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INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON

A PROPOSED ADDITIONAL CREDIT

IN THE AMOUNT OF SDR 17.6 MILLION

(US$25 MILLION EQUIVALENT)

TO

THE REPUBLIC OF GUINEA

FOR THE

POWER SECTOR RECOVERY PROJECT

February 21, 2018

Energy and Extractives Global Practice

Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective December 31, 2017)

Currency Unit	=	Guinean Franc (GNF)
US$1	=	GNF 9,014.9991
US$1	=	SDR 0.70218309

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AF	Additional Financing
AFD	*Agence Française de Développement* (French Development Agency)
AfDB	African Development Bank
AGER	*Agence Guinéenne d'Electrification Rurale* (Guinea Rural Electrification Agency)
BOAD	West African Development Bank
CLSG	Côte d'Ivoire, Liberia, Sierra Leone, and Guinea Interconnector Project
CPF	Country Partnership Framework
CWE	China International Water and Electric
DA	Designated Account
DPO	Development Policy Operation
EIB	European Investment Bank
EDG	*Electricité de Guinée* (Electricity of Guinea)
EIRR	Economic Internal Rate of Return
ESEIP	Electricity Sector Efficiency Improvement Project
FM	Financial Management
FY	Fiscal Year
GDI	Gender Development Index
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GNF	Guinean Franc
GoG	Government of Guinea
GRS	Grievance Redress Service
HDI	Human Development Index
HV	High Voltage
IFR	Interim Financial Report
IMF	International Monetary Fund
IMS	Integrated Management System
IPP	Independent Power Producer
IRP	Internal Recovery Plan
IsDB	Islamic Development Bank
kV	Kilo Volt
kWh	Kilowatt Hour
LV	Low Voltage
MEH	Ministry of Energy and Hydraulics

MSC	Management Services Contract
MSC SC	Management Services Contract Steering Committee
MV	Medium Voltage
MW	Megawatt
NPV	Net Present Value
O&M	Operation and Maintenance
OMVG	*Organisation pour la Mise en Vigueur du Fleuve Gambie* (Gambia River Basin Development Organization)
OMVS	*Organisation pour la Mise en Vigueur du Fleuve Sénégal* (Senegal River Basin Development Organization)
PA	Project Account
PDO	Project Development Objective
PIU	Project Implementation Unit
PNDES	*Plan National de Développement Economique et Social* (National Economic and Social Development Plan)
PPA	Power Purchase Agreement
PPP	Public-Private Partnership
PRG	*Présidence de la République de Guinée* (the Office of the President of the Republic of Guinea)
PRSP	Power Sector Recovery Project
RAP	Resettlement Action Plan
SDR	Special Drawing Rights
SEA4ALL	Sustainable Energy for All
SG&A	Selling, General and Administrative
SGG	*Secrétariat Général du Gouvernement* (General Secretariat of Government)
TA	Technical Assistance

Regional Vice President:	Makhtar Diop
Country Director:	Soukeyna Kane
Senior Global Practice Director:	Riccardo Puliti
Practice Manager:	Charles Joseph Cormier
Task Team Leader:	Yussuf Uwamahoro

REPUBLIC OF GUINEA

POWER SECTOR RECOVERY PROJECT (P160771) - ADDITIONAL FINANCING

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ADDITIONAL FINANCING DATA SHEET

Guinea

Power Sector Recovery Project - Additional Financing (P160771)

AFRICA

Energy and Extractives Global Practice

Basic Information – Parent			
Parent Project ID:	P146696	Original EA Category:	B - Partial Assessment
Current Closing Date:	31-Dec-2019 – Credit and Grant		

Basic Information – Additional Financing (AF)			
Project ID:	P160771	Additional Financing Type (from AUS):	Restructuring, Scale Up, Cost Overrun
Regional Vice President:	Makhtar Diop	Proposed EA Category:	B - Partial Assessment
Country Director:	Soukeyna Kane	Expected Effectiveness Date:	15-Jul-2018
Senior Global Practice Director:	Riccardo Puliti	Expected Closing Date:	31-Dec-2020
Practice Manager/Manager:	Charles Joseph Cormier	Report No:	PAD2467
Team Leader(s):	Yussuf Uwamahoro		

Borrower				
Organization Name	Contact	Title	Telephone	Email
Ministry of Economy and Finance	Joachim Lama	Secretary General of Ministry of Economy and Finance	224669934551	joachim.lama@yahoo.fr

Project Financing Data - Parent (Power Sector Recovery Project-P146696) (in US$, Million)

Key Dates

Project	Ln/Cr/TF	Status	Approval Date	Signing Date	Effectiveness Date	Original Closing Date	Revised Closing Date
P146696	IDA-54990	Effective	16-Jun-2014	02-Jul-2014	30-Jan-2015	31-Dec-2019	31-Dec-2019
P146696	IDA-H9690	Effective	16-Jun-2014	02-Jul-2014	30-Jan-2015	31-Dec-2019	31-Dec-2019

Disbursements

Project	Ln/Cr/TF	Status	Currency	Original	Revised	Cancelled	Disbursed	Undisbursed	% Disbursed
P146696	IDA-54990	Effective	SDR	14.60	14.60	0.00	1.67	12.93	11.47
P146696	IDA-H9690	Effective	SDR	17.70	17.70	0.00	14.32	3.38	80.92

Project Financing Data - Additional Financing for the Power Sector Recovery Project - (P160771) (in US$, Million)

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

Total Project Cost:	25.00	Total Bank Financing:	25.00
Financing Gap:	0.00		

Financing Source – Additional Financing (AF)	**Amount**
International Development Association (IDA)	25.00
Financing Gap	0.00
Total	25.00

Policy Waivers

Does the project depart from the CAS in content or in other significant respects?	No
Explanation	
Does the project require any policy waiver(s)?	No
Explanation	

Team Composition

Bank Staff

Name	**Role**	**Title**	**Specialization**	**Unit**
Yussuf Uwamahoro	Team Leader (ADM Responsible)	Senior Energy Specialist	Senior Energy Specialist	GEE07
Alpha Mamoudou Bah	Procurement Specialist (ADM Responsible)	Senior Procurement Specialist	Procurement	GGO07
Jean Charles Amon Kra	Financial Management Specialist	Senior Financial Management Specialist	Financial Management	GGO26
Ali Ouattara	Team Member	Senior Financial	Utility Financial	GEE07

		Specialist	Analysis	
Claudia M. Pardinas Ocana	Counsel	Senior Counsel	Senior Counsel	LEGAM
Demba Balde	Social Safeguards Specialist	Senior Social Development Specialist	Social Safeguards	GSU01
Emeran Serge M. Menang Evouna	Environmental Safeguards Specialist	Senior Environmental Specialist	Environmental safeguards	GEN07
Fabrice Karl Bertholet	Peer Reviewer	Senior Financial Analyst	Senior Financial Analyst	GEE03
Issa Diaw	Peer Reviewer	Program Leader	Program Leader	AFCC1
Issa Thiam	Team Member	Finance Officer	Finance officer	WFALA
Juliana Chinyeaka Victor	Team Member	Senior Operations Officer	Operations	GEE08
Karidjatou Kragbe	Team Member	Temporary	Program Assistant	GEE07
Marie-Claudine Fundi	Team Member	Senior Program Assistant	Senior Program Assistant	GEE07
Miarintsoa Vonjy Rakotondramanana	Peer Reviewer	Senior Energy Specialist	Senior Energy Specialist	GEE01
Olayinka M. Bisiriyu	Team Member	Financial Analyst	Financial Analysis	GEE07
Pedro Antmann	Team Member	Lead Energy Specialist	Lead Energy Specialist	GEE08
Racky Dia Camara	Team Member	Program Assistant	Program Assistant	AFMGN
Thierno Bah	Team Member	Senior Energy Specialist	Senior Energy Specialist	GEE07
Extended Team				
Name	**Title**		**Location**	
Emmanuel Ngollo	Environmental Safeguards Specialist		Consultant, GEN07	

Locations					
Country	**First Administrative Division**	**Location**	**Planned**	**Actual**	**Comments**
Guinea	Conakry	Conakry Region		X	

Institutional Data
Parent: Guinea: Power Sector Recovery Project - P146696
Practice Area (Lead)
Energy & Extractives
Contributing Practice Areas
Additional Financing: Guinea Power Sector Recovery Project - P160771
Practice Area (Lead)
Energy & Extractives
Contributing Practice Areas

I. Introduction

1. This Project Paper seeks the approval of the Executive Directors to provide Additional Financing (AF) for the Guinea Power Sector Recovery Project (PRSP) (P146696) in the form of an additional International Development Association (IDA) credit in the amount of US$25 million to the Republic of Guinea. The parent project, financed through an IDA credit in the original amount of SDR 14.6 million (US$22.6 million equivalent) (Credit No. 5499-GN) and an IDA grant in the original amount of SDR 17.7 (US$27.4 million equivalent) (Grant No. H969-GN), was approved by the Board on June 16, 2014. If approved, this would be the first AF for the project, bringing total IDA financing under the project to US$75 million equivalent, of which US$47.6 million is through credits and US$27.4 million is through grants.

2. The parent project was designed to support the Guinean Power Sector Recovery Plan, which was developed through technical assistance (TA) by the French Development Agency (*Agence Française de Développement,* AFD) and the World Bank, and adopted by the Government of Guinea (GoG) in 2012. A number of donors are supporting the Power Sector Recovery Plan[1] as follows: the European Investment Bank (EIB) financed the rehabilitation of the existing hydropower plants (total installed capacity of 111.4 megawatt - MW), the Islamic Development Bank (IsDB) financed the rehabilitation of the Kaloum three thermal power plant (44 MW) and the rehabilitation of the distribution network in Greater Conakry along with the African Development Bank (AfDB), the Exim Bank of China financed the construction of the Kaléta hydropower plant (240 MW), and the GoG with a Mauritanian Independent Power Producer (IPP) Abdallahi Ould Noueiguedh Group financed 100 MW of additional thermal power plants in Conakry. These projects are progressing well. The Kaléta hydropower plant and the additional 100 MW of thermal capacity were commissioned in 2015.

3. The Project Development Objective (PDO) of the parent project is to improve the technical and commercial performance of Electricité de Guinée (Electricity of Guinea – EDG). The parent project has three components: the first component is providing support for the improvement of performance of EDG, the national electricity utility, through a Management Services Contract (MSC). The second component focuses on improving the Conakry distribution network and commercial performance of EDG. The third component supports technical assistance to the Ministry of Energy and Hydraulics (MEH) for power sector reforms and project implementation support.

4. The MSC provides for the preparation of an Internal Recovery Plan (IRP) of EDG within the first year of the contract execution, which is deemed essential if Guinea is to attract public and private investments in the energy sector. The IRP, adopted by the GoG in August 2017, one year later than the planned date,[2] was elaborated by the MSC contractor (private operator), based on the realities on the ground, experienced over the last two years of the implementation of the MSC. Following the completion of the IRP, the GoG requested AF to finance (a) critical activities that were identified during the preparation of the IRP but not foreseen at the parent project design stage; (b) activities, which did not have sufficient funds, that were identified during project preparation; and (c) activities for which costs had been underestimated during project preparation.

5. The proposed AF would help address the financing gap, enhance the development impact of the project, and contribute to the financial recovery of the electricity sector. Specifically, the AF will (a) provide additional resources to the MSC and technical auditor to turn around the performance of EDG; (b) improve

[1] The Power Sector Recovery Plan, adopted in 2012, aimed at rehabilitating grid infrastructure, increasing generation capacity, and improving the governance of the sector. It is monitored by the Energy Sector Working Group of donors and local power sector institutions.

[2] According to the MSC, the contractor was supposed to deliver the IRP on June 9, 2016, that is, eight months after the effective date of the contract.

the distribution network in Conakry through the construction of a new substation at Kissosso; (c) improve the commercial performance of EDG by implementing a Revenue Protection Program for high-value consumers and support the rollout of consumption meters to the customers of EDG; (d) build the capacity of EDG's human resources to sustain the performance of the utility after the completion of the MSC; and (e) provide technical support to the MEH, the Guinean Rural Electrification Agency (*Agence Guinéenne d'Electrification Rurale,* AGER), and the Public Water and Electricity Services Regulatory Agency to enhance their capacity for better performance. The proposed additional activities will address the bottlenecks to improved service delivery by EDG and other key institutions in the power sector, thereby enhancing the development effectiveness of the project.

6. The activities supported by the proposed AF are consistent with the PDO of the original project, which is to improve the technical and commercial performance of EDG, and as such, no changes are proposed to the PDO. To ensure the completion of new activities and promote effective implementation, it is proposed to extend the closing date of the parent project by 12 months to December 31, 2020. The disbursement estimates, implementation schedule, and Results Framework will also be revised in line with the proposed new activities and proposed closing date extension.

II. Background and Rationale for Additional Financing in the amount of US$25 million equivalent.

A. Country Context

7. Guinea is a resource-rich country. However, it is among the poorest in the world with an annual per capita income of only US$460. A series of external shocks, including the Ebola crisis and the sharp decline of commodity prices, has further exacerbated the poverty rate which was close to 58 percent in 2014.[3] The Ebola virus had a dramatic impact on the economy, with an estimated gross domestic product (GDP) loss of US$535 million for Guinea in 2015. With a population of 12.6 million people (2015), Guinea ranks ninth from the bottom of the Human Development Index (HDI), with 73 percent of the population living on less than US$2 a day, only 19 percent of the population having access to sanitation, and an adult literacy rate of 25 percent—the second lowest in the world. The female HDI value for Guinea is 0.364 in contrast with 0.464 for males, resulting in a Gender Development Index (GDI) value of 0.784 in 2015. These results place the country in the bottom fifth group of the ranking, notably below the average GDI values for Sub-Saharan Africa and low HDI countries, 0.877 and 0.849 respectively

8. To return the economy on a solid footing, the Government developed a post-Ebola recovery plan for 2015–2017 and has adopted the 2016–2020 National Economic and Social Development Plan (*Plan National de Développement Economique et Social,* PNDES), which covers all key sectors of the economy. The overall objective of the PNDES is to promote strong and high-quality growth to improve the well-being of Guineans and initiate the structural transformation of the economy, while putting the country on the path of sustainable development. The PNDES strategy is based on four development pillars: (a) promotion of good governance for sustainable development; (b) sustainable and inclusive economic transformation; (c) development of inclusive human capital; and (d) sustainable management of natural capital. It assumes an average economic growth rate of 9.4 percent per year for 2018–2020 based on the ambitious infrastructure projects in the pipeline, particularly in the energy and transport sectors. The proposed AF will specifically contribute to the sustainable and inclusive economic transformation pillar of the PNDES.

9. The energy sector will play a crucial role for the implementation of the PNDES. The PNDES will fast-track the implementation of the 2012 National Energy Policy which sets an objective to (a) guarantee

[3] A study is ongoing to determine the poverty rate in 2017. It will be published in June 2018.

the security of supply to contribute to the national security, reduce the dependency on fossil fuel, and enable exports through the diversification of energy sources; and (b) promote renewable energy and energy efficiency programs. The PNDES explicitly highlights the need to increase access to sufficient, reliable, and affordable modern energy services for socioeconomic transformation. It fixes targets to increase access to electricity from 29 percent (including 11 percent of illegal connections) to at least 35 percent by 2020 and to increase the share of renewable energy (excluding large hydropower) to 10 percent by 2020.

10. Guinea's ambition is to make use of low-cost hydroelectricity to meet domestic energy demand, including the mining demand, and in the medium term, to become a major exporter of electricity to neighboring countries within the West African Power Pool. This would be a major turnaround for a sector that currently requires indirect and direct subsidies of 1.5 percent of GDP (US$100 million in 2016) and could reach almost 3 percent of GDP in 2017.[4] The projects under active preparation (Souapiti I, Amaria, and Koukoutamba)[5] are expected to be commissioned by 2022 and will help realize Guinea's vision for hydropower. Guinea will begin exporting electricity very shortly, even if it does not fully meet the unmet domestic energy demand, as a way of boosting its foreign currency reserves. Guinea's role as an electricity exporter will be enhanced by the completion of several interconnector projects currently under preparation, including, the Organization for the Implementation of the Senegal River (*Organisation pour la mise en Vigueur du Fleuve Senegal*, OMVS) Transmission Expansion Project (P147921), Organization for the Implementation of the Gambia River (*Organisation pour la Mise en Vigueur du Fleuve Gambie* (OMVG) Interconnection Project (P146830)), and Côte d'Ivoire, Liberia, Sierra Leone, and Guinea (CLSG) Interconnector Project (P113266), which will complete the southern loop under the West African Power Pool by 2021. Commitments have already been made for the export of some energy from the Kaléta hydropower plant, which was commissioned in 2015. Foreign currency revenues from electricity exports and mining would also help stabilize the country's macroeconomic indicators.

11. The proposed AF will contribute to the improved performance of one of the enablers for the effective implementation of the PNDES, namely electricity services. This will require a sustained effort to shift the energy mix from expensive fossil fuel toward least-cost hydropower, reduce inefficiencies along the value chain, and ensure that the high-value customers pay for the electricity they consume, and eventually reduce energy subsidies over time. The AF would contribute to this effort by facilitating the improvement of the utility's technical and commercial performance. This is a challenging objective as Guinea has a long tradition of providing highly subsidized electricity services and presently, only 1 out of 2-kilowatt hour (kWh) produced is actually paid for.[6]

B. Sector and Institutional context

12. The current sector institutions in Guinea include both public and private sector players. The key sector institutions include EDG, the state-owned electricity utility that was created following the failure of the privatization in the 1990s. EDG is currently being managed by the consortium, Veolia-Seureca, since October 2015, under an MSC signed between the GoG and the consortium on June 19, 2015. An Inter-ministerial Management Services Contract Steering Committee (MSC SC), chaired by a minister of state in the President's Office, was established by decree[7] in May 2017 to monitor the MSC's performance and the associated performance contract between EDG and the GoG and recommend corrective actions as

[4] The International Monetary Fund (IMF) estimates that direct electricity subsidies are expected to be almost triple the amount budgeted (1.3 percent of GDP against the planned 0.5 percent) in 2017.
[5] Koukoutamba is being developed under the OMVS regional organization.
[6] With system losses of about 35 percent and billing collection rate of about 81 percent.
[7] Created by decree D/2017/101/PRG/SGG on May 11, 2017.

needed. The MSC SC comprises representatives from the President's Office, Prime Minister's Office, the MEH, Ministry of Finance, Ministry of Budget, Ministry of Planning and International Cooperation, Major Projects Management Office, and EDG. The MEH sets the sector policy and plays an overarching supervising role of the sector. The recently established AGER,[8] will oversee the development of rural electrification programs, including decentralized off-grid electrification solutions. The law establishing the independent regulator was adopted by the parliament on November 24, 2017, and the GoG is working towards operationalizing it in 2018. Several IPPs (Abdallahi Ould Noueiguedh, *La Guinéenne d'Elecricité*, and China International Water and Electric (CWE) operating Kaléta hydropower plant) produce more than 70 percent of electricity generation, leaving less than 30 percent of the generation to EDG. The electricity law is being updated to reflect new developments in the sector and encourage private participation. A set of regulations will follow to initiate the enforcement of the law before the end of 2018.

13. The access rate reached 18 percent in 2015,[9] and continues to be below the Sub-Saharan African average of 37 percent. The access rate masks significant regional disparities, with only 3 percent access in rural areas. Through the financing of the Energy Sector Management Assistance Program trust fund (P145846), the GoG commissioned a Geographical Information System-based National Least Cost Electricity Access Scale Up Program and presented it to the donors in a consultative group meeting in Paris on November 17, 2017, to mobilize the required financing (to the tune of around US$644 million), with the aim of increasing the access rate from the current 18 percent to 36 percent by 2020 through grid extensions (including regularization of illegal connections) and off-grid solutions.

14. Despite its vast hydropower potential of about 6230 MW (ten times the size of current grid capacity), Guinea's energy sector performance has remained below that of its regional peers. Unreliability is rampant: Guinea reported 1,962 outages due to breakdowns per year. The perception of reliability is the lowest in Sub-Saharan Africa, with 20 percent of the population believing that electricity is never reliable (Afro-barometer 2014). Extended blackouts often contribute to street protests, with the most recent protest reported in June 2017. EDG's operational inefficiencies also translate into (a) high commercial and technical losses, standing at about 35 percent (among the highest in Sub-Saharan Africa), due to poor development and maintenance of the transmission and distribution networks, illegal connections (around 11 percent of the population), and a poor billing system with many unmetered customers (about 80 percent) and (b) a weak collection rate, of about 81 percent in 2017 (below the average in Sub-Saharan Africa). These issues are compounded by the gap between electricity tariffs and cost of supply, which prevents the utility (EDG) from making new investments. With three-quarters of all consumers belonging to the low voltage (LV) category, average electricity tariff is at about US$0.09 per kWh, which is well below the cost of service of about US$0.2 per kWh. Consequently, EDG is in a critical financial situation with significant debts and arrears. Indeed, EDG owes around US$240 million (about 3 percent of GDP or four years of annual turnover) to suppliers, while the GoG owes EDG about US$160 million.

15. As electricity tariffs are not cost reflective, Guinea's power sector generated a quasi-fiscal deficit[10] of about 2.1 percent of GDP in 2016. This is higher than the 0.9 percent average of 39 countries in Sub-Saharan Africa—excluding South Africa. It is also large in comparison to the central government's fiscal deficit (6.9 percent of GDP in 2015) and key social sectors such as education (3.2 percent of GDP in 2014).

[8] Created by the decree D/2017/099/PRG/SGG on May 9, 2017.
[9] Based on the results of an access baseline survey conducted by the Castalia group in 2015; the access rate may be 29.1 percent if one takes into account illegal connections.
[10] The difference between the net revenue of an efficient utility and the net cash it collects.

16. The installed capacity in 2016 was about 590 MW while the available capacity was limited to around 458 MW due to ongoing rehabilitation of the existing power plants. In 2016, EDG generated 1531.5 GWh to meet the needs of its 246,527 customers, of which 65 percent live in the capital city of Conakry. About 45 percent of the energy was generated by the Kaléta hydropower plant, 31 percent by thermal Independent Power Producers (IPPs), and 24 percent by EDG's legacy power plants. The electricity demand has grown by 13 percent in 2015 and it is expected to grow at 9 to 10 percent per year in the next five years. Table 1 shows statistical data of the utility's performance in 2015 and 2016. The demand for electricity in Guinea is not accurately known because (a) many households and businesses are connected to the network illegally and are not listed in the EDG customer database; (b) up to 80 percent of LV customer billing is based on a flat fee with no metering; and (c) the demand may adjust downward once billing collection improves. The demand forecasted in 2025 is estimated at 1,623 MW driven by (a) meeting unserved demand; (b) the acceleration of access to electricity under the Sustainable Energy for All (SEA4ALL) initiative and the National Least Cost Electricity Access Scale Up Program; and (c) the likely development of industrial activities, including major mining projects.

Table 1. EDG's Performance in 2016

Item	Units	2015	2016	Improvement
Power generation	GWh	1118.191	1 531.504	**37%**
EDG	%	39	24	–15 pts
IPPs	%	16	31	15 pts
Kaléta	%	45	45	0 pts
Peak demand	MW	260	295	**13%**
Number of clients	N	238,469	246,527	**3,4%**
Prepayment meters	n	104	1778	1610%
Billed energy	GWh	702,803	1,002,937	**42,7%**
Annual turnover	GNF, millions	491,730	780,388	**28%**
Revenues	GNF, millions	407,561	616,821	**51,3%**
Revenue collection rate	%	60	79	**19 pts**
Staff	N	1,592	1,582	**–1%**

Source: EDG's annual report 2016.

17. The GoG has ambitious development plans prioritizing privately financed generation and public sector financed transmission and distribution for access, as well as some hydropower. Lately, a few power generation projects have been commissioned, including the Kaléta (240 MW) hydropower plant (commissioned in August 2015)[11] as well as thermal plants developed as IPPs, including Kaloum 1 (24 MW), Kaloum 2 (26 MW), Kipe (50 MW), and K-Energies (75 MW) that added around 175 MW of installed capacity to the national grid. The country launched the construction of the 450 MW Souapiti I hydropower plant using public funds, to meet the domestic and regional demand by 2022 and reduce overall risks of shortage of supply. Souapiti I will have a reservoir that will mitigate the seasonality along the cascade of projects on the Konkouré river, thus limiting the need for expensive thermal power generation during the dry season, which constitutes about 30 percent of current electricity generation. Regional hydropower

[11] Kaléta has been partly privatized to raise equity financing for Souapiti. CWE and the GoG own 51 percent and 49 percent of Kaléta's shares respectively.

projects, including Sambangalou through the OMVG (120 MW) and Koukoutamba through the OMVS (290 MW) are under development. Other projects in the pipeline include Amaria hydropower plant (300 MW), Poudaldé (60 MW), and other renewable energy projects to be developed under public-private partnerships (PPPs).

18. The expansion of electricity production would, however, increase the total cost of electricity production. This would translate into higher subsidies. The IMF estimates the increase at 2.1 percent of GDP in 2016, and therefore requires that the GoG (a) develop a policy framework to ensure that fiscal transfers to the electricity sector do not become unsustainable and (b) persist in the implementation of the Guinean Power Sector Recovery Plan to reach financial sustainability in the medium to long term. The Government has concluded negotiations for a new IMF-supported program (2018-2020), which includes fiscal consolidation measures needed to maintain fiscal deficit at a sustainable level. In addition, the MSC of EDG is pushing the GoG to take a decision on future tariff-subsidies commitment. Thus, the country is under great pressure to rationalize subsidies by raising electricity tariffs toward cost recovery. Any tariff increase in Guinea must take into account the global best practice, which indicates that tariff reforms are more successful when there is a credible promise of improved service delivery. The reverse is also true, which is why the improvement of the operational and financial performance of the utility is a key priority.

19. The Government is undertaking an assessment of arrears, which have become worrisome. As of June 30, 2017, the GoG owes EDG around US$160 million, of which GNF 600 billion (approximately US$66 million) is for public administration and street lighting consumption. On the other hand, EDG has accumulated around GNF 2180 billion (approximately US$240 million) of arrears to different suppliers as of October 31, 2017, representing about 3 percent of GDP or four years of EDG's annual turnover. In the effort to find a sustainable solution to the utility's short-term debts and accumulated arrears, the GoG is hiring a consultant to assist in undertaking a financial restructuring of EDG in 2018. A first step to reduce the arrears is the implementation of the IRP, which has important measures that improve billing practices, increase billing collection rates, and reduce technical and commercial losses. Such measures are also supported by the World Bank's Guinea Second Macroeconomic and Fiscal Management Development Policy Operation (DPO), to be delivered to the Board mid-March 2018 (P161796).

20. The preliminary results of the MSC for EDG are mixed and there is a joint responsibility of the Government and the MSC contractor to improve performance. The MSC of EDG became effective on October 9, 2015. To date, some preliminary positive results have been achieved, in particular (a) reduction in the number and duration of power interruptions; (b) reduction of operational expenditures by 32 percent; (c) increase in generation capacity in rural secondary cities with 14 small generators; (d) increase in the annual turnover by 28 percent; and (e) increase in the billing collection rate by 19 percent. However, the midterm review of the MSC, undertaken in November 2017, revealed that the contractor registered minimal improvements in the expected results regarding commercial performance and did not make sufficient efforts to build the capacity of Guinean counterparts. To rectify the situation and improve commercial performance through modernization of billing function, the GoG has secured funds in the 2018 budget for the installation of smart meters for nonresidential large consumers (as part of the implementation of the Revenue Protection Program in this AF) as priority and both prepayment and post-payment meters to residential consumers, depending on the choice of the beneficiary. This will also require the political will to promote the concept that large consumers pay for electricity consumption, which should convince the rest of the population to pay. Investments are also required to reduce losses to within Sub-Saharan African averages or lower. The MSC contractor is committed to improve billing collection (currently at 81 percent), rollout consumption meters (currently 80 percent of consumers have no meters), and work with the GoG to reduce losses (still at 35 percent).

21. For the success of the MSC, it is critical that the MSC contractor (the 'Operator' under the MSC) restores EDG's top management team with qualified experts and sustains them until the end of the contract. In September 2017, four key experts of the MSC contractor left EDG and the MSC contractor is in the process of replacing them. The Government's primary interest remains that staff appointments be made based on expert qualifications and experience and should a staff member need to be replaced, that they be replaced with staff of at least equal qualification. During the midterm review of the project conducted in November 2017, the MSC contractor committed to fully reestablish the management of EDG before the end of March 2018 and ensure the stability of the team for the MSC's remaining contractual period. The AF, if approved, will support the financing of the full-time presence of key personnel for the remaining contract duration of two years until end 2019. Furthermore, there is an agreement with the MSC SC, the MEH, and the MSC auditor on the way forward, to strengthen the supervision of the implementation of the contract, with a special focus on commercial and human resources development improvements. The MSC submitted an annual action plan in December 2017, conforming with the IRP of EDG, with clear milestones and key performance indicator targets, to enable the evaluation of the performance by the MSC technical auditor every quarter starting with the quarterly audit planned for April 2018. Ultimately, in a worst-case scenario, should the MSC contractor fail to get satisfactory results, termination of the MSC and launching a new bidding process to select a new contractor will be considered by the Government.

22. The project's midterm review also identified a number of recommendations for the GoG to strengthen its role in the management of the energy sector, which affects the performance of EDG. The MSC SC is committed to hold meetings at least on a quarterly basis to review the performance of the MSC contractor, based on the independent assessment of the MSC technical auditor. Specific commitments of the Government include the establishment of a mechanism to ensure the regular and timely payment of electricity consumption from the public sector and state-owned enterprises, the operationalization of the regulator to provide regular independent assessments of tariff methodology, the adoption of a clear policy on tariff adjustments based on the results of the ongoing tariff study to be commissioned in April 2018, and the communication of the Government's vision and action plan to improve electricity services to the population. The Government is also committed to undertake analytical work to inform a decision on the future governance of EDG at least 10 months before the expiration of the MSC in October 2019. Different options, including extension of the MSC, handover of the management to trained Guinean staff, affermage and privatization of EDG, will be analyzed. This assessment is expected to be completed by December 2018.

23. The World Bank is engaged in the development of Guinea's energy sector through policy dialogue, investment activities and technical assistance. The World Bank's ongoing operations include (a) the Power Sector Recovery Project (P146696), the parent project of the proposed AF; (b) the US$2.1 million World Bank-executed SEA4ALL TA (P145846) that financed the electricity access scale-up investment prospectus to mobilize concessional financing for access, the monitoring and evaluation framework to track the performance of the power sector, the capacity building of the MEH in PPPs and the development of a hydropower atlas for the country, and the Internet viewer for potential investors; (c) regional interconnector projects: Organization for the Implementation of the Senegal River (*Organisation pour la mise en Vigueur du Fleuve Senegal*, OMVS) transmission expansion project (P147921), Organization for the Implementation of the Gambia River (*Organisation pour la Mise en Vigueur du Fleuve Gambie* (OMVG) Interconnection Project (P146830)), and Côte d'Ivoire, Liberia, Sierra Leone, and Guinea (CLSG) Interconnector Project (P113266), which are financed by IDA together with other donors; and (d) the Guinea Second Macroeconomic and Fiscal Management DPO series (P161796), which includes energy

sector-related prior actions.[12] The Electricity Sector Efficiency Improvement Project (ESEIP, P077317) with an overall financing of US$30 million closed on June 30, 2016, and the Decentralized Rural Electrification Project (P074288) with a financing of US$7 million closed on June 30, 2013. The new Country Partnership Framework (CPF) has identified further sector investment needs, including the Guinea Electricity Access Scale Up Project (P164225) and the Guinea-Mali Interconnection Project (P166042), to be delivered to the Board in FY2019.

C. Higher Level Objectives to which the Project Contributes

24. The proposed AF is well aligned with the Guinea Country Partnership Strategy (CPS) FY2014–2017 [13] and the CPF FY2018–2020 under preparation, which will be presented to the Board of Directors of the World Bank Group in May 2018. The CPS states that the WBG will support the Government's Action Plan to improve energy services in the country over a three to five-year horizon through: (i) urgent investments and financial/institutional measures to turnaround EDG and improve the reliability of energy services; and (ii) support the development of the hydropower potential in Guinea. The Guinea Power Sector Development Policy Note prepared by the World Bank in June 2017 to inform the new CPF (FY2018–2020) and facilitate its dialogue with the GoG in defining the sector priorities (2016–2025) confirmed the investments to be financed by the AF as critical for improving the sector management and efficiency. The AF is also part of the World Bank Group's broader engagement in the sector as described earlier (Paragraph 23).

D. Original Project Description and Performance

25. **Parent project performance.** The project ratings for 'Overall Implementation Progress' and 'Progress toward the PDO' have been consistently Moderately Satisfactory over the past two years in the project Implementation Status and Results Reports. The parent project was approved on June 16, 2014 and became effective on January 30, 2015. The project faced difficulties at the beginning due to turnover in Project Implementation Unit (PIU) staff and delayed replacement of staff, as well as delays in reaching the effectiveness for the MSC of EDG. Overall disbursements, as of February 20, 2018, stand at 48.61 percent[14], while 90 percent of the project funds are committed through contracts under implementation. Key results achieved so far from 2014 to today include the increase in billing collection rate from 77 to 81 percent, average daily hours of services increased from 12 to 16, electricity losses reduced from 42 to 35 percent; etc.

26. The GoG is in compliance with the project's two dated legal covenants, the appointment of the technical auditor for the MSC and the appointment of the project financial auditor. financial management FM is rated Moderately Satisfactory and all the project's interim financial reports (IFRs) are up-to-date. However, there are inadequacies to be addressed during the project implementation, including (a) the need to improve the engagement of the oversight structure by creating a Project Steering Committee to replace the inter-ministerial technical committee for power sector reform that is no longer active and (b) the absence of an internal audit function for the project. For the purposes of this AF, the fiduciary risk has been assessed Moderate following the primary risk assessment which considered the current risk rating of the parent project and the mitigation measures required for the AF (Annex 2). Procurement

[12] Two energy sector prior actions include (a) the Recipient, through the MEH, has (i) adopted EDG's Management Improvement Plan and (ii) committed to provide budgetary support for the first year of the associated business plan; and (b) the Recipient's Council of Ministers has submitted, to Parliament, a draft law establishing an independent regulator for the electricity sector to monitor financial compliance with electricity tariffs.

[13] Report number 76230-GN.

[14] Disbursements of about 73% on IDA-H9690 and 10.5% on IDA-54990

performance is also rated Moderately Satisfactory. Safeguards performance is rated Satisfactory. However, the risk on environmental and social safeguards was raised to Substantial given the EDG's limited capacity and the increasing number of projects it manages, with different sources of financing. The downgrade is also because of the delays to the implementation of the recommendations of the Environmental and social Audit of EDG grid infrastructure that was carried out during the preparation of the project. The midterm review of the project was conducted in November 2017 and the findings confirm that the project remains likely to achieve its PDO.

Parent Project Components and Status of Implementation

Component 1: Improvement of EDG's Performance through a Management Services Contract (US$14.00 million equivalent)

27. This component, implemented by the MEH, finances the MSC between the Government and a private operator with sufficient technical and fiduciary capacity to provide management, operation, and capacity-building services for EDG over four years for EDG (2015-2019). The MSC was signed on June 19, 2015, for a period of four years, and became effective on October 9, 2015. The MSC contractor deployed a top management team[15] at EDG and accomplished specific short-term missions[16] to assess the status or baseline situation of different departments and operations of EDG to be able to prepare the contractual IRP of EDG. The IRP reflects (a) strategic activities to turn around the performance of EDG with special focus on improving service delivery, commercial performance, and human resource capacity building; (b) specifications and costs of each activity; and (c) the EDG's business plan for the MSC contract period (2015–2020) and beyond toward a fully creditworthy utility. The final version of the IRP was endorsed by the technical auditor in June 2017, submitted in July 2017, and adopted by the GoG in October 2017. From the midterm review report of the technical auditor, both the MSC contractor and the GoG have shortcomings and a shared responsibility in meeting their respective obligations under the MSC. Out of 17 defined performance indicators,[17] the MSC contractor performed well on five indicators, including (a) System Average Interruption Duration Index (high voltage - HV) that has improved to 1.3 hours by end of June 2017 (already reached the target of 2 hours in 2019); (b) System Average Interruption Duration Index (medium voltage - MV) has improved to 120 hours by end of June 2017 (achieved the target of 2017 of 280 hours); (c) Rate of non-planned outages of power plants has decreased from 28 percent in 2016 to 18 percent by end of June 2017 (the target was 15 percent in 2017, 10 percent in 2018, and 5 percent in 2019). However, the MSC contractor is yet to deliver on commercial performance improvement and capacity building of EDG's human resources. The key performance indicators include (a) the ratio of the number of customers billed on meters to the number of total customers which has marginally increased from 1 percent to 8.6 percent (the target is 80 percent for 2018 and 100 percent in 2019) due to strong resistance by the population with regard to the installation of meters and (b) low billing collection rate for the public institutions which has marginally increased from 45 percent to 60 percent while the target for 2017 is 100 percent, and so on. The MSC contactor is committed to shift the focus to the commercial performance improvement and capacity building over the next two years with support from the AF.

Component 2: Improvement of Conakry Distribution Network and Commercial Performance of EDG (US$33.70 million)

[15] Administrator General plus seven directors, Director of Administration and Finance, Director of Commercial Department, Director of Human Resource Development, Director of Generation and Transmission, Director of Distribution, Director of Procurement, and Director of Planning and Project Implementation. Four of the directors are in the process of being replaced.
[16] 25 out of 26 that are planned over two years.
[17] There are 23 key performance indicators of the MSC. Six of them are yet to be defined in terms of calculation methodology.

28. This component, implemented by EDG, supports investments to enable EDG improve the reliability of the electricity supply in the capital city of Conakry, where 80 percent of its clients are located. The component builds on the World Bank-financed ESEIP (P077317, closed on June 30, 2016), which supported the rehabilitation and upgrading of the network in the district of Kaloum and complements the AfDB- and IsDB-financed rehabilitation works in the Ratoma and Matoto districts of greater Conakry.

Subcomponent 2.A: Improving distribution network conditions in Conakry

29. This subcomponent supports the GoG's priority investment program, including (a) rehabilitating and upgrading the dilapidated distribution infrastructure in the Dixinn district of greater Conakry; (b) providing operation and maintenance (O&M) equipment and tools; (c) supplying and installing the protection system of hydropower plants against voltage surges to ensuring sustainable and safe supply of power; and (d) supplying and installing equipment to compensate for reactive power and improve power factor in the system. Rehabilitation works are ongoing and O&M equipment and tools have been delivered.

Subcomponent 2.B: Improvement of commercial performance of EDG

30. This subcomponent is financing investments to improve the EDG's commercial performance. These include some elements of the IRP of EDG: the implementation of a census of all EDG customers and codification of the clients, the implementation of an integrated management system (IMS) of EDG, and the rehabilitation of household connections, including standardization of informal and illegal connections in Kaloum, Ratoma, and Matoto districts. Most of the contracts for these activities are under execution.

Component 3: Technical Assistance to MEH, Monitoring and Evaluation, and Project Implementation Support (US$2.30 million)

31. This component, implemented by the MEH, provides TA to the MEH to enhance the MEH's capacity to monitor and supervise the MSC contractor and carry out other sector policy reforms and oversight activities.

Subcomponent 3.A: Technical Assistance to the MEH

32. This subcomponent supports the MEH's supervision of the MSC contractor (operator) and provides TA to the MEH to carry out other sector policy and oversight activities, including TA to implement financial restructuring of EDG, independent technical auditing to directly monitor the MSC contractor's deliverables and verification of key performance indicators reported by EDG, and TA to develop the GoG's anti-fraud policy and the legal instrument to enforce it. The implementation of these activities is progressing steadily. The technical MSC auditor was appointed on August 12, 2016 by the GoG for monitoring and supervising the execution of the MSC and the associated performance contract between the GoG and EDG, describing mutual responsibilities of both parties to achieve the agreed sector performance results. In May 2017, the GoG put in place a high-level MSC SC chaired by a Minister of State, Adviser in the President's Office, to supervise the execution of the MSC and the performance contract.

Subcomponent 3.B: Project Implementation Support

33. This subcomponent covers costs related to the provision of equipment and services of experts in the areas of procurement, financial and disbursement management to enable the MEH-PIU to implement Components 1 and 3 of the project.

E. Rationale for Additional Financing

34. The overarching rationale of the AF is that the existing financing from the parent project is not sufficient to cover the additional critical activities proposed in the adopted IRP of EDG and the parent project would not fully achieve the intended PDO without the implementation of these additional activities. Following the development of the IRP by the MSC contractor (financed by the parent project), a set of activities required for the full achievement of the PDO and enhancing sustainability of the project results has been identified. These include (a) upgrading distribution network through the construction of a new substation in Kissosso to release the load on the existing substations and improve the quality of service in Ratoma and Matoto districts in Conakry while reducing distribution losses in these areas; (b) implementing a Revenue Protection System to permanently secure about 80 percent of EDG's annual revenues for nonresidential large consumers; (c) supplying and installing around 20,000 consumption meters targeting large consumers (currently 80 percent of consumers have no meters to measure their consumption and are hence being billed on a lump-sum basis), as part of a larger multidonor initiative aiming at installing around 250,000 meters[18]; and (d) implementing EDG's Human Resources Capacity Building Plan to sustain the performance of the utility's operations after the MSC's expiration. The AF will also finance additional man-month(s) for experts and specific technical missions from the MSC contractor to ensure the implementation of the IRP of EDG within the MSC's timeline (2015–2019).

35. By financing these activities, the AF will improve project results: enhancing the condition of the electricity network in Conakry, reducing technical and commercial losses, improving the management of EDG, and significantly increasing the company's revenues. By supporting capacity building of the EDG staff in addition to skills transfer and preparation of future managers of EDG by the MSC contractor, the AF will enhance the sustainability of the project results. The AF will finally address the financing gap for activities planned in the parent project that were not fully funded. The costs of some activities of the parent project were underestimated. These include (a) the technical audit of the MSC and (b) support to the PIU. The proposed AF will address these financing gaps.

36. **Construction of a new substation in Kissosso (110** Kilo Volt **(kV)/20 kV).** The construction of a new substation in Kissosso, which was not included in the parent project, is critical to increase supply, reduce losses, and provide reliable power supply to the areas of Ratoma and Matoto in Conakry by releasing load from the two existing overloaded substations in those areas, following the commissioning of Kaléta HPP in 2015. This activity was identified by EDG among the top priorities to improve the quality of its service in the greater Conakry area.

37. **Establishment of the Revenue Protection Program for large customers and supply and installation of consumption meters for customers.** The installation of smart meters and implementation of a Revenue Protection Program for large customers is urgent for EDG to permanently secure about 80 percent of its annual revenues. The installation of meters is indeed critical as 80 percent of electricity consumers do not have meters and are billed on a fixed rate per month, regardless of their consumption. Based on poor performance of the ESEIP (P077317) in rolling out prepayment meters due to resistance from the population, the new strategy adopted by the GoG is to allow beneficiaries to choose between post-payment and prepayment meters, with the possibility to convert post payment to prepayment in case of prolonged nonpayment by a consumer.

38. **Capacity building for EDG's human resources and additional time and effort for the MSC contractor's experts to ensure that the MSC objectives are fully and sustainably achieved**. The IRP

[18] There are other donors including the AfDB, the IsDB, the AFD, financing the supply and installation of meters.

identified a critical capacity-building program to allow the staff of EDG to take over from the MSC contractor at the end of the MSC. This program needs to be implemented as a matter of urgency in the two remaining years of the MSC. According to the same IRP, additional efforts of key experts and specific short-term missions from the MSC contractor are required to achieve the targeted results. The initial assessment of the time and efforts needed from the MSC was based on consultant estimates, while the IRP has been developed based on the circumstances and facts on the ground leading to the conclusion that capacity building is needed not only for professional staff, but for most of the intermediate and lower-level staff. The thorough analysis found that additional time and effort of experts and funds will be needed to reach the MSC objectives. The AF will support the implementation of the Capacity Building Program (2017–2019) of EDG's staff and the extension of contracts for the key experts whose required time was underestimated.[19] In addition, based on the experience of the first years of the MSC, the auditor will be required to do more missions than initially planned.

Consideration of Other Options

39. The World Bank team considered preparing a new operation instead of an AF. However, given the precise alignment of the proposed activities with the PDO of the parent project (P146696) and the limited time to implement the MSC's predefined objectives within the time frame of the contract (by end 2019), an AF was seen as a more efficient option.

III. Proposed Changes

Summary of Proposed Changes

The activities under the AF are aligned with the PDO of the parent project and will be incorporated under existing project components, namely Component 1 (Support the improvement of EDG's performance through a management services contract), Component 2 (Improvement of Conakry distribution network and commercial performance of EDG), and Component 3 (Technical assistance, capacity building and project implementation support). A closing date extension to December 31, 2020, is proposed to allow for completion of activities under the project, particularly the activities to be financed under the proposed AF. The disbursement estimates and implementation schedule are revised in line with the proposed new activities and closing date. Adjustments will be made in the PIU (located within the MEH) to reduce redundancies and improve FM efficiency by transferring FM to the PIU of EDG. Two activities under the parent project, the compensation of reactive power on the grid and protection of hydropower plants, are dropped because they are covered under projects financed by other donors: West African Development Bank (BOAD) and EIB respectively. Components and costs will be revised to account for new activities under the AF. Four new covenants related to production and disclosure of annual audit reports of EDG, adoption of a financial restructuring plan of EDG, maintenance of qualified key experts of the MSC contractor throughout the MSC execution period, the carrying out of an assessment of the different options available leading to a decision for the future governance of EDG after the expiration of the MSC, and the establishment, not later than four months after the effectiveness date and the maintenance of the Project Steering Committee, were added. The project Results Framework will be updated to reflect the results of the activities financed under the proposed AF and the new closing date.

[19] These include the Director of Studies and Works (extension of two years), Director of Procurement (extension of two years), Director Human Resource Development (extension of one year), and Director of Generation and Transmission (extension of one year).

Change in Implementing Agency	Yes [ ] No [X]
Change in Project's Development Objectives	Yes [ ] No [X]
Change in Results Framework	Yes [X] No [ ]
Change in Safeguard Policies Triggered	Yes [ ] No [X]
Change of EA category	Yes [ ] No [X]
Other Changes to Safeguards	Yes [ ] No [X]
Change in Legal Covenants	Yes [ ] No [X]
Change in Loan Closing Date(s)	Yes [X] No [ ]
Cancellations Proposed	Yes [ ] No [X]
Change in Disbursement Arrangements	Yes [ ] No [X]
Reallocation between Disbursement Categories	Yes [ ] No [X]
Change in Disbursement Estimates	Yes [X] No [ ]
Change to Components and Cost	Yes [X] No [ ]
Change in Institutional Arrangements	Yes [ ] No [X]
Change in Financial Management	Yes [ ] No [X]
Change in Procurement	Yes [ ] No [X]
Change in Implementation Schedule	Yes [X] No [ ]
Other Change(s)	Yes [ ] No [X]

Development Objective/Results

Project's Development Objectives

Original PDO

The PDO is to improve the technical and commercial performance of the *Electricité de Guinée (EDG)*

Change in Results Framework

Explanation:

The project Results Framework has been updated to reflect the impact of the AF activities, to include the World Bank's new corporate results indicators, and to incorporate indicators on citizen engagement and gender, as well as to revise some baseline and end targets for existed indicators. The new PDO indicators include (a) average interruption frequency per year in the project area; (b) people provided with new or improved electricity service; and (c) people provided with new or improved electricity service - female. The intermediary indicators introduced are (a) people provided with access to electricity services under the project by household connections - rehabilitation and standardization of household connections in Kaloum, Ratoma, and Matoto; (b) people provided with access to electricity services under the project by household connections - rehabilitation and extension of distribution network in Dixinn; (c) number of transformers installed, of which large consumer smart meters; (d) number of meters installed; (e) beneficiary satisfaction survey completed, published; and (f) average number of hours of training per staff per year. The end target dates have been extended in line with the proposed new closing date of the project of December 31,2020.

Compliance						
Covenants - Additional Financing (Power Sector Recovery Project - Additional Financing - P160771)						
Source of Funds	**Finance Agreement Reference**	**Description of Covenants**	**Date Due**	**Recurrent**	**Frequency**	**Action**
IDA	Section I.F(1) of Schedule 2, to the Financing Agreement and Section C.1-Schedule 1 of the Project Agreement	The Recipient shall cause EDG to produce and disclose, and EDG shall produce and disclose, not later than June 30 of each fiscal year, throughout project implementation, annual consolidated audited financial statements, in form and substance satisfactory to the Association and in accordance with international accounting standards.		☒	Yearly	New
IDA	Section I.F(2) of Schedule 2, to the Financing Agreement	The Recipient shall, not later than six (6) months after the effective date, adopt the financial restructuring plan of EDG in form and substance satisfactory to the association.	15-Jan-2019	☐		New
IDA	Section I.C(2) of Schedule 2, to the Financing Agreement	The Recipient shall cause the Operator to maintain employed under the Management Services Contract and throughout its implementation period, qualified and experience key experts in number		☒	Continuous	New

		and with qualifications satisfactory to the Association.				
IDA	Section I.A(1) of Schedule 2 to the Financing Agreement.	The Recipient, through the MEH, shall establish, not later than four (4) months after the Effective Date, and thereafter maintain throughout Project implementation, the Project Steering Committee to be responsible for the suitable oversight of the Project, and composed of representatives of the MEH and the Recipient's Ministry of Finance and Economic Planning, Ministry of Budget, Ministry of Planning and International Cooperation, and the Recipient's Prime Minister's Office.	15-Nov-2018	☐		New
IDA	Section I.C(3) of Schedule 2 to the Financing Agreement.	The Recipient shall, not later than ten (10) months before the expiration of the Management Services Contract, conduct an assessment of the different options available leading to a decision for the future governance of EDG after the expiration of the Management Services Contract	31-Dec-2018	☐		New

IDA	Section I.E(4) of Schedule 2 to the Financing Agreement	The Recipient shall, every three (3) months, collect, compile and furnish, as part of the Project Report, reports on the status of compliance with the Safeguards Instruments.		☒	Quarterly	New

Conditions

Source of Fund	Name	Type
IDA	Updating the Project Implementation Manual, Article V, 5.01 of the Financing Agreement	Effectiveness

Description of Condition

The Recipient shall have updated the Project Implementation Manual, in form and substance satisfactory to the Association, to ensure the full coverage of the execution of the Project activities.

Risk

Risk Category	Rating (H, S, M, L)
1. Political and Governance	High
2. Macroeconomic	Substantial
3. Sector Strategies and Policies	Substantial
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Substantial
7. Environment and Social	Substantial
8. Stakeholders	High
9. Other	
OVERALL	High

Finance

Loan Closing Date - Additional Financing (Power Sector Recovery Project - Additional Financing - P160771)

Source of Funds	Proposed Additional Financing Loan Closing Date
IDA Credit from CRW	31-Dec-2020

Loan Closing Date(s) - Parent (Power Sector Recovery Project - P146696)

Explanation:

An extension of the project closing date to December 31, 2020 is proposed to allow for completion of activities under the parent project that have already registered delays, and those proposed under the AF.

Ln/Cr/TF	Status	Original Closing Date	Current Closing Date	Proposed Closing Date	Previous Closing Date(s)
IDA-54990	Effective	31-Dec-2019	31-Dec-2019	31-Dec-2020	
IDA-H9690	Effective	31-Dec-2019	31-Dec-2019	31-Dec-2020	31-Dec-2019

Change in Disbursement Estimates (including all sources of Financing)

Explanation:

Disbursement estimates are updated to reflect the additional activities to be supported under the AF and the proposed new closing date.

Expected Disbursements (in US$, thousands) (including all Sources of Financing)

Fiscal Year	2015	2016	2017	2018	2019	2020	2021			
Annual	2,500.00	6,500.00	11,000.00	22,000.00	20,000.00	10,000.00	3,000.00			
Cumulative	2,500.00	9,000.00	20,000.00	42,000.00	62,000.00	72,000.00	75,000.00			

Allocations - Additional Financing (Power Sector Recovery Project - Additional Financing - P160771)

Source of Fund	Currency	Category of Expenditure	Allocation	Disbursement %(Type Total)
			Proposed	Proposed
IDA	US$	(1) Goods, works, non-consulting services, consultants' services, Training and Operating Costs for Components 1 and 3(b)	5,500,000.00	100.00
IDA	US$	(2) Goods, works, non-consulting services, consulting services, voluntary retirement, Training and Operating comp. 1 and 3(a)	19,500,000.00	100.00
		Total:	25,000,000.00	

Components

Change to Components and Cost

Explanation:

The proposed AF will retain the three components of the original project and add new activities as described in the following paragraphs.

Component 1: Improvement of EDG's performance through a management services contract (AF: US$2.00 million equivalent). The AF will finance the additional services of experts from the MSC contractor without extending the MSC execution period ending in October 2019. This will enable EDG to maintain the experts of the MSC contractor throughout the remaining period of the MSC to deliver the expected results and transfer skills and prepare future management team of Guinean nationals. It will also finance the additional specific technical support missions identified in the IRP of EDG as adopted by the GoG in October 2017.

Component 2: Improvement of Conakry distribution network and commercial performance of EDG (AF: US$13.00 million equivalent). This component will finance critical investments identified by the IRP of EDG

to improve (a) the distribution network for better service delivery and (b) commercial performance of EDG.

Subcomponent 2.A: Improving Distribution Network (US$8.00 million)

The AF will provide financing to upgrade the distribution network by constructing a new substation 110 kV/20 kV in Kissosso (US$8 million), which is critical to increase supply, reduce losses, and provide reliable electricity to the areas of Ratoma and Matoto in Conakry. This substation is among the top priorities identified by EDG to improve service delivery in Conakry. The substation will be located in the district of Matoto, 23 km away from the center of Conakry, the capital city of Guinea. The scope of work will include the design, supply, and installation and commissioning of the substation and its equipment, including civil works. The following equipment will be, among others installed: 2 × 110 kV bay, 2 × 50 MVA 110/20 kV transformers, 2× 20 kV bay, and 9 20 kV feeders.

Subcomponent 2.B: EDG's commercial performance improvement (US$5.00 million)

The AF will finance the supply and installation of smart meters to around 6,500 nonresidential large consumers of electricity to protect about 80 percent of revenues of EDG as identified as an urgent activity to increase EDG's revenues. It will also finance the supply and installation of consumption meters to residential customers and the O&M equipment and tools.

(a) **Supply and installation of smart meters and implementation of a Revenue Protection System of large consumers (US$3.00 million).** The AF will finance around 6,500 smart meters to around 1,200 HV and MV customers and 5,300 large LV customers consuming more than 1,000 kWh per month and a management system to monitor the consumption of the large customers at any given time. It will also finance associated accessories to standardize the metering system for the abovementioned category of consumers. Standardization of these connections and metering systems is key to increasing billing and revenue collection rates.

(b) **Supply and installation of consumption meters and supply of operation and maintenance equipment and tools (US$2.00 million).** The AF will finance (i) the supply or upgrading of meters in the store of EDG, supply of accessories, and installation of about 20,000 LV consumption meters and (ii) supply of O&M equipment and tools for prepayment and post payment meters' unit within EDG. An expert in electricity metering to support the unit is being selected with financial support of the AFD. The installation of meters is indeed critical as 80 percent of the customers have no meters and are billed a lump-sum amount per month, regardless of consumption. This support, though limited, will complement the ongoing meter installation projects financed by the parent project and different donors, including the AfDB, the IsDB, as well as the Government and EDG.

Under this component, two activities: supply and installation of the equipment to compensate for reactive power and improve power factor on the grid and supply and installation of equipment to protect the grid infrastructure will be dropped from the parent project scope because the BOAD- and the EIB-financed projects have implemented them.

Component 3: Technical assistance, capacity building, and project implementation support (US$10.00 million equivalent)

The title of this component will be amended to include a 'capacity building' activity. It will read as 'Technical assistance, capacity building, and project implementation support'. The proposed AF will finance the implementation of Human Resource Capacity Building Program of EDG (2017–2019) and the institutional support to the MEH, AGER, and the regulator, and support to the two PIUs of the project.

Subcomponent 3.A: Capacity building of EDG's human resources (2017–2019) (US$6.50 million)

The AF will finance the critical capacity building of middle class managers and operational team of EDG to be able to improve the operational performance of the utility. This is critically important for the success of the MSC.

Subcomponent 3.A.1: Specific training sessions to strengthen staff capacity in the respective professional areas (US$3.00 million)

Under this subcomponent, the project will provide co-financing to conduct specific training sessions identified by the MSC contractor in different departments. Training sessions will be organized either in-country or outside. The target number of staff hours of training is 8,213. Specific training sessions will be co-financed with EDG and other donors.

Subcomponent 3.A.2: Industrial attachments for key operational staff in better performing utilities in Africa (US$1.50 million)

This subcomponent will finance an industrial attachment program for about 25 key positions identified in different departments of EDG to improve the operations.

Subcomponent 3.A.3: Selection of future management team of EDG, recruitment of young professionals, and payments for voluntary retirements (US$2.00 million)

This subcomponent will finance TA for competitive selection of future management team (directors and sub-directors' positions), TA for the recruitment young and dynamic professionals to take over from elderly staff (60 percent of human resources of EDG is above 55 years), and one-time payments for anticipated retirement on voluntary basis. EDG will put in place a transparent mechanism for the selection of managers, young professionals, and voluntary retirement scheme.

Subcomponent 3.B: Institutional and project implementation support (US$3.50 million)

This subcomponent will finance the following activities: (a) TA to strengthen planning, institutional reform, and supervision roles of the MEH, including additional missions of the MSC auditor; (b) TA to support the implementation of communication strategy of EDG and the MEH; (c) institutional support to the newly established AGER and the electricity and water regulatory agency; and (d) support to the PIUs within EDG and the MEH.

The current and revised component costs are shown in Table 2. With the AF, total resources under the project will amount to US$75 million equivalent.

Table 2. Current and Revised Component Costs

Current Component Name	Proposed Component Name	Current Cost (US$, millions)	Proposed Cost (US$, millions)	Action
Financing management services contract to support EDG performance improvement	Improvement of EDG's performance through a management services contract	14.00	16.00	Revised
Selected investments to support improvement of Conakry distribution network and commercial performance of EDG	Improvement of Conakry distribution network and commercial performance of EDG	33.70	46.70	Revised

Technical assistance to MEH and project Implementation Support	Technical assistance, capacity building, and project implementation support	2.30	12.30	Revised
	Total:	50.00	75.00	

Other Change(s)

Change in Implementation Schedule

Explanation:

The implementation schedule has been updated to reflect the new activities to be undertaken with support from the AF and to take into account the delays in the project implementation.

IV. Appraisal Summary

Economic and Financial Analysis

Explanation:

Broadly, the economic benefits from the proposed project may be classified into two categories:

(a) The increased efficiency in electricity supply (reduction in losses, outages, and voltage fluctuations)

(b) The increased supply of electricity to meet the existing suppressed demand and expected growth in demand

The stream of benefits from increased supply of electricity and reduced distribution losses are evaluated against the project capital costs, O&M cost, and the generation cost of electricity supplied. The cost-benefit analysis, assuming a discount rate of 6 percent (excluding taxes and duties from capital expenditure), estimates a net present value (NPV) of US$43.90 million (economic internal rate of return [EIRR]: 57.30 percent). This represents a benefits-costs ratio of 2.1.

EIRR: 57.30%
NPV (@ 6%DR): US$43.90 million
Benefits-Costs Ratio: 2.10

A sensitivity analysis, in the form of switch values, has been performed for costs and demand drivers. The results show that the project will remain economically feasible even if there were an increase in investment costs up to 518 percent or generation costs increase up to 256 percent or unserved demand decreased by 84 percent. Annex 5 presents the complete economic analysis.

Greenhouse gas (GHG) accounting. The construction of a new substation in Kissosso will result in an estimated net reduction of 10,960 tons of CO_2 equivalent during the overall lifetime of the project estimated at 15 years. This is due to reduction in technical losses of about 1,479 MWh per year and avoided thermal generation compared to the 'business as usual' scenario, with a marginal positive impact on the EIRR. The economic benefits have been computed assuming a cost of carbon of US$30 per ton.

In assessing the financial viability of the project, the NPV of the stream of inflows and outflows result in a negative NPV of (US$22.50 million). Given that generation costs are higher than retail tariff in Guinea (tariffs are not cost reflective), it could be expected that a project such as the construction of a new substation will not be financially viable on a stand-alone basis. Emphasis is therefore placed on the economic benefits of embarking on such a project. The full financial analysis is also presented in Annex 5.

Rationale for public sector financing. Given the sector's lack of commercial viability and the project's negative financial NPV, public financing is considered the only way to finance the abovementioned investment in transmission and distribution network and commercial improvement. The investments would contribute to lay a foundation to attract private investments in the generation segment in the medium term.

Value added of World Bank support. The proposed AF leverages the World Bank's vital role in the electricity sector in Guinea and its convening power to bring in other donors. The financing of the investment to improve the EDG's performance is crucial for other development partners and private investors who are interested in Guinea. The World Bank is strongly involved in the sector dialogue and reform process, notably through a DPO series largely focused on the electricity sector.

Financial appraisal of the electricity sector

The financial viability of the sector is highly influenced by the EDG's financial situation as the sole state-owned electric utility. A financial analysis of EDG undertaken to assess its financial viability by analyzing the historical performances and the financial projections shows that the financial position of the company is weak and will likely improve only after 2022. The details of the financial analysis of the company are provided in Annex 5.

EDG's average cost of service is around GNF 1,665 per kWh (US$0.188 per kWh) in 2014–2015, while its average revenue per kWh collected is estimated to be around GNF 556 per kWh (US$0.063 per kWh) in 2015. EDG is not able to cover its operating charges with the revenues collected. As a result of low level of revenue collected relative to the cost of service, EDG experienced a growing negative margin in 2014–2015 averaging 31 percent of revenue collected per kWh.

The company's profitability, liquidity, asset efficiency, and leverage are weak, keeping the company in a poor financial situation. The company is highly leveraged with no internally generated financial resources.

With all the ongoing support to EDG, including the project and related AF, the commercial performance of the company is expected to steadily improve, but will not be enough to have a material impact on the financial situation of the company. To reestablish the financial balance, EDG would have to raise its tariff annually on average by 37.7 percent until 2022 instead of 8.4 percent as projected in the base case scenario to cover its operating charges even though the cost of energy is projected to fall with the coming online of cheaper hydro generation plants (if the Government succeeds in negotiating good project financing terms with the developers). Without the said tariff increase, the Government would have to provide an average annual operating subsidy of GNF 1,800 billion over 2017–2022.

Technical Analysis

Explanation:

The project uses well-established technologies and presents no unusual construction or operational challenges. The equipment and the technologies involved in the construction and operation of substations and transmission lines are standardized and well-known. For instance, the technologies supported by the AF for the construction of the Kissosso substation have been successfully implemented by EDG in the past.

Project costs are based on estimates derived from recently commissioned substations under the EIB-financed project executed by EDG. The cost estimates have been evaluated and are aligned with current market prices. For project implementation, an owner's engineer will be contracted to support oversight of activities under Component 2 and the experts from the MSC contractor will ensure overall supervision of the implementation according to the MSC. The owner's engineers will help ensure that design,

construction, and commissioning are carried out in accordance with international quality standards.

Social Analysis

Explanation:

With regard to social safeguards, OP/BP 4.12 on Involuntary Resettlement, triggered in the parent project, is applicable also to the AF as physical and economic displacement of project-affected populations may be involved. This envisaged displacement may lead to requirements for land acquisition and resettlement such as compensation for lost assets or loss of livelihoods due to the construction of the Kissosso substation as well as mitigation measures that take into account potential social risks and impacts of the substation. A Resettlement Policy Framework was prepared in 2014, under the parent project, and it applies to the AF. It has been updated and disclosed in-country on December 14, 2017, and at the World Bank external site on December 18, 2017, before project appraisal. With regard to the new Kissosso substation, a specific Resettlement Action Plan (RAP) to fully detail the operational process of undertaking resettlement is in an advanced stage and will be cleared, disclosed in-country and the World Bank website prior to Board approval (March 14, 2018) and fully implemented before civil works commence. This RAP will also include all the 61 distribution posts to be rehabilitated and/or constructed under the parent project. The resettlement process is meant to be inclusive to encompass vulnerable social groups and guarantee that they receive equitable treatment.

Gender. Gender issues are critical to the implementation of World Bank-funded projects. Gender disaggregated baseline data against the impacts and results of the project will be carried out in 2018. A beneficiary survey, financed under the parent project, is planned to be conducted in sample villages to gather baseline data to understand key issues around electricity connections, consumer satisfaction, communication, gender, and social issues. This survey will be done in 2018 using a mixed methods approach (qualitative/quantitative) of data collection, focus group discussions, and analysis and will be carried out in two stages: (a) gather baseline data and (b) gather impact-level data at project completion. The data collection and gender-sensitive focus group discussions will provide a feedback mechanism and will help the donor and Government counterparts develop a more robust monitoring and evaluation system that will measure the gender impacts through specific sex-disaggregated indicators and targets in the project's Results Framework. The ongoing EDG customer census will provide additional information on household configuration and gender. The project will also provide support to improve the quality of services rendered by EDG to all beneficiaries and, in particular, to those living in a vulnerable situation, such as female-headed households, having difficulties benefiting from energy services and paying energy costs. As a result, an indicator on beneficiary satisfaction survey has been added to the project Results Framework (see Annex 1).

Citizen engagement. Citizen engagement is particularly important in the implementation of World Bank-funded projects with citizens and civil society organizations being key partners in the planning and implementation of works. The project will undertake a series of gender-sensitive consultations with citizens in all beneficiary communities. Beneficiaries will equally be informed of the status of the works and other project-related activities, will provide monthly updates regarding the planned works, and will report any issues or problems associated with the implementation of these works on the field. This community monitoring system reinforces the existing grievance redress mechanism of EDG that is operated by stakeholders and will allow project beneficiaries to submit questions, complaints, or suggestions through email, phone, text messages, or regular mail. A project performance indicator on Beneficiary satisfaction survey completed and published was included in the results framework to get feedback of the beneficiaries on the project implementation.

Environmental Analysis

Explanation:

The proposed construction of the Kissosso substation under the AF involves construction or civil works with minor social impacts. This was reflected in the MSC's environmental requirements, applicable to the client (MEH and EDG) as well as to the contractors, in line with the World Bank safeguard policies. A broad environmental audit of EDG's grid infrastructure was undertaken during the preparation of the parent project. The audit included an assessment of potential impacts and proposed mitigation measures. However, the construction of a substation of high voltage in Kissosso has led to the preparation of an Environmental and Social Impact Notice (one of the environmental and social management plans), consulted upon and disclosed in the country as well as on the World Bank's website before appraisal. Likewise, the construction of 39 power distribution substations and rehabilitation of 22 distribution substations, spread over the distribution network in Dixinn will require the preparation of site-specific environmental and social management plans (ESMPs) to counter the negative effects generated by these construction activities. These specific ESMPs are now available. The Environmental and Social Impacts Notice that was prepared for the AF was disclosed in the country on December 14, 2017, and at the World Bank's external website on December 18, 2017, before project appraisal. The World Bank team will work closely with the EDG team to ensure that the project satisfies the environmental compliance requirements of the project.

Strengthening environmental and social safeguards capacity. A new capacity-building needs assessment will be undertaken within the implementation agency, EDG, with a view to identifying inadequacies and capacity gaps and recommending actions to be enhanced during project implementation.

Climate and disaster risks. The AF has been screened for risks related to climate change and disaster risk management. The potential impacts are expected to be negligible as climate risks have a limited impact on the distribution substations and lines. The proposed AF will also increase efficiency in the whole electricity supply chain, reducing the overall losses and associated GHG emissions.

Risk

Explanation:

The overall risk rating for the parent project and the AF is High. Key risks include the following:

Political and governance. Risks in this area are assessed as High. The relationship between the GoG and the MSC contractor have been characterized by ups and downs over the last 24 months of the MSC. There is a serious risk of termination of the MSC by the GoG if the MSC contractor does not provide the expected level of service and the situation of the sector does not improve for reasons that could eventually be beyond the MSC contractor. The GoG's commitment to reform the energy sector, particularly tariff increases, is dependent upon the local social and political climate. The willingness of the GoG to implement politically unpopular measures of power metering and tariff adjustment will depend on the political agenda. The AF will strengthen the Government's capacity to closely supervise the MSC execution by increasing the number of supervision missions of the MSC auditor and strengthening the MSC Steering Committee. The GoG is also hiring future managers of EDG who will play the role of champions of the reform agenda. A close supervision of the implementation by the World Bank team will be ensured throughout the project implementation period.

Sector strategies and policies. Risks in this area are assessed as Substantial. The Government has signed a number of Power Purchase Agreements (PPAs) with IPPs running heavy fuel oil fired power plants at high

prices to meet the growing demand, especially during the dry season when hydropower plants supply limited energy to the grid. EDG is insolvent because it has many arrears to its suppliers and because it devotes a large portion of its revenues to tax payments. More than 80 percent of EDG clients have no meters to measure their consumption and pay the fair price for it. Losses in the system are still high. The energy sector is going through an institutional reform, with the establishment of a new rural electrification agency and new independent regulator. EDG is facing financial distress and requires huge subsidies to survive. The Government is committed to the sector reforms, engaging World Bank support, including through the DPO series to address the sector's financial situation. However, it will take some time to reach financial equilibrium which can only happen when relatively cheap generation from the Souapiti hydropower plant is available and tariffs are adjusted as needed. Both this AF and the parent project provide support to EDG for further improvements in its operations through the MSC and associated investments to turnaround operational and commercial performance (for example, acquisition and operationalization of IMS, the implementation of a Revenue Protection Program, Outrage Management System, and acquisition and operationalization of smart meters and associated software for utility fraud detection). Through the parent project, this additional financing and the DPO series, the World Bank team will maintain a close sector dialogue with the GoG and EDG to mitigate risks related to the sector's poor performance.

Institutional capacity for implementation and sustainability. This risk is assessed as Substantial. Project performance has been improving substantially over the last 12 months and the project has been rated Moderately Satisfactory in the most recent Implementation Status and Results Report. However, some concerns remain regarding the capacity of the implementation agencies especially the MEH. The organizational reforms of EDG and human resources development reforms are sensitive and require a high level of professionalism and transparency. The EDG's capacity to roll out meters has been limited given the resistance of the population and staff within EDG. The project will provide TA to the MEH and EDG. The World Bank team will support the implementation of a communication strategy to raise awareness on the power sector reforms and associated benefits to different stakeholders, including the electricity consumers and hence reduce resistance to the implementation of those reforms, including the rollout of meters, tariff adjustments, and energy efficiency. The AF will also strengthen the MEH's capacity to closely supervise the execution of the MSC.

Fiduciary. This risk was assessed as substantial following the primary procurement risk assessment which considered the country's overall procurement risk level. To mitigate this risk the project will finance a procurement specialist to strengthen the PIU and the project execution manual will be updated to take into account the AF.

Macroeconomic. Guinea's macroeconomic situation is characterized by low and volatile growth. Its growth rate hit a peak of 6.3 percent in 1988. Since then, Guinea's economic growth has followed a trend that could be summarized in four main episodes. The first growth episode spans from 1988 to 1991, when GDP growth declined from 6.3 percent to 2.6 percent. The second growth episode was marked by a recovery, as Guinea's GDP grew from 3.3 percent to 5.2 percent between 1992 and 1997. The third growth episode was a long and fluctuating, but declining, growth period, when Guinea's GDP growth rate declined from 3.6 percent in 1998 to −0.3 percent in 2009. The fourth growth episode started in 2010 and ended in 2015. The last growth episode was marked by a short growth recovery, which lasted two years (2011 and 2012). Since 2013, economic growth has been declining and stagnant in 2015. The last growth episode was marked by declining commodity price and the outbreak of Ebola in Guinea, which may have contributed to economic contraction. The country's engagement in macroeconomic stabilization programs and budget support with development partners, particularly the IMF, the World Bank, the EU, and the AfDB, provide adequate safeguards against extreme deterioration of the macroeconomic situation.

Stakeholders. This risk is assessed as high. The Power sector recovery plan in general and this project in particular are co-financed by different donors. If financing from other donors is not fully mobilized, it can jeopardize the results of the project and the performance of the sector reform in general. The World Bank team has initiated a sector working group (SWG) of donors and Government institutions for better coordination. The team will assist the Government to maintain the momentum of SWG and to specifically coordinate with donors co-financing the project activities (components 2 and 3).

Safeguards. The environmental risk of the parent project is rated Substantial. This reflects the risk on which the AF will be implemented within EDG. The environmental audit that was carried out during the preparation of the parent project identified inadequacies within EDG. As the recommendations to address these inadequacies were not limited to the parent project, it was difficult to address them in an efficient manner. This is the reason for the Substantial risk rating. EDG continues to have low technical human capacity (environmental safeguards) to address all inadequacies identified by the environmental and social audit. For the AF, only specific measures will be taken to address direct and indirect adverse environmental risks and impacts related to the activities that will be financed by the AF resources. The AF will also reinforce the capacity of EDG on Safeguards.

Financial Management

The FM system and performance of the PIU at the MEH and of the dedicated FM Unit set up at EDG under the parent project are acceptable to IDA. The FM of the AF will be managed by the PIU within EDG. The following inadequacies have identified during the appraisal and will be addressed during the first months of AF effectiveness: (a) the lack of an effective oversight structure (Steering committee) as the inter-ministerial technical committee for sector reform is no longer active to assume the project oversight role and (b) the absence of an internal audit function in the project. For the purposes of this AF, the fiduciary risk has been assessed Moderate following the primary risk assessment which considered the current risk rating of the parent project and the mitigation measures required for the AF. The Government is committed to appoint a steering committee and an internal auditor of the project.

Procurement

The existing procurement arrangements will be maintained under the proposed AF. Procurement under the parent project currently follows the previous guidelines. As the concept memo for the AF was approved on April 12, 2016 which is before the effective date (July 1, 2016) of the 'World Bank Policy: Procurement in Investment Project Financing and Other Operational Procurement Matters' , the updated 'Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers', published by the World Bank dated January 2011, revised in July 2014, will apply to all contracts financed under the AF. Procurement of consultants' services shall be governed by the ''Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by the World Bank Borrowers'', published by the World Bank in January 2011, revised in July 2014. The World Bank Anti-Corruption Guidelines: "Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants" dated October 15, 2006 and revised in January 2011, July 1, 2016 will be applied.

V. World Bank Grievance Redress

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

Annex 1. Revised Results Framework and Monitoring

Power Sector Recovery Project - Additional Financing (P160771)

Project Development Objectives							
Original Project Development Objective - Parent:							
The Project Development Objective (PDO) is to improve the technical and commercial performance of *Electricité de Guinée*.							
Proposed Project Development Objective - Additional Financing (AF):							
Results							
Core sector indicators are considered: Yes			Results reporting level: Project Level				
Project Development Objective Indicators							
Status	Indicator Name	Corporate	Unit of Measure		Baseline	Actual(Current)	End Target
Revised	Electricity losses per year	☐	Percentage	Value	42.00	35.00	23.00
				Date	21-May-2014	25-Aug-2017	31-Dec-2020
				Comment			Target revised from 27% to 23% and end date extended by a year.
Revised	Direct project beneficiaries	☐	Number	Value	1400000.00	1800000.00	1850000.00
				Date	21-May-2014	25-Aug-2017	31-Dec-2020

				Comment			Target revised from 2,000,000. End date extended by one year.
No Change	Female beneficiaries	☐	Percentage	Value	52.00	52.00	52.00
			Sub Type				
			Supplemental				
Revised	Bill collection rate	☐	Percentage	Value	77.00	81.00	96.00
				Date	21-May-2014	25-Aug-2017	31-Dec-2020
				Comment	Adjusted based on EDG		End date revised.
No Change	Average daily hours of service	☐	Number	Value	12.00	15.00	18.00
				Date	21-May-2014	25-Aug-2017	31-Dec-2020
				Comment			
New	Average interruption frequency per year in the project area	☐	Number	Value	942.00	700.00	350.00
				Date	21-May-2014	25-Aug-2017	31-Dec-2020
				Comment			
New	People provided with new or improved electricity service	☒	Number	Value	0.00	0.00	318000.00
				Date	21-May-2014	25-Aug-2017	31-Dec-2020
				Comment			

New	People provided with new or improved electricity service - Female	☒	Number	Value	0.00	0.00	165360.00
			Sub Type				
			Supplemental				
Intermediate Results Indicators							
Status	Indicator Name	Corporate	Unit of Measure		Baseline	Actual(Current)	End Target
No Change	Operator appointed	☐	Yes/No	Value	No	Yes	Yes
				Date	21-May-2014	25-Aug-2017	31-Dec-2020
				Comment			
No Change	Distribution lines constructed or rehabilitated under the project	☐	Kilometers	Value	0.00	0.00	96.00
				Date	21-May-2014	25-Aug-2017	31-Dec-2020
				Comment			
No Change	Distribution lines rehabilitated under the project	☐	Kilometers	Value	0.00	0.00	96.00
			Sub Type	Date	21-May-2014	25-Aug-2017	31-Dec-2020
			Breakdown	Comment			
No Change	Number of substations refurbished	☐	Number	Value	0.00	0.00	67.00
				Date	21-May-2014	25-Aug-2017	31-Dec-2020
				Comment			
No Change	Technical auditor appointed		Yes/No	Value	No	Yes	Yes

		☐		Date	21-May-2014	25-Aug-2017	31-Dec-202020
				Comment			
New	People provided with access to electricity services under the project by household connections – rehabilitation and standardization of household connections in Kaloum Ratoma and Matoto	☐	Number	Value	0.00	0.00	216150.00
				Date	25-Aug-2017	25-Aug-2017	31-Dec-2020
				Comment			
New	People provided with access to electricity services under the project by household connections – Rehabilitation and extension of Distribution network in Dixinn	☐	Number	Value	0.00	0.00	74178.00
				Date	25-Aug-2017	25-Aug-2017	31-Dec-2020
				Comment			
New	Number of transformers installed	☐	Number	Value	0.00	0.00	24.00
				Date	25-Aug-2017	25-Aug-2017	31-Dec-2020
				Comment			
New	Number of meters installed, of which large consumer smart meters	☐	Number	Value	0.00	0.00	57887.00[20]
				Date	25-Aug-2017	25-Aug-2017	31-Dec-2020
				Comment			
New			Yes/No	Value	No	No	Yes

[20] Number of meters to be installed under the project including to households benefiting from the rehabilitation of distribution network in Dixinn and these benefiting from regularization of illegal connections.

	Beneficiary satisfaction survey completed, published[21]	☐		Date	25-Aug-2017	25-Aug-2017	31-Dec-2020
				Comment			
New	Average number of hours of training per staff per year	☐	Number	Value	0.00	0.00	17.00
				Date	25-Aug-2017	25-Aug-2017	31-Dec-2020
				Comment	Result of EDG staff training including industrial attachment		

[21]Results and recommendations of beneficiary satisfaction survey will allow EDG's management (and MEH) to improve its service delivery to meet its clients' expectations.

Annex 2. Project Components and Cost Estimations

Guinea: Power Sector Recovery Project - Additional Financing (P160771)

Table 2.1 provides the overall cost estimation by component, further detailed by subcomponent and activity.

Table 2.1. AF Costs and Financing by Component

	Component	Estimated Cost (US$, millions)	IDA Financing	Recipient Financing
1	**Improvement of EDG's performance through a management services contract**	**2.00**	2.00	0.00
2	**Improvement of Conakry distribution network and commercial performance of EDG**	**13.00**	13.00	0.00
	Subcomponent 2.A: Improving distribution network	**8.00**	8.00	0.00
	New substation in Kissosso (110 kV/20 kV):	8.00	8.00	0.00
	Subcomponent 2.B: EDG's commercial performance improvement	**5.00**	5.00	0.00
	Supply and installation of consumption meters and supply of operation and maintenance equipment and tools	2.00	2.00	0.00
	Supply and installation of smart meters and implementation of Revenue Protection System of large consumers of EDG	3.00	3.00	0.00
3	**Technical assistance, capacity building, and project implementation support**	**10.00**	10.00	0.00
	Subcomponent 3. A: Capacity building of EDG's human resources	6.50	6.50	0.00
	Specific training sessions to strengthen staff capacity in the respective professional areas	3.00	3.00	0.00
	Industrial attachments for key operational staff in better performing utilities in Africa	1.50	1.50	0.00
	Selection of future management team of EDG, recruitment of young professionals, and payments for voluntary retirements	2.00	2.00	0.00
	Subcomponent 3.B: Institutional and project implementation support	**3.50**	**3.50**	**0.00**
	Subcomponent 3.B: Institutional and project implementation support	3.50	3.50	0.00
	Total AF	**25.00**	25.00	0.00

Table. 2.2 Estimated Costs for Institutional Technical Assistance and Project

Item	Description	Estimated Cost (US$, millions)	Other donors involved
1	TA to the MEH: strengthening the planning, institutional reforms and sector oversight roles	1.20	AFD, AfDB
2	TA for the implementation of communication strategy of EDG and the MEH	0.50	AFD
3	Support to AGER and electricity regulator	0.20	European Union
4	Support to the PIUs within EDG and the MEH	1.60	
	Total	**3.50**	

Annex 3: Financial Management Assessment Report

Guinea: Power Sector Recovery Project - Additional Financing (P160771)

The FM system and performance of the PIU at the MEH and of the dedicated FM Unit set up at EDG under the parent project are acceptable to IDA.

1. The FM aspects of Components 1 and 3 of the parent project are managed by the PIU at the MEH while those of Component 2 are managed by the PIU at EDG. The FM of the AF will be managed by the PIU within EDG. The current FM staffing comprising an FM officer (responsible administrative and finance) and one accountant is adequate. The FM performance was rated Moderately Satisfactory following the project midterm review mission in November 2017. No specific critical FM issue was noted during the supervision mission. However, the following inadequacies identified during the assessment need to be addressed during the first months of AF effectiveness: (a) the lack of an effective oversight structure (Steering committee) as the inter-ministerial technical committee is no longer active and (b) the absence of an internal audit function in the project. For the purposes of this AF, the fiduciary risk has been assessed Moderate following the primary risk assessment which considered the current risk rating of the parent project and the mitigation measures required for the AF (Table 3.1).

2. To mitigate the risks, the Government is committed to implement the following measures: (a) the establishment of a Steering Committee composed of representatives of the MEH, EDG, Ministry of Finance and Economic Planning, Ministry Budget, Ministry of Planning and International Cooperation, and the Prime Minister's office; (b) the configuration of the current accounting software 'TOM2PRO' will be updated; (c) the existing FM procedures manual which was prepared during the parent project will be revised to reflect the aspects of the AF; and (d) the internal audit function will be put in place. An internal auditor (individual consultant) with qualifications and experiences acceptable to the World Bank will be recruited on a competitive basis. The scope of work of the internal auditor will include the World Bank-financed projects (for example, Guinea Urban Water Project [P157782] and the PSRP [P146696]) implemented by the MEH and the state-owned enterprises (for example, EDG and *Société des Eaux de Guinée* - SEG). The contract of the external auditor of the parent project will be revised to include the audit of the financial statements of the AF. Some of these actions and measures are dated covenants and some are recommended measures, and all should be implemented within six months following the AF effectiveness date (Table 3.2).

3. The consolidated unaudited IFRs comprising the components implemented by the PIU and EDG are prepared every quarter and submitted to the World Bank regularly (for example, 45 days after the end of each quarter) on time. The frequency of the preparation of the IFR, as well as its format and content will remain unchanged.

4. **Recruitment of an internal auditor.** It was agreed during the preparation of the AF to explore the option to create this function within the MEH because of the increase in the number of donor-financed projects implemented within the ministry, which in turn, require more effective internal control systems. Furthermore, the establishment of the internal audit function will help the MEH monitor the implementation of the World Bank- and other donors-financed projects within the two sectors. The scope of work of the internal auditor (individual consultant) will include the Guinea Urban Water Project (P157782) and the PSRP (P146696). For efficiency purposes, the internal auditor will be in the offices of PIU of the PSRP in the MEH. The internal auditor costs will be co-shared between the two World Bank-

financed projects (Guinea Urban Water Project and PSRP). The responsibility and scope of work of the internal auditor will be extended to the projects financed in the sector by other donors.

5. There is no overdue audit report in the project and the sector at the time of preparation of the AF. The audit report of the project managed by the PIU covering the period ending December 31, 2016, was submitted on time; the external auditor expressed an unmodified (clean) opinion. The AF's financial statements will be audited on an annual basis and the external audit report will be submitted to IDA not later than six months after the end of each calendar year; the contract of the current external auditor should be revised to reflect the AF no later than six months following the AF effectiveness date. The project will comply with the World Bank disclosure policy of audit reports and place the information provided on the official website within one month of the report being accepted as final by the team.

6. Upon the AF credit effectiveness, transaction-based disbursements will be used. The credit will finance 100 percent of eligible expenditures inclusive of taxes. the two existing Designated Accounts (DAs) (DA-A managed by the PIU at the MEH and DA-B managed by EDG) opened in U.S. dollars in United Bank for Africa (DA-A) and ICB (DA-B) will be used for the AF. The existing sub-accounts 'Project Accounts PA-1 and PA-2' in local currency 'GNF' opened in the same commercial bank under terms and conditions acceptable to IDA will be used for the AF. The ceiling of the DAs will be established at US$200,000 for DA-A and US$1,000,000 for DA-B respectively. The existing signatories' arrangements of the parent project will remain unchanged. An initial advance up to the ceiling of the DAs will be made and subsequent disbursements will be made against submission of Statements of Expenditures reporting on the use of the initial/previous advance. Funds will, therefore, flow from the DAs in U.S. dollars to subaccounts in GNF. The option to disburse against submission of quarterly unaudited IFRs (also known as the report-based disbursements) could be considered, as soon as the project meets the criteria. The other methods of disbursing the funds (reimbursement, direct payment, and special commitment 'letter of credit') will also be available to the project. The minimum value of applications for these methods is 20 percent of the DA ceiling. The project will sign and submit Withdrawal Applications electronically using the eSignatures module accessible from the World Bank's Client Connection website. (Figure 3.1)

7. Based on the current overall residual FM risk which is Moderate, the project will be supervised once a year to ensure that project FM arrangements still operate well and funds are used for the intended purposes and in an efficient way.

8. A description of the project's FM arrangements above indicates that they satisfy the World Bank's minimum requirements under World Bank IPF Policy and Directive.

Table 3.1. FM Risk Rating of the PIUs of the PSRP

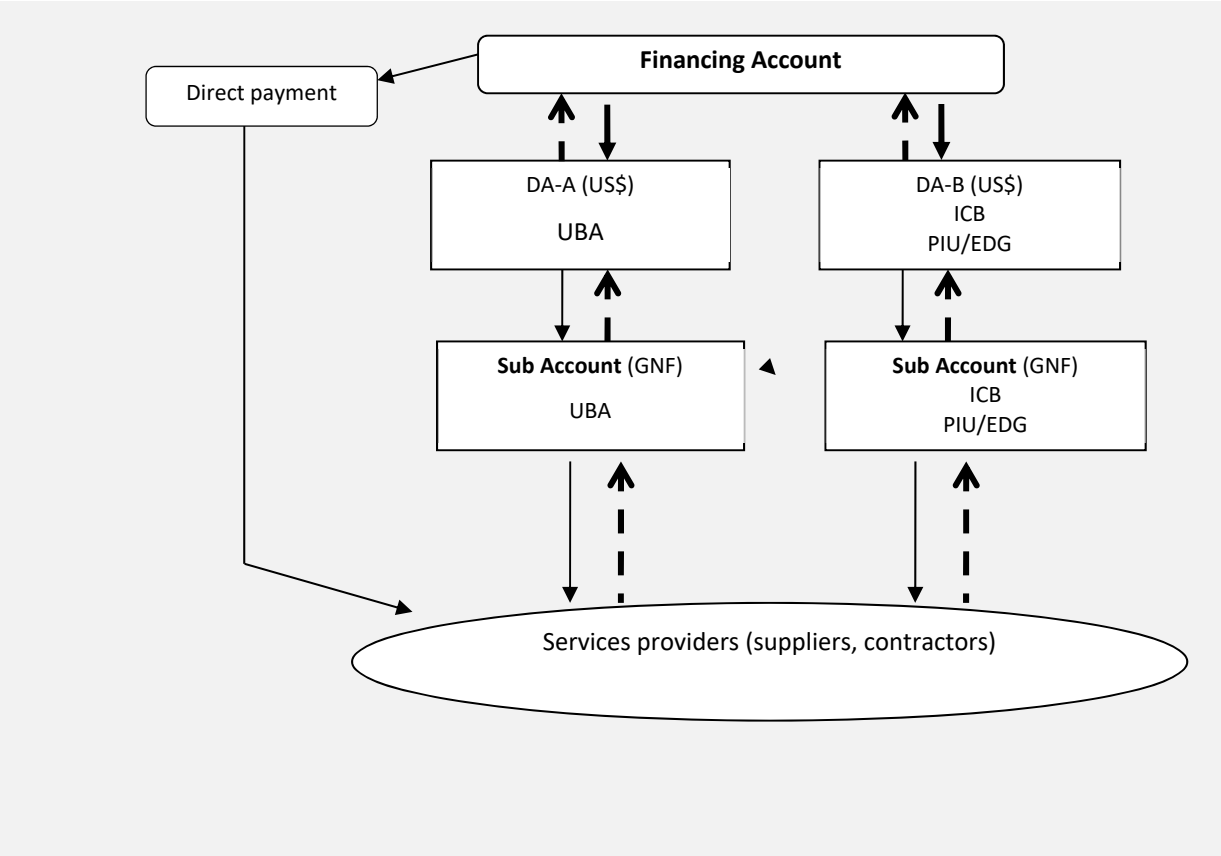
Type of Risk	Residual Risk Rating		Brief Explanation of Changes and any New Mitigation Measures
	Previous	FMAR	
Inherent Risk			
Country level	H	H	
Entity level	S	S	
Program level	S	M	Big contracts subject to the World Bank prior review and limited activities prone to irregularities (for example, workshops, trainings, seminars, missions, expenditures related to office supplies and furniture, and so on).
Overall Inherent Risk	**S**	**S**	
Budgeting	S	M	Annual Work Plan and Budget to be prepared and submitted to IDA by November 30 of each year
Accounting	M	M	The computerized accounting software will be customized to reflect the AF activities
Internal controls	S	S	Internal audit function is not effective in the projects implemented in the sectors- recruitment of an internal auditor
Funds Flow	M	M	Two DAs and PAs opened with option to use direct payment and special commitment 'letter of credit'
Financial Reporting	M	M	The delays in submission of IFRs should be addressed.
Auditing	M	M	The terms of reference of the current external auditor of the parent project should be revised to include the AF accounts.
Overall control risk	**M**	**M**	
Overall FM risk	**M**	**M**	

Note: M = Moderate; S = Satisfactory; H = High.

Table 3.2. FM Action Plan of the GoG as Recommended by the World Bank's Team

Covenants and Recommended Actions	Responsible Party	Time Line
1- Establishment of the Steering Committee of the project (covenant)	MEH	Four months after the AF effectiveness
2- Update the FM manual to reflect the AF aspects (recommended action)	PIU/EDG	Four months after AF effectiveness
3- Update the configuration of the accounting software 'TOM2PRO' to take into account the AF activities (recommended action)	PIU/FM officer and procurement specialist	Four months after AF effectiveness
4- Recruit the internal auditor to work on the PSRP and Guinea Urban Water Project (recommended action)	EDG, PIUs, and MEH (SEG)	Six (6) months after AF effectiveness
5- Revise the terms of reference of the external auditor of the parent project to include the audit of the financial statements of the AF. (recommended action)	PIU/MEH (procurement specialist and FM officer)	Four months after AF effectiveness

Figure 3.1. Funds Flow



Annex 4: Procurement Assessment

Guinea: Power Sector Recovery Project - Additional Financing (P160771)

1. The existing procurement arrangements will be maintained under the proposed AF.

2. Procurement under the original project currently follows the previous guidelines. As the concept memo for the AF was approved on April 12, 2016 which is before the effective date (July 1, 2016) of the 'World Bank Policy: Procurement in Investment Project Financing and Other Operational Procurement Matters' the updated 'Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers', published by the World Bank dated January 2011, revised in July 2014, will apply to all contracts financed under the AF. Procurement of consultants' services shall be governed by the 'Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by the World Bank Borrowers', published by the World Bank in January 2011, revised in July 2014. The "World Bank "Anti-Corruption Guidelines: Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants" dated October 15, 2006 and revised in January 2011, July 1, 2016 will be applied.

3. The two PIUs are experienced with the World Bank's procurement and FM procedures. The World Bank-approved existing procurement manuals will be updated. The PIUs will update the Procurement Plan that has already been submitted for project implementation.

4. A procurement capacity assessment of the PIUs has been carried out and found to be Satisfactory. No specific procurement issue was noted during the parent project implementation. For this AF, the procurement risk has been assessed as Substantial following the primary risk assessment which took into account the country's overall procurement risk level.

5. To mitigate these risks, the following is recommended: (a) strengthen the existing staffing arrangement (one procurement officer) with specific training and (b) update the manual of procedures taking into account this AF.

Annex 5: Economic and Financial Analysis of the Project

Guinea: Power Sector Recovery Project - Additional Financing (P160771)

1. This section presents the economic and financial analysis prepared for this project. The project includes the following components:

- Component 1: Improvement of EDG' performance through a management services contract (US$2 million)
- Component 2: Improvement of Conakry distribution network and Commercial performance of EDG (US$13 million)
- Component 3: Technical assistance, capacity building, and project implementation support (US$10 million)

2. The evaluation of the components is restricted to the activities that generate benefits for which an economic value can be clearly identified and measured, notably benefits associated with investments under Component 2: construction of a new 110 kV/20 kV substation in Kissosso.

3. Components 1 and 3 are excluded because of the complexity in valuing the outcomes of funding a management contract and TA, respectively.

Economic Analysis

4. The economic analysis for the project follows a standard cost-benefit framework. Comparing the present value of incurred costs to the stream of attributable benefits, the EIRR and NPV will inform the project's viability over its economic lifetime. The economic analysis has been based in the estimations presented in the project justification analysis prepared by EDG for the investment component in this project. The analysis was performed in real U.S. dollar, assuming an exchange rate of US$1 = GNF 9,333 and the lifetime (economic life) of the entire project has been conservatively estimated as 20 years.

Description of Project Benefits

5. The proposed project intends to scale up activities that will improve the technical and commercial performance of EDG. A new substation will be constructed at Kissosso that will enable the release of load on the existing substations, reduce distribution losses, and therefore improve the quality of service in Ratoma and Matoto districts.

6. Broadly, the economic benefits from the proposed project may be classified into two categories:

(a) The increased efficiency in electricity supply (reduction in losses, outages, and voltage fluctuations); and

(b) The increased supply of electricity to meet the existing suppressed demand and expected growth in demand.

7. The network of existing distribution infrastructure in the Ratoma and Matoto districts are dilapidated and overloaded resulting in frequent load shedding and outages. The availability of the

recently constructed Kaléta hydropower plant has also resulted in a significant increase in demand, which is expected to increase steadily as Conakry is urbanized. The construction of a new substation at Kissosso will improve the quality of service and reliability of supply and reduce incidents of outages as the load on existing network is redistributed.

8. The generated benefits from the project are quantified by determining two main factors: (a) value to end consumers of the electricity that will be consumed by unserved demand (valued at estimated willingness to pay) and (b) value to utility of losses reduction (valued at average generation cost). The additional demand has not been taken into account in this analysis as the value of this is yet to be satisfactorily determined.

9. A survey of average household energy consumption and affordability conducted in 2016, and funded by the World Bank showed that customers spend GNF 105,023 (US$11.25) per month with an average monthly consumption of 30 kWh. Therefore, an estimated willingness to pay of GNF 3,500 per kWh (US$0.38 per kWh) has been adopted for this analysis.

10. Other benefits would also accrue from the project during its economic lifespan but are very difficult to value, predict, and quantify. Therefore, they are not included in the quantification of benefits. The economic analysis thus represents a conservative estimate of the economic viability of the proposed project.

11. Table 5.1 presents the assumptions for the project benefits.

Table 5.1. Key Assumptions on Project Benefits

Benefit	Value	Comment
Willingness to pay	GNF 3,500 per kWh (US$0.38 per kWh)	Applies to unserved demand
Average generation cost	GNF 1,293 per kWh (US$0.14 per kWh)	Applies to the savings derived from the reduction in electricity losses
Average retail tariff	GNF 750 per kWh (US$0.08 per kWh)	Applies to demand in financial analysis

12. The incremental electricity demand and the reduction in electricity losses expected from the project implementation have been estimated in the project justification analysis prepared by EDG. The annual estimates were available but without their trends over the projection period. For the purposes of this analysis, these values have been kept as constants for the lifetime of the project. Table 5.2 presents a summary of the estimated values for Component 2.

Table 5.2.a. Estimated Project Impact on Electricity Distribution (in MWh)

Component 2		Annual
Unserved demand	MWh	19,182
Reduction in Losses	MWh	1,479

Table 5.3.b. estimated technical losses per feeder before and after the construction of Kissosso substation

Existing substation	Feeder	Current capacity (MW)	Capacity after the construction of Kissosso substation (MW)	Annual technical losses before the construction of Kissosso substation (MWh)	Annual technical losses after the construction of Kissosso substation (MWh)
Matoto	Centre pilote	10.82	4.10	429	163
Matoto	CBK	10.70	4.64	312	135
Matoto	Kobaya	11.15	6.47	900	522
Matoto	Symbaya	11.22	8.00	833	594
Matoto	Sangoya	9.43	3.18	286	97
Sonfonia	Enta	10.60	6.27	498	294
Sonfonia	Université	9.70	9.37	778	752
Total				**4035**	**2556**

Description of Costs

13. The main costs associated with the project are

(a) Capital costs of the Kissosso substation and distribution line expenditures;
(b) Associated Operating and Maintenance (O&M) costs; and
(c) Generation cost of additional electricity supplied.

14. Table 5.3 summarizes the project costs.

Table 5.4. Costs

Cost	Value	Comment
Component 2 CAPEX	US$8 million	CAPEX for Kissosso. Excludes duties, taxes, and contingencies
Operating Expenditure	3%	Excludes duties, taxes, and contingencies
Average generation cost	GNF 1,293 per kWh (US$0.14 per kWh)	

Note: CAPEX = Capital Expenditure.

Results

15. To assess the economic viability of Component 2, the stream of benefits from increased supply of electricity and reduced distribution losses are evaluated against the project capital costs, O&M costs, and

the generation costs of electricity supplied. The cost-benefit analysis, assuming a discount rate of 6 percent (excluding taxes and duties from capital expenditure), estimates an NPV of US$43.9 million (EIRR: 57.3 percent). This represents a benefits-costs ratio of 2.1. Table 5. 4 summarizes the main results of the analysis.

Table 5.5. Estimated Project Economic Viability

EIRR	**57.30%**
NPV (@ 6% Discount Rate)	**US$43.90 million**
Benefits-Costs Ratio	**2.10**

Sensitivity

16. A sensitivity analysis in the form of switching values was performed to determine how economic viability changes with variations in the most critical risk drivers of the project. The results show that the project is economically viable and sufficiently robust to changes in the key underlying parameters within reasonable limits. Table 5 provides a summary of the analysis.

Table 5.6. Results of the Sensitivity Analysis (Switch Values)

Parameter	Unit	Base Case	Switch Value	Change (%)
CAPEX	US$, million	8	41	+518
Generation costs	US$/kWh	0.14	0.36	+256
Unserved demand	MWh	19,182	3,069	–84

Figure 5.1. Economic Cash Flow Analysis

		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Component 2																						
Benefits																						
Unserved Demand	000 USD		7,194	7,194	7,194	7,194	7,194	7,194	7,194	7,194	7,194	7,194	7,194	7,194	7,194	7,194	7,194	7,194	7,194	7,194	7,194	7,194
Savings in Losses	000 USD		205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205
Total	**000 USD**		**7,398**	**7,398**	**7,398**	**7,398**	**7,398**	**7,398**	**7,398**	**7,398**	**7,398**	**7,398**	**7,398**	**7,398**	**7,398**	**7,398**	**7,398**	**7,398**	**7,398**	**7,398**	**7,398**	**7,398**
Costs																						
Initial CAPEX	000 USD	-8,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OPEX	000 USD		0	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240
Cost of Additional Generation	000 USD		-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657
Total	**000 USD**	**-8,000**	**-2,657**	**-2,897**	**-2,897**	**-2,897**	**-2,897**	**-2,897**	**-2,897**	**-2,897**	**-2,897**	**-2,897**	**-2,897**	**-2,897**	**-2,897**	**-2,897**	**-2,897**	**-2,897**	**-2,897**	**-2,897**	**-2,897**	**-2,897**
Annual Benefit / Cost	**000 USD**	**-8,000**	**4,741**	**4,501**	**4,501**	**4,501**	**4,501**	**4,501**	**4,501**	**4,501**	**4,501**	**4,501**	**4,501**	**4,501**	**4,501**	**4,501**	**4,501**	**4,501**	**4,501**	**4,501**	**4,501**	**4,501**
Discount Rate	6.00%																					
Discount Factor		1.000	0.943	0.890	0.840	0.792	0.747	0.705	0.665	0.627	0.592	0.558	0.527	0.497	0.469	0.442	0.417	0.394	0.371	0.350	0.331	0.312
PV(Benefits)		**84,859**																				
PV(Costs)		**-41,008**																				
NPV (@DR)	**000 USD**	**43,852**																				
EIRR	%	57.3%																				
Benefit-Cost Ratio		**2.1**																				

Financial Analysis

17. The project generates cash inflows from two main sources (a) unserved demand (valued at the retail tariff) and (b) savings in generation cost as a result of reduction in distribution losses (valued at average generation cost). The revenue from incremental sale of electricity is adjusted with a collection rate to account for the actual cash collected. Cash outflows are represented by the investment costs, additional energy supplied costs, and O&M costs.

18. The NPV of the stream of inflows and outflows result in a negative NPV of (US$22.50 million). Given that generation costs are higher than retail tariff in Guinea (tariffs are not cost reflective), it could be expected that a project such as the construction of a new substation will not be financially viable on a stand-alone basis. Emphasis is, therefore, placed on the economic benefits of embarking on such a project.

Figure 5.2. Financial Cash Flow Analysis

		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Component 2																						
Revenue Collections	000 USD		933	979	1,028	1,080	1,134	1,190	1,250	1,312	1,378	1,447	1,387	1,387	1,387	1,387	1,387	1,387	1,387	1,387	1,387	1,387
Energy Generation Cost Saving	000 USD		205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205
Total Revenues	**000 USD**		**1,138**	**1,184**	**1,233**	**1,285**	**1,339**	**1,395**	**1,455**	**1,517**	**1,583**	**1,652**	**1,592**	**1,592**	**1,592**	**1,592**	**1,592**	**1,592**	**1,592**	**1,592**	**1,592**	**1,592**
Costs																						
OPEX	000 USD		0	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240	-240
Depreciation	000 USD		0	-400	-400	-400	-400	-400	-400	-400	-400	-400	-400	-400	-400	-400	-400	-400	-400	-400	-400	-400
Cost of Additional Generation	000 USD		-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657	-2,657
EBIT	**000 USD**		**-1,520**	**-2,113**	**-2,064**	**-2,013**	**-1,959**	**-1,902**	**-1,843**	**-1,780**	**-1,715**	**-1,646**	**-1,705**	**-1,705**	**-1,705**	**-1,705**	**-1,705**	**-1,705**	**-1,705**	**-1,705**	**-1,705**	**-1,705**
Tax Expense	000 USD		532	740	723	705	686	666	645	623	600	576	597	597	597	597	597	597	597	597	597	597
EBIT (1-Tax)	**000 USD**		**-988**	**-1,374**	**-1,342**	**-1,308**	**-1,273**	**-1,236**	**-1,198**	**-1,157**	**-1,115**	**-1,070**	**-1,108**	**-1,108**	**-1,108**	**-1,108**	**-1,108**	**-1,108**	**-1,108**	**-1,108**	**-1,108**	**-1,108**
(-) CAPEX	000 USD	-8,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(+) Depreciation Add back			0	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Project Unlevered Cash Flow (CF)	**000 USD**	**-8,000**	**-988**	**-974**	**-942**	**-908**	**-873**	**-836**	**-798**	**-757**	**-715**	**-670**	**-708**	**-708**	**-708**	**-708**	**-708**	**-708**	**-708**	**-708**	**-708**	**-708**
Discount Rate	0.75%																					
Discount Factor		1.000	0.993	0.985	0.978	0.971	0.963	0.956	0.949	0.942	0.935	0.928	0.921	0.914	0.907	0.901	0.894	0.887	0.881	0.874	0.868	0.861
FPV (@DR)	**000 USD**	**-22,455**																				
FIRR	%	#NUM!																				

EDG Financial Position Analysis

19. The financial viability of the sector is highly influenced by the financial situation of EDG as the sole state-owned electric utility. A financial analysis of EDG undertaken to assess its financial viability by analyzing the historical performances and the financial projections shows that the financial position of the company is weak and will highly improve from 2022.

A. Historical Operational Performance Analysis

20. EDG's average cost of service which is around GNF 1,530 per kWh (US$0.164 per kWh) in 2015–2016 is considered relatively high. The cost of service followed a seesawing trend, decreasing by 23 percent in 2015 before increasing by 11 percent in 2016. This movement was due to both fuel price and the commissioning of the Kaléta dam.

21. The energy supply is mainly coming from the hydroplants, including Garafiri and Kaléta which were commissioned in May 2015. As the country was facing load shedding, the Government was using IPPs thermal plants with costly power purchase contracts, locked by a take or pay under PPA.

22. The energy supplied by thermal IPPs, Kaléta, and Garafiri, and fuels were the main cost drivers of the company. The energy purchased from the IPPs (thermal, Kaléta, and Garafiri) represents 32 percent of the total cost of service in 2015 and 75 percent in 2016. Similarly, the fuel cost represents 36 percent

and 0.1 percent respectively of the total cost of service in 2015 and 2016. Table 5.6 shows the impacts of these drivers on the energy supplied cost.

Table 5.7. Drivers of Energy Supplied Cost

Elements	Unit	2015	2016
Energy purchased IPP	GNF, million	513,568	1,841,977
Fuel	GNF, million	577,517	2,212
Selling, General and Administrative (SG&A)	GNF, million	297,196	221,318
Financial Charges	GNF, million	124,485	277,767
Salaries	GNF, million	110,301	119,397
Total cost of service	GNF, million	1,623,067	2,462,670
Energy Supplied	GWh	1,118	1,532
Cost of service	GNF/kWh	1,452	1,608

Source: EDG financial statements.

23. EDG is facing significant losses on average around 33 percent, despite operating only MV and LV networks. The distribution networks are outdated and the level of fraud is high and unsustainable. The company is tentatively trying, by investing in rehabilitation and reinforcement programs focusing on the distribution system, to resolve this situation and by introducing secured prepaid meters. Nevertheless, more rehabilitation and reinforcement are needed in the distribution system. Table 5.7 shows the trend in demand, energy sold, and losses.

Table 5.8. Demand, Energy Sold, and Losses Trend

Elements	Unit	2015	2016
Energy supplied	GWh	1,118	1,532
Energy sold	GWh	758	1,003
Losses	GWh	360	529
Losses	%	32	35

Source: EDG financial statements.

24. EDG's commercial performance is poor, characterized by a low performance of the employees and inadequate and poor collection rate of state-owned enterprises and public administration. The revenue collected per kWh supplied is below cost recovery, was around GNF 364 per kWh (US$0.0372 per kWh) in 2015, and increased to GNF 403 per kWh (US$0.0411 per kWh) in 2016. As a result of the low level of revenue collected relative to the cost of service, EDG experienced a growing negative margin during 2015–2016 averaging three times the revenue collected per kWh supplied.

25. The margins have been low or negative because of the level of losses and poor commercial performance. This latter is characterized by low energy sold by employees of around 476 MWh in 2015, which increased to around 634 MWh in 2016. Referring to the collection, while there is an improvement in 2016, the level is still very low when compared to the average collection rate realized by electric utilities in West Africa. Table 5.8 shows the evolution of the commercial performance indicators.

Table 5.9. Commercial Performance Indicators

Elements	Unit	2015	2016
Unit revenues collected	GNF/kWh	364	403
Energy sold per Employee	MWh/employee	476	634
Energy sold per Customer	kWh/customer	3,181	4,068
Collection	%	60	79

Source: EDG financial statements.

B. Historical Financial Position Analysis

26. The financial performance of the company is poor from 2015 to 2016. The profitability, liquidity, asset efficiency, and leverage are weak keeping the company in a poor financial situation.

Profitability

27. EDG remains in deficit territory during the period. The operational margin is very low and the operational charges were not covered by revenues collected, resulting in low and negative returns on equity during the last two years. The net margin ratio has oscillated between 2 percent in 2015 and –165 percent in 2016 even with the Government subsidy included.

27 The company is highly leveraged with no internally generated financial resources. The return on equity was slightly positive in 2015 (owing to high injection of Government subsidies - five times the level of equity) but returned to negative territory in 2016, even with additional capital injection from the Government. Furthermore, the operational cash flow is negative and too low to cover the other cash expenses in both years (2015 and 2016 without subsidy). Table 5.9 summarizes the company profitability position in 2015 and 2016.

Table 5.10. Profitability Ratios

Elements	Unit	2015	2016
Operating margin	%	9	–132
Net margin	%	2	–165
Operating charges coverage ratio (+ subsidy)	%	105	50
Return on equity (ROE)	%	10	159
Return on capital employed (ROCE)	%	1	–37

Source: EDG financial statements

Liquidity

28. The liquidity of the company was weak during the period. EDG was not able to pay its current expenses. The collection days slightly decreased in 2016. While the payables days were trending down slightly, its average level (405 days) is still very high when compared to the average of West African utilities, which is around 60 days. On a positive note, the cash conversion cycle decreased from 28 days in 2015 to 22 days in 2016. Finally, the day's cash on hand were negative in both years, a definitive sign that EDG is relying on its suppliers (power and fuel) to keep operating. Table 5.10 shows the trend of the liquidity ratios.

Table 5.11. Liquidity Ratios

Elements	Unit	2015	2016
Quick Ratio		0.69	0.69
Current ratio		0.73	0.74
Collection days	Days	654	523
Days in payables	Days	450	360
Cash conversion cycle	Days	28	22
Days cash on hand	Days	–176	–141

Source: EDG financial statements.

Solvency

29. EDG is a highly indebted company that funds its investment with mainly debts which are currently twice as large as the equity of the company in 2015. Chronic deficit has eroded the equity of the company, which has resulted in high interest expenses to service the long-term debt needed to finance the investment program.

30. The utility is trapped in a 'vicious circle' characterized by a high indebtedness combined with a chronic deficit and a tariff which is not able to cover the resulting high costs. The debt ratio increased significantly during the period, while the short-term financial position was negative. The credit quality of EDG was weak and was characterized by its inability to honor its debt service obligation, due to its negative debt service coverage ratio during the period despite the subsidies from the GoG. The financial position of the company, which is practically in quasi bankruptcy is described in Table 5.11.

Table 5.12. Solvency Ratios

Elements	Unit	2015	2016
Leverage (debt/equity ratio)	%	608	–178
Indebtedness (liabilities/assets)	%	81	31
Interest coverage ratio	%	38	–310

Source: EDG financial statements.

Asset Efficiency

31. The conservative commercial policy has maintained a high level of receivables turnover during the period. It is expected that the introduction of prepaid meters combined with a strong communication and/or marketing plan will improve the receivables turnover. On the other hand, the payables turnover remained relatively the same as the situation did not improve on this front. Table 5.12 shows the trend in the asset efficiency ratios.

Table 5. 13. Asset Efficiency Ratios

Elements	Unit	2015	2016
Receivables turnover	%	788	1,485
Payables turnover	%	531	600

Source: EDG financial statements.

C. Projected Operational Performance Analysis

32. The financial projections prepared by the World Bank Group finance team based on assumptions collected from EDG and validated by the World Bank Group finance team are the following:

(a) Estimated financial statements for FY2014 and FY2015

(b) Investment plan will be financed under concessional loan

(c) No subsidies are expected from the Government from FY2021

(d) Tariff is maintained constant in Guinea up to FY2018, but will be increased by around 10 percent for households and 20 percent for industrial and mining companies in FY2019

(e) The total energy generation in FY2016 was 1,531,504 MWh. Domestic demand growth of 10 percent up to 2020 and 9 percent up to 2025 can be expected. EDG's projections for new generation implementation plan are the following:

   a. Kaléta exports of 30 percent will start in FY2020;

   b. Souapiti exports of 20 percent will start in FY2022;

   c. Mining demand is pushed to FY2020;

   d. Baneah: one group 2.5 MW currently operational. It will operate at full capacity from FY2019 onwards after rehabilitation;

   e. Kaléta will start producing at maximum capacity in FY2022 when Souapiti is operational;

   f. Koukoutamba will start producing in FY2022 and a quarter (of 840 GWh) will be meant for Guinea;

   g. Sambangalou is likely to be onboard in FY2022 and a quarter comes to Guinea; and

   h. Imports from Côte d'Ivoire will come from FY2020 when CLSG is completed (27 MW).

33. EDG's cost of service while already relatively high at GNF 1,608 per kWh (US$0.164 per kWh) in 2016, is projected to decrease in 2017 and will stay stable up to 2020, before increasing in 2021 to GNF 1,505 per kWh (US$0.169 per kWh). The main cost drivers of the company are expected to be the energy purchased (hydro and thermal IPPs). Table 5.13 shows the evolution of the drivers of the energy supplied cost.

Table 5.14. Drivers of Energy Supplied Costs

Elements	Unit	2017	2018	2019	2020	2021	2022	2023	2024
Energy cost	GNF, million	1,993,655	2,492,208	1,932,714	1,987,318	2,283,318	3,552,873	4,297,250	4,963,774
O&M cost	GNF, million	525,254	673,938	1,311,055	1,390,709	2,016,216	726,966	1,712,198	2,631,631
Fuel costs	GNF, million	84,635	88,722	93,144	100,555	108,394	116,688	125,469	134,774
SG&A	GNF, million	11,604	17,068	22,983	71,546	78,990	161,002	165,489	169,642

Elements	Unit	2017	2018	2019	2020	2021	2022	2023	2024
Financial charges	GNF, million	111,889	104,700	96,980	100,688	104,532	108,515	112,644	116,923
Total cost of service	GNF, million	2,727,037	3,376,636	3,456,876	3,650,817	4,591,450	4,666,044	6,413,049	8,016,744
Energy supplied	GWh	2,112	2,359	2,682	2,586	3,050	3,444	4,252	4,939
Cost of service	GNF/kWh	1,291	1,431	1,289	1,412	1,505	1,355	1,508	1,623

Source: EDG financial model.

34. The technical losses are projected to be high during the four first years, around 36 percent, and to improve slightly to be close to 26 percent from 2020 to 2022 and then increase to 34 percent from 2023. Table 5.14 shows the trend of the energy losses.

Table 5.15. Energy Losses and Trends

Elements	Unit	2017	2018	2019	2020	2021	2022	2023	2024
Demand	GWh	2,112	2,359	2,682	2,586	3,050	3,444	4,252	4,939
Energy sold	GWh	1,329	1,482	1,715	1,977	2,238	2,518	2,824	3,179
Losses	GWh	783	878	967	609	812	926	1428	1759
Losses	%	37	37	36	24	27	27	34	36

Source: EDG financial model.

Commercial Performance

35. The overall commercial performance of EDG is expected to stay weak with a forecast low collection rate for the public administration -. The metrics related to the energy sold per employee with an average of 634 MWh per employee in 2016, is expected to increase during the upcoming period, around 15 percent per year.

36. Similarly, the unit revenue collected per kWh around GNF 615 per kWh (US$0.063 per kWh) in 2016 is forecast to increase up to GNF 2,411 per kWh (US$ 0.24 per kWh) in 2024. Table 5.15 summarizes the commercial performance indicators.

Table 5.16. Commercial Performance Indicators

Elements	Unit	2017	2018	2019	2020	2021	2022	2023	2024
Unit revenues collected	GNF/kWh	665	723	918	1,375	1,602	1,927	2,103	2,411
Energy sold per employee	MWh/employee	869	1,066	1,372	1,569	1,762	1,967	2,189	2,446
Energy sold per customer	MWh/customer	3.286	3.435	3.701	3.961	4.137	4.224	4.321	4.381
Collection	%	94	95	97	98	98	98	99	99

Source: EDG financial model.

D. Projected Financial Position Analysis

37. The operational performance while improving will not be enough to have a material impact on the financial position of the company during 2016–2021. Based on the projections, EDG is expected to continue facing poor profitability, liquidity, leverage, and asset efficiency during the period, but will see improvement in its financial position starting from 2022.

Profitability

38. The utility is expected not to be able to pay its fixed cost, such as interest on debt, selling, and general and administrative expenses before 2022. The net margin is forecast to be positive from 2022 onward with average annual deficit GNF 2.7 billion before the breakeven period starting from 2022. Consequently, EDG's profitability is expected to be negative during the period, save the last three years.

39. The company cost recovery situation is also expected to improve from 2022. The revenues will cover the operating charges from 2022 to 2024. Similarly, the return on capital employed (investments of EDG) is expected to be positive from this period, resulting in the utility being profitable starting from 2022. Table 5.16 summarizes the profitability ratios.

Table 5.17. Profitability Ratios

Elements	Unit	2017	2018	2019	2020	2021	2022	2023	2024
Operating margin	%	–55	–73	–29	0	–2	21	19	23
Net margin	%	–61	–78	–33	–3	–4	19	18	22
Operating charges coverage ratio	%	72	64	80	100	98	126	123	130
Return on equity	%	69	56	24	4	12	–702	–114	206
Return on capital employed	%	–347	–534	–324	–37	–73	497	610	1,041

Source: EDG financial model.

Liquidity

40. EDG's short-term financial position, being weak at the start of the projection period, is expected to see an improvement up to 2022. The company will not be able to pay off its current liability from 2016 to 2021 on time. However, beyond 2022 the utility will be able to do so.

41. This positive outlook is due to the expected improvement in collection days during these upcoming years. Still, the collection days remains relatively high despite efforts to improve it. As such, EDG's cash is mainly locked in the receivables which will not allow the utility to pay its suppliers on time. The company will be mainly relying on its suppliers to operate; in the end this can lead to a supply of energy and fuel cut. Table 5.17 shows the forecast trend of the liquidity ratios

Table 5.18. Liquidity Ratios

Elements	Unit	2017	2018	2019	2020	2021	2022	2023	2024
Quick ratio	%	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Current ratio	%	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Collection days	Days	418	335	268	214	171	137	110	88
Days in payables	Days	288	230	184	147	118	94	75	60
Cash conversion cycle	Days	18	14	11	9	7	6	5	4
Days cash on hand	Days	–113	–90	–72	–58	–46	–37	–30	–24

Source: EDG financial model.

Solvency

42. EDG is a highly leveraged company. The investments are mainly being forecast to be funded using concessional loan. With a forecast of a poor operating performance, the company is not expected to have positive retained earnings to bolster its equity position, which could potentially pave the way for it to participate in the financing of its investment program. Moreover, the growth accumulated in the past and projected deficit will keep eroding the equity of the utility.

43. With expected negative equity, EDG's capital structure is and will remain meaningless. Unless a capitalization is pursued, the company will technically be bankrupt. In fact, the long-term liabilities are forecast to be more than twice the long-term assets. The cash flow is mainly used to repay the debts, sowing the seeds for the company's lack of resiliency to withstand revenue and expense volatility. Table 5.18 shows the expected trend in the solvency ratios.

Table 5.19. Solvency Ratios

Elements	Unit	2017	2018	2019	2020	2021	2022	2023	2024
Leverage (Debt/Equity Ratio)	%	–55	–29	–20	–32	–138	–2,021	–384	535
Indebtedness (Liabilities/Assets)	%	–57	–171	–229	–90	17	57	44	93
Interest Coverage Ratio	%	–908	–1370	–742	9	–79	1,326	1,609	2,689
Debt Service Coverage Ratio	%	–70.5	–71.1	–38.9	–3.2	–3.8	7.7	9.1	14.9

Source: EDG financial model.

Asset Efficiency

44. During the projection period, EDG is forecast to maintain the speed of supplier's payment despite the critical financial situation. These payments are mainly energy purchased from the hydro and thermal IPPs. Consequently, the utility is and will stay in a situation of bankruptcy and the cessation of operations is hanging on EDG's head unless the Government provides adequate subsidy and a financial restructuring plan.

45. The extremely high working capital turnover shows that the company does not have enough capital to support it sales growth, despite the efficient uses of the assets. Table 5.19 shows the trend in the assets efficiency ratios.

Table 5.20. Assets Efficiency Ratios

Elements	Unit	2017	2018	2019	2020	2021	2022	2023	2024
Receivables turnover	%	478	478	478	478	478	478	478	478
Payables turnover	%	654	654	654	654	654	654	654	654
Working capital turnover	%	–176	–176	–176	–176	–176	–176	–176	–176
Fixed asset turnover	%	254	212	178	168	259	337	363	273

Source: EDG financial model.

46. A scenario was simulated to assess the level of tariff increase necessary to cover the operating expenses during 2017–2021. The results show that EDG would have to annually raise its average rate by a staggering 37.7 percent instead of the current projected average annual rate increase of 8.4 percent, even though the cost of procuring power will trend down.

MAP


GUINEA
SELECTED CITIES AND TOWNS
PREFECTURE CAPITALS
REGION CAPITALS
NATIONAL CAPITAL
RIVERS
MAIN ROADS
RAILROADS
PREFECTURE BOUNDARIES
REGION BOUNDARIES
INTERNATIONAL BOUNDARIES
FEBRUARY 2016
GSDPM
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SIERRA LEONE
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CÔTE D'IVOIRE
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FARANAH
KANKAN
KINDIA
NZEREKORE
CONAKRY
Koundâra
Foulamôri
Gaoual
Mali
Balaki
Koubia
Tongue
Lélouma
Labé
Siguirini
Doko
Kintinian
Siguiri
Nyagassola
Dinguiraye
Niandankoro
Sangarédi
Sansalé
Boké
Télimélée
Pita
Dabola
Bissikrima
Dalaba
Kamsar
Kouroussa
Mandiana
Fria
Mamou
Kankan
Boffa
Kindia
Faranah
Dubreka
Coyah
Forécariah
CONAKRY
Moribaya
Tiro
Kissidougou
Kérouane
Sokourala
Sibiribaro
Guéckédou
Beyla
Macenta
Boola
Nzérékoré
Lola
Yomou
Diéké
Mt. Nimba (1752 m)
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