			

# Table A2.15. Historical Net Worth (GMD, thousands)

#### Equity

51. NAWEC's equity at the end of FY2017 remained unchanged from previous years at US\$1.4 million. No additional contributions were made during the period under review. As a consequence of the company's negative results during the past several years, NAWEC's equity account displays a negative value since 2011. By the end of FY2017, NAWEC's negative equity had fallen to GMD 4,182 million.

52. As part of the implementation of the MoU, part of NAWEC's debt due to Government was capitalized. This resulted in an equity injection of GMD 2,646m which was approved by the NAWEC board of directors at an EGM during 2019. This conversion, if it had happened during 2017, would have reduced NAWEC's negative equity to GMD – 1,536mm. As NAWEC returns to profitability this balance would be expected to be reduced and ultimately return to a positive value.

## Cash Analysis

## Working Capital

53. Working capital is a key principle of financial analysis because it gives an indication of the cash required to cover financing shortfalls of the day-to-day operation of a company. It is customarily calculated taking uses of funds (inventory and receivables) and deducting sources of funds (trade payables and tax payables). If the balance is positive, working capital needs to be financed.

## **Cash Flow Statement**

54. A company's cash flow statement provides the information with respect to how the company obtains the cash it needs and how that cash is used.

55. <u>Cash from operations</u>: Historically NAWEC's cash from operations was negative, which is consistent with the losses registered in the company's Income Statement. However, in 2016, this trend was reversed and, for the first time since 2010, NAWEC posted a positive result in its Income Statement and also registered a positive amount of US\$10 million in its cash from operations. This is the combined result of the year's net profit plus a lower impact of grants, a lower increase of receivables, a dramatic reduction of payables, and a lower increase in inventory. This trend was continued during 2017 with US\$1.2 million being generated from operations.

56. <u>Cash from (used in) investing activities</u>: This account is intended to reflect the funds applied by a company in new investments or asset acquisitions. In NAWEC's case, it reflects the amounts invested in CAPEX during the period under review, which increased from GMD 293 million in FY2014 to GMD 368 million in FY2015 and GMD 390 million in FY2016 and GMD 602 million in 2017.

57. <u>Cash from financing (to) activities</u>: This account is intended to reflect the loan disbursements and grants received during the year, as well as any amounts applied to repay debt. It is worth noting that in the case of NAWEC, this account historically displayed drastic changes between fiscal years, particularly with respect to loans, with US\$8 million of loan disbursements in 2017, up from US\$5 million in 2016.

58. <u>Cash at the end of the year</u>: This line item is intended to indicate the balance of the cash that was either not used by a company, or the amount of the shortfall to be covered with cash reserves from previous years. In the case of NAWEC, the company registered a negative cash balance at the end of each year from 2009 to 2015. However, 2016 showed a return to a cash surplus with US\$8 million cash at bank or in hand on the 31<sup>st</sup> of December that year, increasing to US\$23 million at the end of 2017.

59. Cash flow forecasts for 2020 prepared as part of budget 2020 show a positive case balance at the end of the year of US\$36 million. This figure includes payables which shows a positive turnaround in the company finances where a positive cash figure was achieved in each year from 2017 to 2019 and is forecast to continue to the end of 2020.

## NAWEC's Financial Recovery Plan

60. The GESP has financed technical assistance for NAWEC to develop a financial recovery plan, which includes actions such as restructuring some key debts, and the improved operational performance of NAWEC. The technical assistance also allowed an update of the NAWEC financial model to identify the impacts of these measures, as well as other measures such as the impact of the GERMP investments, and other measures expected in the road map such as the diversification of the energy mix. The key assumptions used in the financial model (as updated in March 2018) are summarized in Table A2.16.

Assumption	Value
Demand growth	Low 1.5%; Base Case 3.5%; High 5%
GDP growth	3.5% average
Inflation	4.7% average
Generation installed capacity	2018: 102 MW

## Table A2.16. Financial Model Key Assumptions



Assumption	Value	
	2020: 203 MW	
	2022: 225 MW	
Electricity tariff adjustment index	Inflation	
Water and sewerage tariff adjustment index	GDP growth	
Revenue collection rate	90%	
Current losses (technical and commercial)	Electricity: 22%	
	Water: 39%	
O&M - generation	Variable cost: US\$5/MWh; Fixed cost: US\$29/MWh	
O&M - water	Variable cost: US\$0.06/m <sup>3</sup> ; Fixed cost: US\$757,306	
O&M - sewerage	Variable cost: US\$0.33/m <sup>3</sup> ; Fixed cost: US\$112,404	
Fuel cost basis	HFO: US\$68.4/MWh; LFO: US\$91.06/MWh	
Power purchase prices	HFO IPPs: US\$120/MWh	
	OMVG: US\$130/MWh	
CAPEX - generation	Road Map 2017 – (Scenario 3A)	
CAPEX - T&D	US\$88 million (2018–2035)	

61. Taking into account the implementation of the Debt MoU, signed in March 2018 and which became effective in December 2019, indicates that indicate that NAWEC should have sufficient funds to pay debt service obligations from 2021.

	2020 P	2021 P	2022 P
Debt outstanding at start of FY	3,389,346 <sup>27</sup>	3,417,785	3,351,434
Principal	155,228	159,808	187,310
Interest	39,582	40,488	39,798
Total debt service	194,810	200,296	227,108
Cash available for debt service	178,818 <sup>28</sup>	370,254 <sup>29</sup>	370,254 <sup>30</sup>
Balance/(shortfall)	(15,992)	169,959	143,146
DSCR (x)	-0.09	1.85	1.64

<sup>&</sup>lt;sup>27</sup> Excluding 2019 drawdown of ITFC funding for HFO as already included in 2020 cash flow statement.

<sup>&</sup>lt;sup>28</sup> 2020 budget cash flow including balance of payments outstanding to creditors and repayment of IRFC 2019 drawdowns.

<sup>&</sup>lt;sup>29</sup> Assuming 2021 budget cash flow equals 2020 after payment of outstanding creditors.

<sup>&</sup>lt;sup>30</sup> Assuming no change in annual cash flow between 2021 and 2022.



# Annex 4. Gender Gap Analysis

1. The following gender gap analysis was conducted for The Gambia to help in identifying which gaps might be closed by the project.

## Background

2. The GoTG aims to commit to gender equality and to adhere to international and regional treaties and protocols on women's rights. For example, the National Gender Policy which updates the National Policy for the Advancement of Women (1999-2009) marks the beginning of a new policy implementation period from 2010–2020. The country Gender Profile was initiated at the request of the GoTG as part of a wider effort to promote gender responsive policies and programming.

3. Despite this commitment women still make-up the majority of the poor and extremely poor, marginalized and disadvantaged on a number of fronts.<sup>31</sup> In particular, women are faced with disparities for example in literacy, access to education (especially post-secondary), and employment and the gender disparity is larger in rural areas. In The Gambia, 65.9 percent of the male population aged 15 years or above is literate compared to 45.0 percent of females. Over the last years, women in urban areas have been catching-up in terms of literacy as shown by literacy rates of younger cohorts. For example, the rates for female and male populations aged 15-19 are 72.2 and 78.3 respectively.

4. Women also have limited access to resources such as land and credit and are overrepresented in unpaid labor and with rates of participation in the labor force of 53.2 and 37.8 percent for men and women respectively<sup>32</sup>. Furthermore, the rate of unemployment for women doubles that of men (12.6 versus 6.7 percent)<sup>33</sup>. Employment opportunities are not favorable to women due to their low level of education in the energy sector either, where men's share is 74 percent versus 26 percent for women<sup>34</sup>. The Integrated Household Survey (IHS) 2015/16 showed that females constituted 55.9 percent of the working age population (15-64 years) compared to 50.9 percent for males. However, the share of economically active (employed and unemployed) stood at 53.8 percent for females compared to 76.3 percent for males. A similar gap was observed for male and female youth labor force participation (15-35 years). In terms of industry and sector women are less economically active in the formal sector and agriculture remains the predominant sector of industry for both females and males. However, males are also predominant in mining, energy, manufacturing, services and wholesale/retail trade.

## Specific gaps

5. Poverty and wealth<sup>35</sup>: The Human Development Report derives the GNI/capita of male and

<sup>&</sup>lt;sup>31</sup>http://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/GAMBIA%20Gender%20Profil%20final%20(2).pdf.

<sup>&</sup>lt;sup>32</sup> 2013 Population and Housing Census. The Gender Report. *http://www.gbos.gov.gm/uploads/census/2013/Gender-Report\_Final.pdf.* 

<sup>&</sup>lt;sup>33</sup> International Labor Organisation statistics.

https://www.ilo.org/shinyapps/bulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_A <sup>34</sup> http://www.ecreee.org/sites/default/files/documents/news/gambia\_country\_presentation.pdf.

 $<sup>^{\</sup>rm 35}$  Gambia DHS 2013 and authors' own calculations.



female members of the population based on the ratio of female to male wages, and female and male shares of economically active population. In Gambia, the estimated female GNI per capita is 800, in 2011 PPP US\$, which is only 37 percent of the male GNI per capita (2,190 PPP US\$).

6. **Productivity and access to productive resources (including livelihoods):** Despite a higher prevalence of females in agricultural occupations, male headed households are more likely than their female counterparts to own agricultural land (39.7 versus 28.6 percent, respectively)<sup>36</sup>. The gap also holds in rural and urban areas. Additionally, the average agricultural land is smaller for female headed households (0.8 ha) compared to male headed households (1.4 ha).<sup>37</sup>

7. The system of land ownership in the rural areas is traditional land tenure system. This allows men to own a greater proportion of the land currently being used for agricultural purposes. As a result, in many communities women farmers can access land but not control or own the land, exacerbating tenure insecurity for women. The inequalities created by the traditional land tenure system among men and women in terms of control and ownership disadvantage women farmers from accessing credit to acquire necessary agricultural inputs such as fertilizers, pesticides/insecticides, and quality seed. Since women farmers only have yearly user rights on the land as a result they can only grow (perennial crops) thus depriving them of the possibility for engaging in agro-forestry.<sup>38</sup>

8. **Labor and occupation:** Males are more likely to participate in the labor force. The rates of participation are 53.2 and 37.8 percent for males and females respectively.<sup>39</sup> Furthermore, the rate of unemployment for females doubles that of males 12.6 versus 6.7 percent respectively.<sup>40</sup>

9. Most women (59 percent) work in service, 37 percent in agriculture, and only 4 percent in industry. In comparison, 51 percent of males work in service, 24 percent in agriculture, and 25 percent in industry.<sup>41</sup>

10. As noted above, there is a huge gap in women's employment in sectors where a higher level of education is required, including also the energy sector where men's share is 74 percent share versus 26 percent for women. In particular at NAWEC only 4 women engineers and 9 technicians are employed, which altogether accounts for less than 1 percent of the staff or less than 0.5 percent of new hires – so an effective baseline of zero. Some other structures such as MoPE and PURA have no women employed as engineers. In spite of skills training being more accessible to the wider population due to the fact that only secondary education is required, women represent less than 2 percent of the technicians at the utility.

## Entry points and potential actions

<sup>&</sup>lt;sup>36</sup> Gambia DHS 2013 and authors' own calculations.

 <sup>&</sup>lt;sup>37</sup> FAO, National gender profile of agriculture and rural livelihoods, *http://www.fao.org/3/ca3222en/ca3222en.pdf* <sup>38</sup> ibid

<sup>&</sup>lt;sup>39</sup> 2013 Population and Housing Census. The Gender Report. *http://www.gbos.gov.gm/uploads/census/2013/Gender-Report\_Final.pdf*.

<sup>&</sup>lt;sup>40</sup> ILO statistics.

 $https://www.ilo.org/shinyapps/bulkexplorer15/?lang=en\&segment=indicator\&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_GEO\_RT\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_SEAB\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_AGE\_Abulkexplorer15/?lang=segment=indicator&id=EAP\_3WaP\_SEX\_Abulkexplorer15/?lang=segment=indicator&id=EAP\_3WaP\_SEX\_Abulkexplorer15/?lang=en&segment=indicator&id=EAP\_3WAP\_SEX\_Abulkexplorer15/?lang=segment=indicator&id=EAP\_3WAP\_SEX\_Abulkexplorer15/?lang=segment=indicator&id=EAP\_3WAP\_SEX\_Abulkexplorer15/?lang=sgment=indicator&id=EAB\_3WAP\_SEX$Abulkexplorer15/?lang=sgment=indicator&id=EAB\_3WAP\_SBAAbulkexplorer15/?lang=sgment=indicator&sgment=indicator&id=Sgment=indicator&sgment=indicator&sgment$ 

<sup>&</sup>lt;sup>41</sup> The Little Data Book on Gender 2019. https://data.worldbank.org/products/data-books/little-data-book-on-gender



11. The AF plans to close the identified gender gaps in women's employment and build on the ongoing activities under the parent project by:

- (a) Scaling up training to women to provide enhanced technical skills training to enable their employment in the energy and water sector
- (b) Scaling up the recruitment of female staff in electricity restoration and modernization activities and as frontline service providers within the renewable energy sector for installation and maintenance of solar equipment
- (c) Continuing to collect sex-disaggregated data to monitor progress and assess the impact of the gender-targeted interventions and enable iterations if needed for an impactful implementation.

12. In particular, under Components 2 and 3, the restoration and modernization of the energy sector that the project related to activities such as construction of transmission lines, generation and distribution of electricity, along with the construction and installation of the solar PV plants in urban and rural areas, presents great potential in terms of employment generation for women, with tailored interventions on women's employment (in particular in technical roles), to ensure better balance, meaningful employment and labor inclusiveness in the energy sector in The Gambia. The project will assess the existing barriers to employment as well as the pipeline of school-to-work transition to ensure that women can access the training and support needed to join the energy and water sectors. In particular, at the energy utility NAWEC the recruitment, retention, and promotion for women will be addressed among others, through (i) gender stereotypes and norms; (ii) mobility and workplace safety issues; (iii) lack of mentors; (iv) limited networks due to small numbers of women working in the sector; (v) issues maintaining work life balance and care burden; (vi) gender wage gaps; and (vii) sexual harassment and safety concerns.

13. The project will place the focus on actions such as (i) provision of scholarships for academic energy-related education to improve the representation of female engineers and technicians in the sector; and (ii) actions to support capacity building for women in solar isolation, installation and maintenance. The project will contribute to foster and scale up women's empowerment through Renewable Energy Access Model, based on the model provided by the Mbolo Women Training Center in the Gambia. Women graduated from the center are qualified for solar installation and maintenance and could be recruited by private sector companies, in particular those participating in the project. Further details entry points and potential activities are also discussed in paras 92-95 and Table 8 of the main text.



## Annex 5. Country Map



Source: World Bank