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Report No: ICR00005035

IMPLEMENTATION COMPLETION AND RESULTS REPORT

IDA-57870/IDA-D1140

ON A

CREDIT

IN THE AMOUNT OF SDR 4.4 MILLION

AND A GRANT

IN THE AMOUNT OF SDR 9.1 MILLION

TO THE

REPUBLIC OF THE GAMBIA

FOR THE

GAMBIA ELECTRICITY SUPPORT PROJECT

September 29, 2020

Energy & Extractives Global Practice

Africa West

CURRENCY EQUIVALENTS

(Exchange Rate Effective Aug 21, 2020)

Currency Unit	=	Gambian Dalasi (GMD)
52.4 GMD	=	US$1
SDR 0.71	=	US$1

FISCAL YEAR
July 1 - June 30

Regional Vice President:	Ousmane Diagana
Country Director:	Nathan M. Belete
Regional Director:	Riccardo Puliti
Practice Manager:	Charles Joseph Cormier
Task Team Leaders:	Chris Trimble, Manuel Jose Millan Sanchez
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ABBREVIATIONS AND ACRONYMS

AfDB	African Development Bank
ARAP	Abbreviated Resettlement Action Plan
CEN	Country Engagement Note
CPF	Country Partnership Framework
CPS	Country Partnership Strategy
DSCR	Debt Service Coverage Ratio
ECOWAS	Economic Community of West African States
EHS	Environmental Health and Safety
EIRR	Economic Internal Rate of Return
ESMP	Environmental and Social Management Plan
ESIA	Environmental and Social Impact Assessment
FIRR	Financial Internal Rate of Return
GBA	Greater Banjul Area
GDP	Gross Domestic Product
GERMP	Gambia Electricity Restoration and Modernization Project
GESP	Gambia Electricity Support Project
GoTG	Government of The Gambia
GRM	Grievance Redress Mechanism
GWh	Giga Watt Hour
HFO	Heavy Fuel Oil
IDA	International Development Association
IFI	International Financial Institution
IRRs	Economic and Financial Internal Rates of Return
IPP	Independent Power Producer
JPF	Joint Program Framework
Km	Kilometer
KPI	Key Performance Indicator
kV	Kilo Volt
kWh	Kilo Watt Hour
LFO	Light Fuel Oil
M&E	Monitoring and Evaluation
MoFEA	Ministry of Finance and Economic Affairs
MOU	Memorandum of Understanding
MV	Medium Voltage
MW	Mega Watt
MWh	Mega Watt Hour
NAWEC	National Water and Electricity Company
NPVs	Net Present Values
OHS	Occupational Health and Safety
O&M	Operations and Maintenance

OMVG	Gambia River Basin Development Organization (in french, *Organisation pour la Mise en Valeur du fleuve Gambie*)
PAD	Project Appraisal Document
PAGE	Program for Accelerated Growth and Employment
PAP	Project Affected People
PDO	Project Development Objective
PIU	Project Implementation Unit
PMT	Project Management Team
PPA	Power Purchase Agreement
PURA	Public Utilities Regulatory Authority
SC	Service Contractor
SCADA	Supervisory Control and Data Acquisition
SOEs	State-owned Enterprises
T&D	Transmission & Distribution

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DATA SHEET

BASIC INFORMATION

Product Information

Project ID	Project Name
P152659	Gambia Electricity Support Project
Country	**Financing Instrument**
Gambia, The	Investment Project Financing
Original EA Category	**Revised EA Category**
Partial Assessment (B)	Partial Assessment (B)

Organizations

Borrower	Implementing Agency
Republic of The Gambia	National Water and Electric Company Ltd (NAWEC), NAWEC

Project Development Objective (PDO)

Original PDO

The Project Development Objective is to increase the availability and reliability of electricity supply for existing customers.

FINANCING

	Original Amount (US$)	Revised Amount (US$)	Actual Disbursed (US$)
World Bank Financing			
IDA-D1140	6,040,000	6,039,768	6,196,239
IDA-57870	12,460,000	12,345,643	12,661,643
Total	**18,500,000**	**18,385,411**	**18,857,882**
Non-World Bank Financing			
Borrower/Recipient	0	0	0
Total	**0**	**0**	**0**
Total Project Cost	**18,500,000**	**18,385,411**	**18,857,882**

KEY DATES

Approval	Effectiveness	MTR Review	Original Closing	Actual Closing
10-May-2016	16-Aug-2016	07-May-2018	31-May-2021	31-Mar-2020

RESTRUCTURING AND/OR ADDITIONAL FINANCING

Date(s)	Amount Disbursed (US$M)	Key Revisions
23-Mar-2017	2.00	Change in Results Framework Change in Components and Cost
31-Aug-2017	10.42	Change in Results Framework Change in Components and Cost
14-Mar-2019	18.97	Change in Results Framework Change in Components and Cost Change in Loan Closing Date(s) Change in Safeguard Policies Triggered Change in Implementation Schedule

KEY RATINGS

Outcome	Bank Performance	M&E Quality
Satisfactory	Highly Satisfactory	Substantial

RATINGS OF PROJECT PERFORMANCE IN ISRs

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US$M)
01	23-Sep-2016	Satisfactory	Satisfactory	0
02	31-Mar-2017	Satisfactory	Satisfactory	2.00
03	16-Oct-2017	Satisfactory	Satisfactory	12.46
04	29-Jun-2018	Satisfactory	Satisfactory	17.69
05	09-Jan-2019	Satisfactory	Satisfactory	18.76
06	06-Aug-2019	Satisfactory	Satisfactory	18.97

SECTORS AND THEMES

Sectors

Major Sector/Sector	(%)
Energy and Extractives	**100**
Non-Renewable Energy Generation	38
Public Administration - Energy and Extractives	38
Energy Transmission and Distribution	24

Themes

Major Theme/ Theme (Level 2)/ Theme (Level 3)	(%)
Urban and Rural Development	**100**
Urban Development	100
Urban Infrastructure and Service Delivery	100
Environment and Natural Resource Management	**25**
Climate change	25
Mitigation	25

ADM STAFF

Role	At Approval	At ICR
Regional Vice President:	Makhtar Diop	Ousmane Diagana
Country Director:	Louise J. Cord	Nathan M. Belete
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I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

A. CONTEXT AT APPRAISAL

Context

1. **Country context.** The Gambia is the smallest country in Africa and is bordered on all sides by Senegal, with the exception of a coast along the Atlantic Ocean spanning approximately 60 km. In 2016, its population was about 1.8 million and gross domestic product (GDP) per capita was estimated at US$1,443. The Gambian economy relies primarily on tourism, agriculture and remittances which has made it highly vulnerable to external shocks. The Ebola outbreak in 2014 in neighboring countries and a low rainfall season coupled with poor fiscal and monetary policy depressed real GDP significantly at the time of appraisal. A rising fiscal deficit led to an increase in public debt from 83.3 percent of GDP in 2013 to 108 percent of GDP in 2015. Under the Jammeh administration, which had been in place for the past 22 years, government finances were under significant strain with heavy reliance on costly domestic markets and substantial contingent liabilities from state-owned enterprises (SOEs), including the national utility (National Water and Electricity Company – NAWEC) amounting to 5 percent of GDP in 2014. GDP growth rate fell from 4.3 percent in 2015 to 2.2 percent in 2016.

2. **The Gambia is classified as a Fragile, Conflict and Violence (FCV) Country**. At appraisal, The Gambia was on the verge of a financial, economic and social crisis. Currency exchange policies in place overvalued the Gambian Dalasi with currency controls since 2013 that constrained the availability of foreign exchange, discouraged private investment and strained the capacity to service public sector debt. Market confidence had deteriorated and government borrowing interest rates were rising further undermining economic growth prospects. Although the share of the population in poverty remained constant between 2010 and 2015 at 48 percent, the absolute numbers of people in poverty increased from 790,000 to 930,000 people. With a non-performing economy, outmigration surged from 0.17 percent of the population per year seeking asylum in the European Union in 2013 to 0.6 percent in 2015. Estimated at 8.8 percent of the population in 2013, the stock of Gambian migrants abroad was among the highest in the world.

3. **Sector context.** In 2015, the energy sector was characterized by insufficient generation capacity, over dependency on expensive fuel generation, inadequate transmission and distribution (T&D) networks, and a poorly performing utility. While it was challenging to gather accurate sector performance data given the FCV context, several issues were clear. In the Greater Banjul Area (GBA), only 62 MW of the 102 MW installed generation capacity were available as a result of poor maintenance, from two heavy fuel oil (HFO) thermal power plants: Kotu (41 MW) and Brikama (47 MW). Load shedding was a daily occurrence and electricity was only available for 10 to 12 hours per day. With several HFO plants unavailable in 2015, NAWEC was forced to resort to the use of expensive emergency power diesel engines for baseload which raised diesel consumption from 1 million liters in 2014 to 6 million liters in 2015. Technical and non-technical network losses were very high at 25 percent. The power utility, NAWEC, had suffered three consecutive years of losses leading to eroded capital and liabilities amounting to four times its annual revenue. Private sector participation in the energy sector was limited. Under the Jammeh administration, the energy sector was ruled based on ad hoc political decisions where the private sector could not freely participate, the legal framework was uncertain and currency exchange policy was unreliable. The first Independent Power Producer (IPP) plant by Global Electrical Group Ltd entered into a power purchase agreement (PPA) with NAWEC in 2006 for a 26 MW plant in Brikama but operations were subsequently transferred to NAWEC in 2013.

4. **Project background.** The Energy Roadmap and Action Plan developed for The Gambia in 2015 outlined a number of short- and medium-term investments to restore sector performance. These investments included increasing generation and improving the T&D network in the short term with new HFO plants and network improvements to reduce losses, and investments in the medium term to access cheaper electricity imports through planned regional interconnections. The Arab Fund for Economic Development in Africa and the OPEC Fund for International Development had invested in a 11.1 MW HFO plant to be commissioned in 2017 at Kotu. The Islamic Development Bank was completing procurement for two additional 10 MW HFO plants to be commissioned in Brikama. The Government of India was preparing a US$22.5 million T&D rehabilitation project. The Gambia River basin Development Organization (Organisation pour la Mise en Valeur du fleuve Gambie, OMVG) Interconnection Project (P146830) – financed by the Bank and several other donors – for the construction of an interconnection transmission line linking The Gambia, Guinea, Guinea-Bissau and Senegal was expected to allow The Gambia to import energy that would significantly decrease the average cost of supply. The Gambia Electricity Support Project (GESP) was designed to complement to the aforementioned activities, and was an opportunity for the Bank to engage in the energy sector.

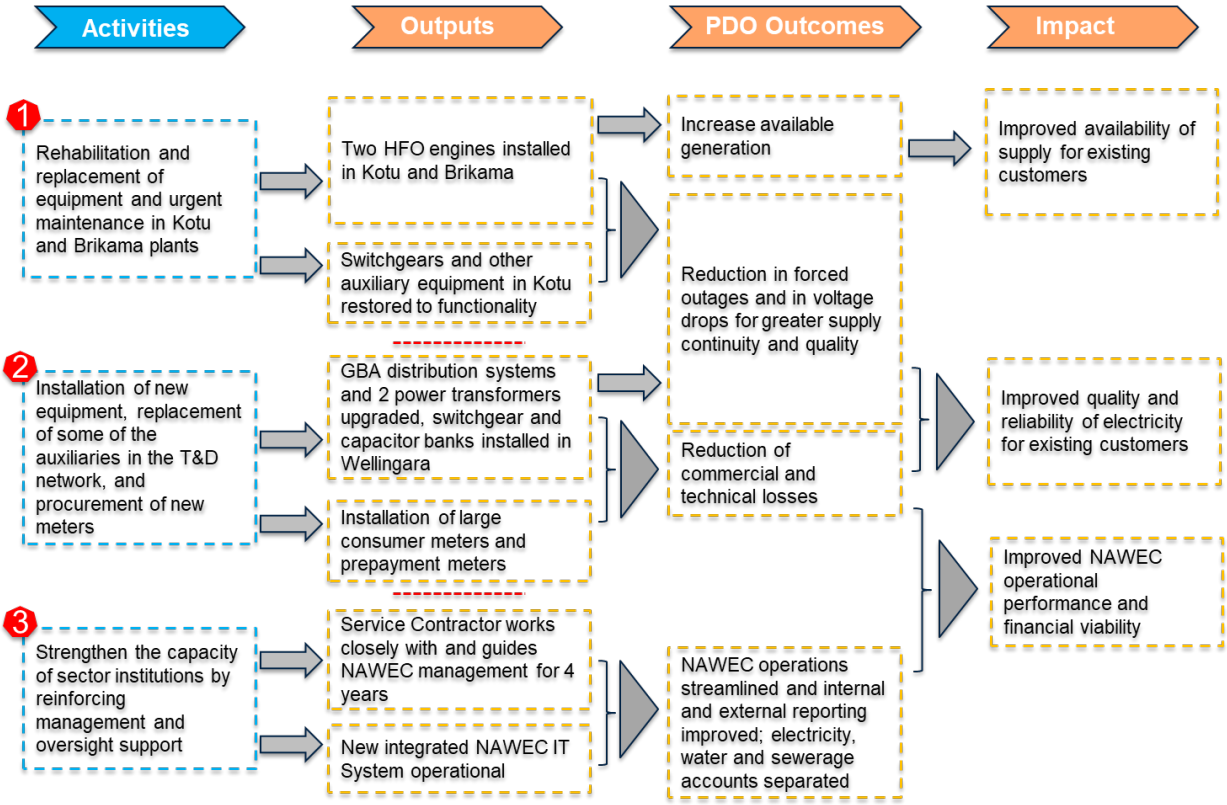
5. **Rationale for World Bank support and contribution to the country's higher-level objectives**. The GESP was a complementary operation to the OMVG Interconnection Project, aiming to prepare the sector to enable the Government of The Gambia (GoTG) to take advantage of low-cost imports for baseload capacity. The project was well aligned with the Gambia's Program for Accelerated Growth and Employment (2012-2015) – PAGE, which outlined the GoTG's development agenda. The GESP was in line with the second pillar of the PAGE focusing on improving and modernizing infrastructure as well as the general objective to increase infrastructures investments that addressed the country's key shortcomings in view of creating a more enabling business environment. The project was also consistent with the objectives of the Second Joint Partnership Strategy of the World Bank Group and the African Development Bank (AfDB) for FY2013-2016 (JPS-2) discussed by the Bank's Board in March 2013[1]. Pillar 1 of the JPS-2, in particular, had a focus on developing supporting infrastructure in the energy and water sectors. As an important engine for economic growth, on which both poverty reduction and shared prosperity depended, the project's support to strengthening the energy sector to boost economic activity made it a critical operation. It was not only expected to support the government in achieving its goal to increase access to reliable and competitively priced electricity but also help improve NAWEC's financial position by improving billing rates and bill collection rates.

Theory of Change (Results Chain)

6. The GESP project was a timely project to support the GoTG in addressing key essential investments needed to stabilize the electricity sector and set the stage for more profound reforms to improve the operational and financial viability of the energy sector in the medium to long term. The Project Development Objective (PDO) was to increase the availability and reliability of electricity supply for existing customers. Figure 1 illustrates the results chain showing how the generation increase and loss reduction investments led to securing the availability and reliability of electricity for existing customers. Note a theory of change was not developed during appraisal, since it was not a requirement at the time, but has been prepared ex-post.

[1] Report № 72140-GM, March 11, 2013.

Figure 1 – Theory of Change at project appraisal



Project Development Objectives (PDOs)

7. The PDO as stated in the Financing Agreement was to "increase the availability and reliability of electricity supply for existing customers".

Key Expected Outcomes and Outcome Indicators

8. The key outcomes expected from the GESP were (a) a direct benefit to existing electricity consumers, including households, businesses, public entities and sector institutions through the enhancement of service quality with improvements in available generation and a reduction in losses; and (b) a benefit to NAWEC and PURA from institutional support aiming to improve sector management and laying the foundation for more in depth sector reform in the future.

9. The outcome indicators identified to measure progress towards achieving the objectives were (i) the number of direct project beneficiaries, with monitoring of the percentage of female beneficiaries, (ii) the amount of electricity generated from capacity constructed or rehabilitated under the project (in GWh), and (iii) the percentage of electricity losses reduced per year in the project area.

10. There were six intermediate indicators to assess progress towards achieving project objectives. These indicators assessed the amount of generation capacity for conventional generation constructed under the project (in MW), the number of kilometers of distribution lines constructed or rehabilitated under the project, the number of installed meters under the project, the signing of Service Contractor (SC)[2], separation of NAWEC's commercial and financial accounts for electricity, water and sewerage, and the percentage of grievances processed from total grievance received on the project.

Components

11. The project components for the GESP at approval were as follows:

12. **Component 1: Expansion of available generation capacity at Kotu and Brikama (US$7 million).** These investments were to improve NAWEC's generation capacity and efficiency in the Kotu and Brikama power plants through the rehabilitation and replacement of critical equipment, provision of critical spare parts and financing of urgent maintenance. Specific investments included (a) subcomponent 1 - the purchase and installation of two new HFO engines at Kotu and Brikama, (b) subcomponent 2 - the rehabilitation of an HFO engine at Brikama power plant, and (c) subcomponent 3 - the rehabilitation of damaged equipment to restore functionality, provide operational reliability and improve plant efficiency at Kotu power plant.

13. **Component 2: Reduction of technical and commercial losses in the GBA (US$4.5 million).** This component aimed to finance investments in the transmission and distribution network in the GBA that would reduce forced outages and diminish voltage drop thus improving the continuity and quality of supply. Specific investments included (a) subcomponent 1 – the reduction of technical losses through upgrading and rehabilitating the T&D network with new transformers and the replacement of conductors, distribution feeder pillars and other auxiliaries, and (b) subcomponent 2 – the reduction of commercial losses by improving metering.

14. **Component 3: Institutional Strengthening and Project Implementation Support (US$7 million).** This component aimed to finance capacity building and project management activities. Investments included (a) subcomponent 1 – a four-year service contract for NAWEC management support to reform the utility and improve its technical, financial and managerial capacity for improved operational performance, (b) subcomponent 2 – installation of a new IT system to streamline NAWEC's operations, improve internal and external reporting, and process separation of electricity, water and sewerage accounts, (c) subcomponent 3 – financing of an owner's engineer to supervise execution of components 1 and 2 and procurement support to the Project Implementation Unit (PIU), and (d) subcomponent 4 – project implementation support to finance capacity building activities, strategic studies to guide NAWEC reform and operating costs for project management.

[2] A four-year contract to advise NAWEC management across the business technical, financial and commercial etc.

B. SIGNIFICANT CHANGES DURING IMPLEMENTATION

Revised PDOs and Outcome Targets

15. Taking into account that The Gambia is an FCV country, project implementation took a flexible and agile approach. Several project restructurings were processed to support the government responses to changing needs, including an energy crisis inherited by the new government in 2017. The modifications in the activities financed and the project components were fully in line with the original PDO. There were therefore no changes to the PDO and outcome targets during implementation.

Revised PDO Indicators

16. The PDO indicators were modified to (i) better capture the impact of the project with more ambitious targets, and (ii) reinforce monitoring of project activities with more tailored indicators. The Electricity generated from capacity constructed or rehabilitated under the project (GWh) indicator was revised under the second and third project restructurings in order to increase the targets as a result of the addition of fuel purchase and cross-border import capacity investments. The final target increased from 118 GWh at appraisal to 317 GWh. The Electricity losses per year (percentage) indicator was revised to slightly decrease the target from 21 percent of losses to 22 percent of losses in light of the reduction of scope of commercial loss reduction activities. A new indicator was created under the second project restructuring to track import capacity and then revised under the third project restructuring to increase the target from 3,300 kVA to 4,466 kVA reflecting satisfactory implementation. The indicators of number of direct project beneficiaries and percentage of female beneficiaries' indicators were not revised.

Table 1. Revised PDO Indicators

Original PDO Indicators	Revised PDO Indicators
Electricity generated from capacity constructed under the project (GWH)	- **2nd restructuring**: *Annual generation capacity constructed or rehabilitated under the project* increased from target of 118 GWH per year to 139 GWH per year - **3rd restructuring:** *Electricity generated under the project (from capacity constructed or rehabilitated, or fuel purchased)* target increased from 139 GWH to 317 GWH
Electricity losses per year (percentage)	- **3rd restructuring:** New *Electricity losses per year in the project area* decreased from 21 percent to 22 percent

N/A	- **2nd restructuring:** New *import capacity* indicator added with a baseline of 0 kVA and an end target of 3,300 kVA - **3rd restructuring:** *Import capacity* indicator target increased from 3,300 kVA to 4,466 kVA

Revised Components

17. **First project restructuring.** In response to an urgent request for support to the new government, the following changes were processed in March 2017:

a. **Component 1** was renamed to "*increase in electricity capacity and supply*" with the following changes designed to deliver an immediate boost to electricity supply: subcomponent 2 was modified to finance the rehabilitation and repair of additional engines, financing for subcomponent 3 for the rehabilitation activities in Kotu was decreased to 0 and put on hold until additional sources of financing could be identified, and a subcomponent 4 was created for fuel purchase with an allocation of US$8 million.

b. **Component 2** was reduced in scope and financing, with subcomponent 2.1 reduced with the removal of the upgrading and rehabilitation of existing distribution systems in the GBA, the substitution of switchgear in Wellingara substation, and the installation of capacitor banks in Wellingara and Mile 5 for reactive power compensation which were cancelled. This meant the network upgrades (required to improve quality of service and reduce losses) were delayed until financing became available through a new project that was under preparation, the Gambia Electricity Restoration and Modernization Project (GERMP; P163568).

c. **Component 3**, its subcomponent 2 financing for the new IT system was decreased to 0 and transferred to the GERMP, which was already under preparation at the time of the restructuring. Subcomponents 3 and 4 for the owner's engineer and project implementation were decreased.

18. **Second project restructuring.** A second project restructuring was processed in August 2017 with the following changes:

a. **Component 1.** An additional US$3 million was allocated to finance the cross-border lines, bring back auxiliary equipment at Kotu to help stabilize supply, and full cost of replacement engine at Brikama.

b. **Component 2 and Component 3** were reduced by an amount of US$3 - the corresponding amount allocated to Component 1, in particular, cost savings for Component 2 and the cancelation of the service contractor and owner's engineer contracts for component 3.

Component 3 was renamed to "*Project implementation support*", but still included some TA to advise on the financial restructuring of NAWEC.

19. **Third project restructuring.** A third project restructuring was processed in March 2019 with the following changes:

a. **Safeguards policy** OP 4.12 "Involuntary Resettlement" was triggered.

b. **Project closing date** was brought forward from May 31, 2021 to March 31, 2020.

Rationale for Changes and Their Implication on the Original Theory of Change

20. The transition of political power a few months after the effectiveness of the GESP had a significant impact on the evolution of the project. The depth of challenges in the energy sector became increasingly clear and the project became an important vehicle to address the most critical issues and mitigate long-term impact of the ongoing crisis. In particular, the three different project restructurings were the consequence of a flexible and agile approach over the project lifecycle to respond to changing needs on the ground. The rationale for each of the restructuring are presented below:

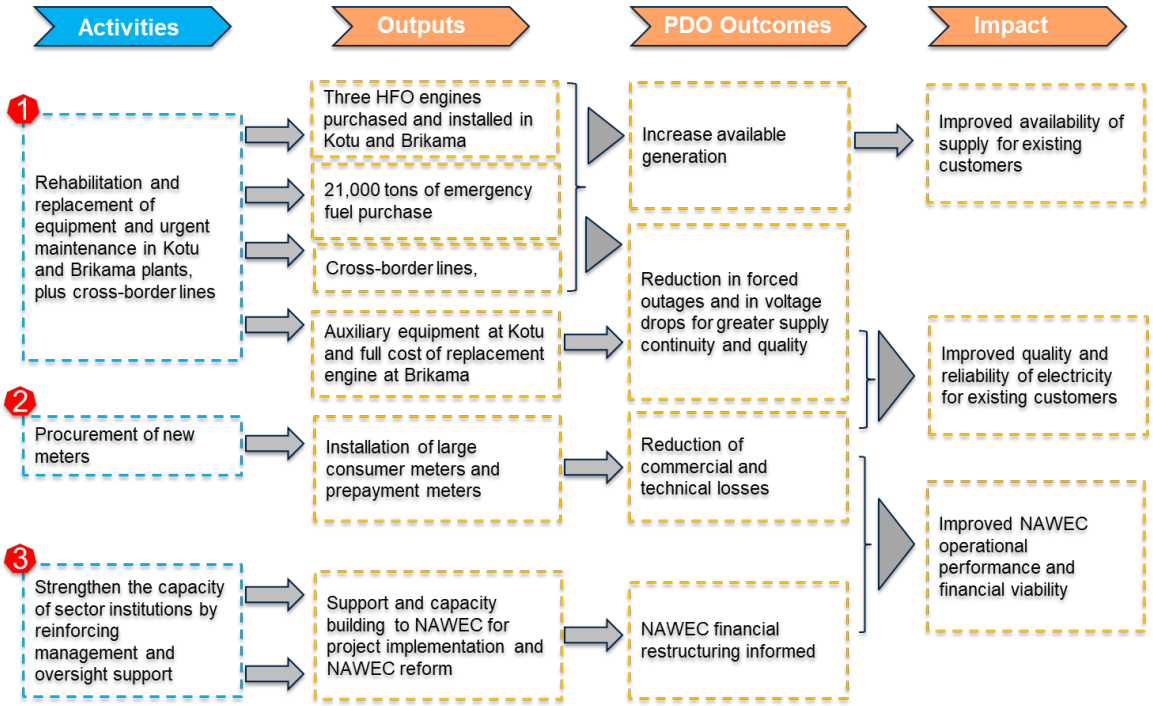
21. **Rationale for the first project restructuring**: following the historical transition to a democratically elected government ending the 22-year reign of former President Jammeh in December 2016, The Gambia was faced with an emergency in the sector after the existing fuel supplier was forced to terminate its contract due to non-payment. With only three weeks' worth of fuel supply for electricity generation in stock and generation engines breaking down (only 40MW were available against 80MW peak demand), the GoTG requested assistance to use the GESP finance three months' worth of fuel and to rehabilitate additional engines through the GESP.

22. **Rationale for the second project restructuring**. The second project restructuring a few months later in August 2017 enabled the GESP to contribute significantly to supporting the emergency plan developed by the GoTG to improve the availability and reliability of electricity supply in the short to medium term. In particular, a power purchase agreement (PPA) was signed with the Senegal utility, SENELEC, for the purchase of up to 10 MW through a number of 30 kV cross-border lines requiring minimal investment to connect the two networks. The GoTG requested support to finance up to 2 of the cross-border lines through the GESP. The restructuring also prioritized activities to stabilize supply by bringing back upgrades to Kotu auxiliary equipment, and with agreement with the Borrower, other activities were switch to the GERMP, which was already under preparation at the time of the restructuring.

23. **Rationale for the third project restructuring.** Following the construction of the two cross-border lines, there were unforeseen safeguards impacts on the ground including damaged and trees cut. The project was brought back into compliance through the preparation of an Abbreviated Resettlement Action Plan (ARAP – see Section IV.B for additional details), and OP4.12 was triggered as a result. At the time of the restructuring, the GESP project had disbursed 99 percent of the financing and nearly achieved fully the PDO, so the project closing date was brought forward accordingly, from May 31, 2021 to March 31, 2020.

24. Overall impact on the theory of change was limited given that the adjustments remained within the original PDO and relevant indicators were achieved. The PDO remain unchanged through the different three project restructurings since these restructurings, particularly the first and second contributed to increase of the availability and reliability of electricity supply for existing customers. As such, the first restructuring was essential to support the new GoTG in the provision of fuel to address the emergency situation, while the second was key to expand the cross-border interconnection to support the emergency plan developed by the GoTG to address the most essential basic investments to improve the availability and reliability of electricity supply in the short to medium term. The updated Theory of Change, after restructurings are taken into account, is presented in Figure 2.

Figure 2: Updated theory of change, after three project restructurings



25. Preparation of Gambia Electricity Restoration and Modernization Project (P163568) in parallel to the restructurings helped to minimize the impact of delaying certain activities. Activities to upgrade to the distribution network and support to utility were shifted to the new GERMP, which was under implementation in parallel with the implementation of the GESP, helping to minimize the impact of the delays. The financing for GERMP was approved in May 2018 and the project has been performing satisfactorily.

II. OUTCOME

A. RELEVANCE OF PDOs

Assessment of Relevance of PDOs and Rating

Rating: Substantial

26. The Gambia had neither a Country Partnership Strategy (CPS) nor a Country Partnership Framework (CPF). Instead, a Country Engagement Note (CEN)[3] was prepared for the FY18-FY21 period in recognition of the need for critical short-term assistance to address macro-fiscal challenges while a Systematic Country Diagnostic (SCD) is under preparation. The CEN and SCD are then together expected to inform a CPF in 2021.

27. The relevance of PDO to CEN for The Gambia is rated Substantial. The PDO was fully aligned with one of the two objectives of the CEN (to restore macroeconomic stability and stimulate inclusive growth). It was also fully aligned with one of the eight strategic priorities of the GoTG's 2018-2021 National Development Plan (building our infrastructure and restoring energy services to power our economy).

28. As a key factor to address bottlenecks to growth and services, strengthening access to energy is one of the critical activities to achieve these objectives. The GESP PDO responded to this need by improving the delivery of energy services and thereby creating an enabling environment for growth. The PDO enabled a flexible approach that contributed not only to support the GoTG address the emergency situation, but also to the promotion of regional trade through the financing of the 30 kV cross-border lines, addressing even better results than those envisioned at appraisal. The project supported significant investments in the sector that have helped stabilize supply and laid the foundations for the entry of other donors into the sector.

[3] Report No. 123654-GM, June 12, 2018.

29. Indeed, the GESP was a key contributor to the improvement of the sector in the face of political transition and a severe energy crisis. The transition of power from the Jammeh administration to a new democratically elected government dramatically shifted the political context within which the project was implemented. As a result, increased access to sectoral information showed the adverse effects of the political crisis, indicating that significant investments and technical assistance were required to ensure both the operational and financial viability of the sector. In addition, with a new government in place, the population's expectations for quality electricity service were high and demonstrations were held in the capital city to protest against poor quality of energy services. As one of the few projects in the sector at that time and considering that the project team had built strong relationships with local counterparts, GESP was uniquely placed to address some of the most critical and urgent needs to stabilize the sector. Through the initial project restructuring, the project was able to increase electricity generation from target 118 GWh to 317 GWh, to increase new import capacity from a baseline of 0 kVA and an end target of 4,466 kVA, and to reduce electricity losses per year from 21 percent to 19 percent.

30. However, there were moderate shortcomings in the relevance of the PDO to the CEN. In particular, improving the financial viability of NAWEC could have been included in the PDO given the activities in this area, and overall fiscal risk posed by NAWEC and importance of addressing this issue to ensure macroeconomic stability.

31. The PDO was consistent with and remained highly relevant to the GoTG's past and present objectives to revitalize and transform the economy through satisfactory investment in infrastructure. The project supported significant investments in the sector that have helped stabilize supply and laid the foundations for the entry of other donors into the sector.

B. ACHIEVEMENT OF PDOs (EFFICACY)

Assessment of Achievement of Each Objective/Outcome

Rating: High

32. As summarized in Table 2, the project achieved or exceeded its PDO indicators, as measured through (i) electricity generated under the project (either capacity constructed or rehabilitated, or fuel purchased); (ii) import capacity; and (iii) electricity losses per years in the project area. Achievement of the PDO is presented in the two main parts of the PDO (i) availability of electricity; and (ii) reliability of electricity.

33. **Achievement of the PDO: Availability of electricity:** under Component 1, the increased availability of electricity for existing customers was achieved in the GBA through restored capacity of 21.8 MW, as well as emergency support through the purchase of 21,000 tons of fuel. In the provinces, the cross-border lines enabled the import capacity being achieved of 6,875 kVa, 153% of the target value of 4,466 kVA, enabling the provision of 24/7 access to electricity in villages across the North Bank for the first time. Combined, the project achieved its target to generate 314 GWh over the life of the project, on par with the target value.

34. **Achievement of the PDO: Reliability of electricity:** network stability significantly improved as a result of the investments under GESP. The increase in generation capacity helped the system to reduce the number of voltage drops and, therefore, system wide blackouts. In absence of the availability of classic indicators used to measure the frequency or duration of blackouts, T&D losses were used as a proxy for service quality. The procurement of prepayment meters under Component 2 allowed NAWEC to shift existing customers from old and faulty credit meters, to new calibrated prepayment meters, helping to significantly reduce losses. Taken together, these activities substantially reduced T&D losses from a baseline of 25 percent in 2016, to 19 percent in 2019, significantly surpassing the target of 22 percent. These results helped improve the financial viability of NAWEC. For example, as a result of reduced technical and commercial losses, generation has grown at a rate of 6 percent per annum over the project life, while cash collected has grown at over 10 percent per annum.

35. With respect to intermediate indicators, there were minor shortcomings in the targets for two of the intermediate indicators, but these had no major impact on achievement of PDO nor of the main outcome indicators. The indicator for the number of kilometers of distribution lines constructed or rehabilitated under the project was achieved at 62 percent with 31 km against a target of 50 km. It was originally expected that the project would support the construction of up to 4 cross-border lines of a combined length estimated at 50 km. During implementation, given that the needed physical investments on the Senegal side of the border to enable the connection were delayed, only two of the cross-border lines initially planned were built. The targets for the indicators on number of installed meters under the project, percentage of grievances processed from total grievances received on the project, and number of staff trained in the PIU were all fully achieved.

36. The project's strong results despite adjustments to the project activities and the political transition enabled early closing of the project. The results outlined below, and the timely implementation of the project were the result of close collaboration between the GoTG, NAWEC management and the World Bank. The strong commitment of all parties and ability to be adaptable and flexible allowed the project to successfully address critical short- and medium-term challenges in the sector. It should be noted that the changes of outcome targets or project restructurings did not trigger an application of split rating, since the indicators added or changed during the various restructurings were more ambitious that those used at the outset.

Table 2. Project Outcomes

PDO	Indicators	Baseline	Target Value	Actual Value	Achievement
To increase the availability and reliability of electricity supply for existing customers	Direct project beneficiaries - (Percentage female)	0 (51)	570,000 (51)	744,432 (51)	130 %
	Electricity generated under the project (from capacity constructed or rehabilitated, or fuel purchased)	0 GWh per year	317 GWh	314 GWh	99 %
	Import capacity	0 kVA	4,466 kVA	6,875 kVA	153 %
	Electricity losses per year in the project area	25 %	22 %	19 %	200 %
	Intermediate Indicators				
	Generation capacity of conventional generation constructed under the project	0 MW	22.2 MW	21.8 MW	98 %
	Distribution lines constructed or rehabilitated under the project	0 km	50 km	31 km	62 %
	Installed meters under the project	0	23,000	23,000	100 %
	Percentage of grievances processed from total grievances received on the project	0	100	100	100 %
	Staff trained in the PIU	0	10	10	100 %

Justification of Overall Efficacy Rating

37. The PDO to "*increase the availability and reliability of electricity for existing customers*" was achieved with all three of the main outcome indicators fully achieved or exceeded. The target for the indicator measuring number of project beneficiaries was also exceeded. Not only was the project critical to improve the electricity supply, but also it helped identify key investments needed to address current and future demand and improve sector performance. This diagnostic informed the design and preparation of the GERMP currently under implementation. As a result, the efficacy in achieving the PDO is rated 'High'.

C. EFFICIENCY

Assessment of Efficiency and Rating

Rating: Substantial

38. The economic and financial analysis for GESP was conducted ex-post to review the Economic and Financial Internal Rates of Return (IRRs) and Net Present Values (NPVs) of the project. The methodology followed is the same as at appraisal stage, but the underlying data is updated using the actual values realized in the three years of implementation, as well as accounting for the changes in project activities through the restructurings. Given the different nature of activities financed through the project – short-term emergency fuel supply, and as well as long-term investments - the results of the ex-post economic and financial analysis are presented with and without the fuel supply included. A detailed analysis is presented in Annex 4.

39. The main benefit of Component 1 was the increase in electricity production, through the increase in available capacity energy available to dispatch onto the grid. The main benefit of Component 2 was the investments in prepayment meters, which help to reduce in technical and non-technical losses to 19 percent in 2019. As during project appraisal, these economic benefits are valued using a Willingness to Pay (WTP) approach.

40. **Economic performance**. Economic analysis at project appraisal concluded that the EIRR for GESP would be 23.1 percent, and the NPV was estimated to be US$29.4 million. Based on the actual values, the EIRR at closing is 29.7 percent – 6.6 percentage points above expectations at appraisal – and NPV is US$12.7 million. The EIRR when fuel purchase is excluded is 11.4 percent, lower, but still above the 6 percent hurdle rate. This lower value reflects the lower (40-50 percent) utilization rate of the engines financed through the GESP, which is based on the first 2-3 years of operations. This may be a conservative assumption and the utilization rate could increase towards the 70 percent initially assumed.

41. **Financial performance**. Financial analysis at project appraisal concluded that the FIRR for GESP would be 45.1 percent, with an NPV was estimated to be US$79.6 million. Based on the actual values, the FIRR at closing is 27.7 percent and NPV is US$12.0 million. While the achieved values are lower than estimated at appraisal, they are still well above the hurdle rate. The main reason they are lower is that tariffs did not increase by 5 percent per year as assumed during project appraisal (they are the same in 2020 as they were in 2015), and a more conservative assumption was taken for the ICR financial analysis (tariffs remain fixed). When fuel is excluded, the FIRR drops to 10.6 percent, for similar reasons explained above for the EIRR excluding fuel.

42. The ex-poste efficiency analysis demonstrates that the project delivered economically and financially viable activities. Despite a lower utilization rates driven in part by lack of maintenance, the project's performance remains highly viable. The sensitivity analysis shows that the results are robust even when taking extreme assumptions on WTP, utilization rates, and fuel prices. However, they underscore the importance of NAWEC maintaining its engines to avoid any further breakdowns, and to coordinating closely with PURA to ensure tariffs are updated regularly to reflect global oil prices.

Table 3. Comparison of Economic Analysis IRR Results (percent)

		PAD Projections (2016)	At closing (2020)	Difference
Economic	*All investments*	23.1	29.7	+6.6
	Excluding fuel	n/a	11.4	
Financial	*All investments*	45.1	27.7	-17.4
	Excluding fuel	n/a	10.6	

D. JUSTIFICATION OF OVERALL OUTCOME RATING

Rating: Satisfactory

43. The overall outcome rating for GESP is Satisfactory. The project's design was well aligned with the context, capacity and needs. The PDO remains highly relevant at the closing of the project. The PDO was well achieved with strong adaptability to local context and in the process, economic and financial value of the project increased. Despite low capacity and a challenging socioeconomic and political context, there were no shortcomings that affected the achievement of the PDO.

E. OTHER OUTCOMES AND IMPACTS (IF ANY)

Gender

44. A gender screening of the project was conducted. Input was provided to the PAD with proposed gender-entry points around developing a capacity building training on gender and energy for NAWEC under Component 3, and analyzing behavioral issues around non-technical losses. The potential for generating sex-disaggregated individual level data in the project activities was investigated and relevant gender dimensions considered in the ESMP. NAWEC received gender and energy sector related training from the World Bank, to facilitate mainstreaming of gender and social dimensions in the project various activities and learnt from interventions with regards to gender related to consumer interface on non-technical losses, service delivery and expansion.

Institutional Strengthening

45. As the first Bank energy project in The Gambia, GESP was uniquely placed to build capacity within the utility and other stakeholder institutions. The project team built a close collaborative relationship with the Government, NAWEC management, and donors present in the sector. The analytical work supported under GESP to restructure NAWEC's debt entailed several deep-dive workshops and multiple support missions creating opportunities to share knowledge and build expertise across the board. Several capacity building activities were supported in procurement (beyond the PIU) and safeguards (environmental and social (E&S) mainstreaming activities) including "on the job" training through the support of international consultants, and through targeted training courses. These activities helped to lay the foundational work that later enabled the implementation of a Development Policy Operation (DPO) series and the development of the current extensive energy portfolio in The Gambia. The impact is not only on the energy sector but has wider reach with lasting impact in the collaboration of different ministries (Finance, Land, Energy and Environment) and the general management of state-owned enterprises.

Mobilizing Private Sector Financing

46. There were no activities to mobilize private sector financing. It should be noted that the operational improvements and activities to reinforce the capacity of the utility were essential to begin to rebuild confidence in the sector and lay the foundations to increase private sector participation in the sector in the future.

Poverty Reduction and Shared Prosperity

47. As a small and fragile country highly dependent on tourism, the potential socioeconomic impact of investments in the energy sector in The Gambia is tremendous. Throughout the project's implementation period, the impact of project activities in stabilizing energy supply, lowering blackouts, increasing electricity availability has had a tangible effect in boosting the economy. The cross-border lines alone have enabled the provision of 24/7 access to electricity in villages across the North Bank for the first time with strong subsequent impact on living standards. Further, the foundational sector and policy work completed has enabled the expansion of activities in the sector to move towards the highly tangible goal of universal access with the development of the regional access project and the impact of the OMVG Interconnection Project (P146830; OMVG).

Other Unintended Outcomes and Impacts

48. GESP was a flagship project in The Gambia and enabled the identification of priority needs in the sector. Together with the OMVG project, which has been under preparation in parallel, the project has contributed to the definition of a strong energy program and led to an expansion in investments including the regional access project by ECOWAS, the GERMP, and a series of DPOs with an energy focus including (i) The Gambia Emergency DPO (P163285); (ii) The Gambia First Fiscal Management, Energy and Telecom Reform Development Policy Financing (P164545); and (iii) The Gambia 2nd Fiscal Management and State-Owned Enterprise Performance Development Policy Financing (P173150). Investments and technical assistance supported through the project positioned NAWEC and the GoTG well to attract other donors, including the EIB and EU who co-finance the GERMP, the AfDB access project, and a number of bilateral interventions from donor countries.

III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

A. KEY FACTORS DURING PREPARATION

49. **Realistic objectives.** The project's development objective was simple and flexible, which was ideal for a context like The Gambia. It was this flexibility that enabled the project to adapt quickly to the changing political context and help address the essential needs in the sector quickly and efficiently.

50. **Project design.** Similarly, the project design was simple and effective. It was highly informed by the first energy sector roadmap, which had been prepared by IFMIS through a grant from the Bank. The simple objective and component structure addressed the Government's priority focus on stabilizing electricity supply and building foundations upon which operational and financial performance could be improved in the medium and long term.

51. **Well-designed results framework.** Simple indicators were selected to not only track the project's performance but build a monitoring and evaluation framework that could perform well in a context of limited capacity.

52. **Plan for monitoring, adequacy of risk and mitigation measures.** During project preparation, the project team conducted an average 3-4 missions per year. In 2017, one of the TTLs relocated to a country office in a neighboring country and supervision missions became almost monthly since then. The consistency of implementation support and close collaboration with partners were essential to address concerns as they arose and mitigate the risks presented by the political and security context. It also resulted in a well-designed and efficient project ready for implementation despite capacity limitations.

B. KEY FACTORS DURING IMPLEMENTATION

(i) Factors subject to the government and/or implementing entities' control

53. **Coordination and engagement.** The energy sector being a priority sector, activities linked to the project were closely monitored by the highest levels of the government. An energy taskforce was created to help identify and lift obstacles and facilitate successful implementation.

54. **Commitment and leadership.** Despite strong commitment to the project overall, there was uncertainty in leadership throughout implementation. The steering committee planned under the GESP was never constituted. The Board of NAWEC changed frequently, as well as the Managing Director of NAWEC and the Minister of Energy. These changes even led to the delay of the submission of the project to the Board during preparation. There were six changes in the Board of NAWEC throughout the life of the project. There was a whole year in which there was no Board with subsequent impact on management decisions and operational performance.

55. **Human resources and organizational capacity.** Under the GESP, staff of the PIU was not dedicated to the project. As a result, they were overloaded with responsibilities outside of the project and this created some difficulties in the management of the project. Further, staff had no procurement experience and no prior experience in the implementation of Bank projects.

56. **Maintenance of generation assets.** There were two significant issues regarding the maintenance of generation assets. First, a lack of maintenance on the engine at Kotu (G8) which resulted in a breakdown in August 2019. The engine was repaired and brought back online in August 2020. Second, O&M contract for the Wartsila engine, which is still under negotiation.

57. **Contract management**. While the project was successfully closed 14 months ahead of the original closing date, some delays were encountered during project implementation. These were mainly related to procurement and contract management related issues. This meant that some engines were delivered later than expected e.g. Brikama G7 was originally planned to be commissioned installed in January 2018, but it was commissioned in July 2018. Similarly, the replacement of auxiliary equipment at Kotu was only delivered at a rate of 96 percent at project closing, meaning that NAWEC had to finance the 4 percent remaining on the contract.

58. **Safeguards.** NAWEC did not have adequate expertise and experience in the management of environmental and social safeguards which resulted in poor oversight over contractors and non-compliance with some of project requirements. Capacity was built over the implementation period of the project, through designated trainings and workshops, and ongoing close support by the Bank team and an international consultant, hired by NAWEC.

(ii) Factors subject to World Bank control

59. **Adequacy of supervision/adequacy of reporting.** In light of the fragility of the political and economic context, the project team undertook very close supervision of the project and documented meticulously project and sectoral developments. There were 7 ISRs, 12 Aide Memoires and management letters, and 3 restructuring papers logged into the system over the three-year implementation period. Supervision missions were organized almost monthly. Outside of these activities, the project team remained in constant contact with the utility management, PIU, and government counterparts with frequent email and telephone exchanges.

(iii) Factors outside the control of government and/or implementing entities

60. **Conflict and instability.** A few months after the project became effective, The Gambia underwent its first democratic transition ending 22 years of rule from former President Yayah Jammeh. The uncertainty and conflict situation surrounding the election period and transition and the subsequent overhaul in the Government were unexpected. These shifts shed more transparency into the state of the sector and brought to light the depth of challenges in the sector and growing energy crisis. The project would not have been successful had local counterparts and the Bank team not been proactive and flexible to adapt to the context and make the needed changes to respond to emergency situation and restore electricity supply.

IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME

A. QUALITY OF MONITORING AND EVALUATION (M&E)

M&E Design

61. At appraisal stage, the team encountered significant data gaps as a consequence of the limited access to sectoral information during the Jammeh administration and of the low institutional capacity in the context of an FCV country. These gaps impeded the Bank team to effectively collect reliable and up to date information to produce specific and adequate indicators to monitor the progress towards the achievement of the outcomes during implementation. In particular, NAWEC did not have the systems in place to monitor any service quality indicators. As such, the two main outcome indicators were two simple targets that could be measured and used as a tool to monitor progress towards increasing the availability and reliability of electricity. These indicators measured (i) the electricity generated from capacity constructed under the project (to measure availability of electricity); and (ii) electricity losses per year (as a proxy for reliability of electricity, since lower losses tend to coincide with improved service quality).

M&E Implementation

62. The transition to a new democratically elected government dramatically shifted the political context within which the project was implemented and enabled access to greater information on issues facing the sector, and provided flexibility with regard to the modification of the components through the project restructurings. The project team made changes to the indicator capturing electricity generated to include investments to rehabilitate capacity and the purchase of fuel and added a new indicator to measure import capacity achieved through project investments. All three outcome indicators were specific, quantifiable, and adequate to monitor the specific investments contributing to the PDO. Corresponding intermediate results indicators were selected to monitor progress towards achieving the outcome indicators during project implementation.

63. The project team conducted over 25 projects support and supervision missions in the approximate four years of project preparation and implementation. The team collected data provided by the PIU and other NAWEC departments to monitor project results through the selected indicators. There was strong quality control and sense-checking of the provided numbers to ensure that the data was collected appropriately and was reliable. In addition, the task team leaders remained in constant contact with NAWEC management and the PIU by email and through WhatsApp to support daily management of project activities. Throughout this time, the project team built the capacity of the PIU to serve in the management of subsequent projects, and in the last year of implementation monthly reports were prepared and shared by the PIU combining reporting for GESP and GERMP.

64. When the electricity crisis developed during the early stages of project implementation after the transition of political power to the new Barrow administration, the team worked closely with the local stakeholders to identify high impact activities that could address the most critical needs and restructured the project and its targets to accommodate for these changes. In addition, the economic and financial analysis for the project was updated at every restructuring to ensure that the project remained economically and financially viable. The presence of one of the task team leaders in a neighboring country was important to facilitate close coordination with project stakeholders and facilitated project communications.

65. The indicators selected by the team were specific, adequate and relevant for the project scope and context of the project. The results framework was also flexible and adaptable, and the indicators and targets were modified appropriately to reflect adjustments to the project activities and scope. There were small shortcomings in the targets for two of the intermediate indicators, but these had no major impact on achievement of the PDO nor of the main outcome indicators. Thus, the overall M&E design is considered satisfactory.

M&E Utilization

66. The team took advantage of the frequent support missions to collect and monitor progress towards achieving progress results and reported on key issues through the mission aide memoires and corresponding management letters. Real-time exchanges between the country office-based team and the PIU helped to ensure the timely identification and address of key implementation issues to keep the project on track. The monitoring and reporting system put in place was suitable and it was implemented satisfactorily.

Justification of Overall Rating of Quality of M&E

67. The design of the GESP M&E was sound and efficient in assessing the achievement of the PDO. M&E is, therefore, rated as Substantial.

B. ENVIRONMENTAL, SOCIAL, AND FIDUCIARY COMPLIANCE

Safeguards

68. At appraisal, GESP was classified as a category B project as the impacts of the rehabilitation investments planned were expected to be low. There were no expectations for land acquisition or adverse impacts on parks and protected areas with all investments occurring on existing equipment and works on public domain or existing right of ways. The only safeguards policy triggered was for Environmental Assessment (OP 4.01). The Environmental, Health and Safety (EHS) guidelines on Electric Power T&D were applied. An Environmental and Social Management Plan (ESMP) and its addendum were prepared, approved and published in August 2015 and March 2016, respectively.

69. Under the second restructuring, the project activities were expanded to include the construction of cross-border lines and enable the import of electricity from Senegal. There were no expectations of a change in the nature of existing project impacts, but as new geographical areas were covered – notably the northern bank of The Gambia – a new ESMP was prepared, approved and published in August 2017. An Environmental and Social Impact Analysis (ESIA) was prepared for each of the two cross-border lines financed by the project and these were disclosed in October 2017 and February 2018, respectively.

70. The third restructuring was processed to trigger OP4.12 on Involuntary Resettlement. The construction activity of the Kanuma-Amdalai distribution line was found to be in non-compliance with the safeguards requirements as the ESMP was not appropriately implemented. The contractor built the line on the opposite side of the road identified in the ESMP, meaning approximately 100 trees were cut during the construction, and there was some damage to non-critical infrastructure such as fences. As a corrective action, the project prepared an ARAP which was published in May 2018. The tree-replanting and compensation elements defined in the ARAP were satisfactorily implemented and a grievance redress mechanism was designed and made operational prior to the implementation of the ARAP. The ARAP was implemented with 101 of the 103 Project Affected People being (PAPs) compensated. The two remaining PAPs have very small amounts and have decided that this does not warrant traveling to Banjul. However, compensation for the two remaining PAPs has been placed in an escrow account and will be made available for the PAPs for a period of two years. No grievances have been received on the GESP. NAWEC also subsequently signed a Memorandum of Agreement with the Department of Forestry, to ensure that there is a mainstreamed and systematic approach to replacement and management of trees which could be impacted through its activities.

71. The above-mentioned non-compliance incident was used as an opportunity to build institutional capacity and mainstream E&S safeguards issues into NAWEC core operations. Capacity building in E&S safeguards was given high priority under GESP. In addition to specific trainings and ongoing support by Bank' designated specialists, the PIU Environmental and social specialists were sent for a three-week training course on OP4.12. Subsequently, an international consultant was hired to provide on-the-job training and technical guidance for the remainder of the project implementation period. It should be noted that these environmental and social issues were identified and resolved in a timely manner during the construction under the Farafenni – Iliasa line, which occurred after Kanuma-Amdalai and works were completed without any safeguards incidents.

72. Before completion of the project, an independent environmental audit was commissioned by GESP to assess the implementation of safeguards instruments. The audit report highlighted some concerns with regards to occupational health and safety (OHS) in the power plants and sludge management at Kotu and Brikama. Implementation of short-term measures recommended in the report is ongoing. As per the recommendations, a sludge management audit was also conducted, which recommended short- and long-term actions and solutions, including building appropriate infrastructure for sludge management, strengthening OHS implementation and building capacity. Some of these recommendations are being taken forward under the ongoing GERMP.

73. In conclusion, the project successfully complied with requirements of the Operations Safeguards Policies OP4.01 and OP4.12, through effective and timely development, consultation and implementation of environmental and social due diligence instruments and timely attention to redressal of issues and capacity building.

Fiduciary

74. NAWEC and PIU capacity and experience to manage fiduciary responsibilities at appraisal was limited. Procurement was downgraded once during the project to Moderately Satisfactory due to poor quality of bidding documents leading to excessive iterations and improper procedures. The procurement review indicated that request for quotations were not issued for shopping activities and advance payments in some cases were 100% whereas the maximum allowance was 30%. As a result, trainings were organized by the procurement international consultant to reinforce capacity and additional procurement staff were added to the team. As a result, the procurement challenges discussed did not have a negative impact on the achievement of project outcomes. There were some delays on one of the contracts due to a procurement dispute that was eventually resolved with no consequence on the project.

75. With regards to financial management, the IFRS were delivered on a timely basis and in satisfactory quality. The accounting system in place was adequate and internal control was effective. The audit reports were issued with unqualified opinions and recommendations from the external auditor were implemented.

76. The PIU gained significant experience in fiduciary aspects throughout this project with continuous hands on capacity building and strong contracted support from international consultants. The results are already apparent in the team's management of the GERMP and the other energy sector projects under implementation. More than 6 months before project closing date, disbursement rate was 99 percent with no fiduciary concerns.

C. BANK PERFORMANCE

Quality at Entry

Rating: Satisfactory

77. Performance on the quality at entry of the project is *Satisfactory*. Project design for GESP was simple but solid and specific. It was strongly supported by economic and financial analysis with important use of lessons learnt from projects in small and fragile countries. The design was flexible which allowed for strong subsequent support in a time of severe crisis in the sector. However, as stated before, there were a few elements related to relevance of ensuring the operational and financial viability of NAWEC and sustainability of reforms that were not captured in the project PDO, although these elements are being effectively addressed under the GERMP and the DPOs series.

78. As the first engagement of the Bank in the sector, the structure was ideal to ensure that high impact critical activities were prioritized to adequately leverage project funds. It is this strong project preparation that ensured that the project remained relevant and successfully achieved its objective despite subsequent crises and additionally set the stage to build confidence and attract much needed investments from other donors.

Quality of Supervision

Rating: Highly Satisfactory

79. Bank supervision of the GESP was sustained throughout implementation. An average of 2-3 full supervision and support missions were held per year. In between, shorter support missions were held almost monthly not only to monitor activities financed under the project but also provide strategic sector wide support to local stakeholders to prepare deeper sectoral reforms. One of the task team leaders supervised the project from the country office in neighboring Senegal while maintaining constant contact with the PIU, NAWEC management, and the Ministry of Petroleum and Energy. All of the missions and key issues and trends were thoroughly documented through aide-memoires, management letters, and implementation status and results reports (ISRs).

80. Close implementation support allowed the Bank to quickly respond to changing needs and take a flexible approach through several restructurings. The Bank team also ensured strong interlinkages with the GERMP, to ensure continuity between bank projects, and to minimize the impacts of any delays of activities that had to be shifted from the GESP to the GERMP to respond to urgent needs.

81. In addition, the team was proactive in monitoring activities with careful and constant attention to the progress of activities. This approach is what enabled the identification of safeguards non-compliance prior to any grievance being raised by the community. The team was also appropriately reactive and adaptable and shifted financed activities to ensure that investments remained oriented towards the most critical needs and responded to the urgency of the situation. Opportunities were seized to also reinforce local capacity wherever possible. Per these considerations, Bank supervision performance is rated Highly Satisfactory.

Justification of Overall Rating of Bank Performance

Rating: Highly Satisfactory

82. The efficient achievement of project outcomes, as described in previous sections, in the circumstances within which the project was implemented are mainly due to the strong performance of the Bank team in designing, guiding, and monitoring the project throughout the preparation and implementation periods, helping the project results to be achieved despite being an FCV context. The overall rating for Bank Performance is, therefore, assessed to be Highly Satisfactory.

D. RISK TO DEVELOPMENT OUTCOME

Rating: Moderate

83. The risk to development outcome for GESP is assessed against threats to outcomes achieved under the project. Taking into account the mitigation actions identified, described in more detail in Section V, the risk to the development outcome is rated as *Moderate*

84. With respect to the availability of electricity, there are a number of issues that will need to be closely monitored to ensure engines financed through the GESP continue to deliver energy throughout their economic life (5-10 years).

85. First, it is critical that a robust maintenance plan be prepared and executed. Unfortunately, NAWEC's financial cash flow challenges have meant basic maintenance of equipment is postponed or not done, leading to lower reliability and breakdowns over the medium to long term. While the engine at Kotu G8 was brought back online in August 2020, it is critical that effective systems are developed within NAWEC to avoid these kinds of short-sighted decisions (discussed further in Section V).

86. With respect to the Wartsila engine, considering that the previous engine, originally financed by the IsDB, broke down twice with the initial replacement completed under the guarantee, one of the conditions for Bank investment in the replacement of the Wartsila engine was that an O&M contract would be secured by NAWEC to ensure that the equipment is properly managed to maximize the economic life of the investment. NAWEC's financial position challenged their ability to mobilize the advance payment required for the contract. The negotiations and contracting for O&M were thus stalled and remained so at the project closing date. As the reform activities under the GERMP and the debt MOU are implemented and NAWEC's financial position improves, it is expected that the utility will be able to secure this contract despite the delay.

87. The cross-border interconnection lines financed by the project are enabling imports from Senegal, currently around 5 MW (with the possibility to increase to 10 MW, per the PPA). NAWEC is still planning to invest in the Velingara-Basse line once the 225 kv line under construction in Senegal is completed. There are no concerns with regards to the performance on this investment. However, it is important to ensure adequate metering is installed on the Gambian side of the border, so NAWEC is able to verify the imported energy. These meters are expected to be financed through the AddiGERMP.

88. With respect to improved reliability of electricity supply, the outcome achievements relative to the reduction of T&D losses are expected to be maintained or further improved. The GERMP is continuing to support NAWEC improve in service quality. This has included developing the systems and tools to track basic indicators such as the number of blackouts in the GBA. Further, the GERMP is supporting the preparation and implementation of a loss reduction strategy. Prepayment meters are available to all new residential customers, and non-critical public sector facilities will also be transitioned to prepayment meters.

V. LESSONS AND RECOMMENDATIONS

89. As the first investment operation in the sector, the GESP was a strategic operation to develop Bank engagement in the sector and lay foundations for deeper and longer-term collaboration. There were many lessons captured through this experience that have served in the preparation of the GERMP and other current operations in the sector and will be useful for future operations, particularly in FCV environments:

90. **The ICR has the following recommendations:**

With respect to NAWEC operations:

a. **An effective structure needs to be established to ensure that NAWEC conducts regular maintenance of its generating assets.** To this end, the GERMP has provided funding for NAWEC to have technical assistance to develop and execute a maintenance plan. Further, it is proposed that the MoFEA strengthens its oversight of NAWEC on this aspect, potentially through the 2021 NAWEC / MoFEA Performance Contract, by adding an outcome indicator on plant availability, and an input indicator on the preparation and execution of the maintenance schedule. Further, it is proposed to establish an effective, regular monitoring mechanism on the Performance Contract through the year. Indeed, the GERMP has allocated funding to put in place an independent auditor to monitor and validate progress against the KPI targets.

b. **Establish an effective sludge management system.** The GESP environmental audit identified sludge management as a key risk at NAWEC. A by-product of HFO generation is sludge. Currently, NAWEC does not have effective sludge management systems in place, and the large pools of sludge that are accumulating represent a major environmental risk and fire hazard. As such, it should be dealt with a matter of urgency. The GERMP has provided funding for NAWEC to receive Technical Assistance to design a proper sludge management system.

c. **Developing strong OHS practices**. The GESP environmental audit also highlighted several concerns on the lack of basic OHS practices within NAWEC main generation plants at Brikama and Kotu. Establishing a safe workplace is part of NAWEC's Board approved Strategic Development Plan, and the GERMP has provided funding for Technical Assistance to NAWEC to strengthen the basic OHS practices at NAWEC facilities.

With respect to project design and implementation:

a. **Ensure close monitoring of ESMP implementation by contractors.** The discovery of safeguards compliance issues under the construction of the Kanuma-Amdalai cross-border line is a result of a lack of monitoring of the contractor and a lack of understanding from the contractor of responsibilities and requirements. This underscores the importance of having

adequate supervision capacity in place to ensure approved ESMPs are properly implemented.

b. **A functional grievance redress mechanism (GRM) at an institutional level is essential to ensure adverse project impacts can be addressed.** Under the GESP, the GRM was only developed after the discovery of non-compliance on construction for one of the cross-border lines (line was constructed on a different side of the road than expected through the ESMP). Subsequently, Project Affected Persons were identified through the ARAP, and were sufficiently compensated. However, these issues could have been identified sooner had a proper mechanism been put in place to ensure that the project establishes accessible lines of communication with the communities in the project areas.

91. The ICR has the following lessons learned, particularly related to project implementation in an FCV environment:

a. **Keep it simple and flexible:** The simplicity of PDO at design stage in an FCV environment such as in The Gambia allowed the project to remain flexible, and with active implementation support, the project was able to adapt in an agile manner to address emergency issues in the sector that could not be foreseen, deepen dialogue with clients and build better trust and capacity to undertake more complex support operations (including reforms) in the next stages.

b. **PIU staff should be dedicated to the project to ensure timely project implementation.** The GESP PIU was composed by NAWEC staff who held other roles within NAWEC, which led to occasional delays in project activities, and required additional supervision support from the World Bank to avoid slippages during project implementation. In larger operations such as GERMP, staff must be dedicated full time to the project to avoid poor performance.

c. **Strengthening assistance and building capacity in the areas of procurement and E&S safeguards in an FCV environments are a key ingredient to ensure a successful implementation.** Given low experience and low capacity to deliver international standards for procurement, and E&S safeguards management, reinforced assistance in these aspects is critical. Given the complex procedures and contracts involved in energy investment projects, it's important that the PIU team is reinforced with experienced consultants to support procurement and the management of environmental and social safeguards. This support under GESP has been a key factor in the good implementation pace of the project.

ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

A. RESULTS INDICATORS

A.1 PDO Indicators

Objective/Outcome: Increase the availability and reliability of electricity supply for existing customers

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Electricity generated under the project (from capacity constructed or rehabilitated, or fuel purchased)	Gigawatt-hour (GWh)	0.00 10-May-2016	118.00 10-May-2016	317.00 31-Mar-2020	314.00 14-Sep-2020
Comments (achievements against targets):					

This indicator was achieved through a total long-term restored capacity of 21.8 MW (three HFO engines at Kotu and Brikama), cross-border lines to import power from Senegal, and a short-term emergency support through the purchase of 21,000 tons of fuel. Combined, the project generated 314 GWh over its lifetime, which represents a 99 percent achievement compared to the latest revised target of 317 GWh.

The detailed contribution (in GWh) is presented below:

Total contribution	GWh
Brikama G7	52.8
Kotu G8	19.4
Warstsila	85.5
Barra and Farafenni cross-border lines: 35.3 GWh	35.3
Fuel purchased	121

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Import capacity	Kilovolt-Amphere(KVA)	0.00 01-Aug-2017	3300.00 31-Aug-2017	4466.00 29-Mar-2019	6875.00 14-Sep-2020

Comments (achievements against targets):

The GESP included a new indicator under the second project restructuring to track import capacity derived from the cross-border lines, with a a baseline of 0 kVA and an end target of 3,300 kVA. This indicator was later revised and expanded under the third project restructuring from a target of 3,300 kVA to final end target of 4,466 kVA.

Original target of 3,300 kVA was surppased by 108 percent with a total import capacity expanded of 6,875 kVA. This was successfully achieved through the import capacity investments that enabled the construction of the two cross-border lines in Barra and Farafenni. As a result, in the provinces, the cross-border lines facilitated the import capacity being achieved of 6,875 kVa, 200% of the original target value of 3,300 kVA, enabling the provision of 24/7 access to electricity in villages across the North Bank for the first time.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Electricity losses per year in the project area	Percentage	25.00 10-May-2016	21.00 31-Dec-2019	22.00 29-Mar-2019	19.00 31-Dec-2019

Comments (achievements against targets):

Electricity losses per year in the project area were significantly reduced from a baseline of 25 percent in 2016 to 19 percent in 2019, significantly surpassing the revised target of 22 percent.

This indicators was fully achieved and comprised the procurement of 23,000 prepayment meters and 300 smart meters that enabled NAWEC helped shift existing customers from old and faulty credit meters, to new calibrated prepayment meters, contributing to significantly reduce losses.

These results helped improve the financial viability of NAWEC. For example, generation has grown at a rate of 6 percent per annum over the project life, while cash collected has grown at over 10 percent per annum, as a result of reduced technical and commercial losses.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Direct project beneficiaries	Number	0.00 10-May-2016	570000.00 31-Mar-2020		744432.00 31-Mar-2020
Female beneficiaries	Percentage	51.00	51.00		51.00

Comments (achievements against targets):

A.2 Intermediate Results Indicators

Component: Increase Electricity Supply

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Generation Capacity of Conventional Generation constructed under the project	Megawatt	0.00 10-May-2016	22.20 31-Mar-2020		21.80 31-Mar-2020

Comments (achievements against targets):
This indicators was achieved at 98 percent with 21.8 MW against a target of 22.2 MW and comprised the acquisition and installation of three HFO engines in Kotu and Brikama.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Distribution lines constructed or rehabilitated under the project	Kilometers	0.00 10-May-2016	50.00 31-Mar-2020		31.00 31-Mar-2020
Distribution lines rehabilitated under the project	Kilometers	0.00 10-May-2016	50.00 31-Mar-2020		31.00 31-Mar-2020

Comments (achievements against targets):
This indicator was partially achieved at 62 percent with 31 km against a target of 50 km.

The project was originally envisioned to support the construction of up to 4 cross-border lines of a combined length estimated at 50 km. During implementation, several delays in the physical investments on the Senegal side of the border to enable the connection caused that only two of the cross-border lines initially planned (Barra and Farafenni) were built.

Component: Reduction of technical and commercial losses in the Greater Banjul Area (GBA)

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Percentage of grievances processed from total grievances received on the project.	Percentage	0.00 10-May-2016	100.00 31-Mar-2020		100.00 31-Mar-2020

Comments (achievements against targets):
Indicator fully achieved.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Installed meters under the project	Number	0.00 10-May-2016	23000.00 31-Mar-2020		23000.00 31-Mar-2020

Comments (achievements against targets):
Indicator fully achieved. The GESP effectively procured 23,000 prepayment meters.

The following table provided additional details:

	Total No. meters	SERVICE CONNECTION	REPLACEMENT	Total

Consignment 1	13,000	10,200	2,800	13,000
Consignment 2	10,000	7,800	2,200	10,000
Total	**23,000**	**18,000**	**5,000**	**23,000**

Component: Project Implementation Support

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Staff trained in the PIU	Number	0.00 01-Jan-2016	10.00 31-Mar-2020		10.00 31-Mar-2020

Comments (achievements against targets):
Indicator fully achieved.

B. KEY OUTPUTS BY COMPONENT

Objective/Outcome 1 – Increase the availability of electricity supply for existing customers	
Outcome Indicators	1. Electricity generated under the project (from capacity constructed or rehabilitated, or fuel purchased) (GWh) 2. Import capacity (KvA) 3. Electricity losses per year in the project area (percentage) 4. Direct Project beneficiaries (number) of which female beneficiaries (percentage)
Intermediate Results Indicators	1. Generation capacity of conventional generation constructed or rehabilitated under the project (MW) 2. Distribution lines constructed or rehabilitated under the project (km) 3. Percentage of grievances processed from total grievances received on the project (percentage) 4. Installed meters under the project (number)
Key Outputs by Component (linked to the achievement of the Objective/Outcome 1)	1. Component 1: Increase electricity Supply - 2 cross-border MV lines constructed - 3 engines installed or rehabilitated 2. Component 2: Reduction of technical and commercial losses in GBA - 23,000 prepayment meters procured and installed - 300 smart meters procured and installed 3. Component 3: Project implementation support - Consultant recruited to restructure NAWEC debt - 10 staff trained

ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION

A. TASK TEAM MEMBERS

Name	Role
Preparation	
Christopher Philip Trimble, Manuel Jose Millan Sanchez	Task Team Leader(s)
Cheick Traore	Procurement Specialist(s)
Ngor Sene	Financial Management Specialist
Amadou Mamadou Watt	Team Member
Inka Ivette Schomer	Team Member
Melissa C. Landesz	Social Specialist
Fatou Fall	Social Specialist
Maiada Mahmoud Abdel Fattah Kassem	Team Member
Yassin Saine Njie	Team Member
Mamadou Mansour Mbaye	Team Member
Seynabou Thiaw Seye	Team Member
Thanh Lu Ha	Team Member
Mariangeles Sabella	Counsel
Luis M. Schwarz	Team Member
Supervision/ICR	
Christopher Philip Trimble, Manuel Jose Millan Sanchez	Task Team Leader(s)

Mouhamadou Kabir Ndoye, Mamadou Mansour Mbaye, Mamata Tiendrebeogo	Procurement Specialist(s)
Tahirou Kalam	Financial Management Specialist
Anta Tall Diallo	Procurement Team
Seynabou Thiaw Seye	Procurement Team
Ruma Tavorath	Environmental Specialist
Yassin Saine Njie	Team Member
Maiada Mahmoud Abdel Fattah Kassem	Team Member
Frank Anthony Fariello	Counsel
Aminata Ndiaye Bob	Team Member
Tamaro Kane	Team Member
Gina Cosentino	Social Specialist
Daniel Alvaro Diez	Team Member

B. STAFF TIME AND COST

Stage of Project Cycle	Staff Time and Cost	
	No. of staff weeks	US$ (including travel and consultant costs)
Preparation		
FY15	21.145	103,302.82
FY16	25.215	107,539.39
FY17	1.550	5,152.20
Total	**47.91**	**215,994.41**
Supervision/ICR		
FY16	4.475	19,566.01

FY17	11.573	90,614.70
FY18	14.200	115,650.53
FY19	10.379	123,497.83
FY20	16.999	140,172.07
Total	**57.63**	**489,501.14**

ANNEX 3. PROJECT COST BY COMPONENT

Components	Amount at Approval (US$M)	Actual at Project Closing (US$M)	Percentage of Approval (%)
Increase Electricity Supply	7	16.80	240
Reduction of technical and commercial losses in the Greater Banjul Area (GBA)	4.5	0.70	16
Project Implementation Support	7	1.00	14
Total	**18.50**	**18.50**	**100.00**

ANNEX 4. EFFICIENCY ANALYSIS

1. An ex-post economic and financial analysis of the GESP was conducted to assess project outcome efficiency. The same methodology used in the PAD is maintained to ensure consistency. The costs and benefits assumed for each component, and the general assumptions are explained below. Table A4.1 presents the main assumptions used.

General assumptions.

2. **WTP.** As at project appraisal, the WTP has been assumed to be US$0.20 per kWh based on 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.

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

Costs and benefits assumed for Component 1.

4. The main benefit of Component 1 is the increase in electricity production, through the increase in available capacity energy available to dispatch onto the grid. As during project appraisal, these economic benefits are valued using a WTP approach, as described above.

5. *Assessment of emergency fuel supply*: it should be noted that in the case of fuel, which is a short-term investment, the benefits are realized in the same year as the costs. This means there is no stream of economic or financial benefits to be discounted as per typical long-term investments supported by the World Bank. In this case, the key questions are whether or not the immediate benefits are more valuable than the immediate costs. In the case of the emergency fuel supply, the emergency request came from the new government, which was facing a fuel supply crisis, with the alternative being no power supply. In this case, the willingness to pay is arguably significantly higher than assumed in this analysis. The results of the ex-post economic and financial analysis are nevertheless presented with and without the fuel supply included.

6. Specific assumptions:

   a. *Actual investment costs and timelines are used*: the investment costs for the rehabilitation of engines took place in 2017 (at a cost of $6.2 million), cross-border lines in 2018 (at a cost of $500k), fuel purchases in 2017 (at a cost of $8 million), and Kotu upgrades in 2018 and 2019 (at a cost of $2 million).

   b. *A life expectancy* of ten years is assumed for the Wartsila engine and cross-border lines, and five years for Kotu G8 and Brikama G7. These are conservative assumptions and likely the economic life could be expanded, particularly for the Wartsila engine and cross-border lines.

c. *Total increase in energy available* is assumed as follows:

   i. *Engines*: increase in energy generated by 73,000 GWH per year, based on actual production data, and assumed to remain constant to the duration of the economic life of the engines. Actual generation data from engines financed through the project takes into account the fact that Kotu G8 was out of service for part of 2019 and 2020 due to the maintenance issues described in the main text. These actual data translate to a utilization rate of 40-50 percent, which is lower than the 70 percent assumed at project appraisal. This is explained in part due to the maintenance issues described above, and in part due to the rental of the Karpower barge, which was not foreseen at project appraisal and which became the source of baseload energy during project implementation period, together with the Wartsila engine.

   ii. *Cross-border lines*: increasing energy imported by 15,000 GWH per year, based on actual imports.

   iii. *Provision of fuel on an emergency basis*: increasing generation in 2017 by 120 GWH, based on actual generation.

d. *Fuel costs.* The cost of fuel is based on the contract prices to import fuel for NAWEC in 2017, estimated to be US$67 per MWh dispatched to the grid.

e. *Other generation costs are now included in the analysis*, which were not included in the original economic and financial analysis, estimated to be $US50 per MWH dispatched to the grid.

f. *A depreciation cost* of investments is also considered, consistent with the assumptions used at project appraisal.

Costs and benefits assumed for Component 2

7. The main benefit of Component 2 is the investments in prepayment meters which help to reduce in technical and non-technical losses from 22 percent in 2017 to 19 percent in 2019.

8. Specific assumptions:

a) The US$645k investment is split between 2017 and 2018

b) Actual T&D losses are used for 2017-19 and assumed to remain constant from then on.

c) Depreciation assumptions are consistent with those used at project appraisal, using a valuation of NAWEC's T&D assets.

Table A4.1: Assumptions Used for Economic Analysis

ASSUMPTIONS			
General assumptions			
	Unit	**Value**	**Source**
Cost of fuel	USD/MWh	$66.67	Based on 2018 NAWEC fuel contract price
Other variable generation costs	USD/MWH	$50.00	World Bank estimate
Exchange rate	Dalasi / US$	52.40	World Bank Exchange rate data, August 2020
Willingness to Pay	USD/kWh	$0.20	Based on average tariff data, 2015
Discount rate	Percent	6%	Standard World Bank assumption for economic analysis
Costs	**Cost (US$)**	**Economic life (years)**	
Component 1			
Wartsila	$2,352,000	10	
Kotu G8 & Brikama G7	$3,855,802	5	
Kotu upgrades	$2,044,504	10	
Cross-border lines	$505,908	10	
Fuel purchases	$8,000,000	1	
Total	**16,758,214**	**0**	
Original cost of MW installed	2,000,000		
Component 2			
Comp 2 cost	$645,740		
Valuation T&D assets	$19,311,500		

Assumptions for the financial analysis

9. The updated financial analysis follows the same methodology used at project appraisal. The financial costs assumed for the project financial analysis are consistent with those assumed in the economic analysis. The financial benefits are assessed using the value of tariffs. However, the financial

analysis at appraisal assumed a tariff increase of five percent per year, as indicated by PURA during project appraisal, which was consistent with the policy set by MoFEA to PURA in 2015. However, these tariff reviews did not take place as expected, and tariffs in 2020 remain at the same level as in 2015. The updated financial analysis therefore takes the more conservative assumption that tariffs will remain constant for the remainder of the economic life of the investments.

10. It should also be noted that the financial position of NAWEC improved significantly during the life of the project, driven in part by the reduced T&D losses achieved through the GESP investments. Indeed, in 2019, NAWEC did not require any direct subsidies from the MOFEA.

Results

11. Taking these assumptions into account, the results are summarized in Table A4.2, and the flow of annual yearly costs and benefits are presented in Table A4.3.

Table A4.2. Comparison of Internal Rates of Return at appraisal stage vs completion stage

	PAD projections (2016)	At Closing (2020)	At Closing (2020) (if fuel excluded)
EIRR	23.1%	29.7%	11.4%
FIRR	45.1%	27.7%	10.6%

12. **Economic performance**. Economic analysis at project appraisal concluded that the EIRR for GESP would be 23.1 percent, and the NPV was estimated to be 29.4 million USD. Based on the actual values, the EIRR at closing is 28.1 percent – 5 percentage points above expectations at appraisal – and NPV is 9.8 million USD. The EIRR when fuel purchase is excluded drops to 8.9 percent, still above the 6 percent hurdle rate. This lower value reflects the lower (40 percent) utilization rate of the engines financed through the GESP which is based on the first 2-3 years of operations. This may be a conservative assumption and the utilization rate could increase towards the 70 percent initially assumed.

13. **Financial performance**. Financial analysis at project appraisal concluded that the FIRR for GESP would be 45.1 percent, with an NPV was estimated to be 79.6 million USD. Based on the actual values, the FIRR at closing is 26 percent and NPV is 9.2 million USD. While the achieved values are lower than estimated at appraisal, they are still well above the hurdle rate. The main reason they are lower is that, as explained above, tariffs eventually did not increase by 5 percent per year as assumed during project appraisal, and a more conservative assumption was taken for the ICR financial analysis. When fuel is excluded, the FIRR drops to 8.0 percent, for similar reasons explained above for the EIRR excluding fuel.

14. Despite a slight reduction in the dispatching of infrastructure invested under the GESP compared to expectations, the project's performance remains very robust and the project highly viable.

Table A4.3: Economic and Financial Costs and Benefits Per Year

Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2017
Increase in economic costs											
Investment Cost - component 1 exc. fuel	-6,207,802	-1,900,412	-650,000	0	0	0	0	0	0	0	0
Investment Cost - component 1	-14,207,802	-1,900,412	-650,000	0	0	0	0	0	0	0	0
Investment Cost - component 2	-388,940	-256,800	0	0	0	0	0	0	0	0	0
Depreciation - component 1	-1,325,806	-1,515,848	-1,515,848	-1,515,848	-1,515,848	-1,515,848	-690,041	-690,041	-690,041	-690,041	-690,041
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	0
Increase in opex - component 1	-6,000,000	-8,970,733	-8,986,133	-8,633,333	-10,266,667	-10,266,667	-5,600,000	-5,600,000	-5,600,000	-5,600,000	-5,600,000
Total costs	**-23,209,982**	**-13,931,227**	**-12,439,414**	**-11,436,614**	**-13,069,948**	**-13,069,948**	**-7,577,475**	**-7,577,475**	**-7,577,475**	**-7,577,475**	**-6,290,041**
Total costs exc. fuel	**-9,209,982**	**-13,931,227**	**-12,439,414**	**-11,436,614**	**-13,069,948**	**-13,069,948**	**-7,577,475**	**-7,577,475**	**-7,577,475**	**-7,577,475**	**-6,290,041**
Increase in economic benefits											
Component 1	18,817,101	12,057,371	12,078,070	11,603,879	13,799,207	13,799,207	7,526,840	7,526,840	7,526,840	7,526,840	7,526,840
Component 2	0	2,155,121	1,616,341	1,616,341	1,616,341	1,616,341	1,616,341	1,616,341	1,616,341	1,616,341	1,616,341
Total increase in economic benefit	**18,817,101**	**14,212,492**	**13,694,411**	**13,220,220**	**15,415,548**	**15,415,548**	**9,143,181**	**9,143,181**	**9,143,181**	**9,143,181**	**9,143,181**
Total increase in economic benefit exc. fuel	**0**	**14,212,492**	**13,694,411**	**13,220,220**	**15,415,548**	**15,415,548**	**9,143,181**	**9,143,181**	**9,143,181**	**9,143,181**	**9,143,181**
Net economic benefits	**-4,392,881**	**281,265**	**1,254,996**	**1,783,605**	**2,345,600**	**2,345,600**	**1,565,707**	**1,565,707**	**1,565,707**	**1,565,707**	**2,853,140**
Net economic benefits exc. Fuel	**-9,209,982**	**281,265**	**1,254,996**	**1,783,605**	**2,345,600**	**2,345,600**	**1,565,707**	**1,565,707**	**1,565,707**	**1,565,707**	**2,853,140**
Increase in financial benefit											
Component 1	18,720,000	11,995,152	12,015,744	11,544,000	13,728,000	13,728,000	7,488,000	7,488,000	7,488,000	7,488,000	7,488,000
Component 1 exc. Fuel											
Component 2	0	2,144,000	1,608,000	1,608,000	1,608,000	1,608,000	1,608,000	1,608,000	1,608,000	1,608,000	1,608,000
Total increase in financial benefit	**18,720,000**	**14,139,152**	**13,623,744**	**13,152,000**	**15,336,000**	**15,336,000**	**9,096,000**	**9,096,000**	**9,096,000**	**9,096,000**	**9,096,000**
Total increase in financial benefit exc. fuel	**0**	**14,139,152**	**13,623,744**	**13,152,000**	**15,336,000**	**15,336,000**	**9,096,000**	**9,096,000**	**9,096,000**	**9,096,000**	**9,096,000**
Net financial benefits	**-4,489,982**	**207,925**	**1,184,330**	**1,715,386**	**2,266,052**	**2,266,052**	**1,518,525**	**1,518,525**	**1,518,525**	**1,518,525**	**2,805,959**
Net financial benefits exc. Fuel	**-9,209,982**	**207,925**	**1,184,330**	**1,715,386**	**2,266,052**	**2,266,052**	**1,518,525**	**1,518,525**	**1,518,525**	**1,518,525**	**2,805,959**
Economic	**With fuel**	**Without fuel**									
NPV	**12,734,153**	**7,917,052**									
IRR	**29.7%**	**11.4%**									
Financial	**With fuel**	**Without fuel**									
NPV	**12,029,824**	**7,309,824**									
FIRR	**27.7%**	**10.6%**									

Sensitivity analysis

15. The switching values (for which the EIRR is below six percent) for each of the critical variables are shown in Table A4.4.

a) *WTP*: the switching value for the WTP of US$0.18 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. Further, as noted above, the WTP is likely substantially higher given (i) the observed use of self-generation (estimated at $0.37 / kWh); and (ii) WTP during the electricity crisis inherited by the new government was likely extremely high.

b) *Utilization rate*: the economic analysis assumes that the observed utilization rates of 47 percent for Wartsila and 40 percent for Brikama and Kotu respectively will continue. There is a risk that if engines are not properly maintained, there could be additional breakdowns as happened with Kotu G8. However, the sensitivity analysis shows that even under extreme assumptions where all three engines stop producing from 2021, for the IRR would still be at 1 percent. This is extremely unlikely to happen, especially since Wartsila is used as one of the primary engines for baseload generation.

c) *Cost of fuel*: the economic analysis assumes a fuel cost of US$67 per MWH generated. While this is in line with actual NAWEC contract prices in 2017, global oil prices are volatile and NAWEC remains exposed to global oil price shocks. The sensitivity analysis indicates that the IRR is reduced to zero is fuel price reach above $86.5 per MWH. While global oil prices have been generally low in 2020, primarily driven by the COVID19 pandemic, oil price swings of this order of magnitude are possible. This underscores the importance of NAWEC coordinating regularly with PURA to review tariffs in view of global oil p[rice changes, and perhaps introducing an automatic pass through mechanism which would help mitigate the risk to the sustainability of project outcomes, and help to protect NAWEC more broadly.

Table A4.4: Switching Values

Variable	Unit	Baseline Assumption	Switching Value
WTP	US$/kWh	0.20	0.18
Utilization rate	Percent	47 (Wartsila) 40 (Brikama & Kotu)	At 0 percent utilization from 2021, IRR is 1%.
Cost of fuel	US$/MWH	67	86.5

ANNEX 5. BORROWER COMMENTS

The following comments were discussed during the ICR mission, held in August 2020:

1. The GoTG has seen the GESP as highly satisfactory project and concurred with the assessment of Bank performance as Highly Satisfactory. The GESP was the first WB-funded project on energy and although the project focused on short-term actions to address the generation and emergency fuel supply crisis, the GESP has been key to lay the foundations and to expand the Bank sectoral engagement in the energy sector.

2. The GoTG indicated that this project has enabled the creation of a strong PIU, particularly in the area of environmental and social safeguards, that had substantially contributed to the delivery of subsequent WB projects and facilitated the delivery of a much-larger support to the energy sector, building an optimal internal client capacity.

3. With respect to the coordination between the different counterparts involved, the GoTG highlighted the strong engagement from MoPe, NAWEC, and the Bank and confirmed that the overall coordination was done in an effective and dynamic manner. As a result, the project closed one year earlier with respect to the original closing date and all programmed activities were completed and the respective reports were delivered on time or before.

4. Looking forward, the GoTG also indicated that two areas still need to be addressed:

(a) The need to speed up the provision of spare parts and increased maintenance, since the availability of engines funded under this project marks a deterioration against the emergency actions taken in 2017 to restore electricity supply, and highlights the need for NAWEC to (i) increase capacity of management to prepare and execute a routine maintenance plan; and (ii) financial viability of the company, and corresponding ability to pay for spare parts. The MoFEA is interested to increase oversight of NAWEC on this aspect, by including it in the 2021 NAWEC / MoFEA Performance Contract, and establishing a structure for regular monitoring and review of NAWEC performance against the agreed KPIs.

(b) The management of the sludge, which represents a substantial environmental risk and will need urgent support. Therefore, the GoTG noted the need to improve storage and disposal of sludge, which has now been identified as an immediate priority and NAWEC is exploring the best options available.

ANNEX 6. SUPPORTING DOCUMENTS

- Disbursement Loan Agreement. 2016
- Financial Agreement. 2016
- Project Agreement. 2016
- World Bank. GESP Project Appraisal Document. March 2016
- World Bank. Implementation Supervision Report. September 2016
- World Bank. Implementation Supervision Report. March 2017
- World Bank. Implementation Supervision Report. October 2017
- World Bank. Implementation Supervision Report. June 2018
- World Bank. Implementation Supervision Report. January 2019
- World Bank. Implementation Supervision Report. August 2019
- World Bank. Mission Aide-Memoire. September 2016
- World Bank. Mission Aide-Memoire. November 2016
- World Bank. Mission Aide-Memoire. April 2017
- World Bank. Mission Aide-Memoire. November, December 2017
- World Bank. Mission Aide-Memoire. March 2018
- World Bank. Mission Midterm Review - Aide-Memoire. May 2018
- World Bank. Mission Aide-Memoire. July, August 2018
- World Bank. Mission Aide-Memoire. September 2018
- World Bank. Mission Aide-Memoire. November 2018
- World Bank. Mission Aide-Memoire. January, February 2019
- World Bank. Mission ICR Aide-Memoire, August 2020
- World Bank. Project Restructuring Paper. March 2017
- World Bank. Project Restructuring Paper. August 2017
- World Bank. Project Restructuring Paper. March 2019

ANNEX 7. SUMMARY OF BORROWER'S COMPLETION REPORT

Project achievement[4]

1. The Gambia Electricity Support Project (GESP) achieved its Development Objective to increase the availability and reliability of electricity supply for existing customers as evidenced by the over-achievement of key outcome indicators and intermediate result indicators. The activities financed through the GESP helped to add more than 300 GWH of electricity to the system during the life of the project (breakdown provided in Table A7), including through a challenging time of transition to a new government. Project restructurings allowed the project to adapt and meet the immediate needs of the new government, including through the provision of fuel on an emergency basis, and construction of cross-border allowing imports of electricity for the first time. These lines have meant that villages on the northern bank have been receiving 24/7 electricity for the first time. The meter provided through component 2 helped NAWEC replace old and faulty meters, contributing to a rapid decline in T&D losses from 25 percent in 2015 to 19 percent in 2019.

Component 1 - Increase electricity Supply

2. Component 1 was the main project component, accounting for over 90 percent of project activities in terms of financing. The component financed a range of activities to increase generation. Some key issues are summarized below.

Table A7-1 – summary of outputs from activities in component 1

Source	Timeframe	MWH
Brikama G7	June 2018 - March 2020	52,825
Kotu G8	Dec 2017 - March 2020	19,452
Wartsila	March 2018 - March 2020	85,499
Barra cross-border line	April 2018 - March 2020	6,999
Farafenni cross-border line	August 2017 - March 2020	28,358
Total		**193,133**
Fuel		
Fuel purchased (Metric tons)	21,000	21,000
Assumed heat rate (g / kWh)	174	174

[4] Summary of the Borrower's Completion Report was compiled by the Bank based on the received documentation, which was filed in WBDocs.

Source	Timeframe	MWH
Estimated MWH from fuel	**120,000**	**120,690**
Total MWH		**313,823**
Expected		317,000
% achieved		99%

Engine maintenance

3. The GESP financed three replacement engines for NAWEC, increasing NAWEC's total installed capacity by 21.8 MW. One issue to be addressed is the question of engine maintenance, which is often a challenge given the cash position of NAWEC. This issue was discussed during the ICR mission in August 2020 and a maintenance plan was agreed. Table A7-2 summarizes the situation with each engine financed through the GESP.

Table A7-2 Status of engines financed through the GESP

Engine	Installation date	Current Hours Run (as at 3rd August 2020)	Next Major Maintenance	Status
Brikama G7	June 2018	11,956	**12,000 hours**	Engine is in good running condition, but due for its 12,000 hours overhaul. The procurement process for spare parts is underway
Kotu G8	December 2017	5,050.00	**12,000 hours**	Engine suffered crankshaft failure on a crankpin July 2019. Delivery of the required parts to bring back the engine is expected August 2020. 6,000 hours maintenance will be conducted engine repair.
Wartsila	Mar-18	13,062.00	**12,000 hours**	Engine is in a good running condition but already due for its 12,000 Hrs overhaul. Procurement of required spares and Supervisory Services are in process.

Cross border lines

4. There has been a substantial improvement in service provisions in the two areas with cross-border lines. In 2017, The National Electricity Company of Senegal (SENELEC) and NAWEC signed an interconnection PPA for the two cross-border lines. These two interconnections key results include the

24/7 electricity supply to the North Bank Region and Lower River Region for the first time in the history of The Gambia.

5. Furthermore, the advent of these interconnections have impacted greatly to the socio economic of the two regions with improvement in business activities such as; micro finances for women in business, increased in the number of banking services, major improvement in health service deliveries using modern hospital equipment and schools going more digital with the introduction of more internet facilities. Telecommunication companies has increased their shell sites that gave access to internet interconnection signals across the two regions.

6. However, some supply instability issues need to be addressed. The main constraints are the stability of SENELEC supply (working on a dedicated line for The Gambia) and the monitoring of the system (load profiles).

Management and containment of sludge

7. Due to lack of interest from the usual dealers who used to come and collect the sludge from the power plants for recycling for commercial purposes and lack of enough storage space inside our premises, the management and the containment of the sludge has now become a significant environmental risks for NAWEC particularly during rainy season. NAWEC is yet to have well trained environment staff with special skills in management and handling of sludge and therefore need urgent and strong support from the World Bank in terms of expertise and finance to urgently deal with the current environmental situation inside the power plants. This is expected through the GERMP.

Component 2: Reduction of Technical and Commercial Losses

8. The project financed 23,000 prepayment meters and 300 smart meters for large customers. The prepayment meters helped to significantly reduce T&D losses, and improve the accuracy of billing. The 300 maximum demand meters has face out the Analog conventional meters which had loss calibration so many years ago. It has registered significant improvement in the form of up to 50 percent increased sales on the major Maximum Demand Accounts.

Table A7 - 3 Overview of Single-Phase Prepayment Meters

	Total No. meters	Service connection	Replacement	Total
Consignment 1	13,000	10,200	2,800	13,000
Consignment 2	10,000	7,800	2,200	10,000
Total	**23,000**	**18,000**	**5,000**	**23,000**

new connections	replacements	reserve	total
23	177	50	**300**

Note: 50 are reserve for new service connections and possible replacement of faulty meters

Component 3: Institutional Strengthening and Project Implementation Support

9. Several key activities were financed to support project implementation, build capacity at NAWEC, and fund strategic studies, such as the financial recovery plan for NAWEC which laid the foundation for the debt restructuring that was supported through the DPO in 2020.

10. Additional training provided during project implementation included:

(a) Procurement training on WB procedures and systems. This training was useful as it enhanced the PIU's skills and knowledge in implementing World Bank financed Project as this was the first World Bank project being implemented by NAWEC

(b) Safeguards: in addition to close day to day support, a one-day workshop in Environmental safeguards.