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Report No: PAD1375

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 9.1 MILLION
(US$12.46 MILLION EQUIVALENT)

AND A PROPOSED GRANT

IN THE AMOUNT OF SDR 4.4 MILLION
(US$6.04 MILLION EQUIVALENT)

TO THE

REPUBLIC OF THE GAMBIA

FOR THE

GAMBIA ELECTRICITY SUPPORT PROJECT

APRIL 19, 2016

Energy and Extractives Global Practice
Africa Region

CURRENCY EQUIVALENTS
(Exchange Rate Effective February 29, 2016)

Currency Unit	=	Gambian Dalasi (GMD)
40.54 GMD	=	US$1
SDR 0.72395045	=	US$1

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

BADEA	Arab Bank for Economic Development in Africa
CQS	Selection Based on the Consultants' Qualifications
DSCR	Debt Service Coverage Ratio
EIRR	Economic Internal Rate of Return
ESMP	Environmental and Social Management Plan
FM	Financial Management
FMA	Financial Management Assessment
GBA	Greater Banjul Area
GDP	Gross Domestic Product
GESP	Gambia Electricity Support Project
GoTG	Government of The Gambia
GRS	Grievance Redress Service
HFO	Heavy Fuel Oil
IC	Individual Consultants
ICB	International Competitive Bidding
IFR	Unaudited Interim Financial Report
IT	Information Technology
JPF	Joint Program Framework
LFO	Light Fuel Oil
M&E	Monitoring and Evaluation
MoPE	Ministry of Petroleum and Energy
MoFEA	Ministry of Finance and Economic Affairs
NAWEC	National Water and Electricity Company
NCB	National Competitive Bidding
NPV	Net Present Value
OE	Owner's Engineer
OFID	OPEC Fund for International Development
OMVG	*Organisation pour la Mise en Valeur du fleuve Gambie* (Gambian River Basin Organisation)
PDO	Project Development Objective
PIM	Project Implementation Manual
PMT	Project Management Team
PURA	Public Utilities Regulatory Authority
QCBS	Quality- and Cost-Based Selection
SC	Steering Committee

SOE	State-Owned Enterprise
T&D	Transmission and Distribution
WTP	Willingness To Pay

Regional Vice President:	Makhtar Diop
Country Director:	Louise J. Cord
Acting Senior Global Practice Director:	Charles Feinstein
Practice Manager:	Meike van Ginneken
Task Team Leaders:	Chris Trimble and Manuel Millan

REPUBLIC OF THE GAMBIA

Gambia Electricity Support Project

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PAD DATA SHEET

Gambia, The

Electricity Support Project (P152659)

PROJECT APPRAISAL DOCUMENT

AFRICA

GEE07

Report No.: PAD1375

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Basic Information			
Project ID P152659	EA Category B – Partial Assessment		Team Leader(s) Chris Trimble and Manuel Millan
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints [ ] Financial Intermediaries [ ] Series of Projects [ ]		
Project Implementation Start Date 10-May-2016	Project Implementation End Date 31-May-2021		
Expected Effectiveness Date 10-Aug-2016	Expected Closing Date 31-May-2021		
Joint IFC No			
Practice Manager/Manager Meike van Ginneken	Acting Senior Global Practice Director Charles Feinstein	Country Director Louise J. Cord	Regional Vice President Makhtar Diop
.			
Borrower: Republic of The Gambia			
Responsible Agency: National Water and Electricity Company Ltd (NAWEC)			
Contact: Ebrima Sanyang Telephone No.: +220 437 59 57		Title: Managing Director Email: coxib2000@yahoo.com	

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Project Financing Data(in US$, Million)

[ ]	Loan	[X]	IDA Grant	[ ]	Guarantee
[X]	Credit	[ ]	Grant	[ ]	Other

Total Project Cost:	18.50	Total Bank Financing:	18.50
Financing Gap:	0.00		

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Financing Source	**Amount**
BORROWER/RECIPIENT	0.0
International Development Association (IDA)	12.5
IDA Grant	6.0
Total	18.5

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Expected Disbursements (in US$, millions)

Fiscal Year	2016	2017	2018	2019	2020	2021				
Annual – Credit	0.0	1.35	4.04	3.37	2.02	1.68				
Annual – Grant	0.0	0.65	1.96	1.63	0.98	0.82				
Cumulative	0.0	2.0	8.0	13.0	16.0	18.5				

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Institutional Data

Practice Area (Lead)

Energy & Extractives

Contributing Practice Areas

Cross Cutting Topics

[ ] Climate Change

[ ] Fragile, Conflict & Violence

[ ] Gender

[ ] Jobs

[ ] Public Private Partnership

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %

Energy and mining	General energy sector	34		
Energy and mining	Thermal Power Generation	33		
Energy and mining	Transmission and Distribution of Electricity	33		
Total		100		

☑ I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

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Themes

Theme (Maximum 5 and total % must equal 100)

Major theme	Theme	%
Urban development	City-wide Infrastructure and Service Delivery	100
Total		100

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Proposed Development Objective(s)

The project development objective (PDO) is to increase the availability and reliability of electricity supply for existing customers.

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Components

Component Name	**Cost (US$, Millions)**
Expansion of Available Generation Capacity at Kotu and Brikama	7.00
Reduction of Technical and Commercial Losses in the Greater Banjul Area (GBA)	4.50
Institutional Strengthening and Project Implementation Support	7.00

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Systematic Operations Risk- Rating Tool (SORT)

Risk Category	**Rating**
1. Political and Governance	High
2. Macroeconomic	High
3. Sector Strategies and Policies	High
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	High
6. Fiduciary	Moderate

7. Environment and Social	Moderate
8. Stakeholders	Low
9. Other	
OVERALL	High

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Compliance

Policy

Does the project depart from the CAS in content or in other significant respects?	Yes [ ] No [X]

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Does the project require any waivers of Bank policies?	Yes [ ] No [X]
Have these been approved by Bank management?	Yes [ ] No [ ]
Is approval for any policy waiver sought from the Board?	Yes [ ] No [X]
Does the project meet the Regional criteria for readiness for implementation?	Yes [X] No [ ]

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Safeguard Policies Triggered by the Project	**Yes**	**No**
Environmental Assessment OP/BP 4.01	**X**	
Natural Habitats OP/BP 4.04		**X**
Forests OP/BP 4.36		**X**
Pest Management OP 4.09		**X**
Physical Cultural Resources OP/BP 4.11		**X**
Indigenous Peoples OP/BP 4.10		**X**
Involuntary Resettlement OP/BP 4.12		**X**
Safety of Dams OP/BP 4.37		**X**
Projects on International Waterways OP/BP 7.50		**X**
Projects in Disputed Areas OP/BP 7.60		**X**

.

Legal Covenants

Name	**Recurrent**	**Due Date**	**Frequency**
Accounting software Financing Agreement – Schedule 2.II.B.4a)		Three months after effectiveness	

Description of Covenant

The Recipient shall cause the Project Implementing Entity to, not later than three (3) months after the Effective Date, set up an accounting software for financial management of the Project.

Name	**Recurrent**	**Due Date**	**Frequency**
Steering Committee		Three months after	

Financing Agreement – Schedule 2.I.A.1a)		effectiveness	

Description of Covenant

Not later than three months after the Effective Date, the Recipient shall establish, and thereafter maintain, throughout the implementation of the Project, a steering committee ("Steering Committee"), with a composition, mandate, and resources satisfactory to the Association.

Name	Recurrent	Due Date	Frequency
Appointment of an external auditor Financing Agreement – Schedule 2.II.B.4b)		Six months after effectiveness	

Description of Covenant

The Recipient shall cause the Project Implementing Entity to, not later than six (6) months after the Effective Date, recruit an external auditor in accordance with the provisions of Section III of Schedule 2 of the Financing Agreement.

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Conditions

IDA	Subsidiary Agreement Financing Agreement – Article V.5.01a)	Effectiveness

Description of Condition
The Subsidiary Agreement has been executed on behalf of the Recipient and the Project Implementing Entity.

IDA	Project Implementation Manual Financing Agreement – Article V.5.01b)	Effectiveness

Description of Condition
The Recipient has adopted a Project Implementation Manual acceptable to the Association.

Team Composition

Bank Staff

Name	Role	Title	Specialization	Unit
Chris Trimble	Task Team Leader (ADM Responsible)	Energy Specialist		GEE07
Manuel Jose Millan Sanchez	Task Team Leader	Power Engineer		GEE07
Amadou Mamadou Watt	Team Member	Energy Specialist		GEE07
Ngor Sene	Financial Management Specialist	Financial Management Specialist		GGO13
Cheick Traore	Procurement Specialist	Senior Procurement Specialist		GGO07
Mamadou M. Mbaye	Team member	Procurement Specialist		GGO01
Fatou Fall	Social Safeguards	Senior Social		GSU05

	Specialist	Development Specialist		
Inka Schomer	Team Member	Operations Officer	Gender Specialist	GCGDR
Melissa C. Landesz	Environmental Safeguards Specialist	Natural Resources Management Specialist		GEN07
Mariangeles Sabella	Lawyer	Senior Counsel		LEGEN
Maiada M.A. Fattah Kassem	Finance Officer	Finance Officer		WFALA
Luis Schwarz	Finance Officer	Senior Finance Officer		WFALA
Seynabou Thiaw Seye	Team Member	Program Assistant		AFCF1
Yassin Nije	Team Member	Program Assistant		AFMGM
Thanh Lu Ha	Team Member	Senior Program Assistant		GEE07

Extended Team – Non-Bank staff

Name	Title	Office Phone	Location

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Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
The Gambia	Banjul	City of Banjul		X	Greater Banjul Area

Consultants (Will be disclosed in the Monthly Operational Summary)

Consultants Required? Consulting services to be determined

I. STRATEGIC CONTEXT

A. Country Context

1. **The Republic of The Gambia is a small economy that relies primarily on tourism, agriculture, and remittances inflows.** It is the smallest country on the continent of Africa, and stretches 450 km along The Gambia River. Its 11,285 km^2 area is surrounded by Senegal, except for 60 km of the Atlantic Ocean front. With a population of 1.8 million and 173.6 persons per km^2, The Gambia is one of the most densely populated countries in Africa.

2. **The Gambia is vulnerable to external shocks, as illustrated most recently by the Ebola crisis and poor harvest.** In 2014, the Ebola outbreak in neighboring countries and inadequate rainfalls significantly affected tourism and agriculture, respectively. These exogenous shocks, along with fiscal and monetary policy slippages in recent years, have depressed real gross domestic product (GDP) and contributed to an upswing in outmigration.

3. **Real GDP growth averaged 2.9 percent in The Gambia from 2005 through 2014, but contracted by 0.4 percent in per capita terms, given a high population growth rate.** This reflects exogenous shocks, along with a sharply diminished fiscal space that has limited the Government's capacity to invest in development or respond to shocks. High and rising Government borrowing interest rates, due to deterioration in market confidence, have also led to crowding out of private sector investment, undermining growth prospects. Consequently, poverty alleviation is likely to have stalled in recent years. This follows a marked decline in the reported poverty headcount rate from 58 percent to 48 percent between 2003 and 2010.

4. **Government financial strains have mounted substantially in recent years, largely due to fiscal slippages that have led to a buildup of public sector debt.** The fiscal deficit averaged an 11 percent share of GDP from 2013 through 2015, contributing to a rise in public sector debt to 108 percent of GDP in 2015, from 83.3 percent in 2013. Heavy reliance on costly domestic markets has contributed to mounting debt. Interest payments increased from 25 percent of revenues in 2013 to 40 percent in 2015 and are projected to reach 50 percent in 2016. Strains on public finances in part reflect the Government needing to cover publicly guaranteed external liabilities for state-owned enterprises (SOEs), which continues in 2016 and reached a recent peak of five percent of GDP in 2014—and was led by the National Water and Electricity Company (NAWEC). The Government also had to cover NAWEC's emergency fuel import needs in 2014, equivalent to 0.6 percent of GDP. Recurrent SOE tax arrears, including NAWEC's, especially for the value added tax, have also strained Government finances, as have sizeable SOE import duty waivers that have been extended to NAWEC. For these reasons, strengthening NAWEC's financial health is important for strengthening the central Government's overall financial health and supporting improved conditions for sustainable macroeconomic growth in The Gambia.

5. **Exchange rate policies that sharply overvalued the Gambian dalasi have contributed to financial strains and a possible balance of payments crisis.** Central Bank foreign reserves declined significantly, with the periodic imposition of currency controls since 2013. The controls have constrained the availability of foreign exchange, discouraged private investment, and strained the capacity to service public sector debt. The January 2016 lifting of currency controls should facilitate a rebuilding of reserves (albeit not yet observed).

6. **The Gambia was reclassified by the World Bank as a fragile state in 2014**. As a result of the policy slippages mentioned above, the number of people seeking to leave the country has been increasing in recent years. First time asylum seekers from The Gambia to the European Union increased to 11,310 people in 2014 and 12,130 in 2015 (or about 0.6 percent of the population per year), from 3,355 (0.17 percent) in 2013 and about 1,000 (0.06 percent) per year in the preceding few years. At 8.8 percent of its population as of 2013 (latest available), the stock of migrants abroad is among the highest in the world.

B. Sectoral and Institutional Context

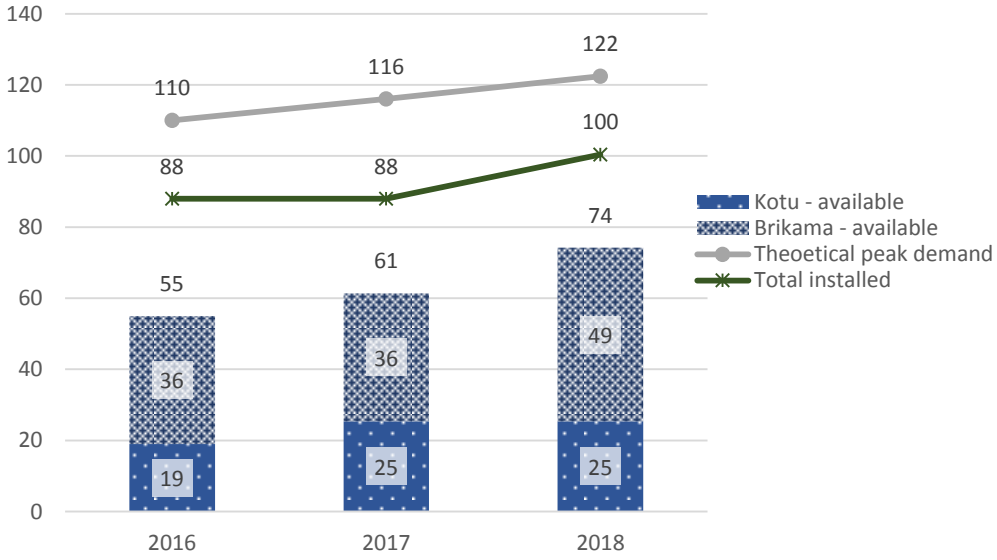
7. **The key stakeholders of the Gambian electricity sector are NAWEC, the Public Utilities Regulatory Authority (PURA), the Ministry of Petroleum and Energy (MoPE), and the Ministry of Finance and Economic Affairs (MoFEA).** Electricity and water services in The Gambia are provided by NAWEC, a vertically integrated electricity public utility that handles generation, transmission, and distribution of electricity, as well as water production and distribution and sewerage. The MoPE is responsible for the implementation of Government policy in relation to electricity supply and distribution and renewable energy. PURA was established in 2001 and conducts tariff reviews and recommends tariff adjustments to the MoFEA, which evaluates the financial implications and provides advice to the president for final decisions.

8. **The 2014 National Energy Policy and the Electricity Act provide the strategic direction and legal background for the development of the Gambian electricity sector.** The goal of the National Energy Policy in electricity is the improvement of the energy supply system, the improvement of access, and the provision of affordable energy services. The Electricity Act was enacted to promote cost-effective generation, transmission, and distribution of electricity, set standards for electricity services, determine appropriate tariffs, and enable a transition to a private investor controlled and operated electricity sector. However, the role of the private sector in the electricity sector has so far been limited. Lack of political independence, the uncertain legal framework, and the unstable currency exchange policy are likely to be an issue for private investors. A first independent power producer (Global Electrical Group Ltd.) with 26 megawatt (MW) capacity entered into a power purchase agreement with NAWEC in 2006 for the Brikama power plant, but transferred its operations to NAWEC in 2013.

9. **Installed generation capacity is 102 MW (88MW in Great Banjul Area (GBA)), of which only 62 MW are currently available (55 MW in GBA).** Due to a constrained financial position, NAWEC has been unable to carry out all of its routine maintenance activities. As a result, only 61 percent of installed generation capacity is available. Most of the generation capacity comes from two heavy fuel oil (HFO) thermal power plants: Kotu, with 41 MW of installed capacity (of which 19 MW is currently available), and Brikama (powerhouses I and II), with 47 MW of installed capacity (of which 36 MW is currently available). Outside the capital of Banjul, NAWEC delivers electricity through six isolated mini grids with 13 MW of installed capacity (of which seven MW is currently available) using high speed, light fuel oil (LFO) plants as baseload power stations with very high operational costs. NAWEC is operating at full generation capacity, at times forced into load shedding to create an artificial spinning reserve, necessary to maintain network stability. Due to unavailability of several HFO plants in 2015, NAWEC was forced to rely on expensive diesel engines normally reserved for emergency use.

As a result, diesel consumption increased from one million liters in 2014 to six million liters in 2015. The investments in generation proposed under this project would help increase available capacity and reduce the supply demand gap, as illustrated in Figure 1.

Figure 1. Generation capacity in Great Banjul Area (2016-18)



10. **Energy access in The Gambia is estimated at 35 percent.** While 60 percent of the population in the GBA is served, only six percent of the population in the outlying provinces has access to electricity. NAWEC had 155,000 electricity customers in December 2015, over 90 percent of which are in the GBA. More than 85 percent of customers are metered and billed with a prepayment system, while the remaining customers use a post-consumption invoice billing system. The prepayment metering sales represent only 50 percent of the electricity sales, implying that some key, high consumption customers are not on the prepaid metering system.

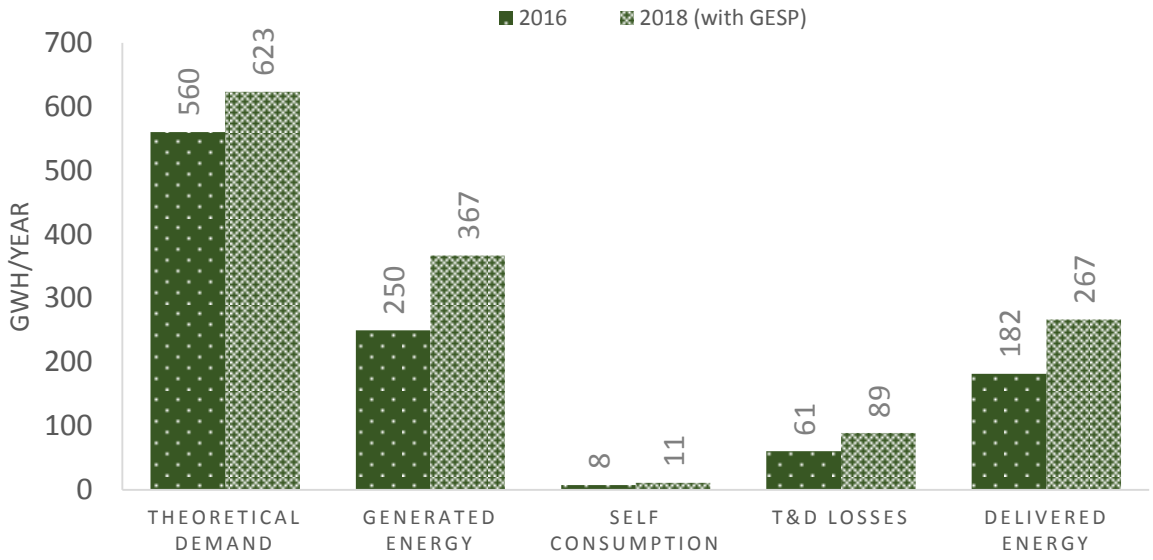
11. **Approximately 66 percent of the Gambian electricity demand is estimated to be suppressed.**[1] Demand for electricity has grown at 5.5 percent per annum during the last decade. However, the main constraints in improving access to electricity include lack of sufficient generation capacity, an inadequate transmission and distribution (T&D) network, an over dependency on expensive fuel generation, poor performance of the power utility, and difficulties in sector regulation. According to the latest Investment Climate Assessment from 2009, almost 80 percent of firms mention electricity as a major or very severe constraint to their operation. Most of their complaints relate to cost and unreliability—electricity is available only 10 to 12 hours daily, and load shedding happens almost daily.

12. **The T&D network is underperforming, with 25 percent technical and non-technical network losses.** The T&D network consists of two 33 kV transmission lines with a total length

[1] The suppressed demand estimate comes from comparing the unmet demand with the theoretical demand (that is, the demand that would be met if no restrictions existed—network failures, lack of fuel, generation capacity shortage, and so on). In 2014, the theoretical demand was 560 GWh, the electricity produced was 250 GWh, and the electricity delivered was 182 GWh (produced minus 25 percent network losses and three percent plants own consumption). The unmet demand thus equals 378 GWh (560 GWh - 182 GWh).

of 125 km conveying electricity from the Kotu and Brikama thermal power plants to 33/11 kV transmission substations and 33 kV/400 V distribution substations. The 181 km of 11 kV lines carry electricity from these substations to various 11 kV/400 V transformer stations at various locations in the GBA and Brikama. Low voltage lines then distribute electricity to three phase and single phase consumers at 400 V and 230 V, respectively. The T&D network has limited reach and inadequacies that reduce its effectiveness, such as obsolete networks, overloaded transformation capacity, and high reactive power flows. This has resulted in high T&D network losses of 25 percent. The investments proposed under the Gambia Electricity Support Project (GESP) would help increase generation capacity and reduce T&D network losses, helping to reduce the supply demand gap as illustrated in Figure 2.

Figure 2. Delivered energy in Great Banjul Area



(*) T&D losses are reduced from 25 percent to 21 percent due to GESP. However, the absolute value increases due to the higher amount of generated energy.

13. **NAWEC has suffered financial distress in the past few years given its inefficient generation and T&D, high prices of imported fuel, and the sustained depreciation of the Gambian dalasi.** NAWEC has had three consecutive years of losses that eroded its capital and increased liabilities to about four times its annual revenue. Consequently, the Government of The Gambia (GoTG) transferred US$22 million to NAWEC in 2014 (representing approximately 50 percent of electricity revenues), and the Economic Community of West African States provided a grant of US$30.1 million in 2013.

14. **Cost recovery is estimated to be 54 percent.** The cost of electricity supply in The Gambia was estimated at US$0.50 per kWh, one of the highest in Sub-Saharan Africa in 2013. Average tariffs for all consumer segments were estimated at US$0.35 per kWh. T&D losses were estimated at 27 percent (reduced to 25 percent in 2014). The cost recovery ratio has recently gone up due to decreases in oil prices. However, this effect has been partially offset by a 40 percent depreciation of the Gambian dalasi against the U.S. dollar since early 2012. In addition,

reductions in global oil prices do not appear to be fully passed onto NAWEC through their fuel supply agreement with the Gambian National Petroleum Company.

15. **Cost and revenue data from NAWEC are rough estimates, as the utility does not have fully separated accounts for its electricity, water, and sewage activities.** According to NAWEC expenditures, 11 percent of overheads are not attributed to individual service activities. In addition, NAWEC is not able to identify the revenues collected from each of the services it delivers. A separation of accounts between activities is needed to obtain more accurate figures on cost recovery, and increase transparency on costs and cross-subsidies.

16. **A 12 percent tariff increase in 2015 and an increased frequency of tariff reviews are helping to improve NAWEC's financial situation.** An average electricity tariff increase of 12 percent became effective on February 1, 2015[2] reaching an average domestic tariff of US$0.20 per kWh. At the same time, the average water tariff was increased by 22 percent. In January 2015, the MoFEA instructed PURA to increase the frequency of tariff reviews from annually to semiannually to improve the cost reflectiveness of tariffs, although it is unclear whether this policy has been enforced to date. PURA have indicated annual increases could be in the order of magnitude of 5 percent to transition the sector towards cost recovery over time.

17. **NAWEC's finances are strongly affected by fluctuations in oil prices as it relies nearly exclusively on HFO and LFO for electricity generation.** To benefit from lower oil prices going forward, NAWEC will have to improve the quality of its fuel supply contracts. In 2014, NAWEC did not benefit from the significant decrease in oil price as it had signed fixed price fuel supply contracts. While the fuel supplier changed to the Gambian National Petroleum Company in 2015, it remains unclear if global oil prices reductions were being passed onto NAWEC.

18. **NAWEC is projected to reach financial stability in 2020 if it implements its planned investments and reforms.** The debt to equity ratio is projected to reduce by up to 112 percent by 2020, and the debt service coverage ratio (DSCR) to increase from -0.5 in 2014 to more than two in 2020. Moreover, the profit margin is projected to become positive from 2018 onward, with the planned investments.

19. **The Energy Roadmap and Action Plan for The Gambia[3] identifies basic, short-term, and medium-term investments needed to restore the sector's performance.** The basic needs include the rehabilitation of existing HFO plants, targeted investments in T&D to reduce losses, and the installation of meters. The short-term investment needs include new thermal power plants to run on HFO and further T&D network improvement investments. Finally, the medium-term investments comprise the planned regional interconnections providing access to cheaper electricity imports for The Gambia.

20. **Currently, multilateral donors are partnering with The Gambia to address the short-term investment needs.** An 11.1 MW HFO-fueled thermal plant financed by the Arab Bank for Economic Development in Africa (BADEA) and the OPEC Fund for International Development

[2] In addition, an average increase of 22 percent in the water tariffs took place simultaneously.
[3] "Development of a National Energy Sector Strategy Study for The Gambia", Final Report, Fichtner Management Consulting, April 2015.

(OFID) is scheduled to be commissioned at the end of 2017 in the Kotu C powerhouse. Two additional 10 MW HFO plants financed by the Islamic Development Bank are being procured and are expected to be commissioned in 2018 in a new Brikama III powerhouse near the existing powerhouses (Brikama I and II). Furthermore, a US$22.5 million T&D rehabilitation project financed by the Government of India is under preparation.

21. **In the medium term, the interconnections with neighboring countries through the regional interconnector of the *Organisation pour la Mise en Valeur du fleuve Gambie* (OMVG) will enable The Gambia to access cheaper electricity supply.** The OMVG interconnector, financed by IDA and other donors, is expected to enable The Gambia to import 17 MW by 2019 from the Kaleta (240 MW) hydropower plant in Guinea and 25 MW by 2021 from the Sambangalou (128 MW) hydropower plant in Senegal. The quantity of power trade will increase over time, with a projected additional 67 MW being generated by 2030. The imported energy will decrease the average cost of supply in The Gambia significantly as power imports will be priced between US$0.09 and US$0.15 per kWh, in comparison with the US$0.50 per kWh in 2013.

22. **The proposed GESP is designed to cover the basic investments needed in the electricity sector to restore available generation and T&D capacity and support institutional capacity development.** The GESP represents an opportunity for the Bank to re-engage in the electricity sector after a period of absence from the sector by providing basic investments and capacity-building support.

C. Higher Level Objectives to which the Project Contributes

23. **The proposed GESP is well-aligned with the GoTG development strategy and its partnership with the World Bank Group.** This operation is aligned with The Gambia's Program for Accelerated Growth and Employment 2012–2015, which is the Government's development agenda. Specifically, it supports the second pillar of improving and modernizing infrastructure, as well as the general objective of stepping up infrastructure investments to address the country's severe shortcomings and to help create a more enabling business environment. This operation is also fully consistent with the objectives of the Bank Group and African Development Bank's 2013–16 Second Joint Program Framework (JPF-2) (Report No. 72140-GM), which was approved by the Bank Board in March 2013. In particular, Pillar I includes a focus on developing key supporting infrastructure, such as the energy and water sectors.

24. **The GESP is complementary to other Bank-financed interventions.** The GESP is complimentary to the OMVG Interconnection Project (P146830), which offers The Gambia a low-cost means to import power to provide baseload capacity as described above.

25. **The project will contribute to the Bank's twin goals to end poverty and boost shared prosperity.** "Directions for the World Bank Group's Energy Sector"[4] describes how energy is an important engine of economic growth, on which both poverty reduction and shared prosperity depend. Inclusive economic growth is the single most effective means of reducing poverty and

[4] *Toward a Sustainable Energy Future for All: Directions for the World Bank Group's Energy Sector*, The World Bank, July 2013.

boosting prosperity. Most economic activity would be impossible without energy. The proposed project will support The Gambia in reaching its goals of increasing access to reliable and competitively priced electricity, which is essential for business development, job creation, income generation, and international competitiveness. The proposed project will also help improve the financial position of NAWEC through reduced dependence on expensive diesel-based generation, and increased collected revenues through increased electricity billing rates and bill collection rates. The project expects to benefit directly to 570,000 people in the GBA, while the increased availability and reliability of the electricity supply will boost the economic activity in the area.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

26. The project development objective (PDO) is to increase the availability and reliability of electricity supply for existing customers.

Project Beneficiaries

27. **The project is expected to benefit current electricity consumers, including households, businesses, and public entities, as well as sector institutions.** Improvements in available generation and reduction in losses, together with managerial improvements in NAWEC, will enhance the quality of the service provided to NAWEC customers. NAWEC and PURA will benefit from institutional support aimed at improving sector management and laying a foundation for further sector reform.

PDO Level Results Indicators

28. The proposed PDO indicators are:

(a) direct project beneficiaries (number), of which female beneficiaries (percentage);
(b) electricity generated from capacity constructed or rehabilitated under the project (GWh);
(c) electricity losses per year in the project area (percentage).

29. The results framework can be found in Annex 1.

III. PROJECTION DESCRIPTION

A. Project Components

30. **The proposed project will provide basic investment and institutional support to NAWEC as part of its strategy to redress its financial and operational performance in the short to medium term.** The GESP will complement other short-term and medium-term interventions. The proposed project will support investments to improve generation capacity and the T&D network. The GESP will support the development of the technical, commercial, and financial capacity of NAWEC. This operation will focus on the GBA, where the vast majority of

The Gambia's electricity is consumed. The GESP consists of the three components described below.

31. **Component 1: Expansion of Available Generation Capacity at Kotu and Brikama (US$7 million equivalent).** This component will finance improvements of NAWEC's generation capacity and efficiency in the existing Kotu and Brikama thermal power plants. This will be in the form of rehabilitation and replacement of required equipment, provision of critical spare parts, and financing urgent maintenance activities. This support is critical in view of the worsening generation scenario in The Gambia. This component will be divided into the following three subcomponents:

- *Subcomponent 1.1: HFO engines at Kotu and Brikama* (US$4 million equivalent). The subcomponent will finance the purchase and installation of two 6.4 MW engines to replace the existing Kotu G8 engine (6.4 MW) in Kotu D powerhouse that is out of service, and to add a similar engine as G7 in the existing powerhouse in Brikama I power plant.

- *Subcomponent 1.2: Rehabilitation of the Brikama thermal power plant* (US$1.5 million equivalent). The GESP will finance the rehabilitation of group 1 (G1) in the existing powerhouse in Brikama I power plant. This investment will restore current suppressed generation due to the breakdown of this group. G1 in Brikama I is a 6.4 MW engine which has been down since 2011. The rehabilitation will be done in house and the GESP will finance only the purchasing of spare parts.

- *Subcomponent 1.3: Rehabilitation of damaged equipment in Kotu A, B, and D* (US$1.5 million equivalent). This subcomponent will finance the rehabilitation of the main electrical and mechanical equipment in Kotu A, B, and D powerhouses. Some specific equipment in the Kotu power plant need to be rehabilitated or replaced to restore functionality, provide operational reliability, and improve power plant efficiency. The equipment to be restored includes:

    - switchgears for Kotu A powerhouse, which were damaged by a fire accident in 2012;
    - HFO separator for Kotu D powerhouse, which will consist of replacing the aging and inefficient HFO separator units at Kotu D powerhouse (the inefficient fuel separation affects not only the performance of diesel generators but also increases their maintenance cost and downtime);
    - replacement of damaged/missing pumps at Kotu B powerhouse, which is expected to improve the overall availability and efficiency of the system; and
    - rehabilitation of the steam system at Kotu D powerhouse, which is expected to reduce the power plant internal auxiliary consumption.

32. **Component 2: Reduction of Technical and Commercial Losses in the GBA (US$4.5 million equivalent).** This component will finance improvements in the T&D network in the GBA. The project will contribute to reduce forced outages, as well as to diminish voltage drops, thus improving customer satisfaction. It will also generate higher supply continuity and quality, and increase prepayment metering, which will result in higher returns. The improvements of the network will have a positive impact on the operations of NAWEC, reducing technical and commercial losses through the following two subcomponents:

- *Subcomponent 2.1: Reduction of technical losses by upgrading and rehabilitating the existing T&D network* (US$3.3 million equivalent). The GESP will finance the installation of new transformers to off-load the existing installations and the replacement of undersized conductors, distribution feeder pillars, and other auxiliaries. The project will cover the upgrading and rehabilitation of existing distribution systems in specific areas of the GBA, the upgrading of two power transformers in Mile 5 and Medina substations, the substitution of switchgears in Wellingara substation, and the installation of capacitor banks in Wellingara and Mile 5 for reactive power compensation.

- *Subcomponent 2.2: Reduction of commercial losses by improving metering* (US$1.2 million equivalent). Currently, about 85 percent of GBA consumers are provided with prepayment meters. The remaining 15 percent are provided with conventional credit meters. This subcomponent will finance the installation of 300 big consumers' meters and 13,000 new prepayment meters for domestic customers to increase prepayment meter coverage to an additional ten percent of consumers. Moreover, the project will finance calibration equipment for meters.

33. **Component 3: Institutional Strengthening and Project Implementation Support (US$7 million equivalent).** This component comprises the following four subcomponents:

- *Subcomponent 3.1: Service contract for NAWEC management support* (US$2 million equivalent). This subcomponent will finance a four-year service contract to strengthen NAWEC's technical, financial, and managerial capacity. The service contractor will assess and assist NAWEC with implementation of the necessary reforms and define a robust, integrated information technology (IT) system to integrate accounting, billing, payroll, stock, and other accounting functions.

- *Subcomponent 3.2: New NAWEC IT system* (US$3 million equivalent). A separate contract will be issued for the installation of the new IT system, defined by the service contractor under Subcomponent 3.1. The IT system will streamline NAWEC's operations, integrating all the processes into one single system. It will also improve the internal and external reporting for NAWEC management and decision making, and enable the process of separation of electricity, water, and sewerage accounts.

- *Subcomponent 3.3: Owner's engineer for supervision* (US$1 million equivalent). The project will finance an owner's engineer to supervise the execution of Components 1 and 2. The owner's engineer will also provide procurement assistance to the Project Management Team (PMT).

- *Subcomponent 3.4: Project implementation support* (US$1 million equivalent). This subcomponent will finance various activities to support project implementation. This will include support for the implementation of the Environmental and Social Management Plan (ESMP). Capacity-building activities will include staff training related to project implementation activities, including procurement, monitoring and evaluation (M&E), IT systems, and Supervisory Control and Data Acquisition, as well as financing strategic studies to help inform the strategic direction of NAWEC, such as a study on the fiscal implications of NAWEC and options for financial restructuring of NAWEC. The subcomponent will also

support various operating costs for the PMT, as well as external audits throughout the project.

B. Project Financing

34. The proposed GESP will be financed by a US$18.5 million equivalent IDA financing, partly credit (US$12.46 million equivalent) and partly grant (US$6.04 million equivalent). The lending instrument will be investment project financing implemented over a five-year period.

Project Cost and Financing

35. Total project cost is estimated at US$18.5 million. Cost estimates have been made in collaboration with NAWEC and are in line with the market (see Section IV, B). Cost estimates by component are shown in Table 1.

Table 1. Breakdown of Project Cost and Financing by Component (US$, millions)

Project Components	Project Cost (US$, millions)	IDA Financing (US$, millions)	% Financing
Component 1: Expansion of Available Generation Capacity at Kotu and Brikama	**7.0**	**7.0**	100
- Subcomponent 1.1: HFO engines at Kotu and Brikama	4.0	4.0	100
- Subcomponent 1.2: Rehabilitation of the Brikama thermal power plant	1.5	1.5	100
- Subcomponent 1.3: Rehabilitation of damaged equipment in Kotu A, B, and D	1.5	1.5	100
Component 2: Reduction of Technical and Commercial Losses in the GBA	**4.5**	**4.5**	100
- Subcomponent 2.1: Reduction of technical losses by upgrading and rehabilitating the existing T&D network	3.3	3.3	100
- Subcomponent 2.2: Reduction of commercial losses by improving metering	1.2	1.2	100
Component 3: Institutional Strengthening and Project Implementation Support	**7.0**	**7.0**	100
- Subcomponent 3.1: Service contract for NAWEC management support	2.0	2.0	100 100
- Subcomponent 3.2: New NAWEC IT system	3.0	3.0	100
- Subcomponent 3.3: Owner's engineer for supervision	1.0	1.0	100
- Subcomponent 3.4: Project implementation support	1.0	1.0	100
Total Project Costs	**18.5**	**18.5**	**100**

C. Lessons Learned and Reflected in the Project Design

36. Project design takes into account broad lessons from the Bank's experiences in the energy sector in Sub-Saharan Africa, particularly small countries facing a power crisis. For example, given limited implementation capacity, procurement contracts for generation expansion activities will be structured as turnkey contracts (design and installation).

37. Designing the project in accordance with other planned investments in the country is essential to maximize its impact. The rehabilitation of existing generation in this project is meant

as a relatively quick intervention to complement other medium-term investments in new HFO plants and in the OMVG project, which will facilitate the low-cost imports.

38. The integrated IT system financed under Subcomponent 3.2 will only be implemented once the service contractor is in place and has begun implementing internal reforms. The reason is that the objectives to be met through this integrative IT tool and the implementation strategy for the different processes (for example, billing, payroll, accounts, procurement, stores, and so on) should be clearly internalized by NAWEC so that the software can be tailor-made according to NAWEC's specific needs. Hence, this project proposes a sequenced approach for Component 3.

39. This operation also reflects the key lessons of Bank experience during the previous JPF period (2008–12), as discussed in the JPF progress report and JPF-2 (2013–16). Some of the key lessons taken into consideration while designing the GESP include the following: (a) design programs in line with local capacity, recognizing limitations (the project design is simple and incorporates institutional capacity building); (b) target sectors with clear strategies (the GESP is being prepared following the recent finalization of the Energy Roadmap and Action Plan for The Gambia); and (c) provide close staff supervision (this is foreseen in the implementation arrangements).

D. Partnership Arrangement

40. The proposed project is designed to complement projects financed by others. Its implementation will be coordinated with other donor-financed activities. There are three other projects under implementation or preparation with NAWEC:

- Kotu will be expanded by 11 MW with a slow-speed two-stroke HFO engine located in the Kotu C powerhouse. The project is estimated to cost US$21 million, financed by US$12 million equivalent from the BADEA, US$9 million equivalent from the OFID, and US$1 million equivalent from the GoTG. The project is on track, with the powerhouse to be commissioned at the end of 2017.

- Brikama will be expanded with two new four-stroke medium-speed 10 MW HFO engines to be located at Brikama III. The project is expected to cost US$25 million, financed by the Islamic Development Bank. The new engines are expected to be commissioned in 2018.

- There is also a T&D expansion and rehabilitation project under preparation with US$22.5 million financed by the Government of India. The project is still at early stages of scope definition.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

41. NAWEC will be the sole implementing agency of the GESP, assuming all fiduciary responsibilities and responsibilities for reporting to the Bank. A GESP Project Management Team (PMT) has been established within NAWEC, including the key functions of project coordinator and procurement specialist, as well as financial management officer, technical

specialists, environmental and social specialist, project accountant, and M&E specialist. While NAWEC has experience in hosting implementation units for projects financed by other donors, the GESP PMT will receive specific training in Bank fiduciary rules and guidelines.

42. The owner's engineer financed under Subcomponent 3.3 will provide support to the implementation of GESP and to the PMT by providing support in the form of expert staff in procurement activities to meet the Bank requirements and conducting supervision of investments under Components 1 and 2. However, the ultimate responsibility for project management will lie with the PMT.

43. The roles and responsibilities of the GESP PMT will be spelled out, including the owner's engineer, and implemented in accordance with the Project Implementation Manual (PIM), which will be completed by NAWEC before effectiveness.

44. A Steering Committee (SC) will be established to provide advice on strategic questions related to the GESP's implementation. The SC will include the MoPE, MoFEA, PURA, the National Environmental Agency, and NAWEC. The role of the SC will be of particular importance in the supervision of the recommendations made by the service contractor to improve the effectiveness of NAWEC's processes.

B. Results Monitoring and Evaluation

45. Data for monitoring project outcomes and results indicators (see Annex 1) will be generated by the implementing agency (NAWEC)—with support from the owner's engineer. Updates on progress on results indicators will be reported through regular progress reports. The PMT will include an M&E specialist to track the indicators. The main indicators are aligned with key specific parameters of the sector that are generated and monitored monthly.

46. The service contractor, recruited under Subcomponent 3.1, will also provide inputs on technical, financial, and commercial aspects to complement the monitoring of the project outcomes.

C. Sustainability

47. The sustainability of the Gambian power sector, including the investments under GESP, will depend upon: (a) the financial health of NAWEC and its ability to generate sufficient revenues to fully cover its expenditures; and (b) the GoTG's continued commitment to support a comprehensive power sector reform program to be undertaken in the coming years. The actions for this power sector reform will be initiated by this project, supported by the medium-term and long-term investments financed by other donors.

48. Cost recovery in the electricity sector will ultimately be essential for sustainability and the phasing out of financial support from the GoTG. Investments in the power sector under the GESP are designed to promote cost recovery through rehabilitated generation capacity and increased efficiency (lower expenditures), as well as to promote a reduction of technical and commercial losses (higher revenues).

49. NAWEC's financial and operational performance will ultimately ensure the long-term sustainability of the electricity sector. This utility has to be managed and operated by experienced and professional operators with an incentive to maintain, upgrade, and keep infrastructure/systems running smoothly. Subcomponents 3.1 and 3.2 of the GESP intend to promote the appropriate managerial and organizational changes within the company through private-sector, expert assistance.

V. KEY RISKS

A. Overall Risk Rating Explanation

50. **The overall project risk rating is high.** 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 possible mitigation measures are discussed below.

51. **Political and governance risks (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 Government has made progress, albeit mixed, with the introduction of some reform measures to define institutional arrangements that enhance transparency and accountability in public sector procedures and promote private sector participation. This risk is being closely monitored by the Bank in coordination with the International Monetary Fund and the wider donor community. The governance risk is partly mitigated through recent changes suggested in the World Bank financed Energy Sector Road Map and implemented by NAWEC including the appointment of an internal audit committee, financial and commercial directors, and company secretary.

52. **Macroeconomic risks (high)**. Macroeconomic risks, which aside from exogenous shocks, derive primarily from persistent fiscal and exchange rate policy slippages that have contributed to a significant rise in Government borrowing interest rates with heightened investor uncertainty, a build-up in public sector debt, and weak GDP growth outturns. In the absence of implementation of comprehensive macroeconomic policy reforms, the Government faces a possible forced adjustment. This risk exposes the financial position of NAWEC through imported fuel and spare parts, and is a risk for the project through imported purchases whose cost are highly dependent on the exchange rate. This risk is being closely monitored by the Bank in coordination with the International Monetary Fund and the wider donor community.

53. **Sector strategies and policies risk (high).** The GESP seeks a phased approach with short-term focus on rehabilitation and efficiency enhancement as a means to engage in The Gambia's electricity sector and build confidence for longer-term engagement for sector reform. To revive the electricity sector in The Gambia from its presently poor operational and commercial conditions, it is critical that the GoTG remains politically committed to a long-term reform vision with a coherent sector-wide strategy. The success of this project depends on continued commitment from the political leadership in The Gambia and the support of NAWEC's management, as well as their willingness to take into account lessons learned at the sectoral level.

54. **Institutional capacity for implementation and sustainability (high).** Due to the lack of recent Bank investments in The Gambia's energy sector, this will be the first experience of the implementing agency with an IDA-financed project. NAWEC's lack of experience with Bank policies and procedures makes this a potentially high risk to project success. However, NAWEC has experience implementing projects financed by other bilateral and multilateral donors. Mitigation mechanisms include the appointment of an experienced head of the PMT and the assistance of experienced staff from the MoFEA, who are familiar with Bank procedures from projects in other sectors. Finally, NAWEC's PMT will be supported through GESP's Component 3 by (a) the service contractor providing support in fiduciary aspects of project implementation; and (b) the owner's engineer, assisting in the supervision of rehabilitation works under Components 1 and 2.

55. The implementation capacity risk takes also into account the fragility of NAWEC's finances and its vulnerability to exchange rate and fuel price volatility shocks. This additional risk will be mitigated by reinforcing the project through a strong policy dialogue with a particular focus on tariff increases needed for financial viability of the sector. On sustainability, the GESP will help NAWEC on increasing revenues, decreasing loses and O&M costs, improving NAWEC financial situation in the short term.

56. **Climate and Disaster Risks.** The project has been screened for risks related to climate change and disaster risk management. There is a moderate potential impact of climate-related disasters to the network upgrade activities. The GBA is subject to strong winds and heavy precipitation, particularly in the rainy season (approximately July–September each year), which could delay construction or affect the operations of the network upgrades. These aspects will be monitored during project implementation and works planned accordingly. The project implementation area is also coastal and so vulnerable to rising sea levels.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

57. The project is economically viable. The economic internal rate of return (EIRR) obtained for the GESP is 23.1 percent with a net present value (NPV) of US$29.4 million.

58. The main benefit of the investments in rehabilitation and major overhaul of generation assets is the increase in electricity production, driven by greater availability of capacity through the rehabilitation of Brikama G1, and secondhand engines purchases for Kotu G8 and Brikama G7. The main benefit of the investments in rehabilitation of the T&D network is a reduction in technical and non-technical losses from 25 percent to 21 percent. The main costs are the respective investment in each component. Further details of these analysis are presented in Annex 5.

59. **Justification of public financing.** The investment component of the project consists of construction of electricity generation and 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.

60. **Value added of Bank support.** The GESP leverages the Bank's experience in neighboring countries and lessons learned from previous and ongoing projects in small-country settings.

61. The project is also financially viable. The financial internal rate of return obtained for the GESP is 45.2 percent with an NPV of US$79.6 million.

62. Once under implementation, the results from the financial forecast indicate that while NAWEC's situation will continue to be fragile in 2016 and 2017, it will start improving considerably in 2020 when the current ratio turns positive. However, NAWEC would need a restructuring financial plan to tackle the high level of debt versus the negative equity, which can affect the operational side of the company.

63. From 2015 to 2021, the operating margins are positive with the positive impact of the financial leverage coming from the profitability of the investments. The profit margins, the return on assets and on equity, are negative from 2015 to 2019, becoming positive in 2020. Afterwards, these ratios rise, showing that the profitability of NAWEC and its financial viability substantially improve. From 2015 to 2019, NAWEC revenues cannot cover the expenses. This deficit is principally due to the cost of the sales, as HFO and LFO baseload plants have poor specific consumption and low availability. However, from 2018 to 2020 the financial viability of NAWEC is expected to improve significantly due to the commissioning of OMVG and the impact of the GESP.

B. Technical

64. The project will use well-established technologies and presents no unusual construction or operational challenges. The equipment and the technologies involved in rehabilitation of generation assets and distribution lines and equipment are well known in Sub-Saharan Africa.

65. The cost estimates have been appraised and are deemed to be in line with current market prices. The owner's engineer will supervise the activities under Components 1 and 2 to ensure adequate implementation.

(a) **Component 1.** The cost estimation for replacement of the G8 engine in Kotu and for the secondhand engine to be installed in Brikama G7, is based on an actual proposal received by NAWEC. The provision of secondhand engines will allow a higher impact on power generation for a lower price and reduced implementation time. In order to ensure a good quality selection of engines, the respective contractor will be requested to provide performance guarantees and equipment warranties. The rehabilitation of G1 in Brikama is based on NAWEC's experiences for spare parts' actual prices. In particular, for G1 in Brikama, the estimation provided by NAWEC has been appraised on-site by a specific specialized consultant, who has verified the feasibility of the process and the accuracy of NAWEC's estimation.

(b) **Component 2.** Cost for distribution equipment (meters, transformers, switchgears, and capacitor banks) and cost for rehabilitating distribution network are based on NAWEC's knowledge of the market.

(c) **Component 3.** Costs of the service contract and owner's engineer have been estimated according to current market prices. For the integrated IT management system, NAWEC requested an informal quotation to get a soundness estimation of the actual cost for such a system.

66. The capacity of NAWEC to install the spare parts to rehabilitate G1 in Brikama has been appraised and deemed sufficient.

67. As part of the project's implementation arrangements, and as is common for these types of projects, an owner's engineer firm will be contracted. This firm will help to ensure that execution is carried out in accordance with the applicable terms of reference and international best practices.

C. Financial Management

68. A financial management assessment (FMA) of The Gambia's NAWEC, GESP implementing entity, was carried out in May 2015. The assessment complied with the Financial Management Manual for the Bank-financed investment operations, updated on February 4, 2015, as well as the FMA and risk rating principles. The objective of the assessment was to determine whether NAWEC has adequate financial management (FM) arrangements in place to ensure that the project funds will be used only for the purposes for which the financing was provided, with due attention to considerations of economy and efficiency.

69. The assessment revealed a number of strengths, including that NAWEC (a) has an Accounting Policies and Procedures Manual and an Internal Audit Manual satisfactory for the Bank; (b) has an Internal Audit Department with sufficient experience; and (c) is setting up an Audit Committee (completed since the assessment took place). However, NAWEC has no experience in implementation of Bank-funded projects, and does not have an accounting software adequate for project management. As a result of the FM capacity constraints, the following measures will be included as dated covenants:

- Set up an accounting software adequate for project FM (by three months after effectiveness); and
- Recruit an external auditor (by six months after effectiveness).

70. Based on the Bank's assessment and the current arrangement in place at NAWEC, residual FM risk for the project is deemed Moderate. The proposed FM arrangements are considered satisfactory in fulfillment of the requirements of the Bank's OP 10.00. The implementing entity will thus ensure that (a) the proposed mitigation measures are implemented; and (b) the Bank's *Guidelines on Preventing and Combating Fraud and Corruption in Projects financed by IBRD Loans and IDA Credits and Grants* (revised January 2011) are followed under the project. Details of the FM arrangements are provided in Annex 3.

D. Procurement

71. The procurement assessment conducted in May 2015 concluded a Substantial risk rating, expected to be Moderate once mitigation measures are implemented. The procurement of works, goods, and consultants' services will be carried out in accordance with (a) following the

guidelines referenced in paragraph 70 (b) above and; (b) the Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits" published by the the Bank in January 2011, revised in July 2014; (c) the Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers dated January 2011, revised in July 2014; (d) the provisions stipulated in the Financing Agreement; and (e) the procurement plan approved by the Bank. All procurement-related activities for the investments supported under the proposed GESP will be carried out by NAWEC. Given that NAWEC's procurement unit does not have previous experience with Bank procurement procedures, procurement support will be provided to the GESP's PMT through Component 3. A description of procurement methods and a draft procurement plan for GESP are presented in Annex 3.

E. Social and Environmental Safeguards

72. The project is classified as Environmental Assessment Category B (partial assessment). The potential biophysical impacts of the generation and distribution component are expected to be low. The project will finance some light infrastructure (distribution poles), replacing existing ones that are generally in bad condition. Only the Environmental Assessment (OP/BP 4.01) policy has been triggered. The Bank Group Environmental, Health and Safety (EHS) guidelines on electric power T&D also apply.

73. The project will not finance any activities demanding land acquisition and/or resulting in access to legally designated parks and protected areas resulting in any adverse impacts.

74. The activities to be financed under Component 1 (existing power plants) will consist of rehabilitation and/or replacement and maintenance of key equipment while Component 2 (upgrading of existing substations, T&D within existing networks, and the installation of new transformers) will take place only on public domain and/or the right of ways.

75. Two project sites, Mile 2 and Mile 5 substations, are located inside the Tanbi Wetland Complex, which is a Ramsar Site of Ecological Significance. Both facilities already exist and there is neither expansion into the wetland nor use of the surroundings of the substations for any project activity. The only activity at Mile 2 and Mile 5 substations will be the replacement of capacitor banks. Workers will access the substations using existing access routes. Therefore, no adverse impacts to natural habitats and/or terrestrial wildlife are expected due to the activities financed by the project and OP 4.04 (natural habitats) is not triggered.

76. An Environmental and Social Management Plan (ESMP) and its addendum have been prepared by the client and subsequently reviewed and validated by the Bank. The ESMP was disclosed in-country on August 5, 2015 and in the Bank's InfoShop on August 6, 2015; the ESMP Addendum was disclosed in-country on March 2, 2016 and in the Bank's InfoShop on March 3, 2016.

77. The PMT will include an environmental and social specialist who will monitor compliance with the Bank safeguards procedures. An existing staff will be designated within NAWEC and will benefit from training from Bank specialists.

78. **Gender.** In The Gambia, men and women have different roles and responsibilities in households, communities, institutions, and businesses which has implication for the electricity sector. For example, women and men have different access to information, legal standing, income, and literacy rates which influences how they participate in consultations and how they are affected by changes in the electricity supply. The GoTG recognizes gender equality and women's empowerment as a key factor for the attainment of social and economic development and the National Gender Policy aims to empower community members, especially women to actively participate and take ownership of development projects and programs. The project will collaborate with the Africa Renewable Energy Access Gender and Energy Program hosted at the Bank to develop gender and energy activities. In addition, the potential for generating sex-disaggregated individual-level data in the project activities will be investigated and relevant gender dimensions have been considered in the ESMP. The project team will also draw from the interventions being piloted in the energy sector in the Union of the Comoros and São Tomé and Príncipe with regard to the various social and gender dimensions related to the consumer interface on non-technical losses, service delivery, and expansion.

79. **Beneficiary feedback.** Beneficiary feedback will be recorded and monitored for all project components through a grievance redress mechanism. The PMT will gather information about activities where complaints have been brought forward, including information on how they were resolved or relevant follow-up, and this information will be included in an annual progress report and taken into account under the project, as relevant, during project implementation.

F. World Bank Grievance Redress

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

Annex 1: Results Framework and Monitoring

REPUBLIC OF THE GAMBIA: Gambia Electricity Support Project (P152659)

Results Framework

Project Development Objectives

PDO Statement

The PDO is to increase the availability and reliability of electricity supply for existing customers.

These results are at | Project Level

PDO Indicators

Indicator Name	Baseline	Cumulative Target Values					
		2017	2018	2019	2020	2021	End Target
Direct project beneficiaries (Number) - (Core)	0	0	570,000	570,000	570,000	570,000	570,000
Female beneficiaries (Percentage - Sub-Type: Supplemental) - (Core)	51	51	51	51	51	51	51
Electricity generated from capacity constructed or rehabilitated under the project (GWh)	0	0	41	118	118	118	118
Electricity losses per year (Percentage) - (Core)	25	25	24	23	22	21	21

Intermediate Results Indicators

Indicator Name	Baseline	Cumulative Target Values					
		2017	2018	2019	2020	2021	End Target
Generation capacity of conventional generation	0	0	6.4	19.2	19.2	19.2	19.2

constructed or rehabilitated under the project (MW) - (Core)							
Distribution lines constructed or rehabilitated under the project (Km) - (Core)	0	10	20	30	40	50	50
Installed meters under the project (Number)	0	0	5,000	10,000	13,000	13,000	13,000
Signature of service contract (Yes/No)	No	Yes	Yes	Yes	Yes	Yes	Yes
Separation of accounts for electricity, water, and sewerage (Yes/No)	No	No	No	No	Yes	Yes	Yes
Percentage of grievances processed from total grievance received on the project (Percentage)	0	100	100	100	100	100	100

Indicator Description				
PDO Indicators				
Indicator Name	Description (Indicator Definition and so on)	Frequency	Data Source/ Methodology	Responsibility For Data Collection
Direct project beneficiaries (Number) - (Core)	Number of existing people in the GBA who will benefit from new meters and the added generation capacity as it becomes available. Calculated by the number of NAWEC customers in the GBA, assuming four people per connection.	Annual	Annual Report	NAWEC/PMT
Female beneficiaries (Percentage - Sub-Type: Supplemental) - (Core)	Based on census data, percentage of females in the population.	Annual	Gambia Bureau of Statistics	NAWEC/PMT
Electricity generated from capacity constructed or rehabilitated under the project (GWh)	This indicator measures the amount of annual electricity generated by the facilities constructed or rehabilitated under the project. The baseline value is expected to be zero.	Annual	Annual Report	NAWEC/PMT
Electricity losses per year (Percentage) - (Core)	This indicator is calculated by dividing total electricity losses to the point of sale (that is, the sum of technical and non-technical losses up to the point of sale: total GWh dispatched to the system minus total GWh billed	Annual	NAWEC reporting	NAWEC/PMT

	to customers) by the total net dispatched generation in The Gambia. The baseline is the actual electricity losses in the project area at the beginning of the project.			
Intermediate Results Indicators				
Indicator Name	Description (Indicator Definition and so on)	Frequency	Data Source/ Methodology	Responsibility For Data Collection
Generation capacity of conventional generation constructed under the project (MW) - (Core)	This indicator measures the capacity of conventional power generation facilities constructed under the project. The baseline value is zero.	Annual	Annual Report	NAWEC/PMT
Distribution lines constructed or rehabilitated under the project (Km) - (Core)	This indicator measures the length of the distribution lines constructed or rehabilitated/upgraded under the project. The baseline value for this indicator is zero.	Annual	NAWEC reporting/ Owners Engineer	PMT
Installed meters under the project (Number)	Number of meters installed under the project	Annual	NAWEC reporting/ Owners Engineer	Owners Engineer
Signature of service contract (Yes/No)	Indicator captures if the service contract has been signed with the selected service contractor.	Annual	PMT	PMT
Separation of accounts for electricity, water, and sewerage (Yes/No)	Indicator captures if financial accounts have been separate and can be reported separately in the company's annual financial statements.	Annual	NAWEC/PMT	NAWEC/PMT
Percentage of grievances processed from total grievance received on the project (Percentage)	Indicator measures the proportion of grievances reviewed and responded to by the PMT, of all grievances received in a given year.	Annual	PMT	PMT

Annex 2: Detailed Project Description

REPUBLIC OF THE GAMBIA: Gambia Electricity Support Project

1. The proposed GESP intends to support the GoTG's commitment to improve the operational and commercial soundness of the power sector. This commitment will entail improvements in operational and managerial performance of NAWEC that will facilitate increasing access and service delivery and fostering an efficient, stable, and growing power sector in the country.

2. All three components of the GESP have the broad objective of increasing the availability and reliability of electricity supply for existing customers of NAWEC. In line with this objective, the GESP will support investments that aim to improve (a) generation capacity for reliable supply; (b) efficiency and commercial performance of distribution networks; and (c) utility management capabilities for optimizing company internal processes and reducing management inefficiencies within the company. The GESP will facilitate the development of technical, commercial, and financial capacity of NAWEC. This operation will focus on the GBA, where the vast majority of Gambia's electricity is consumed (90 percent of NAWEC's customers are located in the GBA and account for 97 percent of billed revenue). The three aims of the project and the related project components are presented below.

I. Generation Capacity for Reliable Supply

3. The Gambia's power generation assets are mainly concentrated on two sites within the GBA, Kotu and Brikama, which provide approximately 97 percent of the country's generation capacity. In addition to that, in six provinces, smaller power stations generate electricity for isolated networks that have no interconnection to The Gambia's T&D grid. Almost all power plants in The Gambia are fossil-fuel-fired diesel engine generators. While the bigger power plants in the GBA mainly run on HFO, the engines in the provinces are all high-speed LFO engines.

4. Kotu power station has historically been NAWEC's main power generation facility. The nine existing units are located in four different powerhouses next to each other with their own control centers, housing eight engines in total. G1 and G2 are LFO engines, while the others are all HFO-fired except for an LFO starting system. Due to relatively higher costs of LFO, G1 is only running in emergency peak situations when there are no other options. G2 is currently not running and requires complete rehabilitation. G6, being a two-stroke slow-speed engine, is considered to be the most robust and stable engine, and therefore is part of the current base load production. G4, G7, and G9 are less stable medium-speed engines and usually consume more lubricants and spare parts. The age of the power plants has an obvious effect on their condition and thus on their availability. Engine failures, shortcomings, and major faults are very common. The engines G3 and G8 are currently out of operation as they need to be rehabilitated. The engine G8 has been heavily cannibalized to repair and maintain the other engines in the plant; therefore, under the current situation it needs to be replaced.

Table 2.1. Overview of Engines at Kotu Power Plant

Powerhouse	Engine	Fuel	Engine	Installed Capacity (MW)	Available (MW)	Status as of January 2016
A	G1	LFO	Mirrlees	3	2.5	Only used in emergency peak situations
A	G2	LFO	Mirrlees	3	0	Not running and requires complete rehabilitation. Almost decommissioned. Might convert to HFO.
A	G3	HFO	Mirrlees	3	0	Not running and requires complete rehabilitation. Will be rehabilitated under the Economic Community of West African States.
A	G4	HFO	Deutz	6.4	5.5	Medium-speed engine with stability issues. Usually consumes more lubricants and spare parts.
B	G6	HFO	MAN B	6.4	6	Two-stroke slow-speed engine, most robust and stable engine, and therefore is part of the current base load production.
C	G5	HFO	n.a.	n.a.	n.a.	11 MW being constructed now (BADEA/OFID financing)
D	G7	HFO	Deutz	6.4	5.5	Medium-speed engine with stability issues. Usually consumes more lubricants and spare parts.
D	G8	HFO	Deutz	6.4	0	Heavily cannibalized and needs to be replaced
D	G9	HFO	Deutz	6.4	0	Medium-speed engine with stability issues. Usually consumes more lubricants and spare parts. Needs a major overhaul to continue producing. NAWEC now doing their own overhaul.
Total				41 MW	19.5 MW	

5. The Brikama power stations (I and II) consist of two different powerhouses that are nearby. Brikama I powerhouse consists of engines G1 to G6. Global Electric Group Ltd. built and operated the first four units in 2006 as an independent power producer. It was handed over to NAWEC in 2013 when two additional units were commissioned. Since then, all power stations belong to NAWEC. Brikama II powerhouse is located right next to Brikama I and consists of one HFO engine. All of Brikama's engines were procured secondhand and have already reached a lifetime of over 20 years. However, all the main rotating parts were replaced with new ones during their installation in The Gambia, and all major overhauls have been conducted on time since their installation. Currently, engine G1 is out of operation. This equipment needs rehabilitation measures that cannot be implemented because spare parts and special equipment are missing, for which financial resources are needed.

6. **Component 1 will support the expansion of available generation in Kotu and Brikama (US$7 million equivalent).** Investment support will be provided to NAWEC to improve the generation capacity and efficiency in the existing Kotu and Brikama thermal power plants. This will be in the form of provision of equipment, rehabilitation of required equipment,

provision of critical spare parts, and financing of urgent maintenance activities. This component will be divided into three subcomponents:

- **Subcomponent 1.1: HFO engines at Kotu and Brikama (US$4 million equivalent).** The GESP will finance two HFO engines. These investments are needed for restoring generation capacity and reliability. The first engine will be used to replace G8 in Kotu D powerhouse with a 6.4 MW HFO engine. The existing engine has been down since 2011. A replacement secondhand engine is expected to be more cost-effective than rehabilitation because the existing engine has been heavily cannibalized to repair and maintain other engines of the same model. A second engine will be located as G7 at the existing Brikama I powerhouse where there is a slot available. A supplier will be appointed following an International Competitive Bidding (ICB) process. After the replacement, both engines are expected to maintain an average load of 5.5 MW at an availability factor of 70 percent for five more years at least. As a result, the total annual generated energy would be about 78,490 MWh.

- **Subcomponent 1.2: Rehabilitation of the Brikama thermal power plant (US$1.5 million equivalent).** The GESP will finance the rehabilitation of G1 in the existing powerhouse in Brikama I power plant. This investment will restore the current suppressed generation. G1 in Brikama I is a 6.4 MW engine, which has been down since 2011. After the rehabilitation, the engine is expected to maintain an average load of 5.5 MW at an availability factor of 70 percent for ten more years at least. As a result, the total annual generated energy would be about 39,245 MWh. The intended rehabilitation will be carried out by internal power plant workforce, which has long experience and expertise in this type of engine. The estimation provided by NAWEC has been appraised on site by a specific specialized consultant, who has verified the feasibility of the process and the accuracy of NAWEC's estimation. The project will provide financing for spare parts and materials under this subcomponent, while Component 3 will finance the owner's engineer for supervision.

- **Subcomponent 1.3: Rehabilitation of damaged equipment in Kotu A, B and D (US$1.5 million equivalent).**

    - *Electrical equipment in Kotu A powerhouse (G1, G2, G3, G4).* The Kotu A system is essential for the entire power system operation. This electrical equipment is where restoration of power supply during total blackouts can be easily started. However, since a fire outbreak in 2010 destroyed almost all the MV switchgears, a temporal switchgear system has been used. This system is very difficult to operate, particularly during blackouts. Thus, the GESP will finance the entire MV switchgear system to bring it back to its normal state. This will greatly improve the entire operation with regard to flexibility, efficiency, and reliability and will reduce the unplanned power outages—including total blackouts—as well as the time needed to restore power when outages occur.

    - *Rehabilitation and replacement of damaged equipment.* Some specific equipment in Kotu power plant needs to be rehabilitated or replaced to restore their functionality, provide operation reliability, and improve the power plant efficiency. The restored equipment will be the following:

- *HFO separator for Kotu D powerhouse.* This will consist in replacing the already aging and inefficient HFO separator units at Kotu D. The inefficient fuel separation affects not only the performance of diesel generators but also increases their maintenance cost and downtime.

- *Replacement of damaged/missing pumps at Kotu B powerhouse.* This is expected to improve the overall availability and efficiency of the system.

- *Rehabilitation of steam system at Kotu D powerhouse.* This is expected to not only reduce the power plant internal consumption of electricity by about 60 percent per year but also to improve its overall operational efficiency.

II. Energy Efficiency of Distribution Networks and Commercial Performance

7. Today, available generation capacity in the GBA network cannot be effectively transmitted and distributed because of the deficient T&D network. There are two transmissions lines linking the two thermal plants (Kotu and Brikama) with a total length of 125 km that bring power to six primary substations 33/11 kV. The secondary substations (11/0.415 kV) at various locations sourced by 11 kV lines departing from the primary substations cannot adequately off-load the power. Equally so, the two transmission lines (40 MVA) linking the two power stations are not in full functional state, and a problem in one of them could cause a total blackout.

8. The T&D challenge has become even more critical after the commissioning of the 26 MW and 9 MW power plants in Brikama in 2006 and late 2011, respectively. The problem is aggravated by the fact that two of the power transformers are overloaded, while the majority of the MV feeders are not only overloaded but do contain substandard sections which restrict their capacity. The most adverse consequence of this problem is that load shedding is inevitable even when there is sufficient generating capacity. In addition, it has also been realized, following the commissioning of the Balast Nadam and Kotu Ring Water Projects in 2008 and 2013, respectively, that the reactive power component has increased significantly and requires urgent intervention.

9. The T&D losses are composed of (a) distribution technical losses; (b) transmission technical losses; and (c) commercial losses. Currently, the total T&D losses in the GBA are 25 percent, which are calculated by comparison of energy generation versus energy sales in the area. Technical T&D losses in the targeted areas of the GBA are estimated to be in between 11 and 14 percent (see Table 2.2). The losses shown in Table 2.2 are calculated by averaging the measures on defined and fixed points in substations and customers. The voltage drop is measured in those points and so the losses are calculated. Therefore, it is estimated that total commercial losses amount to between 11 and 14 percent (Table 2.3).

Table 2.2. Estimated Distribution Technical Losses in Project Areas

Area	Estimated Technical Losses in Distribution
Abuko Old Field	13%
Faji kunda	11%
Brikama Missira	11%
Brikama Gallilee	13%
Sanyang	14%

Table 2.3. Calculation of T&D Losses in the GBA

Area	Estimated Technical Losses in Distribution
Total losses (calculated)	25%
Technical losses (estimated)	11%–14%
Commercial losses (estimated by balance)	11%–14%

10. **Component 2 will support the Reduction of Technical and Commercial Losses in the GBA (US$4.5 million equivalent).** This component will finance improvements in the T&D network in the GBA. The improvements of the network will have a positive impact on the operations of NAWEC. The project will also contribute to reduce forced outages, improve customer satisfaction, and ensure higher supply continuity, hence generating higher returns. This component will be divided in the two following subcomponents:

- *Subcomponent 2.1: Reduction of technical losses by upgrading and rehabilitating the existing system* (US$3.3 million equivalent). The component will finance the installation of new transformers to off-load the existing installations and the replacement of undersized conductors, distribution feeder pillars, and other auxiliaries. The project will cover the upgrading and rehabilitation of existing distribution systems in specific areas of the GBA, the upgrading of two power transformers in the Mile 5 and Medina substations, the substitution of switchgear in the Wellingara substation, and the installation of capacitor banks in Wellingara and Mile 5 for reactive power compensation. The M&E of losses will be done according to the measurements in the same areas and specific points described for Table 2.2 above.

- *Subcomponent 2.2: Reduction of commercial losses by improving metering* (US$1.2 million equivalent). Currently, about 85 percent of the GBA consumers use prepayment meters. The remaining 15 percent are provided with conventional credit meters. The component will finance the installation of 300 big consumers' meters and 13,000 new prepayment meters for domestic customers to cover around an additional 10 percent of consumers. Moreover, the project will finance calibration equipment for meters.

11. Component 2 is expected to reduce the total losses in a conservative amount of four percent, from the current 25 percent to 21 percent. This reduction will mainly be motivated by three factors:

(a) Bringing down the losses in distribution in the targeted areas closer to international standards, from 11–14 percent to about 9–12 percent.

(b) Installing 13,000 prepayment meters, which are estimated to avoid 299 MWh/month of commercial losses (13,000 x 23 kWh).[5] This amount is approximatively 1.2 percent of improvement in the collection rate (3.6 GWh over the 290 GWh of generation).

(c) Installing 300 smart meters in big consumers, which are estimated to reduce commercial losses by 315 MWh/month (300 x 7 MWh[6] x 15 percent[7]). This amount is approximatively 1.3 percent of improvement in the collection rate (315 GWh over the 290 GWh of generation).

12. Considering the numbers above, the four percent of reduction in losses in the project area can be set as a conservative value.

III. Utility Management Capabilities for Optimizing Processes and Reducing Inefficiencies

13. A strong institutional base is fundamental to the sustained financial success of the power sector in The Gambia. There is a clear and urgent need to develop a robust, modern, technical, financial, and accounting infrastructure base to provide value-added support to the efforts of NAWEC to improve its managerial, financial, and operational performance. Among all the activities, the segregation of electricity and water accounting and cost allocation system is conceived as a priority.

14. **Component 3 will provide Institutional Strengthening and Project Implementation Support (US$7 million equivalent).** The component will be divided in four main activities: the first one focused on providing support for NAWEC's management, a second one focused on implementing a new IT system, a third on providing technical support for implementation supervision (owner's engineer), and a fourth providing implementation support.

- *Subcomponent 3.1: Service contract for NAWEC management support* (US$2 million equivalent). The GESP will finance a service contract for NAWEC for approximately four years to assist NAWEC to improve its technical, financial, and managerial capacity. The service contractor will assist NAWEC in implementing the necessary reforms and in defining a robust integrated IT management system to integrate the internal systems such as accounting, billing, payroll, stock, and so on. This system shall ease the process of separation of electricity, water, and sewerage accounts.

15. This subcomponent will finance a service contract between NAWEC and a private firm (the contractor) with sufficient technical capacity to provide assistance, strategic advice, and capacity-building services for NAWEC over three to four years. Specifically, the contractor will

[5] The individual 23 kWh of commercial losses have been estimated by the average difference between the consumption reported by credit metered consumers and the consumption reported by prepaid metered ones.
[6] According to 2015 records, the average monthly consumption of big costumers is seven MWh.
[7] NAWEC has carried out a pilot experience with 15 smart meters for big costumers, with an estimated billing increase of 30 percent in those costumers. Nevertheless, to be in a conservative side, it has been estimated a more moderate impact of 15 percent for the project outcomes.

be selected through a rigorous and competitive process on the basis of technical capacity and a proposed methodology. This component will fund the fees to be paid to the contractor, including fees for mobilizing a team of experienced managerial staff to advice NAWEC management, experts in specialized areas of utility management for specific needs such as financial, commercial, and technical.

16. To that effect, the services in the contract will include the following:

(a) **Advice for organizational improvement.** This activity will include (i) an organizational audit to assess all functions and needs across the utility; (ii) a proposal and appraisal of adjustments for resource allocations, procedures, or structure; (iii) a pre-feasibility of deployment of integrated management software; (iv) a human resources policies manual; and (v) a setup of the staff training curriculum.

(b) **Advice for improving commercial performance.** This activity will provide assistance to NAWEC to: (i) prepare and implement a commercial improvement strategy; (ii) prepare for services unbundling by separating electricity, water, and sewerage commercial organization; (iii) integrate within the future client management software included in the IT system procured under subcomponent 3.2; (iv) create a customer service center; (v) generalize consumption-based billing (for credit metered consumers); (vi) deploy reactive metering; and (vi) organize an effective inspection department for fraud and tampering prevention.

(c) **Advice for improving financial performance.** This activity will include an assistance to NAWEC to (i) prepare and implement a financial improvement strategy; (ii) analyze and propose efficiency measures within the company to minimize overhead costs; and (iii) improve financial reporting.

(d) **Advice for demand side management.** This activity will include (i) an audit of large consumers; (ii) partnering with large consumers to facilitate strategic reductions in consumption; and (iii) the management of reactive power[8].

(e) **Advice for improving technical performance.** This activity will include the assistance to NAWEC on key activities and investment improvements and specifically on, at least (i) the study of generation cost and proposal of optimization; (ii) the analysis of technical losses and proposal of activities and investments prospectus; (iii) the improvements on O&M activities to optimize costs; and (iv) the preparation of NAWEC actual operation organization and need for complementary infrastructure to cope with the future assets within the system (in particular, new power plants and OMVG interconnection).

(f) **Definition of terms of reference for the procurement of an Integrated Management System.** The contractor will define the minimum requirement for this IT system, the implementation process to be carried out by the supplier, and the training program for NAWEC to instruct staff on the new system. The supply, implementation, and training will

[8] NAWEC needs to set proper measures in order to control loses due to reactive power. These measures have to be defined through a specific study to be done by the service contractor.

be carried out by a specialized IT system provider to be selected under competitive bidding process through Bank procurement rules.

17. **Subcomponent 3.2: New NAWEC IT system (US$3 million equivalent).** The IT system defined by the service contractor under Subcomponent 3.1 will be financed by this component. The IT system intends to reorganize and facilitate NAWEC's operations, integrating all the processes into a single system. It will also improve the internal and external reporting for NAWEC management and decision taking.

18. **Subcomponent 3.3: Owner's engineer for supervision (US$1 million equivalent).** The project will finance an owner's engineer contract to supervise the execution of activities included in Components 1 and 2. The owner's engineer will carry out, at least, the following activities for each contract included in Component 1 and 2:

(a) Verification of technical specifications provided by the contractors;
(b) Assistance to NAWEC on the implementation of the GESP, specifically on procurement and FM;
(c) Follow-up of execution timelines;
(d) Verification of materials at reception;
(e) Issuance of periodic advance report for every contract;
(f) Attendance to factory acceptance tests for big equipment when required by NAWEC;
(g) Supervision of commissioning activities;
(h) Certification of project advance and periodic invoicing; and
(i) Final certification of projects completion.

19. **Subcomponent 3.4: Project implementation support (US$1 million equivalent).** This subcomponent will finance various activities to support project implementation.

20. Support for the implementation of the ESMP will include

(a) implementation of mitigation measures;
(b) ESMP monitoring;
(c) institutional capacity enhancement; and
(d) independent environmental auditing.

21. Additionally, as indicated in the ESMP, part of the ESMP monitoring (around US$65,000) will be covered by the National Environmental Agency and NAWEC operational budgets.

22. Capacity-building activities will include staff training related to project implementation such as procurement, M&E, IT systems, and Supervisory Control and Data Acquisition, as well as finance strategic studies to help inform the strategic direction of NAWEC such as a study on the fiscal implications of NAWEC and options for financial restructuring of NAWEC.

23. The subcomponent will also support various operating costs for the PMT, including one project vehicle, office equipment, and software, as well as provisions for external audits throughout the project.

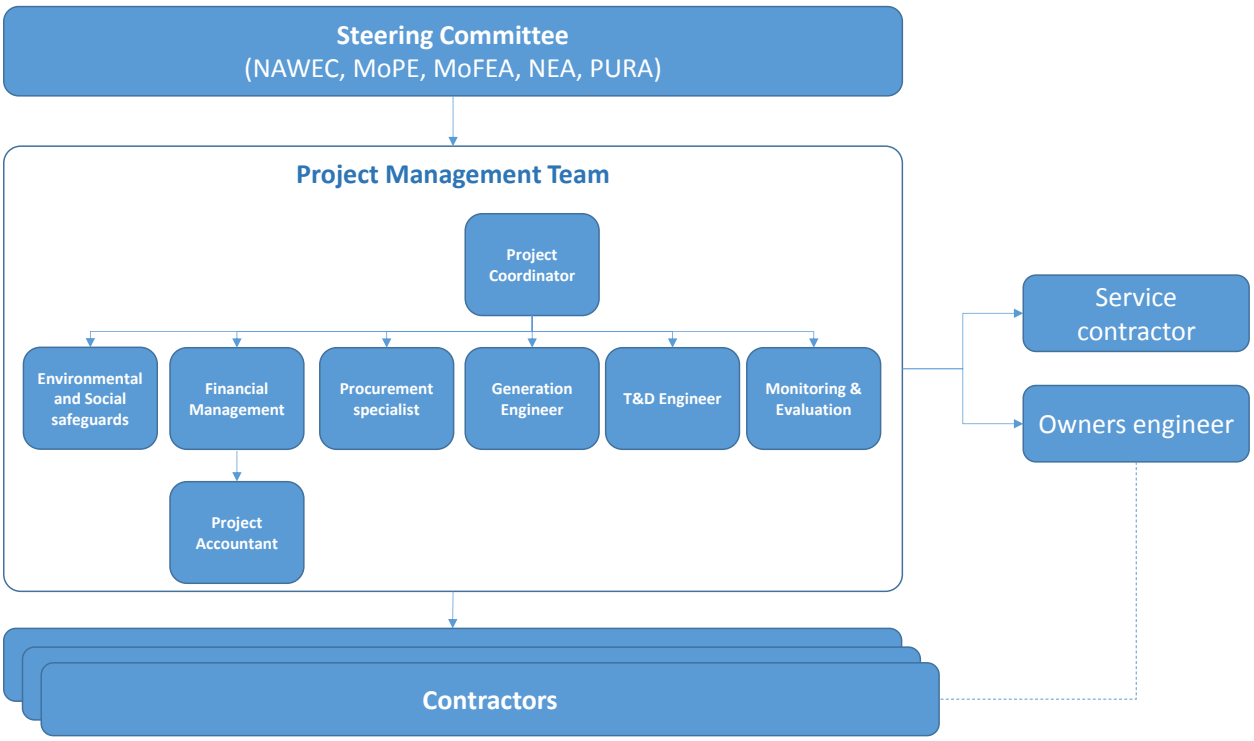
Annex 3: Implementation Arrangements

REPUBLIC OF THE GAMBIA: Gambia Electricity Support Project

Project Institutional and Implementation Arrangements

1. NAWEC will be the implementing agency of the GESP. A GESP PMT has been appointed within NAWEC, including the following functions: project coordinator, procurement specialist, technical specialists, financial management officer, environmental and social specialist, M&E specialist, and project accountant. The PMT will receive specific training in Bank guidelines and procurement rules.

Figure 3.1. Implementation Arrangements for the GESP Including the Appointed PMT



2. The owner's engineer financed under Subcomponent 3.2 will provide support to the implementation of the GESP and to the PMT by providing support from expert staff in procurement activities to meet Bank requirements and conducting supervision of investments under Components 1 and 2. The owner's engineer will also validate the technical specifications for activities under these components before procurement packages are put out for bid. However, the ultimate responsibility for project management will lie with the PMT.

3. The GESP will be implemented in accordance with the Project Implementation Manual (PIM), which will be completed by NAWEC before effectiveness.

4. An SC will be established to provide advice on strategic questions related to the GESP's implementation. The SC will include MoPE, MoFEA, PURA, the National Environmental

Agency, and NAWEC. The role of the SC will be of particular importance in the supervision of the recommendations made by the service contractor to improve the effectiveness of NAWEC's processes. The SC will meet biannually, although an extraordinary meeting may be convened if necessary.

Financial Management

5. An FMA of the implementing agency NAWEC was carried out in May 2015, with a Moderate risk rating. The objective of the assessment was to determine whether NAWEC has adequate FM arrangements in place to ensure that the GESP funds will be used only for the purposes for which the financing was provided, with due attention to considerations of economy and efficiency. The FMA considered the degree to which (a) the budgeted expenditures are realistic, prepared with due regard to relevant policies, and executed in an orderly and predictable manner; (b) reasonable records are maintained; (c) financial reports are produced and disseminated for decision-making, management, and reporting; (d) adequate funds are available to finance the project; (e) there are reasonable controls over project funds; and (f) independent and competent audit arrangements are in place.

6. The assessment found that NAWEC (a) has an Accounting Policies and Procedures Manual and an Internal Audit Manual satisfactory for the Bank; (b) has an Internal Audit Department with sufficient experience; and (c) is setting up an Audit Committee (since completed).The assessment was conducted in accordance with the Financial Management Practices Manual issued by the Financial Management Board on March 1, 2010, but was issued (retrofitted) on February 4, 2015, as well as the World Bank Governance Global Pratice FMA and Risk Rating Principles. Given the FM capacity constraints, NAWEC has agreed to undertake the following actions within three months after GESP's effectiveness, set up an accounting software adequate for project FM, and recruit an auditor by six months after effectiveness.

7. The FM staff of the project comprises a finance officer and a project accountant, who are NAWEC permanent staff. The Bank team assessed the qualification of this team and concluded that they have the minimum qualifications and general experience required by the Bank to manage FM activities of the project.

Internal Control System

8. The GESP will rely on the existing internal control system, comprising an Accounting Policies and Procedures Manual (May 2012), an Internal Audit Department, and an Internal Audit Manual. These manuals were reviewed and are acceptable for the Bank. The Accounting Policies and Procedures Manual defined the policy and procedures, among other things, for the following domains: ethics, fixed asset, cash and bank accounting, financial reporting, and budgeting. The project will follow the FM procedures defined in the Accounting Policies and Procedures Manual and in the Internal Audit Manual. It may develop specific procedures if needed. The Internal Audit Department will be in charge to review the internal control system and produce an internal control review report. The project will furnish to the Bank, no later than 30 days following the end of each quarter, a copy of the internal control review report, which summarizes the key findings of the reviews completed during the quarter.

Planning and Budgeting

9. The GESP will rely on the Accounting Policies and Procedures Manual, May 2012, for the activities planning and the budgeting (preparation, approbation, and execution monitoring). The project will be required to prepare and submit to IDA—for comments, before each new fiscal year—a detailed annual work plan and a budget as well as a disbursement forecast already approved by the NAWEC Board of Directors. NAWEC will define and adopt a specific monitoring mechanism of the work plan and the budget on a quarterly basis.

Accounting

10. Project accounts will be maintained on a cash basis, supported with appropriate records and procedures to track commitments and safeguard assets. Annual financial statements will be prepared by NAWEC in accordance with Gambia Accounting Standards. These standards are close to the Generally Accepted Accounting Principles. NAWEC will install a 'multi-projects' accounting software appropriate for project FM.

Financial Reporting

11. NAWEC has agreed with the Bank on the format of the project financial statement. NAWEC would submit Unaudited Interim Financial Reports (IFRs) to the Bank on a quarterly basis. IFRs should be submitted within 45 days following the end of the calendar quarter. The IFRs will include (a) sources and uses of funds by project expenditures classification; (b) a comparison of budgeted and actual project expenditures (commitments and disbursements) to date and for the quarter; and (c) other document as may be required. NAWEC will produce Annual Financial Statements, and these statements will comply with the Gambian law and the Bank's requirements. These financial statements will consist of

- a statement of sources and uses of funds, which recognizes all cash receipts, cash payments, and cash balances;
- a statement of commitments;
- accounting policies adopted and explanatory notes, a list of material assets acquired or procured to date with project funds;
- a summary of the activity in the designated account; and
- a management assertion that project funds have been expended for the intended purposes as specified in the relevant financing agreements.

Audit

12. NAWEC will submit project audited financial statements acceptable to IDA within six months after year-end. The auditor should have qualification and experience satisfactory to IDA. A single opinion on the audited project financial statements in compliance with the International Federation of Accountants will be required. In addition to the audit opinion report, a Management Letter will be required. The Management Letter will provide observations and

comments and recommendations for improvements in internal control and compliance with financial covenants in the Financial Agreement. Both, the financial statements audit opinion and the Management Letter, should be submitted to IDA and accepted within six months after the year-end.

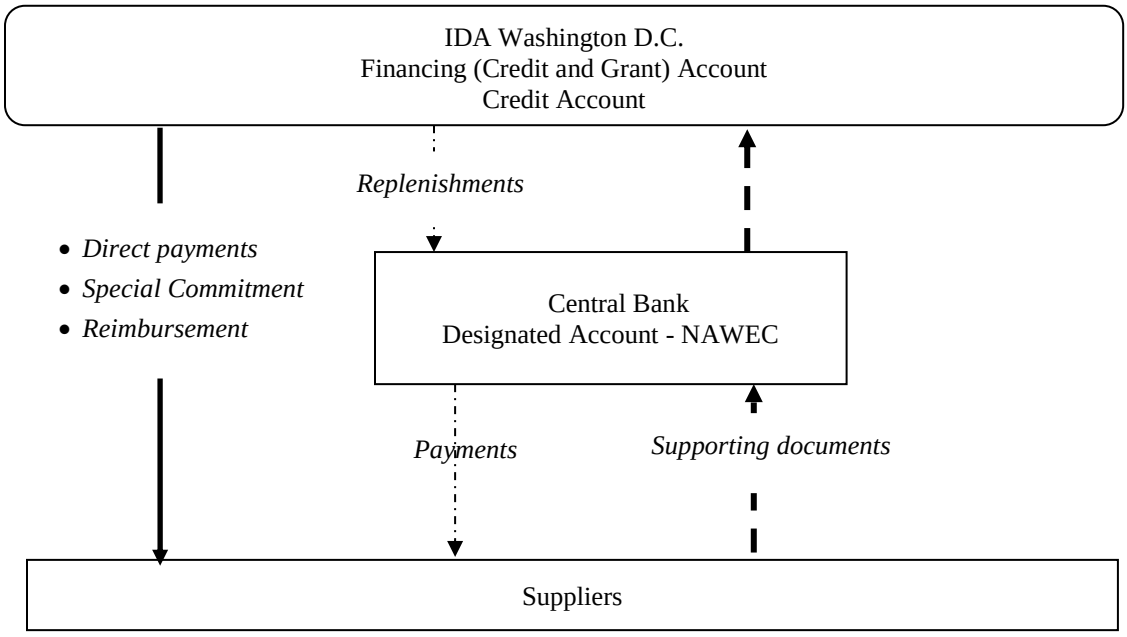
Disbursement

13. Disbursements under the GESP will be carried out in accordance with the provisions of the Disbursement Guidelines (World Bank Disbursement Guidelines for Projects, dated May 1, 2006), the Disbursement Letter, and the Financing Agreement. The disbursement methods will be indicated in the Disbursement Letter.

Designated Account

14. A designated account will be opened at the Central Bank of The Gambia and managed by NAWEC. The designated account will be held in U.S. dollar. The designated account ceiling is indicated in the Disbursement Letter agreed upon during negotiations. The designated account will be replenished through the submission of withdrawal applications on a quarterly basis by NAWEC. Replenishment (requests for reimbursement) and reporting on the use of advances will be accompanied by a Statement of Expenditure providing information on payments for eligible expenditures and records required by the Bank for specific expenditures in the Disbursement Letter. All supporting documentation will be retained at NAWEC and must be made available for periodic review by the Bank's missions and external auditors.

Figure 3.2. Funds Flow Chart



15. The financial covenants to be included in the GESP are the following:

(a) The borrower shall establish and maintain an FM system including records, accounts, and preparation of related financial statements in accordance with accounting standards acceptable to the Bank.

(b) The borrower shall prepare and furnish to the Association not later than 45 days after the end of each calendar quarter, IFRs for the project, in form and substance satisfactory to the Bank.

(c) The financial statements will be audited in accordance with international auditing standards.

(d) The audited financial statements for each period shall be furnished to the Association not later than six months after the end of the project fiscal year.

(e) The borrower will be compliant with all the rules and procedures required for withdrawals from the designated accounts of the project.

(f) Set up an accounting software adequate for project FM within three months after the GESP's effectiveness.

(g) Recruit an auditor by six months after effectiveness.

16. **Disbursement categories and percentages.** The IDA Credit will finance 67 percent of eligible expenditures for category 1. The IDA Grant will finance 33 percent of eligible expenditures from category 1. The table of eligible expenditures, which sets out the allocation of financing proceeds to disbursement category, is shown below.

Table 3.1. Disbursement Table by Expenditure Category (US$, millions)

Category	Amount of the Credit Allocated	Amount of the Grant Allocated	Percentage of Expenditures to be Financed from Credit	Percentage of Expenditures to be Financed from Grant
	(expressed in US$, millions)	(expressed in US$, millions)	(inclusive of taxes)	(inclusive of taxes)
(1) Goods, works, non-consulting services, and consultants' services for Part 1, 2, and 3 of the project	12.46	6.04	67	33
Total Amount	**12.46**	**6.04**	67	33

Environmental and Social (including safeguards)

17. One environmental and social specialist within the PMT will be responsible for managing compliance with Bank safeguards policies and GoTG environmental legislation and regulations by means of the implementation of the ESMP throughout the project. The environmental and social specialist will be an existing NAWEC staff with extensive experience in this type of assignment and will also benefit from training from Bank specialists. The GESP has allocated a

budget to support the implementation of the ESMP. This budget will provide resources for external activities, including an independent environmental auditing during the project.

Monitoring and Evaluation

18. The PMT includes an M&E specialist to track the progress of the project and provide necessary support to project reporting.

Procurement arrangements

19. An assessment of NAWEC's capacity to implement procurement activities was conducted in May 2015. The assessment reviewed NAWEC's organizational structure for implementing the GESP and the interaction between the staff responsible for procurement for the GESP and NAWEC relevant central unit for administration and finance. The overall procurement risk is rated Substantial and is expected to be Moderate once the following mitigation measures are implemented: (a) prepare a PIM with a detailed procurement section dealing with the Bank's procedures; (b) develop a procurement plan for all the activities of the proposed project or at least the 18 first months, then a detailed procurement plan, for the implementation, once the project is approved; (c) train the staff and technical experts involved in the project implementation in the Bank procurement procedures; this approach will be to provide appropriate procurement training, including contract management, to technical specialists and experts who will handle procurement activities; and (d) find more space and purchase stationery to organize the filing system.

20. **Fraud, coercion, and corruption.** All procuring entities, as well as bidders, suppliers, and contractors, shall observe the highest standard of ethics during the procurement and execution of contracts financed under the project in accordance with paragraphs 1.15 and 1.16 of the Procurement Guidelines and paragraphs 1.25 and 1.26 of the Consultant Guidelines.

21. **Frequency of procurement supervision.** In addition to the prior review supervision to be carried out from Bank offices, the capacity assessment of the implementing agency has recommended (a) supervision missions every six months to visit the field; and (b) at least one annual post procurement review.

22. **Procurement and technical audit.** A procurement and technical audit would be carried out at least every two years during project implementation and report on the procurement process, contract management, fiduciary compliance, and so forth.

23. Procurement activities will be managed by the PMT located in NAWEC with support from the service contractor in preparing certain bidding documents. Procurement-related responsibilities of the PMT will include (a) managing procurement activities and ensuring compliance with the procurement process described in the relevant manuals; (b) preparing and updating annually the procurement plan; (c) preparing bidding documents, draft requests for proposals, evaluation reports, and contracts in compliance with the Bank procedures; and (d) seeking and obtaining approval of IDA on procurement documents, as required.

24. Procurement of works, goods and consultants' services will be carried out in accordance with (a) the 'Guidelines on Preventing and Combating Fraud and Corruption in Projects

Financed by IBRD Loans and IDA Credits and Grants', dated October 15, 2006, as revised in January 2011; (b) the 'Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers', published by the Bank in January 2011, revised in July 2014; (c) 'Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers', dated January 2011, revised in July 2014; (d) the provisions stipulated in the Financing Agreement; and (e) the procurement plan approved by the Bank.

25. **National Procurement System and Procurement Reforms.** No procurement under National Competitive Bidding (NCB) is foreseen for this project. If some goods need to be procured by NCB in the future, Bank procedures and bidding documents will be used. In that case, procurement of goods, works, and non-consulting services under NCB shall be carried out through an open tender as set forth in the Gambia Procurement Act 2014, subject to the provisions of the Procurement Guidelines and the following additional provisions:

(a) Prospective bidders shall be provided four weeks from the date of publication of the invitation to bid or the date of availability of the bidding documents, whichever is later, for the preparation and submission of bids.

(b) Bidding documents acceptable to the Association shall be used and shall be prepared so as to ensure economy, efficiency, transparency, and broad consistency with the provisions of Section I of the Procurement Guidelines.

(c) Invitation for bids shall be advertised in national newspapers with wide circulation or in the official gazette, provided that it is of wide circulation, or on a widely used website or electronic portal with free national and international access.

(d) Bids shall be submitted in a single envelope.

(e) Bid evaluation criteria, bidder qualifications criteria, and the contract award criteria shall be clearly specified in the bidding documents.

(f) No margin of preference shall be granted to domestic bidders.

(g) Eligible bidders, including foreign firms, shall not be excluded from the bidding.

(h) The procedures shall include the publication of the results of evaluation and of the contract award.

(i) The bidding document and contract as deemed acceptable by the Association shall include provisions stating the Association's policy to sanction firms and individuals found to have engaged in fraud and corruption as defined in the Procurement Guidelines.

(j) Each bidding document and contract financed out of the proceeds of the financing shall provide that bidders, suppliers, and contractors and their subcontractors, agents, staff, consultants, services providers, or suppliers shall permit the Association to inspect all accounts, records, and other documents relating to the

submission of bids and contracts performance and to have them audited by auditors appointed by the Association. Acts intended to materially impede the exercise of the Association's inspection and audit rights provided for in the Procurement Guidelines constitute an obstructive practice as defined in the Procurement Guidelines.

Procurement methods

Procurement of Works, Goods, and Non-consulting Services

26. **Procurement of works.** The project will finance design, supply, installation, construction, and commissioning of transmission lines. For those civil works, International Competitive Bidding (ICB) will be the procurement method by default. Other methods that may be used when works to be procured meet requirements are spelled out in the corresponding paragraph of the Procurement Guidelines for such procedures, that is, NCB according to paragraphs 3.3 and 3.4; shopping according to paragraph 3.5; and direct contracting according to paragraphs 3.7 and 3.8.

27. **Procurement of goods.** Goods to be procured under this project would include vehicles, office equipment, printing documents, IT equipment, software, equipment, and other furniture needed for the project implementation. For those goods, ICB will be the procurement method by default. Other methods that may be used when the related goods meet requirements are spelled out in the corresponding paragraph of the Procurement Guidelines for such procedures, that is, NCB (for example, for goods available locally) according to paragraphs 3.3 and 3.4; shopping according to paragraph 3.5; and direct contracting according to paragraphs 3.7 and 3.8.

28. **Procurement of non-consulting services.** Non-consulting services procured under the project would include general services for the project implementation, services for training and workshop sessions, insurances, maintenance, and so on. These services are not expected to be of high value; therefore, they will be procured using shopping procedures according to paragraph 3.5 of the Procurement Guidelines.

29. Contracts estimated at less than US$3,000,000 for works and contracts for goods available locally, or non-consulting services with a cost estimate at less than US$300,000, may be awarded through NCB procedures. Contracts for small works (if any), with a cost estimate equal or below US$100,000 and contracts for small goods such as office supplies, minor equipment, and furniture available locally, or non-consulting services with a cost estimate equal or below US$50,000 may be procured under the shopping procedure in accordance with the provisions of paragraph 3.5 of the Procurement Guidelines.

30. Procurement for works, goods, and non-consulting services will be carried using the Bank’s Standard Bidding Documents for all ICB. In the case of shopping, the procurement will be done in accordance with the Memorandum ‘Guidance on Shopping’ issued by the Bank, dated June 9, 2000 (provided this Memorandum is not contradictory to the Procurement Guidelines) and the ‘Guide for the procurement of small contracts’ issued on February 1, 2011.

Selection of Consultants

31. Consultant services to be procured would include studies and supervision missions, development of manuals of procedures, technical assistance, financial audit, and training. Consultants will be selected using the Quality- and Cost-Based Selection (QCBS) method in most cases. In other cases specified in the procurement plan, the following methods will be used: (a) Least-Cost Selection; (b) Selection Based on the Consultants' Qualifications (CQS); (c) Single-Source Selection; and (d) Individual Consultants (IC) Selection (either through competitive selection or single source).

32. For competitive selection methods, the selection will be done necessarily (a) through requests for expressions of interest except for the CQS and the selection of ICs for which requests for expressions of interest are not mandatory and (b) using the Bank's Standard Request for Proposals where required. For simplified selection methods such as the CQS and the selection of ICs, the "Guide for the Procurement of Small Contracts" issued on February 1, 2011 may be used (in the present case for the use of CQS or ICs selection).

33. Short lists of consulting services with a cost estimated to be less than US$200,000 equivalent per contract may be composed entirely of national consultants, in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

Operating Costs

34. The Credit will finance the operating costs related to the implementation of the project. The costs will be covered, whenever possible, using shopping procedures or using the Project Implementation Manual acceptable to the Bank.

Procurement Plan

35. The borrower has developed a preliminary procurement plan for project implementation during an initial period of 18 months, which provides the basis for the procurement methods. This plan will remain dynamic and updated to reflect more details in the implementation of the project when decision will be taken on these details.

Procurement Plan
Details of the Procurement Arrangements Involving International Competition

Goods and works and non-consulting services

(a) List of contract packages to be procured:

Table 3.2. Initial Prior Review Thresholds

	Procurement Method	Prior Review Threshold	Comment
1.	ICB (Goods)	= or > US$300,000	ICB for goods will be used for US$300,000 and above
3.	ICB (Works)	= or > US$3,000,000	ICB for works will be used for US$300,000 and above
5.	ICB (Non-Consultant Services), if any	US$300,000	ICB for non-consultant services will be used for US$300,000 and above

Table 3.3. Contracts for good and works and non-consulting services

1	2	3	4	5	6	7	8	9
Ref. No.	**Contract (Description)**	**Estimated Cost (US$)**	**Procurement Method**	**P-Q**	**Domestic Preference (Yes/No)**	**Review by Bank (Prior/Post)**	**Expected Bid-Opening Date**	**Comments**
GESP/Goods/C1/01	Kotu and Brikama power capacity reinforcement	4,000,000	ICB	n.a.	No	Prior	March 2017	
GESP/Goods/C1/02	Brikama G1 generation capacity rehabilitation	1,500,000	ICB	n.a.	No	Prior	September 2016	
GESP/Goods/C1/03	Kotu A B and D Auxiliary Power Equipment Rehabilitation	1,500,000	ICB	n.a.	No	Prior	February 2017	
GESP/Goods/C2/04	Procurement of T&D lines materials, accessories and distribution transformers	2,300,000	ICB	n.a.	No	Prior	December 2016	
GESP/Goods/C3/07	Delivery and installation of NAWEC IT systems	3,000,000	ICB	n.a.	No	Prior	June 2017	

(b) ICB contracts estimated to cost above US$3,000,000 per contract for works, US$300,000 per contract for goods and non-consulting services, the first contract irrespective of the cost estimate and all direct contracting will be subject to prior review.

Consulting Services

Table 3.4. Initial Prior Review Thresholds

	Selection Method	Prior Review Threshold	Comments
1.	Competitive methods (firms)	US$200,000	Prior review
2.	ICs	US$100,000	Prior review
3.	Single source for individual and firms	All, irrespective of the cost estimate	Prior review
4	Contract for specific consulting services such as procurement, FM, legal	All, irrespective of the cost estimate	Prior review

Table 3.5. Contracts for Consulting Services

1	2	3	4	5	6	7
Ref. No.	**Description of Assignment**	**Estimated Cost (US$)**	**Selection Method**	**Review by Bank (Prior/Post)**	**Expected Proposals Submission Date**	**Comments**
GESP/services/C3/01	Consulting services for the owner's engineer of the GESP	1,000,000	QCBS	Prior	November 2016	
GESP/services/C3/02	Recruitment of service contract for the GESP	2,000,000	QCBS	Prior	November 2016	
GESP/services/C3/03	External auditor	150,000	Least-Cost Selection	Prior	October 2016	
GESP/services/C3/04	ESMP independent environmental auditing	6,000	ICs	Post	December 2017	

(c) Consultancy services estimated to cost above US$200,000 per contract for firms and US$100,000 per contract for ICs, the first contract irrespective of the cost estimate and every single-source selection of consultants (firms) for assignments will be subject to prior review by the Bank.

(d) Short lists of consultants for services estimated to cost less than US$200,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

Annex 4: Implementation Support Plan

REPUBLIC OF THE GAMBIA: Gambia Electricity Support Project

Strategy and Approach for Implementation Support

1. The project will involve the procurement of goods and works contracts through ICB and service contracts through QCBS.

2. Most of the procurement activities and contracting will be carried out in the early period of project implementation. Therefore, the first two years of project implementation will require efforts to review technical and procurement documents. The detailed support from the Bank team during project supervision is outlined below:

(a) **Environmental and social safeguards.** The Bank safeguards team 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 to project implementation with NAWEC and relevant government authorities; and (ii) training on safeguards to NAWEC staff.

(b) **Procurement and technical.** The Bank team 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 Bank guidelines to the PMT.

(c) **FM.** The Bank team will provide implementation support for reviewing the project's FM system, including but not limited to accounting, reporting, and internal controls.

(d) **Implementation Progress.** The Bank will closely monitor the overall progress of project implementation, including the rehabilitation and major overhaul of identified thermal generation engines in Kotu and Brikama power stations.

Implementation Support Plan

3. The proposed implementation support requirements are as follows:

Table 4.1. Implementation Support Requirements to be Provided by the Bank

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

Table 4.2. Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Team leader	10	2	Washington, DC
Power engineer	5	2	Washington, DC
Procurement specialist	4	2	Based in region
Financial management specialist	4	2	Based in region
Environmental specialist	4	2	Based in region
Social specialist	3	2	Based in region
Operations officer	4	2	Based in region
TOTAL	34	14	

4. Based on the outcome of the FM risk assessment, the following FM implementation support plan is proposed. The objective of the implementation support plan is to ensure that the project maintains a satisfactory FM system throughout the project's life.

Table 4.3. FM Implementation Support Plan

FM Activity	Frequency
Desk reviews	
Unaudited financial reports review	Quarterly
Audited financial statement reports review	Annually
On-site visits	
Review of overall operation of the FM system	Semiannual
Monitoring of actions taken on issues highlighted in audit reports, auditors' management letters, and other reports	As needed
Transaction reviews (if needed)	As needed
Capacity-building support	
FM training sessions	During implementation and as and when needed

Annex 5: Economic and Financial Analysis

REPUBLIC OF THE GAMBIA: Gambia Electricity Support Project

1. This annex presents (a) the EIRR calculation for the GESP; and (b) a financial analysis of NAWEC and forecast of financial performance up to the end of this project. An EIRR of 23.1 percent is obtained for the investments. Hence the investments are economically viable. NAWEC's current financial situation is critical, but with the investments currently planned, there is an upward trend toward achieving financial stability by 2020.

I. Economic Analysis

2. A cost and benefit analysis was conducted for the GESP. The costs and benefits assumed for each component, and the general assumptions are explained below. Table 5.2 presents the main assumptions used.

3. **General assumptions.**

(a) **Willingness to pay (WTP).** In the absence of comprehensive surveys on WTP or cost of unserved electricity, the WTP has been assumed to be US$0.20 per kWh based on current average tariffs. It should be noted this is a conservative estimate compared to the estimated cost of self-generation of US$0.37 per kWh.

(b) **Discount rate.** A standard discount rate of six percent is applied per latest World Bank guidelines.

4. **Costs and benefits assumed for Component 1.**

(a) The main benefit of Component 1 is the increase in electricity production, caused by an increase in available capacity for the rehabilitation of Brikama G1, and secondhand engines installed at Kotu G8 and Brikama G7.

(b) The investment costs for the rehabilitation of Brikama G1 are assumed to take place in 2016, while the ones for the secondhand engines at Kotu G8 and Brikama G7 are equally split between 2016 and 2017. A life expectancy of ten years is assumed for Brikama G1 and of five years for Kotu G8 and Brikama G7. Cost estimates are based on proposals received by NAWEC.

(c) *Fuel costs.* The cost of fuel is based on the contract prices to import fuel for NAWEC in November 2015, which was US$464 per metric ton, translating to US$90 per MWh dispatched to the grid. This is a conservative estimate and it is likely to reduce as reductions in global market prices are passed onto NAWEC.

(d) A depreciation cost for each engine is also considered, with the assumptions of constant depreciation over time, and that all engines were manufactured in 1990. To compute the annual and constant depreciation over time of the engines, the new-installation cost per megawatt is assumed to be of US$2,000,000. This figure is based on an offer received by NAWEC following a public procurement in 2014, and

is therefore a conservative assumption for this analysis, as the price was presumably lower when the engines were manufactured.

5. **Costs and benefits assumed for Component 2.**

(a) The main benefit of Component 2 is the investments in rehabilitation of the T&D network resulting in a reduction in technical and non-technical losses of four percent.[9] The US$4.5 million investment is assumed to be equally split between 2016 and 2017, and that the T&D losses diminish to 24 percent in 2018, reach 21 percent in 2021, and remain stable at this value thereafter. A life expectancy of ten years is assumed for these investments.

(b) A depreciation of the overall T&D assets in the GBA is also considered, assuming these assets have an average life expectancy of 15 years. As explained in Table 5.1, the estimated T&D assets of NAWEC are valued at US$19,311,500.

Table 5.1. Valuation of NAWEC's T&D Assets

Item	Units	Unit Price (US$)	Total (US$)
Transformer 33/11 kV	5	500,000	2,500,000
Transformer 11/0.4 kV	193	2,500	482,500
Transformer 33/0.4 kV	4	8,000	32,000
Line 11 kV	181	12,000	2,172,000
Line 33 kV	125	17,000	2,125,000
Prepayment meter	120,000	100	12,000,000
		TOTAL	**19,311,500**

Table 5.2. Assumptions Used for Economic Analysis

Assumptions		
General Assumptions		**Source**
Cost of fuel (US$/MWh)	90.04	Based on 2015 NAWEC fuel contract price
Exchange rate (Dalasi/US$)	41.07	World Bank Exchange rate data, 2015
WTP US$/kWh	0.20	Based on average tariff data, 2015
Discount rate (%)	6	Standard World Bank assumption for economic analysis

Component 1					
Costs	**Cost (US$)**	**Capacity Before Rehab. (MW)**	**Capacity After Rehab. (MW)**	**Availability Before Rehab.**	**Availability After Rehab.**
Brikama G1	1,500,000	0	6.4	0%	70%
Brikama G7	2,000,000	0	6.4	0%	70%
Kotu G8	2,000,000	0	6.4	0%	70%
Powerhouse overhaul	1,500,000				
Total	**7,000,000**	**0**	**19.2**		
Original cost of MW installed	2,000,000				

[9] See annex 2 for an explanation of this decrease of 4 percent.

Component 2	
Component 2 cost	4,500,000
Valuation of T&D assets	19,311,500

6. Taking these assumptions into account, the NPV is US$29,409,821 and the EIRR equals 23.1 percent. The yearly costs and benefits are presented in Table 5.4 below.

7. The switching values (for which the EIRR is below six percent) for each of the critical variables are shown in Table 5.3. The switching value for the WTP of US$0.17 per kWh is below the current tariff of US$0.20 per kWh, which can never be the case given that consumers are observed to be willing to pay at least the tariff amount. Therefore, the analysis is robust with respect to the WTP.

8. For estimated capital investment costs of US$7 million and US$4.5 million for Components 1 and 2 respectively, project costs would need to overrun by multiples of three to four time the cost estimates before the EIRR would drop below six percent.

9. Finally, it is highly unlikely that the cost of investment would be US$6.5 million per MW, which would mean a 300 percent cost increase vis-à-vis an already conservative baseline value (international costs per MW are often assumed to be around US$1,000,000, although this figure does not take into consideration the specific characteristics of the Gambian market).

Table 5.3. Switching Values

Variable	Unit	Baseline Assumption	Switching Value	Multiplier
WTP	US$/kWh	0.20	0.17	0.85
CAPEX - —Component 1	US$, millions	7.00	23.36	3.3
CAPEX—Component 2	US$, millions	4.50	21.31	4.7
New installation cost per MW	US$, millions	2.00	6.49	3.2
Valuation T&D assets	US$, million	19.30	48.69	2.5

10. The project is also financially viable. The financial costs assumed for the project financial analysis are consistent with those assumed in the economic analysis. The financial analysis assumes a tariff increase of five percent per year, as indicated by PURA during project appraisal, which is consistent with the policy set by MoFEA to PURA in 2015. Applying these assumptions, the financial internal rate of return obtained for the GESP is 45.2 percent with an NPV of US$79.6 million.

Table 5.4. Economic and Financial Costs and Benefits Per Year

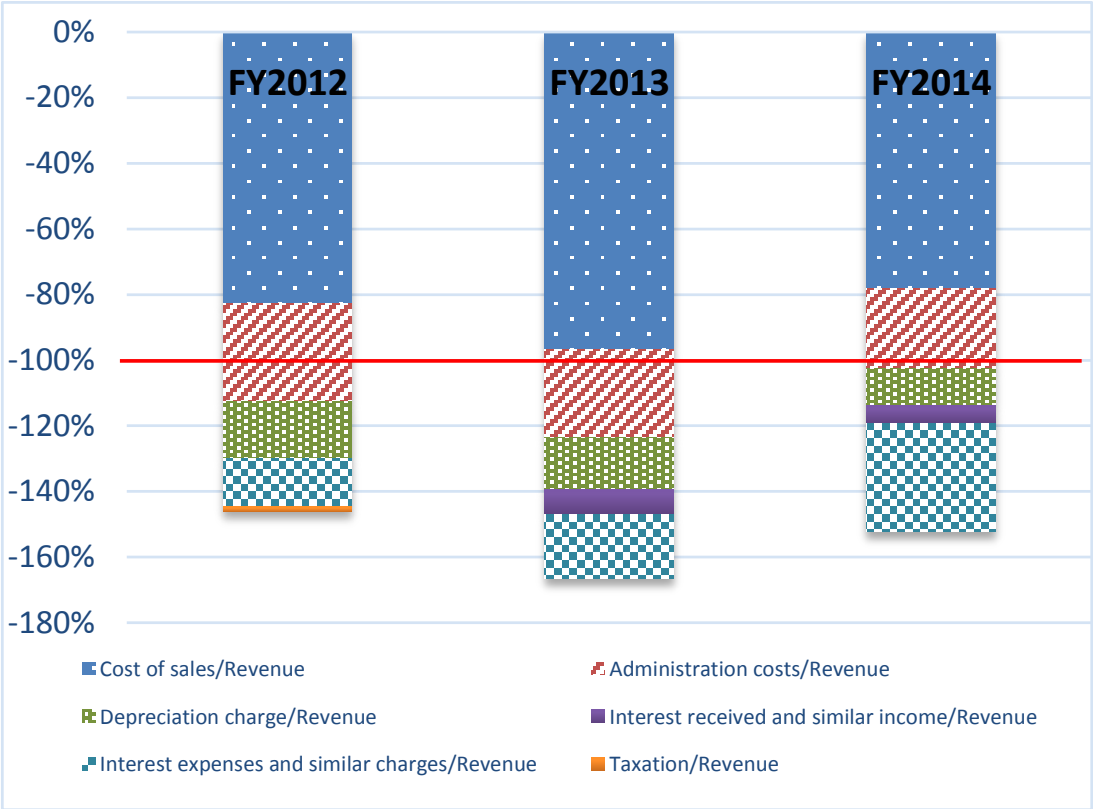
Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Investment cost—Component 1	-4,250,000	-2,750,000									
Investment Cost—Component 2	-2,250,000	-2,250,000									
Investment Cost—Component 3	-1,400,000	-1,400,000	-1,400,000	-1,400,000	-1,400,000						
Annual depreciations—Component 1	-1,181,362	-1,181,362	-1,181,362	-1,181,362	-1,181,362	-1,181,362	-355,556	-355,556	-355,556	-355,556	-355,556
Annual depreciations—Component 2	-1,287,433	-1,287,433	-1,287,433	-1,287,433	-1,287,433	-1,287,433	-1,287,433	-1,287,433	-1,287,433	-1,287,433	-1,287,433
Increase in fuel expenses—Component 1		-3,533,583	-10,600,750	-10,600,750	-10,600,750	-10,600,750	-10,600,750	-3,533,583	-3,533,583	-3,533,583	-3,533,583
Total costs	**-10,368,795**	**-12,402,379**	**-14,469,545**	**-14,469,545**	**-14,469,545**	**-13,069,545**	**-12,243,739**	**-5,176,572**	**-5,176,572**	**-5,176,572**	**-5,176,572**
Increase in economic benefit											
Component 1		5,917,255	17,751,764	17,751,764	17,751,764	17,751,764	17,751,764	5,917,255	5,917,255	5,917,255	5,917,255
Component 2			775,470	1,550,941	2,326,411	3,101,882	3,101,882	3,101,882	3,101,882	3,101,882	3,101,882
Total increase in economic benefit	**0**	**5917254.53**	**18527234**	**19302704**	**20078175**	**20853645**	**20853645**	**9019136.2**	**9019136.2**	**9019136.2**	**9019136.2**
Net economic benefits	**-10,368,795**	**-6,485,124**	**4,057,689**	**4,833,159**	**5,608,630**	**7,784,100**	**8,609,907**	**3,842,564**	**3,842,564**	**3,842,564**	**3,842,564**
Increase in financial benefit											
Component 1		6,523,773	20,549,885	21,577,380	22,656,249	23,789,061	24,978,514	8,742,480	9,179,604	9,638,584	10,120,513
Component 2			897,704	1,885,178	2,969,156	4,156,818	4,364,659	4,582,892	4,812,037	5,052,638	5,305,270
Total increase in financial benefit	**0**	**6523773.12**	**21447589**	**23462558**	**25625404**	**27945879**	**29343173**	**13325372**	**13991641**	**14691223**	**15425784**
Net financial benefits	**-10,368,795**	**-5,878,605**	**6,978,044**	**8,993,013**	**11,155,859**	**14,876,334**	**17,099,434**	**8,148,800**	**8,815,068**	**9,514,650**	**10,249,212**

II. Financial Analysis of NAWEC

A. NAWEC's financial situation in recent years

11. NAWEC's expenses have been consistently higher than its revenues by 40-70 percent in the last few years. Some of the reasons include: demand for electricity, water, and sewerage services has increased in the last few years due to high economic growth; NAWEC variable costs are high as it operates thermal power stations running mainly on HFO in the GBA and LFO in rural areas; and a central challenge of NAWEC over the past few years has been to access sufficient financial resources to procure necessary fuel and spare parts for engines' overhauls.

Figure 5.1. Expenses with Respect to Revenues from 2012 to 2014



12. The volatility of oil prices and the sustained devaluation of the Gambian dalasi have had serious consequences for NAWEC's financial situation. In the absence of a pass-through mechanism in the retail tariffs for electricity and water, the utility is normally left with few options but to continue to rely on some local banks to provide working capital. This implies borrowing at very high interest and bank rates.

13. Table 5.5 presents selected structural and activity ratios for the last three years.

Table 5.5. Structural and Activity Ratios Level FY2012–2014

Ratios	Audited		Unaudited
	FY2012	FY2013	FY2014
Current (current assets/current liabilities)	0.71	0.22	0.21
Debt to asset	73%	78%	89%
Receivable turnover (days of turnover)	295	107	117
Inventory turnover (days of turnover)	52	49	47

14. NAWEC's arrears have been reduced in the last few years. To ensure a timely payment of bills, NAWEC has been replacing almost all conventional electricity meters of all non-critical Government institutions by prepaid meters. This has to a great extent contributed to improve the revenues of the company and, consequently, reduce potential arrears. Furthermore, the recovery of debts from area councils and some Government institutions has recently improved.

15. NAWEC has been facing a high increase of the trade and receivables accounts of about 47 percent between 2012 and 2013, which means there is a problem of recovery. Furthermore, negative cash during the last two years has entailed a problem of treasury, despite an increase of revenues of about 244 million GMD between these years.

Table 5.6. Profitability Ratio for 2012–2014

Ratios	Audited		Unaudited
	FY2012	FY2013	FY2014
Profit margin	-48%	-68%	-72%
Return on assets	-17%	-24%	-27%
Return on equity	-1174%	-2517%	-2802%
Operating margin	-31%	-40%	-19%

16. The reduction of the gross profit (about 40 percent balance) by an increase of operational costs (about 22 percent) despite the increase of revenue (about 13 percent) has put NAWEC in an unbalanced financial situation. The shared capital have been negative, with a reduction of the net operating expenses of around US$59 million. The returns on assets are continually negative resulting from a problem of tariff system. In other words, NAWEC has been operating in a bankruptcy situation.

Table 5.7. Cash Flow Situation from 2013–2014

Cash Flow Statement (in Million GMD)	Audited	Unaudited	Differences	
	FY2013	FY2014	2014-2013	%
Cash flow from operating activities	(961)	(2523)	(1562)	163
Cash flow from investing activities	(458)	(293)	165	-36
Cash flow from financing activities	1082	1633	551	51
Cash and cash equivalents at the end of year	(110)	(116)	(6)	6

B. Forecast of NAWEC's financial situation with basic, short term, and medium term planned investments

17. This section presents a forecast of NAWEC's financial situation during the implementation period of the GESP (2015–2021), considering both the investments of the GESP as well as the other investments envisaged in the Gambian electricity sector up to 2021. Essentially, NAWEC will continue to be dependent on thermal fuel plants before the commissioning of the OMVG lines with 50 percent of the base load energy coming from the Sambangalou and Kaleta hydro plants in 2020.

18. Therefore, NAWEC financial projections are prepared with a production plan presented below:

- Brikama G1 producing 39,245 MWh extra in 2017 as a result of GESP investments (and does that until 2026);
- Brikama G7 starts producing 39,245 MWh extra in 2018 as a result of GESP investments (and does that until 2021);
- Kotu G8 starts producing 39,245 MWh extra in 2018 as a result of GESP investments (and does that until 2021);
- Another 10 MW extra come into operation in 2017 and 20 MW in 2018 (financed by other donors);
- OMVG with 17 MW coming into operation in 2018 and 25 MW in 2020 at an approximate price of US$.12 per kWh; and
- The T&D losses reduce from 25 percent in 2016 to 21 percent in 2020, remaining at this level thereafter.

19. Table 5.8 presents the prices of HFO and LFO assumed for 2014, which are based on the long-term contracts of fuel that NAWEC signed in 2014. Before that, NAWEC was constantly struggling with difficulties in the procurement of HFO and LFO. Due to the difficulties in their financial situation and the extraordinarily high fuel costs usually the payment for HFO was done in small installments and the fuel supplier delivered only parts of the order.

Table 5.8. Price of HFO and LFO in 2014

Elements	Unit	Amount
Base price HFO	US$/MWh	90.00
Base price LFO	US$/MWh	121.00

20. Table 5.9 presents the yearly evolution of HFO and LFO prices assumed in this analysis.[10]

Table 5.9. Escalation Price of HFO and LFO from 2015 to 2020

Elements	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021
Escalation Price HFO	-2.36%	-1.38%	-1.58%	-1.78%	-1.96%	-1.46%	-1.00%
Escalation Price LFO	-2.82%	-1.66%	-1.90%	-2.15%	-2.37%	-1.78%	-1.22%

21. It is also assumed that the corporate tax is determined around 33 percent and the revenue tax around 1.5 percent. The working capital is estimated with 330 days sales outstanding, 300 days payables outstanding and 35 days sales of inventories.

22. The regulatory agency PURA decided to increase the tariff by 12 percent in 2015. NAWEC. For the purpose of this analysis, an annual increase of 5 percent from 2016 to 2020 is assumed to ensure the viability of the operator, as indicated by PURA during project appraisal.

23. **The results from the financial forecast indicate that NAWEC's situation continues to be fragile until 2018, when it starts improving.** As shown in table 5.10, the current ratio is decreasing until 2018, and then starts to rise. However, NAWEC would need a restructuring financial plan to tackle the high level of debt versus the negative equity, which can affect the operational side of the company.

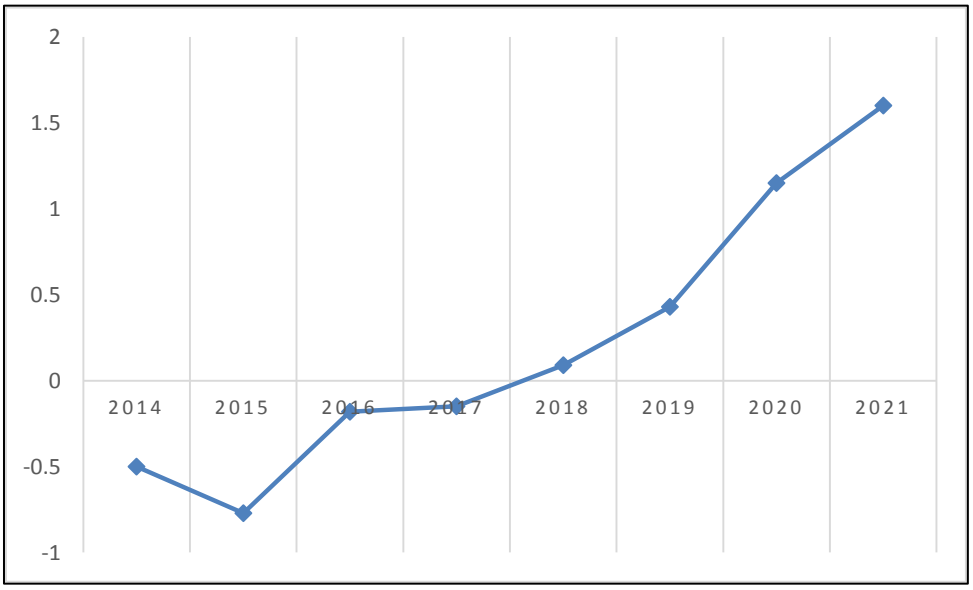
Table 5.10. Structural and Activity Ratios Level for 2015–2021

Ratios	Projected						
	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021
Current (current assets/current liabilities)	0.21	0.16	0.11	0.08	0.09	0.12	0.17
Debt to Asset	75%	76%	76%	89%	96%	99%	100%
Receivable Turnover (days of turnover)	164	124	84	43	43	43	43
Inventory Turnover (days of turnover)	35	31	31	29	20	20	19
DSCR	-0.77	-0.18	-0.15	-0.09	0.43	1.15	1.60

24. From 2016 to 2021, the operating margins are positive with a positive impact of the financial leverage coming from the profitability of the investments. However the net profit remains negative until 2020. In this year, a positive profit of GMD 591 million in 2020, and GMD 1,884 million in 2021. Therefore, the financial situation of the company clearly improves, with a positive DSCR in 2018, and superior to 1 in 2020 and 2021. Figure 5.2 shows the evolution of the debt service ratio from 2015 to 2021.

[10] These values are based on the study undertaken by AF-MERCADOS EMI called "Electricity Strategy and Action Plan" and finalized in August 2012.

Figure 5.2. Evolution of the DSCR from 2014 to 2021



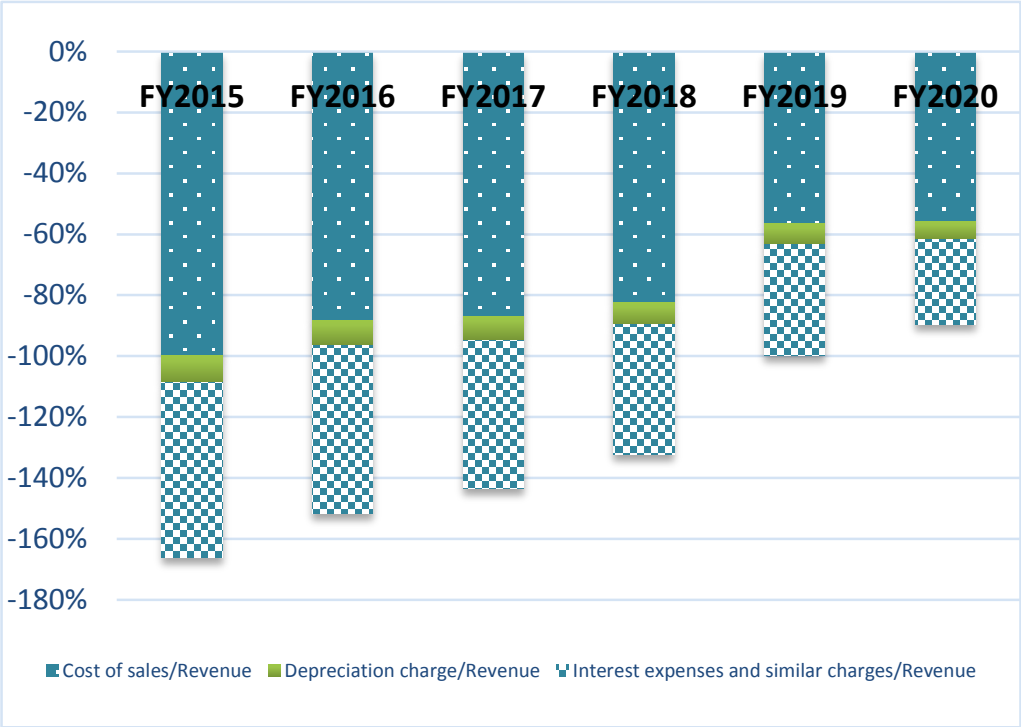
25. As shown in Table 5.11, the profit margins and the return on assets are negative from 2015 to 2019. Afterwards these ratios rise, showing that the profitability of NAWEC and its financial viability substantially improve. The table below shows the evolution of the profitability ratio for 2015–2021.

Table 5.11. Profitability Ratio for 2015–2021

Ratios	Projected						
	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021
Profit margin	-66%	-53%	-45%	-35%	-3%	7%	19%
Return on assets	-27%	-24%	-22%	-19%	-2%	5%	14%
Return on equity	-2937%	-3048%	-3123%	-2905%	-261%	872%	2753%
Operating margin	0%	12%	13%	18%	43%	44%	45%

26. From 2015 to 2018, NAWEC revenues cannot cover the expenses. This deficit is principally due to the cost of the sales, as HFO and LFO base load plants have poor specific consumption and low availability. However, from 2018 to 2022 the financial viability of NAWEC is highly improving due to the commissioning of OMVG and the impact of the GESP. Figure 5.3 shows the percentage of coverage expenses by revenues from 2015 to 2020.

Figure 5.3. Expenses with Respect to Revenues from 2015 to 2020



* The profit and losses account for the projections includes the administration and taxation costs in the cost of sales.

27. The volatility in fuel prices has an enormous effect on NAWEC's operational expenses and is not reflected in the tariffs as fuel costs are not passed through. Therefore, a sensitivity analysis on the fuel prices is pertinent. In the defined sensitivity scenario the prices of HFO and LFO increase 5 percent annually from 2015 to 2020 instead of decreasing as indicated in Table 5.9 above. Table 5.12 shows the gap between the base case and the sensitivity case for the DSCR and the profit: in this sensitivity scenario, a DSCR above 1 or a positive profit is not achieved even in 2021 and a positive profit (the extended model indicates that DSCR above one is achieved in 2023 and a positive profit in 2022).

Table 5.12. Sensitivity Analysis

Elements	Scenarios	2015	2016	2017	2018	2019	2020	2021
DSCR	Base case	(0.77)	(0.18)	(0.15)	(0.09)	0.43	1.15	1.60
	Sensitivity scenario	(0.79)	(0.27)	(0.29)	(0.28)	(0.03)	0.51	0.53
Profit	Base case	(2,010,646)	(2,086,702)	(2,137,902)	(1,988,777)	(178,592)	597,035	1,884,769
	Sensitivity scenario	(2,195,388)	(2,521,205)	(2,997,505)	(3,450,247)	(1,935,467)	(2,172,226)	(2,292,279)

28. The main factor that will insure the financial viability of the sector, including the outcomes of GESP, is the commissioning of Kaleta and Sambangalou hydro project and the interconnection of OMVG. Therefore, commissioning timeline of these infrastructures will substantially affect the future of NAWEC financial situation. In the defined sensitivity scenario the commissioning of Kaleta and the OMVG line are delayed about two years. In this case, the

energy to be provided by these new sources might be substituted with an equal capacity from alternative ones. The alternative sources are assumed to be HFO plants. It is assumed that it will be better to substitute the lack of imports from OMVG with a HFO plant than a renting diesel plant for the GBA. Meanwhile the hypothetic two year delay of the Kaleta and Sambangalou hydro plant with the OMVG line will be substituted by a 10 MW HFO plant in 2018 and a 20 MW HFO plant in 2020. Table 5.13 shows the reserve margin expected with and without the introduction of HFO alternative plants. It reflects deficits of generation in 2018 to 2020.

Table 5.13. Reserve Margins, with and without HFO Plants in Case of OMVG Delay

Scenarios	2015	2016	2017	2018	2019	2020
Without HFO plants	8%	15%	2%	-12%	-18%	-20%
With HFO plants	8%	15%	2%	7%	35%	24%

29. The delay would mean that the DSCR remains lower from 2019 onwards. The profit will not become positive until 2021. Table 5.14 shows the gap between the base case and the sensitivity case for the DSCR and the profit: in this sensitivity scenario.

Table 5.14. Sensitivity Analysis

Elements	Scenarios	2015	2016	2017	2018	2019	2020	2021
DSCR	Base case	(0.77)	(0.18)	(0.15)	(0.09)	0.43	1.15	1.60
	Sensitivity scenario	(0.77)	(0.18)	(0.22)	(0.02)	0.31	0.70	1.14
Profit	Base case	(2,010,646)	(2,086,702)	(2,137,902)	(1,988,777)	(178,592)	597,035	1,884,769
	Sensitivity scenario	(2,010,646)	(2,086,702)	(2,146,190)	(2,014,040)	(1,367,080)	(759,509)	1,356,127

Annex 6: Country Map IBRD 33409R