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IDA/R2017-0123/1

April 25, 2017

Closing Date: Friday, May 12, 2017 at 6 p.m.

FROM: Vice President and Corporate Secretary

Senegal - OMVS Transmission Expansion Project

Project Appraisal Document

Attached is the Project Appraisal Document regarding a proposed credit to Senegal for an OMVS Transmission Expansion Project (IDA/R2017-0123), which is being processed on an absence-of-objection basis.

Distribution:

Executive Directors and Alternates
President
Bank Group Senior Management
Vice Presidents, Bank, IFC and MIGA
Directors and Department Heads, Bank, IFC and MIGA

Document of
The World Bank

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Report No: PAD1393

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A PROPOSED CREDIT

IN THE AMOUNT OF €91.5 MILLION
(US$97 MILLION EQUIVALENT)

TO THE REPUBLIC OF SENEGAL

FOR THE

OMVS - TRANSMISSION EXPANSION PROJECT

April 21, 2017

Energy and Extractives Global Practice
Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate as of February 28, 2017)

Currency Unit	=	US$
€ 1	=	US$1.060
US$1	=	€ 0.943

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AFD	*Agence Française de Développement* (French Development Agency)
ARE	*Autorité de Régulation* (Mauritanian Energy Regulatory Authority)
AWPB	Annual Work Plan and Budget
CER	*Concessionaires d'Electricité Rurale* (Rural Electricity Concessionaires)
	Construction Environmental and Social Management Plan
CESMP	Cote d'Ivoire-Liberia-Sierra Leone-Guinea Interconnector
CLSG	
CPF	Country Partnership Framework
CREE	*Commission de Régulation de l'Energie et de l'Eau* (Malian Electricity and Water Regulatory Commission)
CSCRP	*Cadre Stratégique pour la Croissance et la Réduction de la Pauvreté* (Strategic Framework for Growth and Poverty Reduction)
DA	Designated Account
DPO	Development Policy Operation
DSCR	Debt Service Coverage Ratio
ECOWAS	Economic Community of West African States
EDM	*Énergie du Mali* (Energy of Mali S.A.)
EEM	ESKOM *Energie Manantali* (Subsidiary of the South African utility ESKOM)
EIRR	Economic Internal Rate of Return
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
FBS	Selection under a Fixed Budget
FM	Financial Management
GDP	Gross Domestic Product
GNI	Gross National Income
GPN	General Procurement Notice
GRS	Grievance Redress Service
HFO	Heavy Fuel Oil
IAD	Internal Audit Department
ICB	International Competitive Bidding
IFR	Interim Financial Report
INDC	Intended Nationally Determined Contributions
IPP	Independent Power Producer
LCS	Least-Cost Selection
M&E	Monitoring and Evaluation

NCB	National Competitive Bidding
NPV	Net Present Value
OMVG	*Organisation pour la Mise en Valeur du fleuve Gambie* (The Gambia River Basin Development Organization)
OMVS	*Organisation pour la Mise en Valeur du fleuve Sénégal* (Senegal River Basin Development Organization)
O&M	Operations and Maintenance
PIU	Project Implementation Unit
PRSP	Poverty Reduction Strategy Paper
PSE	*Plan Sénégal Emergent* (Emerging Senegal Plan)
QCBS	Quality- and Cost-Based Selection
RCU	Regional Coordination Unit
RAP	Resettlement Action Plan
RIMA	*Réseau Interconnecté de Manantali* (Manantali Interconnected Network)
RPF	Resettlement Policy Framework
SCADA	Supervisory Control and Data Acquisition
SEMAF	*Société d'Exploitation de Manantali et de Félou* (Manantali and Felou Management Company)
SENELEC	*Société Nationale d'Éléctricité du Sénégal* (Senegalese electricity utility)
SOGEM	*Société de Gestion de l'Energie de Manantali* (Manantali Energy Management Company)
SOMELEC	*Société Mauritanienne d'Electricité* (Mauritania electricity utility)
SPV	Special Purpose Vehicle
UNDP	United Nations Development Business
WAPP	West African Power Pool

Regional Vice President:	Makhtar Diop
Country Director:	Louise J. Cord
Senior Global Practice Director:	Riccardo Puliti
Practice Manager:	Charles Joseph Cormier
Task Team Leader(s):	Pedro E. Sanchez and Thierno Bah

AFRICA
OMVS - Transmission Expansion Project

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PAD DATA SHEET

Western Africa

OMVS - TRANSMISSION EXPANSION PROJECT (P147921)

PROJECT APPRAISAL DOCUMENT

AFRICA

0000009258

Report No.: PAD1393

Basic Information			
Project ID P147921	EA Category B - Partial Assessment		Team Leader(s) Pedro E. Sanchez, Thierno Bah
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints [ ] Financial Intermediaries [ ] Series of Projects [ ]		
Project Implementation Start Date 12-May-2017	Project Implementation End Date 30-Jun-2020		
Expected Effectiveness Date 30-Sep-2017	Expected Closing Date 31-Dec-2020		
Joint IFC No			
Practice Manager/Manager Charles Joseph Cormier	Senior Global Practice Director Riccardo Puliti	Country Director Louise J. Cord	Regional Vice President Makhtar Diop

Borrower: The Republic of Senegal			
Responsible Agency: Mali - SOGEM - Societe de Gestion de Manantali			
Contact:	El Wely Ahmed Hamed BOUHEBEYNI	Title:	Directeur General
Telephone No.:	22320233286	Email:	Elwely.bouhebeyni@sogem-omvs.org

Project Financing Data(in USD Million)					
[ ]	Loan	[ ]	IDA Grant	[ ]	Guarantee
[X]	Credit	[ ]	Grant	[ ]	Other

Total Project Cost:	103.00	Total Bank Financing:	97.00
Financing Gap:	0.00		

Financing Source	Amount
BORROWER/RECIPIENT	6.00
International Development Association (IDA)	97.00
Total	103.00

Expected Disbursements (in USD Million)

Fiscal Year	2017	2018	2019	2020	2021	0000	0000	0000	0000	0000
Annual	0.00	25.00	35.00	35.00	2.00	0.00	0.00	0.00	0.00	0.00
Cumulative	0.00	25.00	60.00	95.00	97.00	0.00	0.00	0.00	0.00	0.00

Institutional Data

Practice Area (Lead)

Energy & Extractives

Contributing Practice Areas

Proposed Development Objective(s)

The project development objective is to enhance electricity trade among Mali, Mauritania, and Senegal.

Components

Component Name	Cost (USD Millions)
RIMA Reinforcement and Expansion	94.00
Technical Assistance	9.00

Systematic Operations Risk- Rating Tool (SORT)

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

Compliance

Policy

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

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

Legal Covenants

Name	Recurrent	Due Date	Frequency
Staffing of the Regional Coordination Unit (RCU) (PA Section I. (b))	**X**		CONTINUOUS

Description of Covenant

SOGEM shall, not later than three (3) months after the Effective Date, appoint and thereafter maintain throughout Project implementation, the following staff, all under terms of reference and with qualifications and experience satisfactory to the Association: one (1) engineer, one (1) dedicated senior accountant, one (1) resettlement specialist, one (1) procurement specialist, one (1) health and safety specialist, and one (1) staff responsible for the monitoring and evaluation functions of the RCU.

Name	Recurrent	Due Date	Frequency
External Auditor (PA, Section II.C.3 (ii) B)		31-Dec-2017	

Description of Covenant

SOGEM shall take all needful action to appoint an external auditor, under terms of reference and with qualifications satisfactory to the Association, under a signed contract, or to apply its current audit arrangements in place to allow its auditor to issue two separate reports on SOGEM and the Project accounts.

Name	Recurrent	Due Date	Frequency
Internal Audit (PA, Section II.C.3 (ii) A)		31-Dec-2017	

Description of Covenant

SOGEM shall take all needful action to appoint a qualified and experienced internal auditor for SOGEM under terms of reference and with qualifications satisfactory to the Association.

Name	Recurrent	Due Date	Frequency
Accounting Software (PA, Section II.C.3 (i))	**X**		CONTINUOUS

Description of Covenant

SOGEM shall take all needful action to ensure that, not later than three (3) months after the Effective Date, its existing accounting software shall have been configured to allow proper recording of the Credit-financed Project transactions

Name	Recurrent	Due Date	Frequency
Compliance with the Env. &/or Social safeguard docs (Schedule 2.D.1; PA I.C1)	**X**		CONTINUOUS

Description of Covenant

The Recipient and SOGEM shall implement the Project in accordance with the provisions of the Resettlement Policy Framework (RPF), the Environmental and Social Impact Assessment (ESIA), the Environmental and Social Management Plan (ESMP), and the Resettlement Action Plan(s) (RAP(s)), all in a manner satisfactory to the Association.

Name	Recurrent	Due Date	Frequency
Env.l and/or social safeguard requirements for works (Schedule 2.D.2; PA I.C2)	**X**		CONTINUOUS

Description of Covenant

The Recipient and SOGEM shall ensure that no works are commenced under the Project, until and unless: (i) SOGEM shall have verified, through its own staff, outside experts, or existing environmental/social institutions, that the works meet the environmental and/or social management requirements, if applicable, of appropriate national and local authorities and that they comply with the review procedures set forth in the ESIA, ESMP and/or RPF, as the case may be, and the provisions of the Implementation Manual; and (ii) if required, SOGEM shall have prepared and adopted the RAP(s) and the same documents have been consulted upon and disclosed as approved by the Association.

Name	Recurrent	Due Date	Frequency
Monitoring and evaluation activities (PA Section II.B (c))		30-Sep-2019	

Description of Covenant

SOGEM shall prepare and furnish to the Association, on or about September 30, 2019, a report integrating the results of the monitoring and evaluation activities and setting out the measures recommended to ensure the efficient carrying out of Project and the achievement of the objective thereof during the period following such date and review with the Association, on or about November 30, 2019, the report and, thereafter, take all measures required to ensure the efficient completion of the Project and the achievement of the objective thereof.

Name	Recurrent	Due Date	Frequency
Establishment & functioning of the Steering Committee (Schedule 2.Section I.A.1)	X		CONTINUOUS

Description of Covenant

The Recipient shall, through its representative at the OMVS' Council of Ministers, take all action required on its behalf to ensure the establishment, not later than three (3) months after the Effective Date and, thereafter, the effective and timely functioning of the Steering Committee.

Conditions

Source Of Fund	Name	Type
IDA	Subsidiary Agreement	Effectiveness

Description of Condition

The Subsidiary Credit Agreement has been executed on behalf of the Recipient and SOGEM.

Source Of Fund	Name	Type
IDA	Regional Coordination Unit	Effectiveness

Description of Condition

SOGEM shall have established the Regional Coordination Unit through the appointment of its Project coordinator and the environmental specialist, both under terms of reference and with qualifications and experience satisfactory to the Association.

Source Of Fund	Name	Type
IDA	Implementation Manual	Effectiveness

Description of Condition

SOGEM shall have updated the Implementation Manual to include a section on financial management and on procurement, all in form and with content satisfactory to the Association.

Source Of Fund	Name	Type
IDA	Retroactive Financing	Disbursement

Description of Condition

No withdrawal shall be made for payments made prior to the date of the Financing Agreement, except that withdrawals up to an aggregate amount not to exceed EUR 4,100,000 may be made for payments made prior to this date but on or after July 31, 2016, for Eligible Expenditures under Category (1)(a).

Team Composition

Bank Staff

Name	Role	Title	Specialization	Unit
Pedro E. Sanchez	Team Leader (ADM Responsible)	Lead Energy Specialist	Energy Policy Specialist	GEE07
Thierno Bah	Team Leader	Senior Energy Specialist	Senior Energy Specialist	GEE07
Mahamadou Bambo	Procurement	Senior Procurement	Senior Procurement	GGO07

Sissoko	Specialist (ADM Responsible)	Specialist	Specialist	
Ndeye Magatte Fatim Seck	Procurement Specialist	Procurement Analyst	Procurement	GGO07
Tahirou Kalam	Financial Management Specialist	Financial Management Specialist	Financial Management Specialist	GGO26
Aissatou Diallo	Team Member	Senior Finance Officer	Senior Finance Officer	WFALN
Ali Ouattara	Team Member	Senior Financial Specialist	Financial Specialist	GEE07
Aminata Ndiaye Bob	Team Member	Program Assistant	Administrative	AFCF1
Aoua Toure Sow	Team Member	Program Assistant	Team Assistant	AFCW3
Claudia M. Pardinas Ocana	Counsel	Senior Counsel	Counsel	LEGAM
Manuel Jose Millan Sanchez	Team Member	Power Engineer	Energy Specialist	GEE08
Natalie Tchoumba Bitnga	Team Member	Program Assistant	Administrative	GEE07
Rahmoune Essalhi	Team Member	Procurement Analyst		GGO01
Robert A. Robelus	Safeguards Specialist	Consultant	Senior Environmental Specialist	GEN05
Salamata Bal	Safeguards Specialist	Senior Social Development Specialist	Social Development Specialist	GSU01

Extended Team

Name	Title	Office Phone	Location

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Senegal	Tambacounda	Tambacounda	**X**		
Mali	Kayes	Kayes	**X**		

Consultants (Will be disclosed in the Monthly Operational Summary)

Consultants Required ?	Consultants will be required

I. STRATEGIC CONTEXT

A. Regional and Country Context

1. Sub-Saharan Africa continues to face challenges in the power sector, with only one in three Africans having access to power. The population of Sub-Saharan Africa is roughly 800 million and the combined generation capacity in the region stands at only 68 GW. In comparison, Spain has similar generation capacity, with a population of 40 million. Excluding South Africa, Sub-Saharan Africa's power consumption is low, at about one percent of the Organization for Economic Cooperation and Development levels. Average power costs are approximately double those found in the rest of the developing world. Cheaper and cleaner energy sources, such as hydropower, geothermal, and natural gas, are unevenly located. A rapid change of the energy mix from thermal generation toward a cleaner energy mix can only be achieved through regional interconnections.

2. The 15 member states of the Economic Community of West African States (ECOWAS) occupy some five million square kilometers and are home to about 300 million people. About half of the ECOWAS population lives in poverty, with less than US$1.90 per day, and it is estimated that at least 170 million people still lack access to electricity. A substantial reduction of poverty will require sustained economic growth. This in turn will require massive investments to make up for current deficits in infrastructure. The high cost of infrastructure, particularly in some of the smaller ECOWAS countries, has been a barrier to development. Recognizing that past efforts to achieve national self-sufficiency in electricity supply have been uneconomical because of the high cost of establishing power generation and transmission infrastructure, ECOWAS member states have established the West African Power Pool (WAPP), a cooperative power pooling mechanism for integrating national power system operations into a unified, regional electricity market. The public utility companies of Mali, Mauritania, Senegal, and *Société de Gestion de l'Energie de Manantali*, (the Manantali Energy Management Company SOGEM) are members of the WAPP.[1]

3. Regional power trade is even more important in West Africa than elsewhere in the continent. Out of the 15 countries in West Africa, 11 are small economies (gross domestic product [GDP] less than US$5 billion) and, thus, do not have enough demand to develop the electricity sector at scale to achieve lower-cost generation capacity. The cost of electricity generation is very high because of the region's high dependence on expensive (and polluting) oil-based thermal generation. Even so, high tariffs of US$0.20–US$0.30 per kWh (e.g. compared to an average of US$0.10 per kWh in the United States) are still not sufficient to cover the cost of supply.

4. Mali is a vast, landlocked, geographically diverse country in West Africa, with a population of approximately 17 million and per capita gross national income of US$720 in 2015. Over the past several years, Mali's economic growth has been influenced by several exogenous shocks. The country's steady state growth rate has hovered around 4.5 percent over the last decade, driven by rapid growth in labor supply, urbanization (along with informal sector and

[1] While Mali and Senegal are members of ECOWAS, Mauritania is not a member of ECOWAS.

tertiary sector development), extensive agriculture, public investment, and gold mining activities. The structure of its GDP has remained relatively stable since 1990 with the primary (agriculture, gold) and tertiary sectors (trade, transport, and public administration) each contributing 35–40 percent to the GDP and the secondary sector contributing the rest. Mali's industrial sector is limited (4 percent of the GDP) and consists largely of privately owned, small enterprises and a few large enterprises (cotton milling and mining). However, economic growth often deviated from this steady state trajectory because of climatic, political, and price shocks. Mali's economy is projected to grow by around 5 percent annually over the next three years, reflecting a return to normalcy and a gradual tapering of the recent surge in international aid. The Government, however, faces the dual challenges of repositioning the Malian economy on a rapid and sustainable growth trajectory while tackling governance challenges. In this context, reliable and affordable access to electricity services will pave the way to further job creation. Over the last few years, Mali has experienced a growing electricity gap due to a lack of investments along the value chain, and it is increasingly dependent on high-cost fossil fuels to fill that gap. Mali's economy would benefit from the import of low-cost electricity.

5. Mauritania is located on the western coast of Africa, with a population of four million and per capita GDP of about US$1,260 (2015). The country has a wealth of natural resources, particularly, in the mining sector, and has experienced sustained growth, owned to a period of high international commodity prices. The country is Africa's second-leading exporter of iron ore and also gold and copper, two exports with significant growth potential. In addition, Mauritania is a modest oil producer and possesses considerable natural gas deposits offshore. Mauritania's waters have some of the most abundant fish stock in the world. However, with the end of the commodity super-cycle in the second half of 2014 and the collapse of iron ore prices, pressures on growth have started to appear in Mauritania. With a 10.3 percent drop in mineral production, economic activity has been slowing down since 2014. Real GDP growth fell to three percent by the end of the year, down from 6.4 percent in 2014. Moreover, all non-tradeable domestic sectors that had previously benefited on the back of the mining boom, such as utilities, transport, and telecommunications, showed signs of deceleration. Even the construction sector was affected despite benefitting from public investment spending, with imports of construction materials dropping 3.8 percent. This leaves the economy exposed to external economic shocks. Mauritania acknowledges the need to implement policies that improve governance, increase resilience to external shocks, and are conducive to accelerating sustainable growth and creating jobs. In this context, improving the access to competitive electricity services will be key in the coming years.

6. Senegal is a country located on the western coast of Africa, with a population of 14 million and per capita GDP of about US$1,050 in 2015. The economy of Senegal is based on agriculture and service industries. Over the course of 2015, Senegal's macroeconomic performance was strong with a growth rate of 6.5 percent, a rate that has not been achieved since 2003. This performance is remarkable given the depressed global environment that has contributed many African countries registering a marked slowdown in their economic activities. As a result, Senegal was the second fastest growing economy in West Africa, behind Côte d'Ivoire. The main drivers of growth were higher private sector demand, stimulated by lower fuel prices, as well as the ambitious public investment program carried out by the Government, the *Plan Sénégal Émergent* (Emerging Senegal Plan, PSE), up by almost 0.4 percent of GDP in 2015. The economic outlook remains favorable in the short term with growth projected to have reached 6.5 percent in 2016 and the economy driven mainly by the services sector, particularly

telecommunications and financial services. The rebound in agriculture coupled with the end of the Ebola epidemic in the West African region will benefit the national economy. Economic activity will be further strengthened by lower oil prices, reduced production costs, and electricity subsidies. Senegal acknowledges the need to implement policies that improve governance, increase resilience to external shocks, and are conducive to accelerating inclusive and sustainable growth to promote job creation. In this context, improving the access to competitive electricity services will be key in the coming years.

7. The proposed project is a regional project that will benefit Mali, Mauritania, and Senegal through enhanced electricity trade opportunities within the WAPP, promoting regional integration under the ECOWAS framework. With growing populations, energy demand is expected to increase, requiring additional generation capacity for the region. The power system developed by the *Organisation pour la Mise en Valeur du fleuve Sénégal* (Senegal River Basin Development Organization, OMVS) whose members include Mali, Mauritania, and Senegal (and more recently Guinea), has allowed for the development and sharing of hydropower electricity, which has been key to reducing electricity costs in each of these countries. The proposed project will not only expand the electricity trade between the three countries, but will integrate the OMVS system to the broader WAPP power system. This will open the possibility for the WAPP countries to access new and more diversified energy sources, which is a well-supported regional strategy.

B. Sectoral and Institutional Context

8. The OMVS interconnected grid is the most advanced subregional power pool in West Africa. This grid is composed of the *Réseau Interconnecté de Manantali* (Manantali Interconnected Network, RIMA) managed by SOGEM, and the grids of the national electricity companies of Mali, Mauritania, and Senegal (*Énergie du Mali* [Energy of Mali S.A., EDM], *Société Mauritanienne d'Electricité* [Mauritania electricity utility, SOMELEC], and *Société National d'Éléctricité du Sénégal* [Senegalese electricity utility, SENELEC], respectively). RIMA comprises (a) the 200 MW hydroelectric plant at the foot of the Manantali Dam; (b) a 1,600 km long system of 225 kV transmission lines and substations that transmit the electricity produced at the Manantali hydroelectric plant to the main load centers in Bamako (Mali), Nouakchott (Mauritania), and Dakar (Senegal), operated in real time by a central load dispatching system located at Manantali; and (c) the Felou 60 MW run-of-the-river hydroelectric plant located on the Senegal River in Mali about 200 km downstream of the Manantali hydroelectric plant, with an interconnection to the 225 kV transmission system. Gouina, a 140 MW run-of-the-river hydroelectric plant, located on the Senegal River in Mali about 160 km downstream of the Manantali hydroelectric plant and about 40 km upstream the Felou hydroelectric plant, is expected to come online in 2020.

9. RIMA's production represents 25 percent of the electricity supply to Mali, Mauritania, and Senegal globally. Mali, Mauritania, and Senegal share the energy produced at Manantali and Felou, amounting to an average total of 1,142 GWh per year through RIMA. However, they need to supplement the hydropower generation with oil-based thermal power generation to meet their electricity needs. Partly, as a result of this generation mix, coupled with relatively high technical and commercial losses, the utilities in the three countries have been incurring financial losses and

have been increasingly relying on government support to cover their operating costs and finance the required investments to expand their systems.

10. In Mali, electricity service provision in urban areas is provided by EDM, the vertically integrated utility, which has monopoly over transport and distribution of electricity within the perimeter of its concession. The power generation segment has been opened to competition with EDM being, nevertheless, the single buyer for power supplied by independent power producers (IPPs) and SOGEM, through the *Société d'Exploitation de Manantali et de Félou* (Manantali and Felou Management Company, SEMAF), the operator of the regional OMVS hydropower plants in Manantali and Felou. The *Agence Malienne pour le Développement de l'Energie Domestique et l'Électrification Rurale* (Malian Agency for Domestic Energy and Rural Electrification Development) was created in 2003 to supply electricity to the rural areas through a public-private partnership approach, whereby rural electrification concessions (outside of EDM's concession perimeter) are granted to private operators. *Commission de Régulation de l'Energie et de l'Eau* (the Malian Electricity and Water Regulatory Commission, CREE), reporting to the Prime Minister's Office, was established in 2000 to regulate the water and electricity sectors. CREE's mandate is, however, limited to EDM's concession perimeter.

11. Despite significant progress over the last decade, access to modern energy services remains low in Mali at about 30 percent. This corresponds to an access rate of 55 percent in urban areas and 18 percent in rural areas. The total installed domestic generation capacity connected to the grid stands at 456 MW (including Mali's share of regional hydropower generation capacity) while the import capacity stands at 65 MW (from Cote d'Ivoire, Mauritania, and Senegal). Additionally, isolated centers in areas located far away from the grid are being served with standalone thermal generation units totaling an installed capacity of 57 MW. Overall generation and imports in 2015 reached 1,595 GWh on the grid, 48 percent of which came from four hydropower plants, including two plants from the regional OMVS system (Manantali and Felou). Over the past 10 years, only thermal generation (heavy fuel oil [HFO] or diesel) capacity has been added to the national grid, with its proportion growing from 10 percent of the total energy mix in 2005 to 37 percent in 2015. This project will contribute to rebalancing the country's energy mix toward cheaper and cleaner sources of energy by adding additional hydropower capacity to the national grid.

12. The performance of the electricity network in Mali has sharply declined since 2011. The availability of the generation facilities has declined, mainly, because of major maintenance works at the Manantali hydropower plant and lack of maintenance of the existing generation facilities. Moreover, on the transmission and distribution side, technical losses have increased from 20 percent in 2011 to close to 23 percent in 2015, mainly, because of the lack of investments in the rehabilitation of the network. On the other hand, EDM's customer base has increased rapidly from 120,000 to close to 400,000 in the past 12 years, with the demand growing at a compounded annual growth rate of 10 percent. To serve the fast-growing demand for electricity, EDM has to rely on expensive rental containerized diesel units (from Aggreko and APR) which is expected to have reached an aggregated installed capacity of 98 MW in 2016, that is, 27 percent of the grid-connected capacity.

13. Because of the sector's weak performance and financial challenges, the Government of Mali developed a recovery plan in 2013 to improve operational and financial performance, and

eliminate subsidies by 2018. As this is unlikely to be met, in a context where the level of subsidies stands at €67.5 million or €0.05 per kWh (2015), the Government has more recently initiated a new reform program, supported by the World Bank Group, aimed at addressing the persistent challenges. In addition, the World Bank Group is assisting the Government in expanding its transmission and distribution network as well as electricity access, particularly in rural areas, through policy advice, technical assistance, and investment project financing. The ongoing Mali Energy Sector Support Project (P108440) aims to improve the access and efficiency of electricity services in Bamako and in other targeted (grid connected) areas in the country. The Rural Electrification Hybrid Systems Project (P131084) aims to expand access to modern energy services in rural (non-grid connected) areas of the country and to increase renewable energy generation in target areas. Looking forward, the World Bank is also considering a development policy operation (DPO) series combined with new investment project financing operations to support the Government's energy sector-reform agenda.

14. Senegal's energy sector is dominated by SENELEC, the state-owned utility that has a monopoly for transmission and distribution and is the single buyer of bulk energy in the country. SENELEC owns about half of the country's generation capacity, with the remainder being owned by IPPs that generate electricity and sell it exclusively to SENELEC. A rural concession model was introduced to attract private concessionaires (Concessionaires d'Electricité Rurale, CERs) in areas not covered by SENELEC, and six have already been granted to private operators. These concessionaires have the monopoly for electricity transmission and distribution within their concessions. The sector policy is overseen by the Ministry of Energy and Development of Renewable Energies. An independent *Commission de Régulation du Secteur d'Electricité* (Electricity Regulatory Commission) was established in 1998 with the responsibility of approving revenue requirements for the sector and overall regulation, including regulating CER's tariff and licensing and leading the IPP tender processes.

15. Senegal has one of the best overall access rates to electricity in Sub-Saharan Africa, but electricity is relatively expensive compared to regional standards and often unreliable and access remains limited in rural areas. The current access rate in Senegal is relatively high by regional standards, at 57 percent (2015) of households, but rural access remains low at 31.5 percent (2015), hindered by inadequate infrastructure and high tariffs. The available installed generation capacity stood at 718 MW in 2016. However, demand is growing faster than supply mainly because of the sector's financial challenges and the limited success in planning and implementing new generation projects. As the country relies mostly on expensive imported fossil fuels for power generation, the average electricity cost in 2016 was estimated at US$0.22 per kWh. Such high electricity costs are unaffordable for many households, and it represents a major barrier to the goal of universal access to electricity. Furthermore, electricity supply remains unreliable. Despite ongoing reforms, customers report poor reliability, with an average of six outages per month, averaging 1.8 hours. Overall losses and unserved energy (a proxy for blackouts and brownouts) are still high at about 20 percent and 37.3 GWh per year (2015), respectively, compared to the country's targets of 17 percent and 10 GWh per year, respectively.

16. The Government of Senegal succeeded in phasing out subsidies in 2016 through diversification of their energy mix, increased revenues, and improvement of the efficiency of service delivery. However, the Government of Senegal may now need to reintroduce subsidies in 2017 for a total amount estimated at XOF 11 billion (equivalent to €17 million or 0.1 percent of

the country's GDP), as a consequence of its decision to reduce electricity tariffs by 10 percent in January 2017. The World Bank is assisting the Government's efforts to improve the operational and financial performance of electricity transmission and distribution. World Bank's engagement includes advisory services to support the reform of SENELEC through the Senegal Electricity Sector Support Project (P125565) and technical assistance to improve the institutional performance of rural electrification through a Sustainable Energy for All (SE4All) World Bank-executed trust fund. The World Bank is also expecting to bring forward in FY2017 a DPO for Senegal with a focus on lowering the cost of energy through cheaper generation mix and better governance and management of the power sector. Finally, the World Bank Group is working with the Government to prepare a support package for a quick, transparent tender process for the development of 100 MW of solar IPPs in the context of the World Bank Group Scaling Solar Program.

17. SOMELEC is the state-owned utility in Mauritania that is responsible for the generation, transport, distribution, and sale of electricity in the country's urban and suburban areas. A regulatory authority, *Autorité de Régulation* (Mauritanian Energy Regulatory Authority, ARE) was set up to regulate activities in the areas of electricity, water, telecommunications, and postal services. However, SOMELEC is not within the perimeter of ARE but regulated by contract by the Ministry of Petroleum, Energy, and Mining, which is responsible for overseeing the sector's activities. There are two agencies that are mandated to promote rural access, the *Agence de Promotion de l'Accès Universel aux Services de base* (Basic Services Universal Access Promotion Agency) and the *Agence d'Electrification Rurale* (Rural Electricity Agency), with some overlapping institutional roles.

18. Electricity consumption in Mauritania is increasing by more than 10 percent per year, yet only 4 percent of the rural population have access to electricity, while the overall access rate stands at 35 percent. The total installed capacity in Mauritania stands at 460 MW, while the peak demand is only 150 MW. The main resource used in the country for electricity production is HFO, even though substantial progress has been achieved lately in diversifying the energy mix, which is comprised of 20 percent solar and wind and 23 percent hydro (mainly imports). Losses stand at 30 percent, which is high. The average electricity tariff stood at US$0.22 per kWh while the average supply cost stood around US$0.32 per kWh in 2014. SOMELEC's financial situation is challenging, as evidenced by the US$53 million loss accumulated from 2011 to 2014.

19. The World Bank is engaged in a dialogue with Mauritania to support the Government's strategy to develop the power sector. The focus is on the security of supply, and the World Bank's role is, specifically, to improve the Ministry of Energy's planning capacity with regard to transmission and distribution; support energy access through the definition of a clear policy and institutional framework involving the promotion of mini-grid and off-grid technologies in rural areas; and improve operational performance through investments to reduce technical and commercial losses and strengthening of SOMELEC's corporate governance.

20. From a regional perspective, the WAPP Master Plan has identified critical links to increase the wheeling capacity of RIMA and integrate it into the WAPP: (a) the Manantali-Kita-Kati line (from Manantali to just outside of Bamako); (b) the Kayes-Tambacounda line (between Mali and Senegal); and (c) the Kayes-Kifa-Titane line (between Mali and Mauritania). The Manantali-Kita-Kati line is needed because the existing Manantali-Bamako line is becoming a

bottleneck in the power transmission system from the main generation area at Manantali to the main consumption area in Mali (Bamako). SOGEM, with financing provided by the *Agence Française de Développement* (French Development Agency, AFD), is in the process of implementing the Manantali-Kita-Kati line. The existing Kayes-Dagana (Senegal) line will also soon become overloaded, as it is transmitting all the energy being produced in the Kayes area toward Senegal and Mauritania. The proposed Kayes-Tambacounda line will therefore release some load from the Kayes-Dagana line by providing an additional connection to Tambacounda, where it will be connected to the 225 kV *Organisation pour la Mise en Valeur du fleuve Gambie* (The Gambia River Basin Development Organization, OMVG) system under implementation and partly being financed by the World Bank. For the Kayes-Kifa-Titane line to create an additional link to Nouakchott, SOGEM is seeking financing. With the completion of the OMVS and the OMVG projects, the OMVS countries will be able to expand trade inside RIMA and on a larger scale, with the WAPP system.

21. With the completion of the Cote d'Ivoire-Liberia-Sierra Leone-Guinea (CLSG) interconnector, the OMVG interconnector, and the proposed project, the WAPP will become a unified power grid. Much progress has been made on developing the WAPP transmission backbone with many interconnections being finalized or under construction. Once the CLSG interconnector (supported by the World Bank) is completed, the networks of Guinea will be connected to the Southern Backbone of Ivory Coast-Togo-Benin-Nigeria. At the same time, once the OMVG project is completed, Senegal, The Gambia, Guinea Bissau, and Guinea will be integrated into one unified system (see Figure 2.1 in Annex 2). The line proposed under this project will reinforce the existing connection within RIMA and connect the OMVG and OMVS systems, which will provide reliability, flexibility, and redundancy to the exchanges between networks within the WAPP.

C. Higher Level Objectives to which the Project Contributes

22. The proposed project supports the three countries' development strategies as well as the World Bank's twin goals to reduce poverty and boost shared prosperity by improving the three countries' access to reliable electricity and promoting regional integration. The project is aligned with the strategic context in each country, with energy being a central piece of the Country Partnership Frameworks (CPFs) of Mali, Mauritania, and Senegal.

23. Mali's *Cadre Stratégique pour la Croissance et la Réduction de la Pauvreté* (Strategic Framework for Growth and Poverty Reduction, CSCRP) 2012–2017 is the reference document for the formulation and implementation of economic and social policies. This framework is built around two prerequisites: (a) strengthening peace and security; (b) consolidating the stability of the macroeconomic framework; and three strategic axes: (a) promotion of accelerated, durable, and pro-poor growth generating job creation; (b) strengthening the foundations of long-term development and equitable access to social services of quality; and (c) institutional development and governance. In line with the CSCRP, the CPF for Mali for the period FY2016–2019[2] articulates three areas of focus: (a) improve governance; (b) create economic opportunities; and

[2] Report No. 94005-ML.

(c) build resilience. The CPF recognizes that energy is critical to enabling transformation of the economy and has specifically identified this regional project as a critical one in that regard.

24. Following the general vision for 2015 articulated in the Poverty Reduction Framework Law of 2001, the Government of Mauritania has adopted its third Poverty Reduction Strategy Paper (PRSP-3) for 2011–2015. PRSP-3 provides a comprehensive framework for implementing an ambitious growth and poverty reduction agenda. It is articulated around five pillars: (a) accelerating economic growth and maintaining macroeconomic stability; (b) making growth more inclusive by developing the growth potential and productivity of the poor; (c) improving the potential of the Mauritanian people and expanding their access to basic social services; (d) enhancing governance and institutional development; and (e) improving planning and monitoring and evaluation (M&E) systems. The World Bank's Systematic Country Diagnostic (SCD) for Mauritania, under preparation, is fully aligned with the Government's PRSP-3 and concentrates on two main pillars: (a) growth and diversification; and (b) economic governance and service delivery. Reliable electricity supply, as an enabler for growth, is a priority under the CPF for FY2014–2016.[3]

25. To accelerate poverty reduction and boost shared prosperity, the Government of Senegal has prepared PSE 2035, which it has started to implement with the *Plan d'Action Prioritaires* (Priority Action Plan) 2014–2018 that operationalizes the PSE for the first four years. Under the PSE (which replaces the *Stratégie Nationale de Développement Economique et Social* (National Strategy for Economic and Social Development) 2013–2017), the Government has developed a highly ambitious, long-term development program. The PSE intends to put Senegal on an accelerated, stable GDP growth path of about 7 percent per year, starting from 2017 for about 10 years, to substantially develop the economy and reduce poverty so that Senegal can become an emerging economy by 2035. One of the key focuses of the PSE is to invest heavily in infrastructure to support private sector development. The high cost of energy, coupled with unreliable supply of electricity, has been identified in the CPF for FY2013–2017 for Senegal,[4] as a key constraint to private sector growth. Therefore, improved access to affordable electricity is strongly consistent with the objectives of the PSE.

26. The project is aligned with key documents of the World Bank. The project is part of the Sahel Initiative (announced by the World Bank's President in November 2013) and is in line with the World Bank Group's Energy Sector Directions Paper,[5] which places strong emphasis on enabling more reliable and efficient energy sectors in developing countries. The proposed project is also aligned with the World Bank's Africa Energy Strategy, in particular the pillar aimed at scaling up regional power generation and transmission capacity. In addition, the project is aligned with the World Bank Group African Climate Business Plan by facilitating interconnection and integration of on-grid renewable projects.

27. The project complements ongoing and planned World Bank Group energy sector operations in the sub region. The World Bank supports investments in transmission and

[3] Report No. 75030-MR.
[4] Report No. 73478-SN.
[5] *Toward a Sustainable Energy Future for All: Directions for the World Bank Group's Energy Sector*, Report No. 79597, July 2013.

distribution (including through the OMVG Interconnection Project, P146830, and the CLSG Power System Re-development Project, P113266), helps with improvements in utility management to meet growing electricity demand, promotes power generation expansion, and participates in scaling solar together with the International Finance Corporation (IFC). The proposed project will reinforce the capacity and reliability of the transmission system for Mali, Mauritania, and Senegal, which will contribute to enhancing the current power exchanges and provide the basis to develop larger generation projects within the expanded market of the WAPP.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

28. The project development objective is to enhance electricity trade among Mali, Mauritania, and Senegal.

B. Project Beneficiaries

29. The direct project beneficiaries are the existing and future customers of the power utilities in Mali, Mauritania, and Senegal. With reliable access to a modern source of energy, these customers will benefit from improved electricity services. Having a more reliable supply of electricity is also expected to improve the productivity of the population as well as the competitive edge of firms in the OMVS countries and, as a result, create jobs and spur economic growth. SOGEM will also benefit from technical assistance to be provided under the project.

C. PDO Level Results Indicators

30. Progress toward the PDO will be measured by the following indicators:

- Additional annual electricity traded between Mali and Mauritania (GWh);
- Additional annual electricity traded between Mali and Senegal (GWh); and
- Average duration of power outages in the RIMA system per year (hours).

31. Annex 1 presents the detailed results framework for the project.

III. PROJECT DESCRIPTION

32. The project will finance the construction of a new transmission line and associated substations to reinforce and extend RIMA, the backbone of the OMVS regional power grid. The new line will interconnect the existing Kayes substation in Mali to the Tambacounda substation in Senegal, which is part of the expanded WAPP system. This line will provide additional capacity to transmit the power generated in new power stations in Mali and Mauritania. The line will create redundancy in the system to ensure availability of supply through the WAPP system in the event of reduction of power generation in the RIMA system (for instance, because of low hydraulicity) through connection to the OMVG network. In addition, the project will finance the implementation of a Supervisory Control and Data Acquisition (SCADA) system and technical assistance for project implementation.

A. Project Components

33. The project consists of two components: (1) RIMA Reinforcement and Expansion; and (2) Technical Assistance.

Component 1: RIMA Reinforcement and Expansion (US$94 million, of which IDA US$88 million equivalent)

Subcomponent 1.1: Kayes-Tambacounda Transmission Line (US$83.6 million, of which IDA US$83.6 million equivalent)

34. The IDA Credit will finance the construction of a new 288 km long 225 kV double-circuit transmission line from Kayes (Mali) to Tambacounda (Senegal), with an estimated wheeling capacity of 400 MW. The line earth system will be equipped with a fiber optic cable (24 pairs) and equipment required to provide electricity access to villages along the route of the line. To connect the line to the system, the IDA Credit will also finance two 225 KV bays at the existing substation in Kayes and at the future substation in Tambacounda. The latter substation is under construction under the World Bank's cofinanced OMVG Interconnection Project (P146830).

Subcomponent 1.2: SCADA System (US$10.4 million, of which IDA US$4.4 million equivalent and SOGEM US$6 million)

35. The IDA Credit will partially finance the implementation of a SCADA system for joint operation and coordination between the three OMVS national power utilities (EDM, SENELEC, and SOMELEC), and the OMVS power system operator by (a) upgrading communication and data acquisition facilities to enable real-time information exchange with the load dispatching center at Manantali and the three national power utilities; and (b) acquiring the necessary software licenses with relevant training to support optimization and scheduling of the combined hydro and thermal power generation capacity of the recipients. The dispatch is being done by the OMVS power system operator within SEMAF, a subsidiary of SOGEM, using an existing SCADA system dated 2002, which is obsolete.

Component 2: Technical Assistance (US$9 million, of which IDA US$9 million equivalent)

36. The project will finance the contract of the Owner's Engineer that will assist SOGEM in implementing the project, including assistance in the procurement process and undertaking the supervision of the works included under Subcomponent 1.1. In addition, this component will finance consultancy services to strengthen SOGEM's capabilities to implement the Environmental and Social Management Plan (ESMP), Environmental and Social Impact Assessment (ESIA), Resettlement Policy Framework (RPF), and Resettlement Action Plans (RAPs) as well as operating costs.

B. Project Financing

37. In the resolution of the 61st Extraordinary Meeting of the Council of Ministers of OMVS held in Nouakchott on August 22nd 2016, SOGEM, the high commission of the OMVS and the OMVS member states were mandated to define the financial structure of the Manantali 2 program, involving the construction of three new transmission lines, including the Kayes-Tambacounda line. Subsequently, at a meeting held in Bamako on October 25th 2016, involving SOGEM, the high commission of the OMVS and the member states, it was decided that the Kayes-Tambacounda line would be entirely financed by the Republic of Senegal. Therefore, the IDA support for this project will entirely go to the Republic of Senegal. The lending instrument is Investment Project Financing. IDA support to the Republic of Senegal will be provided on standard IDA credit terms, and a Financing Agreement will be signed with the Republic of Senegal. The Republic of Senegal will then on-lend the proceeds of the credit to SOGEM, under the same terms, to implement the project. Table 1 presents a summary of the project costs by component and financier.

Table 1. Project Cost and Financing (US$, millions)

Components	Financing Amounts			
	Total	**IDA**	**SOGEM**	**% IDA**
Component 1: RIMA Reinforcement and Expansion	**94.00**	**88.00**	**6.00**	**94**
Subcomponent 1.1: Kayes-Tambacounda Transmission Line	83.60	83.60	0.00	100
Subcomponent 1.2: SCADA System	10.40	4.40	6.00	42
Component 2: Technical Assistance	**9.00**	**9.00**	**0.00**	**100**
TOTAL	**103.00**	**97.00**	**6.00**	**94**

38. A breakdown of IDA financing by regional and national IDA allocations is shown in table 2.

Table 2. IDA Allocation Breakdown (US$, millions)

Country	Regional IDA	National IDA	Total
Senegal	61.00	36.00	**97.00**
Total IDA Financing	**61.00**	**36.00**	**97.00**

C. Lessons Learned and Reflected in the Project Design

39. The project design takes into account lessons learned from earlier projects and those gained from the design of comparable regional World Bank-financed projects. Lessons include the understanding that regional projects are high-risk operations that are complex and resource-intensive, but when well designed and efficiently implemented, can yield high economic rewards. A summary of lessons learned and how they have been reflected in the design of the project is presented in table 3.

Table 3. Summary of Lessons Learned and Reflected in the Project Design

Lessons	Reflection in Project Design
PROJECT AND TECHNICAL DESIGN	

Ensuring commitment and ownership. Country commitment may be erratic; hence, an accounting of the political pressures on the project's governance framework is a key first step to determine the potential for project success and risks to sustainability.	To integrate this lesson into project design, the task team reached out to country specialists and supported the organization of a roundtable including the OMVS, SOGEM, the utilities, and potential donors in January 2015 to discuss the project and to ensure their commitment and ownership. The team has also encouraged and supported regular consultations between the different project players.
Line capacity and factoring growth prospects in technical design. Experience from other interconnection projects in the Africa Region and other regions demonstrate the need to build line capacity with long-term load development in mind. Many interconnections have been built to meet short-term demand and have quickly become congested, resulting in the need for expensive expansions that can also pose difficult right-of-way challenges.	The proposed transmission line to be built under this project is designed with long-term development in mind. Excess capacity is built into the design to allow for growth in supply volumes along the line.

Lessons	Reflection in Project Design
IMPLEMENTATION CAPACITY	
Bridging institutional differences. Earlier experiences show that the least successful regional projects have tried to rely on new institutions to oversee project implementation, while the most successful ones have often built upon the track record of existing institutions.	All key project implementation activities of the proposed project will be handled by SOGEM, an existing entity. SOGEM has gained experience and know-how from the implementation of the World Bank-supported Manantali and Felou hydropower projects, including interactions with large contractors, consultants, and donors.
IMPLEMENTATION DELAYS AND COUNTRY FRAGILITY	
Ensuring uniform implementation of the entire transmission line. In the past, some World Bank-financed WAPP transmission line projects have relied on the existing power utilities to prepare the segment of the line that was located in their territory. This has led to delays of completion for the overall line, as different power utilities operated at different speeds.	Against this backdrop, this project is to be implemented and operated by a single entity, which is the regional body, SOGEM.
Establishing a realistic preparation and implementation schedule to avoid unnecessary delays. The experience with the recently closed Felou Project and other WAPP projects, which faced significant delays, show that there needs to be a realistic preparation and implementation schedule since multi-country, multi-financier regional infrastructure projects are complex and tend to experience implementation delays.	Despite SOGEM's limited capacity, they have implemented many projects in the past and have therefore accumulated some level of experience. However, the team ensured that all required studies and preparatory activities are done upfront so that the project starts immediately after approval. The team has also been conservative in establishing the preparation and implementation schedule.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangement

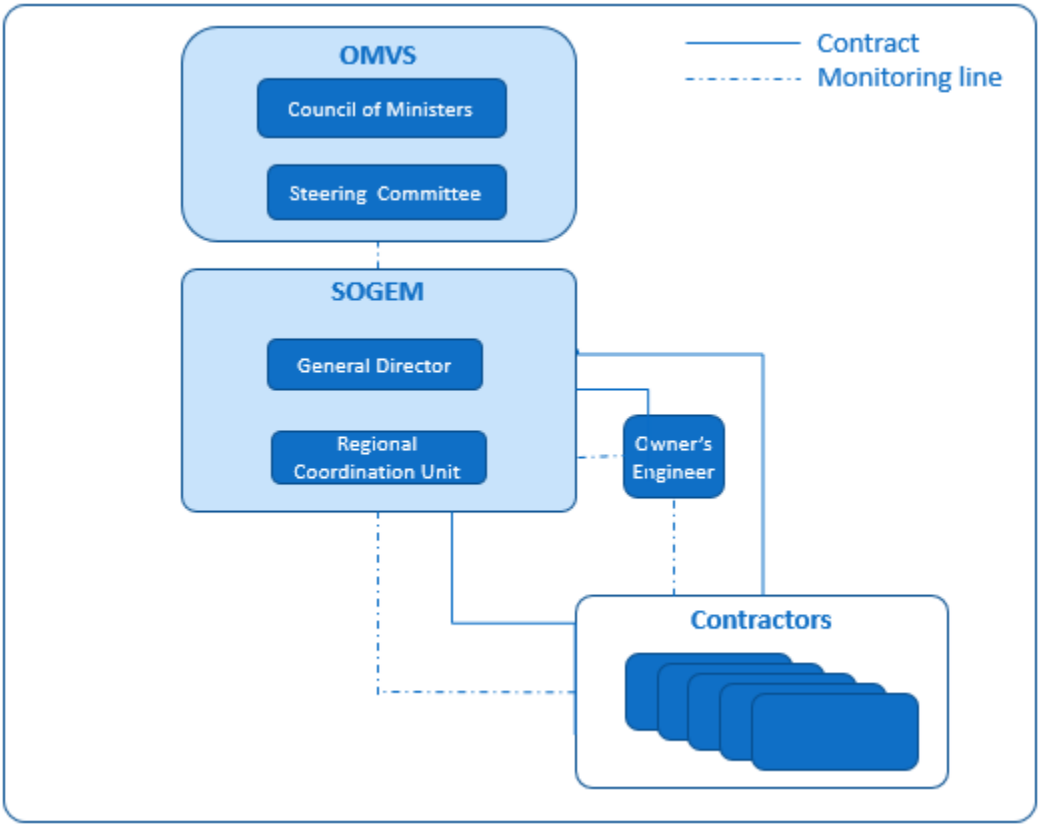
40. The project will be implemented under the legal framework established by the Convention Establishing the OMVS,[6] the Convention of Financing of Common Works,[7] and the

[6] *Convention portant création de l'OMVS*, March 11, 1972.

Convention creating SOGEM,[8] which was adopted and ratified by the Governments of Mali, Mauritania, and Senegal. According to these treaties, SOGEM is the implementation agency for the works financed under this project. SOGEM is a special purpose company in charge of the operations and maintenance (O&M) of RIMA's power generation and transmission assets defined and financed as common works. SOGEM is a public company whose shares are equally owned by three OMVS member countries, Mali, Mauritania, and Senegal.

41. SOGEM will be responsible for the detailed planning and scheduling of project implementation arrangements, preparing and issuing bidding documents, and conducting the bid evaluation and contract award processes. Although, SOGEM has experience with the implementation of World Bank-financed energy projects such as the OMVS Felou Hydroelectric Projects (P099312, P094916), its capacity is stretched. Given the size and complexity of this project, an Owner's Engineer will be recruited to assist the company with overseeing and monitoring project implementation. The implementation arrangements for the project are depicted in Figure 1.

Figure 1. OMVS Project Implementation Arrangements



42. A Regional Coordination Unit (RCU) will be established under SOGEM. The RCU will be composed of a coordinator, an engineer, a procurement specialist, a senior dedicated

[7] *Convention relative aux modalités de financement des Ouvrages Communs*, December 21, 1978.
[8] *Convention portant création de l'Agence de Gestion de l'Energie de Manantali*, January 7, 1997.

accountant, an environmental specialist, a resettlement specialist, a health and safety specialist and an assistant. The RCU will be responsible for (a) coordination and planning of the works; (b) supervision and monitoring/control of the project activities; (c) administrative and financial management (FM); (d) procurement activities; (e) implementation of safeguards measures; (f) performing secretariat duties of the Steering Committee; and (g) reporting on progress.

43. A Steering Committee will be established by the recipient through the Council of Ministers of the OMVS. The Steering Committee will be chaired by the OMVS High Commissioner and should include representatives of the following stakeholders: the OMVS High Commission, the OMVS countries, SOGEM, and the public utility companies, given the specific nature of the project, which require close technical collaboration. The Steering Committee shall be vested with the responsibility for overseeing implementation and ensuring effective cooperation between the OMVS countries and, to this end, shall meet at least twice a year (or more often if required) and report directly to the Council of Ministers of the OMVS.

44. The OMVS has created SEMAF as a subsidiary of SOGEM to operate the OMVS power system, including the proposed project. SOGEM has adopted institutional changes in relation to the O&M of its plants. The O&M of Manantali was outsourced to ESKOM *Energie Manantali* (subsidiary of the South African utility ESKOM, EEM) between 2002 and June 2014. SEMAF was established in July 2014 to take over the role of system operator for an interim period of four years while the process was launched for the recruitment of a new operator pursuant to the expiration of the former operation contract with ESKOM. SEMAF has 140 staff, out of which almost 70 are officers, 50 are technicians, and 20 are unskilled workers. Once the infrastructure financed under the project is commissioned and the network transitions from construction to operation, the infrastructure will be operated and maintained by SEMAF.

B. Results Monitoring and Evaluation

45. The M&E system will be based on the results framework. SOGEM will be responsible for providing the required quarterly implementation-progress-status reports and elaborating an M&E manual as part of the Implementation Manual, which will guide the overall M&E activities. Activities to be monitored include the timely and efficient construction and commissioning of the transmission line, quality control, and processing of payments to contractors approved by the Owner's Engineer, as well as the effective implementation of the ESMP and the RAPs of the project. Project-specific data will be collected by SOGEM.

46. The project area has been defined as the corridor between the Kayes' substation in Mali and Tambacounda's substation in Senegal.

C. Sustainability

47. The project's sustainability depends on the commitment of the national power utilities to continue paying their bills regularly to SOGEM (which they have done so far), as well as on the respective governments' engagement to continue with sector rationalization and modernization. In addition, the OMVS member countries must maintain a clear strategic interest and commitment in the effective operation of the OMVS system to deliver power sustainably at a

reasonable cost. As pointed out in the Implementation Completion and Results Report for the Felou Project,[9] the governments' commitment to the Felou Project (also managed by SOGEM) and to the OMVS system in general, have for the most part, been strong and steady. While addressing their energy needs through the pooling of their resources, the OMVS countries will also be looking further into the future to meet their energy needs through wider power pooling and exchange of energy with other West African countries through the WAPP.

48. In addition, key for the sustainability of the project is the proper O&M of the assets to allow sustained performance and efficiency. The management of the system will be enhanced by the SCADA system implemented under the project. Transitional operation and management arrangements have been put in place with the creation of SEMAF. SEMAF has started taking over the operation of Manantali and some of its staff have been seconded to Felou to undergo training in the O&M of hydropower assets under the supervision of SINOHYDRO.[10] As a new operator has not yet been recruited and the interim arrangement is functioning, it is expected that the interim arrangement will be extended. As part of the dialogue and technical assistance to be provided under the project, the World Bank will work with the client to ensure appropriate arrangement for the operation of the assets.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

49. The overall risk rating for the project is high. This is mainly due to (a) the high risk country environments, particularly, the political and security situation in Mali; (b) the challenges in the electricity sector of the OMVS countries, in particular with regard to the utilities' poor financial standing; (c) the complexity of the project implementation arrangements, given its regional nature; and (d) the allegations of corruption and fraud in the recent past against the OMVS and SOGEM. Key risks, all rated high, are described and proposed mitigation measures are discussed in the following paragraphs.

50. Political and Governance. Despite its efforts in the recent years, Mali remains a politically fragile country with low capacity and weak institutions. In Senegal, parliamentary elections will be held in 2017 and presidential elections in 2019. This may cause delays in key decisions. In the past several years, Mauritania, on the other hand, has enjoyed political stability with the June 2014 presidential elections taking place peacefully. Nevertheless, the OMVS has managed to move ahead owing to its strong regional structure, which is being reinforced with the World Bank's support to the OMVS programs.

51. Sector Strategies and Policies. The electricity sector in Mali is facing institutional and financing challenges. While a sector recovery plan is in place, there are some uncertainties regarding institutional arrangements in the sector with the Government's approach to reform leaning toward a leasing model. In case the reform does not succeed in improving the performance of the sector, there is a risk that the utility in Mali, EDM, will not be in a position to

[9] *Implementation Completion and Results Report on the Felou Hydroelectric Project of the West African Power Pool Program* (P094916), Report No: ICR00003505, September 30, 2015.
[10] A world-renowned Chinese state-owned hydropower company.

pay SOGEM for the energy delivered through the RIMA. This would subsequently put SOGEM in a challenging financial situation and could jeopardize its ability to continue providing the required level of service to the three OMVS countries. As a mitigation measure, the World Bank Group, together with other donors, will continue to engage with the Government of Mali to agree on a roadmap and address core issues to promote sustainable development of the sector. In Senegal, the utility, SENELEC, has improved its financial situation owing to the declining oil prices in the last two years. The project is expected to reduce generation costs in the medium and longer term. In the same vein, this project is expected to reduce generation costs in Mauritania where the main resource used for electricity production is expensive HFO. The World Bank is assisting each country with a set of reforms to improve the performance of the respective utilities with a variety of instruments.

52. Institutional Capacity for Implementation and Sustainability. The implementation of this project will involve SOGEM, OMVS, the three Governments, and their respective utilities. The project will involve construction works in two countries and require effective coordination between the parties. The main measure to mitigate the complexity related to the involvement of all of these actors is to have SOGEM as the sole implementing agency, for signing contracts and supervising implementation. In addition, the project will provide technical assistance to procure an Owner's Engineer to assist SOGEM during implementation.

53. Fiduciary. SOGEM and the OMVS have been under allegations of single fraudulent practice for a contract with SINOHYDRO. These allegations resulted in a reprimand letter that was posted on the World Bank's website on June 29, 2016, for a period of one year. The most important fiduciary risk is related to the process for selecting the main contractors. The World Bank team will monitor all the fiduciary functions of SOGEM, the implementing agency, and train its staff on World Bank procedures.

54. Climate and Disaster Risks. The project has been screened for risks related to climate change and disaster risk management. The rainfall in the project area is characterized by high variability on inter-annual and inter-decadal timescales, which can make long-term trends difficult to identify. It is, therefore, likely that a greater proportion of precipitation will occur during heavy rainfall events. These aspects will be planned and monitored during project implementation. Furthermore, with all of its assets relying on water resource, SOGEM is naturally exposed to a hydrology risk. SOGEM is provisioning a reserve account, which is expected to reach an amount to XOF 15.6 billion in 2020 (about three months of revenue and enough to cover about half of its projected debt service), to partly mitigate this risk.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

55. The economic and financial analysis is conducted for the Kayes-Tambacounda transmission line, which is being financed by IDA.

Economic Analysis

56. The economic analysis for the project results in an economic internal rate of return (EIRR) of 25 percent and a net present value (NPV) of US$305 million. A detailed economic

and financial analysis of the project was prepared as part of the feasibility study carried out by an international consulting firm and confirmed by the World Bank team's assessment.

57. The analysis is based on the assessment of the transmission loss savings realized when the new transmission line Kayes-Tambacounda is built. Then, the total cost of the project is compared to the benefits of such savings to derive the NPV and the EIRR of the project. Economic benefits are derived from valuing the transmission loss savings using the average cost of thermal power generation in Senegal and Mauritania, while the financial benefits are assessed based on the actual tariffs in both countries.

58. The overall EIRR and NPV of the project would remain robust under all sensitivity scenarios. Scenarios analyzed include increase in capital costs, reduction in benefits (because of less power flows than expected), decrease in transmission loss, reduction in thermal power generation costs in Senegal and Mauritania, and increase in O&M costs. Details of the economic analysis are discussed in Annex 5.

59. Justification of public financing. The investment component of the project consists of the construction of an interconnection loop that is a common infrastructure of the member states of the OMVS. Transmission projects, unlike generation projects, which may have potential for public-private partnership arrangements, are generally difficult to finance privately because of their natural monopoly status. Hence, public sector financing is the most efficient and least costly way to finance the project under the existing institutional framework.

60. Value added of World Bank support. The role of the World Bank in the OMVS interconnection project leverages the World Bank's experience in neighboring countries and the lessons learned from previous and ongoing regional interconnection projects in West Africa, including the OMVG and CLSG, as well as in other parts of the continent.

Financial Analysis

61. The financial analysis confirms that the project will be financially viable**.** The financial analysis of the project results in a financial internal rate of return of 18.4 percent and a financial NPV of US$672 million. Details of the financial analysis, the revenue, and tariff assumptions are included in Annex 5.

62. The financial analysis presented in this section evaluates the net financial return of the Kayes-Tambacounda transmission line. The project is assumed to generate cash inflows by selling electricity at the average retail tariff while cash outflows are represented by the investment costs and the O&M costs.

63. The financial appraisal carried out by the team reviewed the financial model of SOGEM, including audited data for 2011–15 and projections for 2016–30. The key findings are summarized as follows: (a) total assets are expected to more than double in value between 2015 and 2020, reaching slightly less than XOF 900 billion in 2020, which is worth 11 times the annual turnover; (b) debt gearing ratio ranges between 72 and 81 percent, reflecting a constant leverage of SOGEM up to 2020. The financial leverage is expected to improve after 2020, with an expected decrease from a high of 81 percent in 2020 to a low of 45 percent in 2030; (c) retained earnings are expected to become positive in 2018, improving from a high negative of

XOF 46 billion in 2013; (d) debt service coverage ratio (DSCR) has been low during the period 2011–2015, ranging from a lowest 0.57x in 2011 to a highest 1.64x in 2014; the DSCR stands at 1.19x in 2016 and is projected to be robust and above a healthy 1.25x during the period 2017–2025. The DSCR will deteriorate from 2026 onward, when the repayment of most of the recently contracted debt starts. The DSCR is expected to drop to 1.09x in 2026 and improve only four years later (2029) at 1.21x. SOGEM is exploring ways to improve the DSCR from 2026 onward.

64. Financial performance of the national power utilities. The utilities in Mali, Mauritania, and Senegal are financially fragile. The power sector in each country is making losses because of a combination of high generation costs, low revenues, efficiency constraints of utilities, and high debt ratios. The project is expected to alleviate some of the financial constraints on the national utilities, because the cost of power imports facilitated by the OMVS interconnection is expected to be less than the marginal cost of domestic generation.

B. Technical

65. 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 transmission lines are well known and proven, including in West Africa. The design, including technical parameters and estimated project costs for the transmission line, have been established by a feasibility study prepared in 2016 by an international engineering consultancy firm. The cost estimates derived from the feasibility study have been appraised and are deemed to be in line with current market prices. Taking into account the possibility of relative cost increases based on the final route alignment, the contingency amount has been estimated at 12 percent of the total investment cost.

66. As part of the project's implementation arrangements, and as it is the practice for these types of projects, an Owner’s Engineer will be contracted. The Owner’s Engineer will be a reputable international engineering company and will help ensure that construction is carried out in accordance with designs and international quality standards.

C. Financial Management

67. The FM arrangements for the project have been designed with consideration for the post-conflict situation while taking into account OP/BP 10.00, which describes the overall World Bank’s FM policies and procedures.

68. An assessment of SOGEM was conducted to verify that it could manage the proposed project. The main findings arising from this assessment are (a) SOGEM’s FM team is familiar with the World Bank’s FM procedures and requirements. However, the overall FM performance of the previously World Bank-funded OMVS Felou Hydroelectric Project (P094916), managed by SOGEM, was rated Moderately Satisfactory; (b) the 2015 accounts were unqualified ‘clean’; and (c) the auditors pointed out some weaknesses of the internal control environment and some delays in the repayment of long-term loans owed to member states. The overall risk for the project is rated Substantial.

69. The assessment of SOGEM concluded that the FM residual risk for the project is Substantial mainly because of the weaknesses in internal controls and that there is a need for

additional strengthening measures (see Annex 3). It is considered that the FM arrangements satisfies the World Bank's minimum requirements under OP/BP 10.00 and, therefore, is adequate to provide, with reasonable assurance, accurate and timely FM information on the status of the project required by the World Bank. To maintain the continuous timely and reliability of information produced by SOGEM, the project team proposed the following mitigation measures: (a) revising the Implementation Manual, including the FM section and according to World Bank's procedures; (b) appointing a senior-accountant with qualifications and experience satisfactory to the World Bank; (c) configuration of the existing accounting software; (d) setting up an Internal Audit Department (IAD), and appointing an internal auditor (acceptable to IDA); and (e) appointing an external auditor (acceptable to IDA) to audit SOGEM financials (including project financial statement for 2016, 2017, and 2018).

D. Procurement

70. Procurement for the proposed project components will be carried out in accordance with the World Bank's 'Guidelines: Procurement of Goods, Works, and Non-Consulting Services, under International Bank for Reconstruction and Development (IBRD) Loans and IDA Credits and Grants by World Bank Borrowers,' dated January 2011, revised in July 2014; 'Guidelines: Selection and Employment of Consultants under IBRD Loans, IDA Credits and Grants by World Bank Borrowers,' dated January 2011, revised in July 2014; and the '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.

71. An assessment of SOGEM as the sole implementing agency was carried out. The assessment has been done in line with OP/BP 11.00, updated in April 2013. The assessment revealed that SOGEM has already recruited a Procurement Specialist who has been exposed to World Bank operations. The assessment also found that (a) the procurement specialist, although already exposed to World Bank procurement procedures, needs to be strengthened on the World Bank's complex procurement procedures; (b) the existing Procurement Manual, (enforced in February 18, 2016, and titled Public Procurement Code of SOGEM), is not sufficiently designed to fit the needs of the project; (c) the personnel involved in the procurement process are not yet familiar with the manual; (d) other staff involved in procurement evaluation and approval processes, are not well-skilled in World Bank procurement procedures; (e) there is lack of technical staff to carry out due diligence on the procurement process; and (f) working space for procurement records is insufficient and inadequate.

72. The overall project risk for procurement is rated Substantial. To mitigate the risks identified in the fiduciary assessment, an action plan has been prepared (see Annex 3). With the implementation of the proposed measures of the action plan and the support of the World Bank team, the overall procurement risk is expected to become Moderate.

E. Environmental and Social (including Safeguards)

73. The project is categorized as environmental assessment Category B under the Environmental Assessment Policy (OP/BP 4.01). An ESIA and an ESMP have been prepared covering all project components, and both instruments have been consulted on and have been disclosed by SOGEM, on behalf of Senegal, Mali, and Mauritania, in country at the various

project sites and by the World Bank on January 31, 2017. Though the right-of-way of the new transmission lines are not yet delineated, the landscapes that they will cross do not host any sensitive biophysical or geographic features in need of particular attention, with the exception of the passage of the line through four protected forest areas near Tambacounda in Senegal. For this reason, the Natural Habitats Policy (OP/BP 4.04) and Forest Safeguard Policy (OP/BP 4.36) are triggered. The lost forest area will be compensated so that there is zero net loss of biodiversity. In addition, lessons learned from the recent transmission line projects in similar socioecological contexts (Mali, Burkina Faso, Senegal) suggest that the biophysical impacts may be less significant than initially assessed as part of the environment analysis. The environmental and social impacts of the construction and operation of the transmission lines is low. There is no risk of labor influx and no work camps will be used because the construction sites will move fast from site to site. The main environmental, health, and safety risks will occur during construction of the line. Health and safety during construction will require special attention to avoid fatal accidents. The World Bank Group 'General Environmental, Health, and Safety Guidelines' of April 2007 and the 'Electric Power Transmission and Distribution Environment, Health, and Safety Guidelines' apply.

74. The Natural Habitat (OP/BP 4.04) and Forests Safeguard Policies (OP/BP 4.36) are triggered. Landscapes are composed mainly of scarce woody savannah. The identification of the right-of-way included criteria such as avoidance of protected areas, sensitive ecosystems, and human settlements, and so on. However, four protected forest areas, which are noncritical natural habitat, in Senegal near Tambacounda could not be avoided. The line passes for 17.9 km through the Goudiry Protected Forest, for 12.5 km through the Bala East, 12.8 km through the Bala West, and 5.9 km through the Botou Protected Forests. About 200 ha of forest will be lost. It is being planned to reforest 400 ha. Forest losses will be compensated to achieve a zero net biodiversity loss. Reforestation will be carried out in close collaboration with local and regional authorities.

75. The Pest Management Policy (OP/BP 4.09) is not triggered, as the project will not use pesticides for maintenance of the right-of-way. The current practices for the maintenance of the right-of-way of transmission lines and of facilities have been reviewed for each country with respect to the use of pesticides.

76. The Physical Cultural Resources (OP/BP 4.11) is triggered. The project site is not located in known archaeological or sacred areas. But, even though there will be no important civil works that would require the exploitation of new and/or large borrow pits, the policy is triggered to prevent any accidental loss and damage during construction. A comprehensive chance find procedure will be included in all contractor contracts. This requirement is part of the ESMP.

77. The Involuntary Resettlement Policy (OP/BP4.12) is triggered. The precise locations of the tower spots and alignment of the transmission lines are not yet determined and real impacts are not yet known, but there is a need for land acquisition to clear the right-of-ways. Therefore, an RPF[11] has been prepared and consulted upon by Senegal, Mali, and Mauritania, approved by the OMVS on behalf of the three countries with an entitlement matrix (on behalf of the Governments of the three countries), and disclosed by SOGEM on January 30, 2017 in Mali,

[11] The RPF terms of reference were prepared by SOGEM and reviewed by the World Bank Task Team in 2015.

Mauritania, and Senegal and by the World Bank. As required, when precise details of the transmission line locations (alignment, locations for pylons, substations, and other structures) are identified in the course of project preparation, a socioeconomic study and a RAP will be prepared, disclosed, and implemented to compensate any physical or economic loss. Construction can only start when project-affected persons have been compensated. Any damage during construction will be compensated by the contractor.

78. The RCU will be composed of qualified experts including the environmental specialist, the health and safety specialist and the resettlement specialist. These experts will have the overall responsibility for the environmental, social, health, and safety aspects during construction and operation. A highly qualified consultant with international experience will be recruited to provide support to the SOGEM team. The World Bank has approved the terms of reference for this specialist. In case of a serious accident, the World Bank needs to be notified within 24 hours.

79. The contractors will need to prepare and implement their own Construction Environmental and Social Management Plan (CESMP), as well as a Health and Safety Plan in compliance with international standards. For this purpose, the contractors will employ environmental, health, and safety staff with international experience. SOGEM will establish a Grievance Redress Mechanism for communities and contractor employees. Complaints need to be resolved within two weeks. Contractor employees need to sign a Code of Conduct, which will prohibit misconduct of contractor employees and which will, among others, prohibit employees from having sex with minors (<18 years). Furthermore, the use of child labor is prohibited to contractors. It is strongly recommended that contractors use, as much as possible, local labor for unskilled jobs to avoid social unrest among nearby communities.

80. The Owner's Engineer will have the contractual obligation to supervise the adequate preparation and implementation of the CESMPs and Health and Safety Plans. For this purpose, the Owner's Engineer needs to employ internationally qualified Environmental, Social, Health, and Safety Specialists to supervise the environmental, social, health, and safety aspects during construction. These responsibilities have been spelled out in the ESIA/ESMP. In addition, a nongovernmental organization will be retained to monitor the social aspects of the project.

81. The project is expected to increase carbon emissions because of the transmission losses and associated land use. A greenhouse gas accounting analysis conducted according to the World Bank Guidelines estimates, for 25 years of use of the projected infrastructure, that the net emissions associated directly to the project are 784 $ktCO_{2e}$. Although this interconnection will probably enable the reduction in emissions by changing the patterns of generation dispatch within the independent systems relying heavily on oil-based power generation, this reduction will not be a direct result of this investment. Therefore, the potential emission reduction associated to the future optimized energy mix cannot be accounted within the analysis of this specific project.

82. The project will contribute to the respective countries Intended Nationally Determined Contributions (INDC) as it will allow additional exchange of clean energy that can replace other polluting sources. The INDCs of the three countries (Senegal, Mali, and Mauritania) include, among other activities, the enhancement of electricity supply from renewable energies. This project will provide a key interconnection for the exchange of renewable energy (hydropower)

among the three countries. This exchange will facilitate the change of generation patterns by replacing the dependency on existing fossil-fueled assets, mainly the HFO.

F. World Bank Grievance Redress

83. 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 complaints to the WB's independent Inspection Panel (IP) who will determine 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.

G. Citizen Engagement/Beneficiary Feedback

84. Beneficiary feedback will be recorded and monitored for Component 1 through the grievance redress mechanism, which is further described in the RAP. The RCU will gather information about Component 1 activities, where complaints have been brought forward, including information on how they were resolved or on relevant follow-up. This information will be included in an annual progress report and taken into account during project implementation.

Annex 1: Results Framework and Monitoring

Country: Senegal

Project Name: OMVS - Transmission Expansion Project (P147921)

Results Framework

Project Development Objectives

PDO Statement

The project development objective is to enhance electricity trade among Mali, Mauritania, and Senegal.

These results are at	Project Level

Project Development Objective Indicators

Indicator Name	Baseline	Cumulative Target Values			
		2017	2018	2019	End Target
Additional annual electricity traded between Mali and Mauritania (GWh)	0	0	0	0	147
Additional annual electricity traded between Mali and Senegal (GWh)	0	0	0	0	147
Average annual duration of power outages on the RIMA system per year (Hours)	72	72	72	72	60

Intermediate Results Indicators

Indicator Name	Baseline	Cumulative Target Values			
		2017	2018	2019	End Target
Transmission lines constructed or rehabilitated under the project (Kilometers) - (Core)	0	0	0	0	288
Kayes-Tambacounda Transmission Line (Kilometers - Sub-Type: Breakdown)	0	0	0	0	288
Implementation of a SCADA system (Yes/No)	No	No	No	No	Yes
Grievances registered related to delivery of project benefits addressed (Percentage) (Core)	0	0	0	0	100

Indicator Description

Project Development Objective Indicators

Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Additional annual electricity traded between Mali and Mauritania (GWh)	The additional quantity of electricity flowing to the Malian national power grid as a result of the project.	Annual	Dispatch Center Report	SOGEM
Additional annual electricity traded between Mali and Senegal (GWh)	The quantity of electricity flowing to the Senegalese national power grid as a result of the project.	Annual	Dispatch Center Report	SOGEM
Average annual duration of power outages in the RIMA system per year (Hours)	The average duration of service interruption per year on the RIMA system in hours per year.	Annual	Dispatch Center Reports	SOGEM

Intermediate Results Indicators

Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Transmission lines constructed or rehabilitated under the project (Kilometers) - (Core) Kayes-Tambacounda Transmission Line	This indicator measures the length of the Kayes-Tambacounda transmission lines constructed under the project.	Annual	Project Monitoring Report	SOGEM
Implementation of a SCADA system	Implementation of a SCADA system for joint operation and coordination between EDM, SENELEC, SOMELEC, and the OMVS Power System Operator	Annual	Project Monitoring Reports	SOGEM
Grievances registered related to delivery of project benefits addressed (Percentage) (Core)	This indicator measures the transparency and accountability mechanisms established by the project.	Annual	Supervision Monitoring Report	SOGEM

Annex 2: Detailed Project Description

Senegal: OMVS - Transmission Expansion Project

1. The proposed project will finance selected investments to reinforce and extend RIMA, which is the backbone of the OMVS regional power grid. It will strengthen the transmission infrastructure for power evacuation by financing the construction of a transmission line and associated substation infrastructure, considering future power generation and related load flows in future generation projects in Mali and Mauritania. In addition, the proposed project will finance technical assistance to SOGEM to strengthen its technical, operational, and financial performance and support the preparation of tender documents for the recruitment of a private operator as well as an Owner's Engineer.

2. The proposed project aims at alleviating a transmission bottleneck in the existing RIMA system once the Banda Gas power station (180 MW) in Mauritania, Albatros power station (92 MW) in Mali, and Gouina hydropower station (140 MW) in Mali are commissioned. The power supply to Dakar (Senegal) and Nouakchott (Mauritania) from the OMVS' existing Manantali and Felou power stations is done through the Kayes-Dagana line and from Dagana to Dakar. The transmission capacity in both these lines are insufficient to transmit all the new production and does not have redundancy to provide reliability to the system. Consequently, it becomes critical to build an additional transmission line required to transmit the additional production in new power stations in Mali and Mauritania, creating redundancy in the system to ensure the availability of supply through the WAPP system (see Figure 2.1) in the event of reduced generation of energy in the RIMA system (e.g. drought) through connection to the OMVG network.

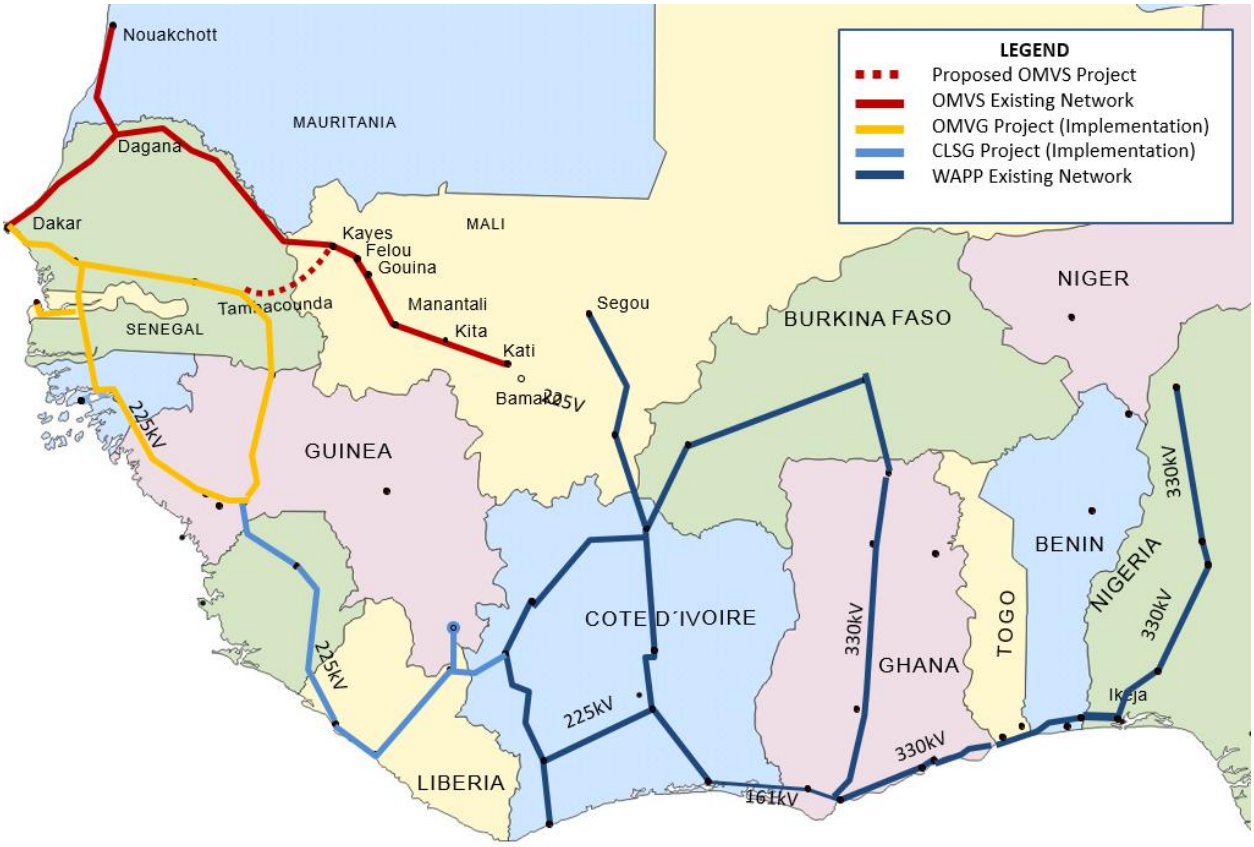
Component 1: RIMA Reinforcement and Expansion (US$94 million, of which IDA US$88 million equivalent)

3. The RIMA Reinforcement and Expansion component will finance the construction of the Kayes-Tambacounda transmission lines and associated substation infrastructure to expand the RIMA system's capacity to enable the evacuation of the energy produced in the new power stations in the context of new generation potential in the OMVS countries. The component comprises two subcomponents.

Subcomponent 1.1: Kayes-Tambacounda Transmission Line (US$83.6 million, of which IDA US$83.6 million equivalent)

4. The WAPP Master Plan identified this line as a strategic connection between the OMVS and OMVG power networks to create redundancy and ensure the availability of the WAPP system in the event of line failures. Within this subcomponent, a new 288km 225kV double-circuit transmission line will be built from Kayes (Mali) to Tambacounda (Senegal), with an estimated wheeling capacity of 400MW. The existing substation at Kayes and the future substation at Tambacounda (to be built under the OMVG Interconnection Project) will also be reinforced with the addition of new bays and transformers. That transmission line will also be used to energize the future 225 kV Tambacounda-Ziguinchor transmission line to be constructed with financing from the Indian Exim Bank.

Figure 2.1. The OMVS System in the WAPP



Source: West African Power Pool (WAPP)

5. The activities to be implemented under the project use basic and well-established methods and equipment used locally and regionally. Transmission routes and rehabilitation works were defined through characterization studies and were agreed by regional and national stakeholders.

6. The design, including technical parameters and estimated project costs for the transmission line, have been defined according to the specific feasibility study. Project costs have been assessed and found to be in line with recent market prices. Taking into account the possibility of relative cost increases based on the final route alignment, the amount of contingencies is estimated at 12 percent of the total investment cost.

7. A 225 kV voltage line has been validated in the feasibility study carried out by an international consulting firm. This voltage level is now standard for electrical power transmission networks in West Africa. The selection of the transmission voltage level and technology is based on previous analysis, and it is consistent with current standards and existing infrastructure. It is designed according to the expected power transit.

8. The power wheeling capacity of the line has been established taking into consideration the defined level of transmission capacity reserve. The Kayes-Tambacounda double circuit is expected to be built in aluminum alloy (AAAC), 228 mm², with two conductors per phase.

9. The line will be equipped with two ground wires, one of them with optic fiber. Two different types of guard wires will be used: (a) the ACSR-type cable; and (b) the CGFO-type cable. Ground wires containing optic fibers (CGFO) will have 24 optic fibers. Beyond the tele-protection, remote control, and tele-control functions of the electrical network, the OMVS optic fiber network will also contribute to public telecommunications. Indeed, optic fibers will be available for rent to public telecommunications companies, which is needed in the subregion. Despite the opening up of the telecommunications sector and the impressive penetration of mobile phones, Internet penetration remains low in most ECOWAS countries. Excess fiber communication capacity on the WAPP's high-voltage, cross-border infrastructure provides redundancy to existing routes to submarine cables and completes a critical missing gap in regional transmission networks.

10. The line earth system will be equipped with the equipment required to provide electricity access to villages along the route of the line. According to the feasibility study, the project will include three substations (*poste source*) and 10 structures of derivation. Two substations will be placed in Senegal and one in Mali. Seven structures will be in Senegal and three in Mali. Medium and low voltage infrastructure to connect the households will be provided by the countries.

11. The project will finance the corresponding substation components in Kayes and Tambacounda. In both the substations, an additional bay will be built to accommodate the new lines, including the control and telecommunications systems required to operate the lines.

12. The existing substation in Kayes 225/90/30/15 kV is located in Mali. Its current configuration does not include any spare bay and only the space for two new bays. However, this substation has to include three new bays: two for the double circuit line to Tambacounda and a third for the coupling. Taking into account the future expansion, this substation will be expanded with seven new bays as follows:

- Two (2) line bays for 225 kV to connect with Tambacounda substations;
- One (1) coupling bay;
- One (1) new system of 225 kV double bars;
- Twelve (12) bar breakers;
- Two 225/33 kV power transformers, of a capacity of 60 MVA each for the distribution;
- Two (2) 33 kV feeders with all the equipment;
- Spaces for future expansions;
- Two (2) line bays for 225 kV to connect with Tintane; and
- Two (2) transformer bays for connection of the Albatros substation.

13. The substation in Tambacounda is a new 225/30 kV substation located in Senegal. This substation will be built under the OMVG Interconnection Project. The substation is designed with a simple breaker with a double set of bars. It also includes a non-equipped spare bay for the

line to Kayes. Therefore, the project will just provide the equipment to this substation, including a bay and an inductance shunt.

14. The construction of an access road usable for the construction of the line and ater for supervision, inspection, and maintenance is anticipated wherever existing access is insufficient.

Subcomponent 1.2: SCADA System (US$10.4 million, of which IDA US$4.4 million equivalent and SOGEM US$6 million)

15. The proposed project will also finance the implementation of a SCADA system for a joint operation and coordination between EDM, SENELEC, SOMELEC, and the OMVS power system operators by (a) upgrading communication and data acquisition facilities to enable real-time information exchange with the load dispatching center at Manantali and the three national power utilities; and (b) acquiring the necessary software licenses with relevant training to support optimization and scheduling of the combined hydro and thermal power generation capacity of RIMA.

Component 2: Technical Assistance (US$9 million, of which IDA US$9 million equivalent)

16. The proposed project will also finance technical assistance to contract a consulting firm that will assist SOGEM in implementing the project, including assistance in the procurement process and undertaking the supervision of the works of the Kayes-Tambacounda line. In addition, to ensure that the project is implemented in accordance with the World Bank's policies, this component will finance consultancy services to strengthen SOGEM's capabilities to implement the ESMP, ESIA, RPF and RAPs, as well as the operating costs (the cost of communications and dissemination activities and associated materials, per diem and travel costs, and the participation in training, seminars, and workshops and its associated costs, but excluding the salaries of the recipient's or participating countries' civil servants).

Annex 3: Implementation Arrangements

Senegal: OMVS - Transmission Expansion Project

Project Institutional and Implementation Arrangements

1. The implementation agency for the project will be SOGEM, which is one of OMVS' five permanent bodies. SOGEM was created in 1997 as a special purpose company in charge of the O&M of RIMA's power generation and transmission assets. The articles of establishment of SOGEM stipulate that, in addition to the Manantali hydroelectric plant, SOGEM is responsible for the O&M of other power generation and transmission assets. SOGEM is a public company whose shares are equally owned by the three OMVS member countries, Mali, Mauritania, and Senegal.

2. The OMVS is led by the Conference of Heads of States, the supreme authority that defines the cooperation and development modalities of the OMVS. In the energy sector, it includes three permanent bodies:

- **The Council of Ministers.** It exercises an oversight role. The Council of Ministers is composed of one minister from each member state.
- **The High Commission.** It is responsible for the implementation of the decisions made by the Council of Ministers. It is chaired by a High Commissioner, assisted by a Secretary General, all nominated for four years.
- **SOGEM.** SOGEM is a special purpose company in charge of RIMA.

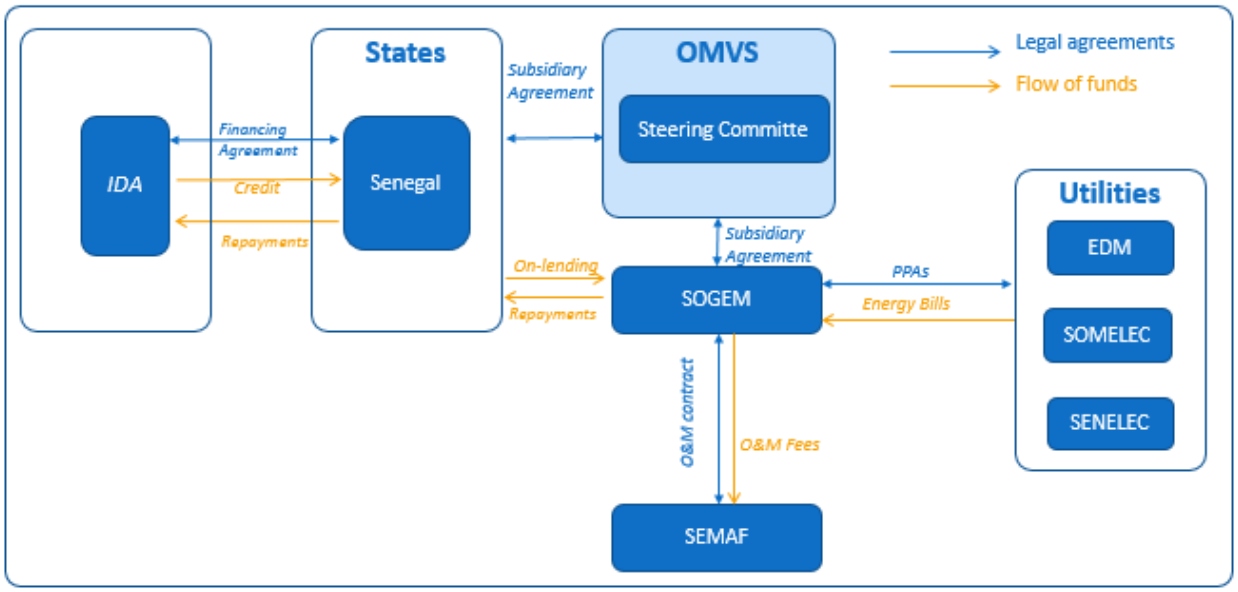
Construction Phase

3. SOGEM will be responsible for the detailed planning and scheduling of project implementation arrangements, preparing and issuing bidding documents, and conducting the bid evaluation and contract award processes. Although, SOGEM has experience with the implementation of World Bank-financed energy projects such as the OMVS Felou Hydroelectric Project, its capacity is stretched given the ongoing major rehabilitation works at Manantali. Therefore, it is expected that SOGEM's capacity will remain limited, and, as such, an Owner's Engineer will be recruited to assist the company with overseeing and monitoring of the project implementation under Component 2. The contractual arrangements for the project are depicted in Figure 3.1.

4. An RCU will be established under SOGEM. The RCU will be composed of a coordinator, an engineer, a procurement specialist, an accountant, an environmental specialist, a resettlement specialist, a health and safety specialist and an assistant. The RCU will be responsible for (a) coordination and planning of the works; (b) supervision and monitoring/control of the project activities; (c) administrative management and FM; (d) procurement activities; (e) implementation of safeguards measures; (f) performing secretariat duties of the Steering Committee; and (g) reporting on progress.

5. A Steering Committee will also be established. The Steering Committee will be chaired by the OMVS High Commissioner and will be composed of the following members: the OMVS General Secretary, Coordinators of the OMVS national units in the three countries, SOGEM Managing Director, and the RCU Coordinator. The Steering Committee shall be vested with the responsibility for overseeing implementation and ensuring effective cooperation between the OMVS countries and, to this end, shall meet at least twice a year (or more often if required) and report directly to the Council of Ministers of the OMVS.

Figure 3.1. OMVS Project Contractual Arrangements



Operations Phase

6. The OMVS has created SEMAF, which is a subsidiary of SOGEM, to operate the OMVS power system including the current project. SOGEM's technical and financial capacity is limited. While works on Manantali are ongoing, SOGEM has adopted institutional changes in relation to the O&M of its plants. The O&M of Manantali was outsourced to EEM between 2002 and June 2014. SEMAF was established in July 2014 to take over the role of system operator for an interim period of four years while the process was launched for the recruitment of a new operator pursuant to the expiration of the former operation contract with ESKOM. SEMAF has 140 staff, out of which almost 70 are officers, 50 are technicians, and 20 are unskilled workers. SINOHYDRO, a world-renowned Chinese state-owned hydropower project contractor, was the engineering-procurement-construction contractor for the construction of Felou and is currently assisting SEMAF. As a new operator has not yet been recruited and the interim arrangement is functioning, it is expected that the interim arrangement will be extended.

Financial Management, Disbursement, and Procurement

Financial Management

7. The FM arrangements for the project have been designed with consideration for Mali's post-conflict situation (where SOGEM is headquartered), while taking into account OP/BP 10.00, which describes the World Bank's FM policies and procedures. The FM system of the project must be capable of (a) correctly and completely recording all transactions related to the project; (b) facilitating the preparation of regular, timely, and reliable financial statements; (c) safeguarding the project's assets; and (d) being subject to auditing diligences as required by the World Bank. The arrangements also aim to facilitate disbursements and ensure effective use of project resources while using the country's own systems to the extent possible.

8. An assessment of SOGEM was carried out in April 2016 to check whether this state-owned enterprise (pertaining to three countries: Mali, Mauritania, and Senegal) could manage the proposed project. The main findings arising from this assessment were as follows: (a) SOGEM is familiar with the World Bank-financed projects' FM procedures and requirements; however, the overall FM performance of the previous World Bank-funded OMVS Felou Hydroelectric Project (P094916) managed by a Project Implementation Unit (PIU) was rated Moderately Satisfactory (see ICR[12]); (b) the 2015 accounts were unqualified 'clean;' (c) the auditors pointed out some weaknesses of the internal control environment and some delays in the repayment of long-term loans owed to member states; and (d) the report of the institutional and organizational audit of SOGEM completed in October 2014 by a well-known international audit firm recommended improvement of the overall governance structure of the company, including the creation and operationalization of an effective internal audit function.

Risk Assessment and Mitigation

9. The World Bank's principal concern is to ensure that project funds are used economically and efficiently for the intended purpose. Assessment of the risks that the project funds will not be so used is an important part of the FM assessment work. The risk features are determined over two elements: (a) the risk associated to the project as a whole (inherent risk) and (b) the risk linked to a weak control environment of the project implementation (control risk). The content of these risks is described in table 3.1.

Table 3.1. Risk Assessment and Mitigation

Risk	Risk Rating	Risk Mitigating Measures Incorporated into Project Design	Conditions for Effectiveness (Yes/No)	Residual Risk
Inherent risk	**H**			**H**
Country level. The Public Expenditure and Financial Accountability II, undertaken in 2011, have highlighted several areas of strengths. However, besides the apparent strong policy and	H	Beyond the control of the project, the Government is committed to a reform program and adopted 'the integrated public finance management action plan (Second Government Action	No	H

[12] *Implementation Completion and Results Report on the Felou Hydroelectric Project of the West African Power Pool Program* (P094916), Report No: ICR00003505, September 30, 2015.

Risk	Risk Rating	Risk Mitigating Measures Incorporated into Project Design	Conditions for Effectiveness (Yes/No)	Residual Risk
legislative frameworks and systems including detailed procedures for procurement and FM, the Government is still struggling with compliance and effective implementation. The compliance with internal control rules and the effectiveness of internal audit need to be improved. Furthermore, accounting and reporting, as well as external scrutiny and audits, are reported to be weak.		Plan for the Improvement and Modernization of Public Finance Management, also known as PAGAM/GFP II), but it will take time for these reforms to yield substantial improvements in the management of public funds. No specific measure for this risk.		
Entity level. SOGEM is a state-owned enterprise that needs improvements in its governance structures and its accounting systems and internal control environment (refer 2014 audit reports). The company also faces some shortage of cash. Implementation of this project will translate into an increase of activity for the Department of Finance and Materials, which in turn will require more sophisticated control systems and adequate staff, an effective internal audit function, developing the Manual of Procedures, an integrated information system, and multiproject software.	S	Regarding the institutional arrangements, internal control environment, and issues currently identified at SOGEM, the creation of an RCU has been recommended. The FM Manual of Procedures will be prepared; one additional FM staff familiar with the World Bank FM procedures will be recruited and will form the FM team of the RCU under the oversight of the Finance Director; the internal audit function will be created and operationalized; and the accounting software will be strengthened and configured. Recruitment of a dedicated senior accountant and the adoption of an FM Manual of Procedures, by effectiveness, will mitigate internal control weaknesses.	Yes	S
Project level. The resources of the project may not be used for the intended purposes. Delays in the reporting system and auditing because of the additional workload of the Department of Finance team are expected. The numerous stakeholders would possibly negatively affect the implementation of the project.	S	Additional FM staff (a dedicated principal accountant) will be recruited based on the terms of reference acceptable to IDA and training and advice to the FM staff will be provided. Specific measures are incorporated in the project design to ensure smooth implementation and mitigate related risks including (governance actions, refer to the Governance Anti-	No	S

Risk	Risk Rating	Risk Mitigating Measures Incorporated into Project Design	Conditions for Effectiveness (Yes/No)	Residual Risk
		Corruption section of the Financial Management Assessment Report)		
Control Risk	**S**			**S**
Budgeting. Delays in preparing and approving the consolidated budget and allocations for each country; unreliable or lack of comprehensiveness of budget due to the absence of up-to-date information downloaded from the computerized accounting system; cost overrun or under run and reasons not detected on time; and lack of a consolidated budget at SOGEM leading to inefficient use of limited human and financial resources.	S	An annual work plan and budget (AWPB) will be required each year. The AWP will be reviewed and approved by the Steering Committee (non-executive) directors. The FM section of the Implementation Manual will define the arrangements for budgeting, budgetary control, and the requirements for budgeting revisions. Interim Financial Reports (IFRs) will provide information on budgetary execution and analysis of variances between actual spending and budget.	No - standard covenant	M
Accounting. Poor policies and procedures; delays in producing financial statements on time; poor information system and not fully operational computer hardware; risk of poor security access of various users; and the impossibility to issue accounting output on a desired period	S	FM aspects handled by the FM team of the RCU to be set up within SOGEM. The project will adopt the revised OHADA[13] accounting system. Accounting procedures will be documented in the Manual of Procedures; the FM team headed by a Finance Director will be strengthened by one individual consultant recruited on a competitive basis and familiar with World Bank FM procedures; and training on IDA FM procedures will be provided to the staff as needed.	No - disbursement	M
Internal control. Compliance with internal control and procedures may be weak because of lack of an effective internal audit function or the current FM procedures may not be sufficient for this project. The	H	Update the FM section of the Implementation Manual and training on the use of the manual; and creation and operationalization of the internal audit function including the appointment of a	Revision of the Manual of Procedures (effectiveness condition); creation and operationaliza	**S**

[13] Organization for the Harmonization of Business Law in Africa.

Risk	Risk Rating	Risk Mitigating Measures Incorporated into Project Design	Conditions for Effectiveness (Yes/No)	Residual Risk
Steering Committee (or non-executive directors) for the project may not be effective; poor compliance with applicable laws and regulations; no implementation or delays in the implementation of the external auditor's recommendations; and some legal actions against the SOGEM pending across various courts		senior Internal Auditor (should be part of SOGEM team) who will scrutinize the proclaimed accounting, financial, and operational procedures. The Internal Auditor will report to the Managing Director of SOGEM and the President of the Board of Directors. There should be in place a thorough reporting system based on accounting and updated data.	tion of internal audit function; and appointment of a permanent Internal Auditor (dated covenant)	
Funds Flow. (a) Risk of misuse of funds and delays in disbursements of funds to the Implementing Entity; (b) inefficient use of the funds; (c) risks of delay in the utilization of advances made to Implementing Partners including contractors; (d) risks of overrun costs as seen in several projects in the sector; (e) shortage of cash situation of SOGEM may create non-formal procedures to divert IDA resources to reimburse company debts; and (f) weak internal control procedures on banks and cash accounts	S	(a) In line with the FM Manual, payment requests to be prepared before disbursement of funds to contractors or consultants and implementing entities; (b) the terms of reference of the external auditors will include field visits (physical verifications of works, goods, and services acquired); (c) anticorruption rules will be presented to the project team; (d) although the project will directly benefit SOGEM, the later will not directly manage the World Bank funds. Instead, one Designated Account (DA) denominated in CFA francs will be opened in a commercial bank acceptable to IDA and separately managed by the Directorate of Finance outside the other bank accounts of SOGEM; and (e) all importations will be made through irrevocable Letters of Credit with the special commitment of the World Bank.	No - opening of a DA	S
Financial reporting. (a) inaccurate and delay in submission of IFR by RCU due to delays from SOGEM and increased workload in the DF activities; (b) workload leading to some delays in recording of expenditures as well as preparation of periodic financial	S	(a) a computerized accounting system will be used (for example, the current accounting software will be configured); (b) IFR and financial statements formats have been agreed at project negotiations; (c) one Finance Manager will	No	M

Risk	Risk Rating	Risk Mitigating Measures Incorporated into Project Design	Conditions for Effectiveness (Yes/No)	Residual Risk
reports; and (c) the poor accounting system will delay and impede the submission on due time and the reliability of financial statements.		lead the FM team of the RCU and one additional senior-accountant will be recruited for the purpose of the project; (d) financial reporting will be the responsibility of the newly created RCU under the oversight of the Director of Finances of SOGEM; and (e) the RCU will run a computerized management system capable of providing an output of all necessary information on time for the production of IFRs and annual accounts.		
Auditing. Delays in submission of audit report; the scope of the mission may not cover expenditures incurred; and auditors selected may not be acceptable to IDA, or may not conduct their assignment in a professional manner.	S	The project's institutional arrangements allow for the appointment of adequate external auditors and the terms of reference (to be discussed before the expressions of interest are advertised) will include field visits and specific report on finding of physical controls of goods, services, and works acquired by SOGEM; current arrangements for appointment of two auditors will remain for the new project; annual auditing arrangements will be carried out during the project implementation period; close monitoring of audits due dates by the World Bank FM team; and separate audit opinion on project accounts and SOGEM accounts.	No	S
Fraud and corruption. Possibility of circumventing the internal control system with colluding practices as bribes, abuse of administrative positions, misprocurement, and so on, are possible critical issues.	S	The terms of reference of the external auditor will comprise a specific chapter on corruption auditing; the Internal Auditor to be appointed will report to the Managing Director, who in turn will directly share the report with the non-executive directors; copies of the internal audit reports will be submitted to the World Bank;	No	S

Risk	Risk Rating	Risk Mitigating Measures Incorporated into Project Design	Conditions for Effectiveness (Yes/No)	Residual Risk
		revised FM Manual of Procedures will be approved before project effectiveness; quarterly IFR including budget execution and monitoring and physical progress; technical auditing; measures to improve transparency such as publication in SOGEM website and newspapers of contracts awarded; and the annual audit reports of the projects and SOGEM are built into the project design.		
OVERALL FM RISK				**Substantial**

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

Strengths and Areas for Improvements

10. SOGEM is in the process of strengthening its governance structure. Significant efforts are underway to stabilize its FM system. On the other hand, the financial infrastructure is available. It is expected that following the institutional audit conducted by a well-known audit firm, the corporation might be going through some organizational changes as a result of the ongoing organizational audit, but the latter will still take some time before the first acceptable results are displayed. Finally, the DF of SOGEM is familiar with World Bank-financed projects, FM procedures, and requirements, having managed the previous Felou Hydroelectric Project. The design of the project follows existing FM arrangements to implement World Bank-financed projects in Mali, which requires a parallel system (RCU). In 2015, SOGEM had a net profit of XOF 4,789 billion and net equity remained positive at XOF 87,220 billion.

11. The audit report on the 2015 financial statement was received in February 2017—the auditors expressed an unqualified opinion. The auditor concluded that the financial statements are prepared, in all material respects, in accordance with the applicable financial reporting framework. The audit also revealed that SOGEM's arrears have increased to XOF 98 billion as of end 2015, essentially related to the repayment of the donors (such as IDA, African Development Bank, European Investment Bank, Islamic Development Bank, and so on) debt contracted by the OMVS member states and on-lent to SOGEM. The company's commercial debt on the other hand is paid on time. Considering that SOGEM's member states are the sole shareholders of the company, these arrears do not represent a direct threat to the company. The external auditors pointed out weaknesses such as the noncompliance with OHADA rules and SOGEM status. These can be related to the lack of monitoring of the board.

Financial Management Action Plan

12. The Financial Management Action Plan described in table 3.2 has been developed to mitigate the overall FM risks.

Table 3.2. Remedial Action Plan

Issue/Topic	Remedial Action Recommended	Responsible Body/Person	Completion Date	FM Effectiveness Conditions
FM staffing	Appointment of a senior accountant familiar with World Bank FM procedures and requirements (to be recruited on a competitive basis). The SOGEM fiduciary key staff will be trained on world bank procedures.	SOGEM/ Director of Finance	3 months after effectiveness	No
Information system accounting software	Configuration of the existing accounting software to allow recording of the World Bank-financed project transactions	SOGEM/ Director of Finance	3 months after effectiveness	No
Administrative, Accounting, and Financial Manual	Revision of the Implementation Manual taking into account new project arrangements	SOGEM/ Director of Finance	Effectiveness condition	Yes
Internal auditing	Appointment of a qualified and experienced Internal Auditor for SOGEM.	SOGEM/ Director of Finance	By end of 2017	No
External auditing	Appointment of an external auditor to be completed, contract signed, or apply current audit arrangements in place at SOGEM which will allow the auditor to issue two separate reports on SOGEM and project accounts.	SOGEM/ Director of Finance	By end of 2017	No

Description of the FM Institutional Arrangements for the Project

13. SOGEM is a state-owned enterprise created by Mali, Senegal, and Mauritania with headquarters at Bamako (Mali). The management of the corporation comprises a Board of Directors, two External Auditors, and a Director General. Because of the company's weak FM system described earlier, SOGEM will implement this project under mitigation measures such as (a) the revision of the Implementation Manual; (b) the recruitment of a senior accountant; and (c) the update of the accounting software.

14. The fiduciary management will be managed by the RCU. The FM team of the RCU will be created within the Directorate of Finance of SOGEM. This FM team, under the responsibility of the Directorate of Finance of SOGEM, will be the World Bank's and other donors' main counterpart and focal point for fiduciary aspects. It will oversee the entire project fiduciary management including the management of the funds and the DAs and will primarily be responsible for (a) planning and budgeting; (b) disbursement and financial reporting; (c) procurement; and (d) internal controls and auditing. For the purpose of this project, one senior accountant (individual consultant) familiar with the World Bank FM procedures and requirements will be recruited on a competitive basis to join the FM team headed by an FM Officer (SOGEM Finance Director). Appropriate FM tools, mainly an accounting software and a

FM Manual, will be updated. The External Auditor of SOGEM will be also the auditor of the project accounts.

Planning and Budgeting Arrangements

15. The budgeting system is operational. Annual budgets are prepared and submitted to the Board of Directors. For the purposes of this project, the FM team of the PIU will prepare a consolidated AWPB for implementing project activities taking into account the project's components. The AWPBs will identify the activities to be undertaken and the role of respective parties involved in the implementation, including the RCU and other implementing entities.

16. The AWPB will provide detailed information on the amount allocated to each implementing entity per activity showing unit costs and quantities. The AWPBs will be consolidated into a single document by the FM Unit of the RCU with support from the other departments of SOGEM and under the overall responsibility of the Directorate of Finance. The AWPB will be submitted to the Board of Directors of SOGEM for approval, and thereafter, to IDA for no-objection no later than November 30, before the year when the work plan should be implemented. The budgeting system under the RCU will build on the lessons learned. The budgetary discussions will begin at least six months before the fiscal year of implementation and will consider the Procurement Plan as the starting point. Once the budget is approved, it will be integrated in the computerized accounting system of each implementing agency to give way to a budget execution monthly follow-up, based on variance analysis.

Key Accounting Policies and Accounting Software

17. The accounting division is under the responsibility of the Directorate of Finance, which comprises two divisions. The accounting division comprises three accountants. The accounting policies are based on the OHADA accounting law. The system is run under the SAARI 100 Software. The 2014 audits report outlined some weaknesses that are being addressed by SOGEM. The existing computerized accounting system comprises the following modules: (a) management accounting; (b) budgetary accounting; and (c) cost accounting. The system is able to process and issue financial statements, IFRs, bank accounts reconciliation, and statements of expenditures for the want of withdrawal applications from the DAs. The management of the overall system will be based on networking installations with appropriate soft and hard securities. The accounting software will be customized to take into account this project.

18. The SYSCOA[14] accounting law will be implemented on an accrual basis. The project code and chart of accounts will be developed to meet the specific needs of the project and documented in the Manual of Procedures to be updated. The prevailing accounting policies and procedures in line with the West African Francophone countries accounting standards—SYSCOHADA—currently in use in Mali's ongoing World Bank-financed operations will apply.

[14] Accounting System of West African States

The accounting systems and policies and financial procedures used by the project will be documented in the project's Administrative, Accounting, and Financial Manual.

Internal Control and Internal Auditing

19. The internal control system aims to ensure (a) the effectiveness and efficiency of operations; (b) the reliability of financial reporting; and (c) the compliance with applicable laws and regulations. The Implementation Manual of SOGEM, which is to be updated, documents, explains, and describes work processes, information flow, authorization and delegation of authority, timing, job segregations, auto and sequential controls, compliance with project objectives, and micro and macro rules and regulations. Application of the procedures set up in the Implementation Manual will be mandatory for all staff at all levels. In addition to the Implementation Manual, all rules of the Directorate of Finance of SOGEM that will not conflict with the Implementation Manual will also apply to the project. Building on the March 2010 (revised in 2013) Implementation Manual SOGEM, the revised sections will be designed under the project. The procurement section (part) of the Implementation Manual has been recently updated and approved by SOGEM management and the non-executive directors.

20. There is no formal IAD or Directorate at SOGEM. To implement the project, SOGEM will retain an experienced and qualified Internal Auditor under terms and conditions acceptable to the World Bank. The FM procedures of the Implementation Manual will contain a description of the roles and responsibilities of the Internal Auditor and the arrangements that guarantee the necessary level of independency.

Funds Flow and Disbursement Arrangements

Designated Account and Project Accounts

21. A DA denominated in CFA francs will be opened in a commercial bank acceptable to IDA. An initial deposit of XOF 2.4 billion will be released by IDA at the request of SOGEM, upon effectiveness. The Managing Director and the Finance Director will co-sign payments related to the RCU activities. Interest income on the DA will be deposited into a specific account opened in a commercial bank and reflected in the project accounting books. Furthermore, revenues generated from the procurement request for proposals on works and acquisitions of furniture/equipment will be reflected in the project accounts.

Disbursement Methods

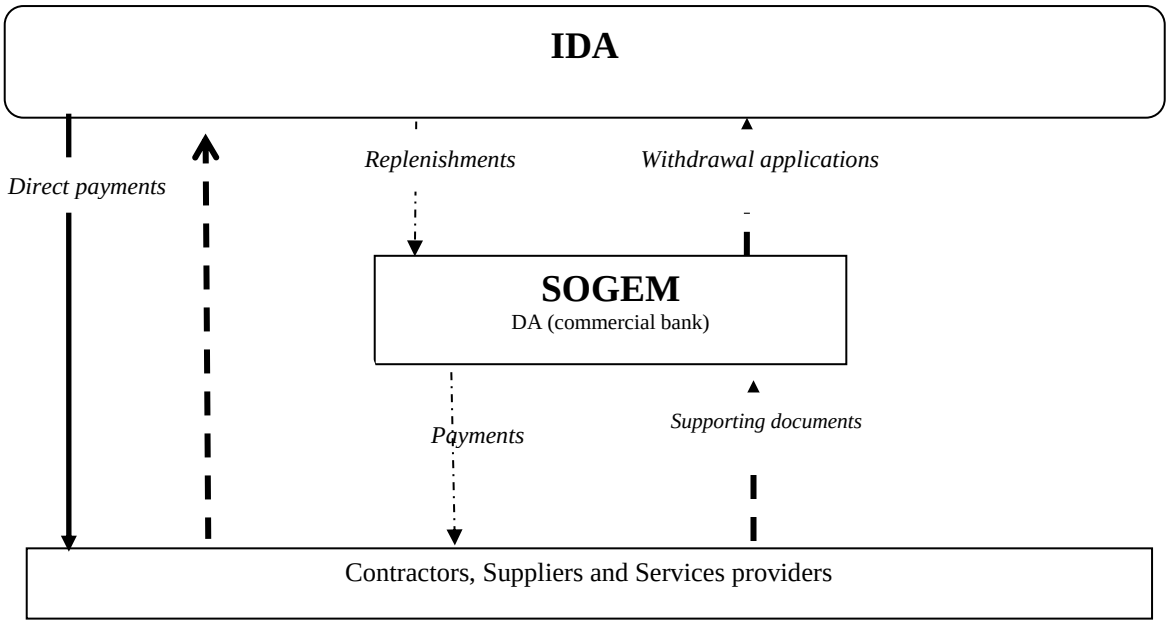
22. Upon project effectiveness, transaction-based disbursements will be used. An initial advance will be made into the DA and subsequent disbursements will be made on a monthly basis against submission of Statements of Expenditures or records as specified in the Disbursement Letter reporting on the use of the initial/previous advance. Thereafter, the option to disburse against submission of quarterly unaudited IFRs (also known as the report-based disbursements) could be considered subject to the quality and timeliness of the IFRs submitted to the World Bank and the overall FM performance and arrangements as assessed in due course. In the case of the use of the report-based disbursement, the DA ceiling will be equal to the cash forecast for two quarters as provided in the quarterly unaudited IFR. If and when IFRs are used as the basis of disbursements, the contents and format will be revised to include disbursement-

related information. In addition to the 'advance' method, the option of disbursing the funds through direct payments to a third party, for contracts above a pre-determined threshold for eligible expenditures (for example, 20 percent of the DA ceiling), will also be available. Another acceptable method of withdrawing proceeds from the IDA Credit, is the special commitment method, whereby IDA may pay amounts to a third party for eligible expenditures to be paid by the recipient under an irrevocable Letter of Credit.

Disbursement of Funds to Beneficiaries, Contractors, Suppliers, and Implementing Partners

23. The RCU will make payments to implementing agencies, contractors, suppliers, and the contracting in regard to the specified activities in the components of the project. Payments will be made in accordance with the payment modalities as specified in the respective contracts/conventions. The criteria for payment and reimbursement and evidences for services delivered will be detailed in the Implementation Manual. The RCU Coordination Unit may also consider the findings of the internal audit function while approving the payments. The Internal Auditor and the FM team will reserve the right to verify the expenditures ex post and refunds might be requested for non-respect of contractual/convention clauses. Misappropriated activities could result in the suspension of financing for a given entity. The overall funds flow is described in figure 3.2.

Figure 3.2. Project Flow of Funds



Local Taxes

24. Funds will be disbursed in accordance with project categories of expenditures and components as shown in the table 3.3 and as set forth in the Financing Agreement. Financing of each category of expenditure will be authorized at 100 percent or 42 percent (inclusive of taxes) as applicable in Mali and Senegal.

Table 3.3 Disbursement Schedule

Category	Amount of the Credit (expressed in €)	Percentage of Expenditures to be Financed (inclusive of Taxes) (%)
(1) Goods, non-consulting services, consultants' services, and operating costs:		
(a) under Part 1.2 of the project	4,100,000	42
(b) under Part 2 of the project	8,500,000	100
(2) Works under Part 1.1 of the project	78,900,000	100

Financial Reports

25. Financial reports will be designed to provide quality and timely information on project performance to project management, IDA, and other relevant stakeholders. Formats of the financial reports are deemed acceptable to IDA and will be used for the purpose of this project. The consolidated quarterly IFR for the project includes the following financial statements: (a) statement of sources of funds and project revenues and uses of funds; (b) statement of expenditures classified by project components and or disbursement category (with additional information on expenditure types and implementing agencies as appropriate), showing comparisons with budgets for the reporting quarter, the year, and cumulatively for the project life; (c) cash forecast; (d) explanatory notes; and (e) DA activity statements. The semiannual IFR will be prepared and submitted to IDA within 45 days after the end of each calendar semester and will reflect the activities implemented directly by the RCU.

26. In compliance with International Accounting Standards and IDA requirements, the project will produce annual financial statements including (a) a Balance Sheet that shows Assets and Liabilities; (b) a Statement of Sources and Uses of Funds showing all the sources of project funds, expenditures analyzed by project component and/or category; (c) a DA Activity Statement; (d) a Summary of Withdrawals using Statement of Expenditure, listing individual withdrawal applications by reference number, date, and amount; and (e) Notes related to significant accounting policies and accounting standards adopted by the management and underlying the preparation of financial statements.

27. The Directorate of Finance of SOGEM will be also required to prepare the company annual consolidated financial statements for audits by the independent and legal auditors.

Auditing Arrangements

28. According to OHADA rules, SOGEM will have external auditors called *Commissaires aux Comptes.*

29. SOGEM will submit audited project financial statements satisfactory to the World Bank every year within six months after closure of the fiscal year. A single opinion on the audited project financial statements in compliance with the International Federation of Accountants will be required. In addition, a Management Letter will be required. The Management Letter will contain auditor observations, comments, and recommendations for improvements in accounting records, systems, controls, and compliance with financial covenants in the Financing Agreement.

Table 3.4 Audit Reports

Audit Report	Due Date
SOGEM and the new World Bank-financed project audit reports (two audit reports and one Management Letter)	(a) Not later than June 30 (2000 + N) if effectiveness has occurred before June 30 (2000 + N-1). (b) Not later than June 30 (2000 + N+1) if effectiveness has occurred after June 30, (2000 + N-1).

30. 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 by IDA.

Governance and Anticorruption

31. The risk of irregularities and corruption within the project activities is substantial given the country context and the nature and implementation arrangements of the project activities. Corruption and poor service delivery are recognized as key challenges in Mali's public sector and to some extent in state-owned enterprises and, more specifically, for a project involving large contracts with relatively diverse interests. In addition, the lack of appropriate oversight mechanisms at SOGEM could jeopardize project implementation.

32. A strong fiduciary arrangement has been designed and put in place to mitigate these risks. The following measures are envisaged to mitigate the risk of misuses, irregularities, and corruption, specifically (a) an audit committee and IAD will be created and technical assistance will be provided to operationalize them by the end of 2017; (b) trainings will be provided to fiduciary staff on World Bank procedures (FM and procurement); and (c) SOGEM will implement some measures to improve transparency such as providing information on the project status (publication of the project and SOGEM audited financial statements on its website). Specific measures are incorporated in the project design to ensure smooth implementation and mitigate related risks.

Supervision Plan

33. FM supervisions will be conducted over the project's lifetime. The project will be supervised on a risk-based approach. Supervision will focus on the status of the FM system to verify whether the system continues to operate well throughout the project's lifetime and to ensure that expenditures incurred by the project remain eligible for IDA funding. The scope of the supervision will include the activities implemented by the RCU and SOGEM. It will comprise, among others, review of transactions, physical inspections of furniture, services, and works delivered, review of audit reports and IFRs, and advice to task team on all FM issues. Based on the current risk assessment, which is Substantial**,** the project team envisages at least two supervision missions per year (however, for the first year, three supervisions mission are planned). The Implementation Status and Results Report will include an FM rating of the project. An implementation support mission will be carried out before effectiveness to ensure project readiness. To the extent possible, mixed on-site supervision, missions will be undertaken with procurement, M&E, and disbursement specialists who will cover the activities implemented by the RCU as well as those contracted. The supervision intensity will be adjusted over time taking into account the project FM performance and FM risk level.

Table 3.5. Implementation Support Plan

FM Activity	Frequency
Desk reviews	
IFRs review	Semester
Audit report review of the project and SOGEM	Annual
Review of other relevant information such as interim internal control systems reports	Continuous, as they become available
On-site visits	
Review of overall operation of the FM system	Twice (Implementation Support Mission)
Monitoring of actions taken on issues highlighted in audit reports, auditors' Management Letters, internal audit, and other reports	As needed
Transaction reviews (if needed)	As needed
Capacity-building support	
FM training sessions	Before project start and thereafter, as needed

Procurement

34. **Use of World Bank Guidelines.** Procurement for the proposed project will be carried out in accordance with the World Bank's 'Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits by World Bank Borrowers' dated January 2011 and revised in July 2014; 'Guidelines: Selection and Employment of Consultants Under IBRD Loans and IDA Credits and Grants by World Bank Borrowers' dated January 2011 and revised in July 2014; and the provisions stipulated in the Legal Agreement. No special exceptions, permits, or licenses need to be specified in the financing document for International Competitive Bidding (ICB) because all OMVS countries' public procurement allows IDA procedures to take precedence over any contrary provisions in local regulations. The OMVS member countries includes Guinea, Mali, Mauritania, and Senegal. SOGEM, as well as contractors, suppliers, and consultants will observe the highest standard of ethics during procurement and execution of contracts financed under this project. 'Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA and Grants' dated October 15, 2006, and revised in January 2011 (the Anticorruption Guidelines) shall apply to the project.

35. **Advertising.** A General Procurement Notice (GPN) will be prepared and published in United Nations Development Business (UNDB) and in at least a national newspaper of each OMVS country member, after the project is approved by the World Bank Board and/or before effectiveness. The GPN would show all ICB for works and goods contracts and all international consulting services. Specific Procurement Notices for all goods and works to be procured under ICB and Expressions of Interest for all consulting services to cost the equivalent of US$300,000 and above would also be published in the UNDB as well as in the national press of each OMVS country member.

Procurement Methods

Procurement of Goods, Works, and Non-Consulting Services (under Component 1)

36. Procurement will be done under ICB or National Competitive Bidding (NCB) using the World Bank's Standard Bidding Documents for all ICB and SOGEM Standard Bidding for NCB

agreed with or satisfactory to the World Bank. Shopping in accordance with paragraph 3.5 of the Procurement Guidelines will be used for procuring readily available off-the-shelf goods of values not exceeding US$100,000 and for simple civil works not exceeding US$200,000. Direct contracting may be used where necessary if agreed in the Procurement Plan in accordance with the provisions of paragraph 3.7 to 3.8 of the Procurement Guidelines.

Selection and Employment of Consultants (under Component 2)

37. The selection method will be Quality- and Cost-Based Selection (QCBS) whenever possible. The following additional methods may be used wherever appropriate—Quality-Based Selection, Selection under a Fixed Budget (FBS), Least-Cost Selection (LCS), Selection Based on Consultants' Qualifications, Single-Source Selection (Firm and Individual), and Selection of Individual Consultants.

38. Short lists of consultants for services estimated to cost less than the equivalent of US$400,000 per contract for engineering and contract supervision and US$200,000 per contract for other consultancy assignments may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines. However, if foreign firms express interest, they will not be excluded from consideration. Single-Source Selection may be employed with prior approval of the World Bank and will be in accordance with paragraphs 3.8 to 3.11 of the Consultant Guidelines. All services of individual consultants will be procured under contracts in accordance with the provisions of paragraphs 5.1 to 5.6 of the Consultant Guidelines.

39. **Procurement implementation arrangements.** The project will be implemented by SOGEM that will hire a procurement specialist who will be highly qualified and competent in World Bank's procurement procedures. SOGEM will be responsible for the daily management, implementation, administration, project coordination, and M&E of the project.

40. The procurement team's main tasks will be (a) preparing and/or submitting procurement documents that require World Bank review and/or clearance; (b) contributing to the preparation of the AWPBs, semiannual and annual progress reports, midterm and completion review reports; and (c) updating and implementing the Procurement Plan and submitting it to the World Bank. The coordination and oversight of the procurement activities of the project will be done by the procurement specialist recruited for SOGEM.

41. **Procurement arrangements for training and workshops.** For all training activities (training, workshops, study tours, and conferences), SOGEM shall prepare and submit for World Bank approval, annual training plans and budgets which will include the objectives of the training, target participants, format of delivery, and qualifications of the resource persons as well as the expected impact of the training before the training can be undertaken. A detailed training and workshop plan giving the nature of training/workshop, number of trainees/participants, duration, staff months, timing, and estimated cost will be submitted to IDA for review and approval before initiating the process. The selection methods will derive from the activity requirement, schedule, and circumstance. When the training is to be outsourced, the procurement of the trainer or the training institution shall be integrated into the project's Procurement Plan and agreed with the World Bank. Similarly, the procurement of venues for workshops and

training materials will be done by comparing at least three price quotations. After the training, the beneficiaries will be requested to submit a brief report indicating what skills have been acquired and how these skills will contribute to enhance their performance and contribute to the attainment of the project objective.

42. **Publication of awards and debriefing.** The results of the bidding process for all the ICB/Limited International Bidding, direct contracts, and also for consultant contracts estimated at US$300,000 and above, shall be published in the UNDB online in line with the relevant paragraphs of the World Bank's 'Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers' dated January 2011 and revised July 2014; and 'Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers' dated January 2011 and revised in July 2014. In addition, all NCB contracts shall be published in the national press.

Assessment of the Capacity to Implement Procurement

43. A Procurement Capacity Assessment was carried out to determine the institutional and management arrangements that would ensure proper execution of the project. It is mainly focused on the capacity and internal arrangements of the recipient and the executing agency to carry out by themselves procurement planning and implementation or otherwise proposed alternative arrangements to ensure transparent and efficient implementation.

44. Procurement activities will be carried out by SOGEM. A formal assessment of SOGEM's capacity to implement procurement actions for the project has been carried out and finalized on March 18, 2016. The assessment was carried out by the World Bank Procurement Specialist based in Bamako, in line with OP/BP 11.00 updated in April 2013. The assessment reviewed the organizational structure for implementing the program, the institutional arrangements, and the capacity for procurement. The assessment revealed that SOGEM had already recruited a Procurement Specialist who has some experience in World Bank operations.

45. The assessment found out that (a) the Procurement Specialist although already exposed to World Bank procurement procedures needs training on complex procurement procedures of the World Bank; (b) the existing Procurement Manual (also titled Public Procurement Code of SOGEM) approved on February 18, 2016, and the related decision of the Council of Ministers on June 14 and 15, 2016, are not sufficiently complete to fit the needs of the project; (c) the personnel involved in procurement procedures is not yet familiar with the said manual; (d) other staff dealing with procurement (for evaluation and approval processes) are not well-skilled in World Bank procurement procedures; (e) there is a lack of technical staff to carry out due diligence with the procurement process; and (f) working space for keeping procurement records is insufficient and inadequate.

46. The overall project risk for procurement is Substantial. Actions to mitigate the risk are summarized in table 3.6.

Table 3.6 Risk Assessment and Mitigation

Risk	Action	Timeframe	Responsibility
Lack of Procurement	Hire a Procurement Specialist highly	No later than 3 months	SOGEM

Risk	Action	Timeframe	Responsibility
Specialist well-skilled in World Bank procurement procedures	qualified and very competent in World Bank procurement procedures Train the Procurement Specialist in specialized centers in World Bank procurement procedures, especially in complex procurement	after effectiveness (**Covenant in Financing Agreement)** No later than 6 months after effectiveness **(Recommended action)**	
Existing Procurement Manual does not fit the project needs	Update the Procurement Manual as part of the Project Implementation Manual by taking a SOGEM Board deliberation detailing procurement processes (by including the description of roles and responsibilities of all stakeholders), establishing the procurement and approval thresholds, time frame, and so on.	Before effectiveness **(Effectiveness Condition in Financing Agreement)**	SOGEM
Lack of mastering the new Procurement Manual by the personnel involved in procurement procedures	Organize a workshop for the personnel involved in procurement to familiarize themselves with the new manual of procurement procedures.	After updating the procurement section of the Implementation Manual **(Recommended action)**	SOGEM
Other staff dealing with procurement is not well-skilled in World Bank procurement procedures	Train the technical staff involved in the procurement process on World Bank's complex procurement procedures.	No later than 6 months after effectiveness **(Recommended action)**	SOGEM
Lack of technical staff to carry out due diligence with the procurement process	Revise the organizational structure of SOGEM in line with the manual adopted and the increasing workload of the entity in the future.	As soon as possible **(Recommended action)**	SOGEM
Insufficient and inadequate working space for records keeping	Provide additional working space with required filing materials to improve filing and record keeping.	No later than one year after project implementation **(Recommended action)**	SOGEM

47. With the implementation of the proposed measures of the action plan and the support of World Bank team, the overall procurement risk is deemed Moderate.

Prior Review Thresholds

Table 3.7. Thresholds for Procurement Methods and Prior Review for Substantial Risk

Expenditure Category	Contract Value (Threshold)[a] (US$)	Procurement Method	Contract Subject to Prior Review (US$,)
1. Works, Turnkey, and Supply & Install of Plant and Equipment	15,000,000 or more	ICB	All
	Below 15,000,000	NCB	All except contracts below 10,000,000
	Below or equal to 200,000	Shopping	None unless contract specified in the Procurement Plan
	No threshold	Direct Contracting	All except contracts below 100,000
2. Goods and Non-consulting services	3,000,000 or more	ICB	All
	Below 3,000,000	NCB	All except contracts below 2,000,000
	Below or equal to 100,000	Shopping	None unless contract specified in the Procurement Plan
	No threshold	Direct Contracting	All except contracts below 100,000

3.Consultancy	Firms	QCBS, QBS, FBS, LCS, CQ	All contracts of 1,000,000 and more and contracts specified in the Procurement Plan
	Firms	Single-Source Selection	Contracts below 1,000,000
	Individual (including direct selection)	Individual Consultants (at least 3 CVs)	Contracts below 500,000

Note: QBS = Quality-and Cost-Based Selection; CQS = Selection based on Consultants' Qualifications.[a] These thresholds are for the purposes of the initial Procurement Plan for the first 18 months. The thresholds will be revised periodically based on reassessment of risks. All contracts not subject to prior review will be post-reviewed. All terms of reference for consulting services will be subject to IDA's prior review.

48. **Procurement Plan.** SOGEM has developed a Procurement Plan for the project implementation for the first 18 months of the project. The Procurement Plan has been discussed and agreed by the recipient and the World Bank task team on November 29, 2016. The Procurement Plan will remain dynamic and updated, at least annually or more frequently as required, to reflect the actual project implementation needs and improvements in institutional capacity.

Procurement Plan

Details of the Procurement Arrangements Involving International Competition

Goods, Works, and Non-Consulting Services

(i) List of contract packages to be procured:

Prior review thresholds:

	Method	Levels	Comments
1.	**Goods**	>=US$2,000,000	Prior review
3.	**Works**	>= US$10,000,000	Prior review
5.	**Direct Contracting**	All contracts	Prior review

1	2	3	4	5	6	7	8	9
Ref. No.	**Contract (Description)**	**Estimated Cost (US$, millions)**	**Procurement Method**	**P-Q**	**Domestic Preference (Yes/No)**	**Review by Bank (Prior / Post)**	**Expected Bid-Opening Date**	**Comments**
	Transmission Line							

1	2	3	4	5	6	7	8	9
Ref. No.	**Contract (Description)**	**Estimated Cost (US$, millions)**	**Procurement Method**	**P-Q**	**Domestic Preference (Yes/No)**	**Review by Bank (Prior / Post)**	**Expected Bid-Opening Date**	**Comments**
ICB/Nr	Kayes-Tambacounda Transmission Line and associated Substations at Kayes and Tambacounda	83.60	ICB	No	No	Prior	06/30/2017	

	Common Infrastructure							
ICB/Nr	SCADA System	10.4	ICB	No	No	Prior	06/30/2017	

(ii) ICB contracts estimated to cost above US$10,000,000 per contract for civil works and US$2,000,000 for goods and non-consultancy services and all direct contracting will be subject to prior review by the World Bank.

Consulting Services

Prior review thresholds:

	Selection Method	Prior Review Level	Comments
1.	**Selection of firms**	>= US$1,000,000	Prior review
2.	**Selection of Individual Consultants**	>= US$300,000	Prior review
3.	**Single-Source Selection for firms and individual consultants**	All contracts	Prior review

1	2	3	4	5	6	7
Ref. No.	**Description of Assignment**	**Estimated Cost (US$, millions)**	**Selection Method**	**Review by Bank (Prior / Post)**	**Expected Proposals Submission Date**	**Comments**
01/CS	Owner's Engineer	6.00	QCBS	Prior	09/30/2017	

(iii) Consultancy services estimated to cost above US$1,000,000 per contract for firms and US$300,000 per contract for individual consultants and every single-source selection of consultants (firms) for assignments will be subject to prior review by the World Bank.

(iv) Short lists composed entirely of national consultants: short lists of consultants for services estimated to cost less than US$300,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines. However, if foreign firms express interest, they will not be excluded from consideration.

Note: The national consultants are consultants from the member countries of the OMVS and the foreign consultants are consultants whose nationality is not that of the member countries of the OMVS.

49. **Procurement supervision.** In addition to the prior review and implementation support mission carried out by the World Bank, it is recommended that at least two supervision missions be carried out each year with one visit to the field to carry out post review of procurement actions.

50. **Post-review procurement.** Post reviews can be done either by World Bank staff or consultants hired by the World Bank. They may also be carried out by third parties such as supreme audit institutions, procurement regulatory authorities, consultancy firms, nongovernmental organizations, and others, according to procedures acceptable to the World Bank to ascertain compliance with procurement procedures as defined in the legal documents. The procurement post reviews should cover at least 10 percent of contracts across the World Bank's portfolio that have not been prior reviewed in a financial year. The sampling is risk-based and takes into consideration: (a) the project procurement risk rating, with the riskier projects having a larger sample; and (b) the contract risk rating, to ensure that riskier contracts constitute a higher proportion of the sample. Post reviews contribute to the overall procurement performance rating of SOGEM based on the rating of the Post Procurement Review and provide a basis for updating the project procurement risk and the risk mitigation plan.

Environmental and Social (including safeguards)

51. The project is categorized as environmental assessment Category B under the Environmental Assessment Policy (OP/BP 4.01). An ESIA and an ESMP have been prepared covering all project components, and both instruments have been consulted on and have been disclosed by SOGEM, on behalf of Senegal, Mali, and Mauritania, in country at the various project sites and by the World Bank on January 31, 2017. Though the right-of-way of the new transmission lines are not yet delineated, the landscapes that they will cross do not host any sensitive biophysical or geographic features in need of particular attention, with the exception of the passage of the line through four protected forest areas near Tambacounda in Senegal. For this reason, the Natural Habitats Policy (OP/BP 4.04) and Forest Safeguard Policy (OP/BP 4.36) are triggered. The lost forest area will be compensated so that there is zero net loss of biodiversity. In addition, lessons learned from the recent transmission line projects in similar socioecological contexts (Mali, Burkina Faso, Senegal) suggest that the biophysical impacts may be less significant than initially assessed as part of the environment analysis. The environmental and social impacts of the construction and operation of the transmission lines is low. There is no risk of labor influx and no work camps will be used because the construction sites will move fast from site to site. The main environmental, health, and safety risks will occur during construction of the line. Health and safety during construction will require special attention to avoid fatal accidents. The World Bank Group 'General Environmental, Health, and Safety Guidelines' of

April 2007 and the 'Electric Power Transmission and Distribution Environment, Health, and Safety Guidelines' apply.

52. The Natural Habitat (OP/BP 4.04) and Forests Safeguard Policies (OP/BP 4.36) are triggered. Landscapes are composed mainly of scarce woody savannah. The identification of the right-of-way included criteria such as avoidance of protected areas, sensitive ecosystems, and human settlements, and so on. However, four protected forest areas, which are noncritical natural habitat, in Senegal near Tambacounda could not be avoided. The line passes for 17.9 km through the Goudiry Protected Forest, for 12.5 km through the Bala East, 12.8 km through the Bala West, and 5.9 km through the Botou Protected Forests. About 200 ha of forest will be lost. It is being planned to reforest 400 ha. Forest losses will be compensated to achieve a zero net biodiversity loss. Reforestation will be carried out in close collaboration with local and regional authorities.

53. The Pest Management Policy (OP/BP 4.09) is not triggered, as the project will not use pesticides for maintenance of the right-of-way. The current practices for the maintenance of the right-of-way of transmission lines and of facilities have been reviewed for each country with respect to the use of pesticides.

54. The Physical Cultural Resources (OP/BP 4.11) is triggered. The project site is not located in known archaeological or sacred areas. But, even though there will be no important civil works that would require the exploitation of new and/or large borrow pits, the policy is triggered to prevent any accidental loss and damage during construction. A comprehensive chance find procedure will be included in all contractor contracts. This requirement is part of the ESMP.

55. The Involuntary Resettlement Policy (OP/BP4.12) is triggered. The precise locations of the tower spots and alignment of the transmission lines are not yet determined and real impacts are not yet known, but there is a need for land acquisition to clear the right-of-ways. Therefore, an RPF15 has been prepared and consulted upon by Senegal, Mali, and Mauritania, approved by the OMVS on behalf of the three countries with an entitlement matrix (on behalf of the Governments of the three countries), and disclosed by SOGEM on January 30, 2017 in Mali, Mauritania, and Senegal and by the World Bank. As required, when precise details of the transmission line locations (alignment, locations for pylons, substations, and other structures) are identified in the course of project preparation, a socioeconomic study and a RAP will be prepared, disclosed, and implemented to compensate any physical or economic loss. Construction can only start when project-affected persons have been compensated. Any damage during construction will be compensated by the contractor.

56. The RCU will be composed of qualified experts including the environmental specialist, the health and safety specialist and the resettlement specialist. These experts will have the overall responsibility for the environmental, social, health, and safety aspects during construction and operation. A highly qualified consultant with international experience will be recruited to provide support to the SOGEM team. The World Bank has approved the terms of reference for this specialist. In case of a serious accident, the World Bank needs to be notified within 24 hours.

[15] The RPF terms of reference were prepared by SOGEM and reviewed by the World Bank Task Team in 2015.

57. The contractors will need to prepare and implement their own Construction Environmental and Social Management Plan (CESMP), as well as a Health and Safety Plan in compliance with international standards. For this purpose, the contractors will employ environmental, health, and safety staff with international experience. SOGEM will establish a Grievance Redress Mechanism for communities and contractor employees. Complaints need to be resolved within two weeks. Contractor employees need to sign a Code of Conduct, which will prohibit misconduct of contractor employees and which will, among others, prohibit employees from having sex with minors (<18 years). Furthermore, the use of child labor is prohibited to contractors. It is strongly recommended that contractors use, as much as possible, local labor for unskilled jobs to avoid social unrest among nearby communities.

58. The Owner's Engineer will have the contractual obligation to supervise the adequate preparation and implementation of the CESMPs and Health and Safety Plans. For this purpose, the Owner's Engineer needs to employ internationally qualified Environmental, Social, Health, and Safety Specialists to supervise the environmental, social, health, and safety aspects during construction. These responsibilities have been spelled out in the ESIA/ESMP. In addition, a nongovernmental organization will be retained to monitor the social aspects of the project.

59. The project is expected to increase carbon emissions because of the transmission losses and associated land use. A greenhouse gas accounting analysis conducted according to the World Bank Guidelines estimates, for 25 years of use of the projected infrastructure, that the net emissions associated directly to the project are 784 ktCO2e. Although this interconnection will probably enable the reduction in emissions by changing the patterns of generation dispatch within the independent systems relying heavily on oil-based power generation, this reduction will not be a direct result of this investment. Therefore, the potential emission reduction associated to the future optimized energy mix cannot be accounted within the analysis of this specific project.

60. The project will contribute to the respective countries Intended Nationally Determined Contributions (INDC) as it will allow additional exchange of clean energy that can replace other polluting sources. The INDCs of the three countries (Senegal, Mali, and Mauritania) include, among other activities, the enhancement of electricity supply from renewable energies. This project will provide a key interconnection for the exchange of renewable energy (hydropower) among the three countries. This exchange will facilitate the change of generation patterns by replacing the dependency on existing fossil-fueled assets, mainly the HFO.

Monitoring & Evaluation

61. Monitoring and impact evaluation for the project will be the responsibility of SOGEM through its Technical Directorate. An Owner's Engineer will assist with overseeing and monitoring project implementation. The OMVS power system operator will record and summarize in its utility database detailed data on the generation and distribution of electricity to the national power utilities of the OMVS power system. Data collection will be done on a monthly basis. SOGEM's Technical Directorate and the Owner's Engineer will closely collaborate with the OMVS power system operator to ensure sound project monitoring and reporting. The WAPP, in coordination with SOGEM and the OMVS power system operator, will prepare annual reports at the regional level, based on data from the OMVS power system

operator and the national power utilities. Component 2 will provide support in facilitating joint operations and coordination between EDM, SENELEC, SOMELEC, and the OMVS power system operator.

Role of Partners

62. AFD has confirmed €90 million to finance the Manantali-Kita-Kati line, a parallel OMVS project.

Annex 4: Implementation Support Plan

Senegal: OMVS - Transmission Expansion Project

1. **Strategy and approach for implementation support.** The strategy for implementation support has been developed based on the nature and risk profile of the proposed project. It aims to make implementation support to the client more flexible and efficient and, it will focus on the implementation of risk mitigation measures defined in the Systematic Operations Risk-rating Tool.

2. **Implementation capacity.** Technical aspects of implementation (including the preparation of bidding documents and the implementation of safeguards mitigation measures) will be handled by SOGEM who will be responsible for carrying out the fiduciary aspects of the project including procurement, FM, M&E, and monitoring of the implementation of safeguards mitigation measures throughout the project's life cycle.

3. **Procurement.** Implementation for procurement will include (a) providing training to SOGEM staff; (b) reviewing procurement documents and providing timely feedback to the client; (c) providing detailed guidance on the World Bank's Procurement Guidelines to procurement specialists who are responsible for preparing procurement documents; and (d) monitoring procurement progress against the Procurement Plan, which will be updated as required to reflect project implementation needs and improvements in institutional capacity.

4. **Financial management.** The team will review the project's FM system including, but not limited to, accounting, reporting, and internal controls. The World Bank team will also work with SOGEM in improving FM and reporting. FM implementation support missions will be consistent with a risk-based approach and will involve a collaborative approach between the client and the entire World Bank task team.

5. A first implementation support mission will be performed six months after project effectiveness. Subsequently, missions will be conducted with a risk-based approach and will include the following diligence:

(a) Monitoring of FM arrangements during the supervision process at intervals determined by the risk rating assigned to the overall FM assessment at entry and, subsequently, during implementation (in Implementation Status and Results Reports);

(b) Integrated fiduciary review on key contracts;

(c) Review of IFRs;

(d) Review of audit reports and Management Letters from the external auditors and follow-up on material accountability issues by engaging with the task team leader, the client, and/or auditors; the quality of the audit (internal and external) will also be monitored closely to ensure that it covers all relevant aspects and provides enough confidence on the appropriate use of funds by recipients;

(e) Physical supervision on the ground; and

(f) Assistance to build or maintain appropriate FM capacity.

6. **Environmental and social safeguards.** Compliance with environmental and social safeguards will be the primary responsibility of SOGEM, which will ensure that all relevant participatory processes embedded within various national legal regulations and the ESIA, RAP, and other relevant project documents are followed. SOGEM will recruit a qualified environmental and social safeguards specialist to support the implementation of safeguards mitigation measures. Throughout the life of the project, the World Bank team will provide guidance to SOGEM to address any issues that may arise.

Implementation Support Plan

7. The World Bank team members will be based both at the headquarters and in the field to ensure timely, efficient, and effective implementation support to the client. Formal missions and field visits will be carried out at least twice a year.

8. **Technical inputs.** Technical knowledge of generation and energy access are required for proper assessment of technical specifications and other aspects of bids and contracts. During project implementation, technical supervision is required to ensure contractual obligations are met. The World Bank's project team will conduct site visits to project sites on a regular basis throughout the duration of the project.

9. **Fiduciary requirements and inputs.** The World Bank project team will help SOGEM identify its capacity-building needs to strengthen its project FM capacity and improve procurement management efficiency. The World Bank's regular FM and procurement supervision missions will provide timely advice on budget planning and related matters. SOGEM will be responsible for the timely compilation of the annual project financial statements for the independent external audit. Project financial statements will be audited by an independent auditor acceptable to the World Bank.

10. **Audit.** The team will continue its diligent attention to the timing of audit report preparation to ensure that audit reports are prepared and submitted on time. External auditors are expected to identify any internal control deficiencies and accounting issues. Audit reports, audited financial statements, and Management Letters will be delivered to the World Bank within six months of the end of each fiscal year.

11. **Monitoring and evaluation.** The M&E system will be based on the agreed Results Framework (Annex 1). SOGEM will be the unit responsible for furnishing the required quarterly implementation progress status reports and elaborate an M&E manual that will guide M&E activities. Project-specific data will be collected by SOGEM. It is expected that the project will build the capacities of staff so that they can adequately lead M&E activities.

Table 4.1. Implementation Support Plan

Time	Focus	Skills Needed	Resource Estimate	Partner Role
First 12 months	Technical review, FM/procurement system Implementation of environmental and social safeguards	Technical and FM/procurement expertise Safeguards	US$250,000	Coordination will take place with other SOGEM partners.
12–60 months	Technical supervision Procurement and FM supervision Safeguards supervision M&E supervision	Power engineering Procurement/FM Safeguards M&E	US$700,000	Coordination will take place with other SOGEM partners.

Table 4.2. Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Power Engineer		Local staff	
Social		Local staff	To be adjusted
Environmental	7–10 weeks per year across the tea	Local staff	annually
Economic/Financial Analys		2 per year	
Monitoring		1 per year	
Procurement		Local staff	
Financial Management		Local staff	
Energy Specialist		2 per year	
Task Team Leader		2 per year	

Annex 5: Economic and Financial Analysis

Senegal: OMVS - Transmission Expansion Project

Project Economic Analysis

1. 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 the NPV of benefits will inform the project's viability over its economic lifetime, assumed as 40 years.

Description of Project Benefits

2. The proposed project will finance selected investments to reinforce and extend RIMA, the backbone of the OMVS regional power grid. It will involve the construction of two new transmission lines and associated substations taking into account future power generation and related load flows, in particular future power generation at Gouina (to be commissioned in 2019), and the necessity of interconnecting with the OMVG network, as well as the implementation of a SCADA system. The section of transmission line IDA will finance is the Kayes-Tambacounda transmission line. This line will provide the planned connection between the OMVS and OMVG systems, while it will also help to transmit the additional energy coming from Gouina hydropower plant to Senegal and Mauritania. The WAPP Master Plan identified the Kayes-Tambacounda line as a strategic connection between the OMVS and OMVG power networks to create redundancy and ensure the availability of the WAPP system in the event of line failures.

3. Broadly, the benefits from the proposed project are mainly (a) increased efficiency in electricity supply (reduced transmission losses, security N-1, reduced outages, and voltage fluctuations), and (b) increased supply of electricity to Senegal and Mauritania to meet existing suppressed demand and expected growth in demand.

4. The average costs of power supplied from thermal generation sources in both countries (Senegal and Mauritania) are used to value the transmission loss savings for the economic analysis.

Description of Costs

5. The main costs associated with the project and the associated benefits are:

   (a) Capital costs of the transmission line expenditure;

   (b) O&M costs of the transmission lines; and

   (c) Transmission loss savings when the transmission line is commissioned.

Assumptions Underlying Analysis

6. The economic viability of the project is evaluated starting in 2017, with the commissioning of the project by the end of 2020. Thus, the first year that the benefits accrue from the flow of electricity is assumed to be 2021. The assumed electricity flow through the transmission line equally to both Senegal and Mauritania when Gouina power plant is

commissioned. The analysis is presented using the base case scenario while also presenting corresponding results for the medium and low scenarios to highlight robustness of the project's economic viability. Table 5.1 presents the main assumptions underlying the analysis.

Table 5.1. Main Assumptions for the Economic Analysis

Main Assumptions for Economic Analysis		
Variable	Value	Comments
Project Life	40	years
Transmission Losses Saving (Senelec) - MWh	121,669	Estimated
Transmission Losses Saving (Somelec) - MWh	93,331	Estimated
Project Cost (CapEx)	99	Million USD
Operation &Maintenance (O&M) Cost	2%	Of CapEx
Value of Energy (senelec)	0.161	Senelec Average Thermal power supply cost (USD/kWh)
Value of Energy (somelec)	0.190	Somelec Average power supply cost (USD/kWh)
Aggregate Cost of Generation	0.173	Aggregate Cost of Generation for both countries (USD/kWh)
Tax Rate	0%	Assumed
Discount Rate	6%	Assumed
Generation Availability		
Base Case	97%	
Medium Case	80%	
Low Case	70%	

Note: Capital expenditure is assumed to be drawn down over 2017–2020 in the following manner: 15 percent, 30 percent, 30 percent, and 15 percent.

7. The results from the analysis show that the project is economically viable with an economic NPV of US$305 million (assuming a 6 percent discount rate) and an EIRR of 25 percent. Sensitivity analysis also shows that the project's viability is robust to large changes in the assumed values of underlying parameters and cost overruns. Details of the analysis are presented in table 5.2.

Table 5.2. Estimated Project Economic Viability

	Base	Project cost over-run			
	100%	105%	110%	115%	120%
EIRR	**24.95%**	**23.19%**	**22.40%**	**21.67%**	**20.99%**
NPV (USD million)	**305**	**297**	**293**	**289**	**285**
PV of Benefits	**385**	**385**	**385**	**385**	**385**
PV of Costs	**80**	**88**	**92**	**96**	**100**
Benefit-Cost-Ratio	**4.80**	**4.36**	**4.18**	**4.00**	**3.84**

Note: Discount rate = 6 percent.

8. The overall EIRR and NPV of the project would remain robust under all sensitivity scenarios that includes increase in capital costs, reduction in benefits (due to less power losses saving than expected), lower power generation costs, lower transmission line availability, and increase in O&M costs. The results of these sensitivity analyses are presented in table 5.3.

Table 5.3. Results of the Sensitivity Analysis (switch values)

Economic Analysis					
Sensitivity Analysis - Switch values					Increase/Decreased
Parameters		**Switch Value**	**Original**	**Change**	
CapEx	USD million	394	99	298%	Increased by 298%
Losses saving	MWh	52,462	208,550	-75%	Decreased by 75%
Generation cost	USD/kWh	0.044	0.173	-75%	Decreased by 75%
Tranmiss. Availability	%	24	97	-75%	Decreased by 75%
O&M Cost	%	29	2	1369%	Increased by 1369%

Project Financial Analysis

9. The financial analysis presented in this section evaluates the net financial return of the Kayes-Tambacounda transmission line. The project generates cash inflows by selling the transmission loss savings. The transmission loss savings, the main benefit of the project, is adjusted with a transmission availability rate of 97 percent and then reduced by distribution losses incurred to make the savings available to final consumption at the average retail tariff while cash outflows are represented by the investment costs and O&M costs.

10. **Project costs.** The investment cost of the project is estimated at US$99 million. The O&M costs are assumed to be 2 percent of the total investment costs.

11. **Project benefits.** The project benefits are the transmission losses saved by the construction of the new transmission line, which generates an inflow from the revenue collected through the average tariff from both countries. The transmission and distribution losses are based on the average losses from both Senegal and Mauritania.

12. Based on these assumptions, the financial rate of return from the project is 18.4 percent and the NPV is US$672 million. Table 5.4 summarizes the results of the financial analysis.

Table 5.4. Estimated Project Financial Viability

	Base	**Project cost over-run**			
	100%	**105%**	**110%**	**115%**	**120%**
EIRR	**18.35%**	**17.01%**	**16.42%**	**15.86%**	**15.35%**
NPV (USD million)	**672**	**665**	**662**	**658**	**654**
PV of Benefits	**769**	**771**	**772**	**774**	**775**
PV of Costs	**96**	**106**	**111**	**116**	**120**
Benefit-Cost-Ratio	**7.98**	**7.28**	**6.97**	**6.69**	**6.43**

Note: Weighted Average Cost of Capital (WACC) = Discount Rate = 0.75 percent (IDA Grant fees rate).

13. As previously done on the economic analysis, a sensitivity analysis in the form of switching value was done for the same scenarios used previously. Table 5.5 presents the results of the analysis.

Table 5.5. Results of the Sensitivity Analysis (Switch values)

Financial Analysis					
Sensitivity Analysis - Switch values					Increase/Decreased
Parameters		**Switch Value**	**Original**	**Change**	
CapEx	USD million	665	99	571%	Increased by 671%
Losses Saving	MWh	31,068	208,550	-85%	Decreased by 85%
Average tariff	USD/kWh	0.033	0.221	-85%	Decreased by 85%
Tranmiss. Availability	%	14	97	-85%	Decreased by 85%
Distribution Losses	%	88	16	442%	Increased by 442%
O&M Cost	%	31	2	1462%	Increased by 1462%

SOGEM Financial Position

14. This section summarizes the financial analysis of SOGEM historical and projected financial position for the period 2011–30.

A. Historical Operational Performance Analysis

15. A historical analysis of the operating performance and financial position of SOGEM during the last five years (2011–15) showed that SOGEM's operation and financial condition have improved materially.

16. Though SOGEM's cost of energy supplied during the period 2011–15 experienced a growth of 31 percent, it has remained relatively stable on CFA francs per kilowatt per hour basis, ranging from a low of XOF 31 per kWh (2012) to a high of XOF 42 per kWh (2015). The main drivers of such stability are a slow increase of O&M and SG&A[16] cost mitigated by a decrease in financial charges.

Figure 5.1. Total Cost of Energy Supplied

	2011	2012	2013	2014	2015
Total Cost of Supplied					
MWh	894,520	997,000	1,039,031	1,107,942	1,171,744
FCFA	37,267,593,633	30,677,531,479	35,187,925,077	36,746,039,551	48,788,458,422
FCFA/kWh	41.66	30.77	33.87	33.17	41.64
Annual Increase	28.40%	-26.14%	10.06%	-2.07%	25.54%
Total Increase					30.9%

17. SOGEM O&M/SG&A unit cost has increased by only 6 percent on the last five years, from XOF 34 per kWh in 2011 to XOF 36 per kWh in 2015. The total cost has increased by 38 percent and it has been partially mitigated by the decrease in financial charges.

[16] Selling, General, and Administrative Expenses.

Figure 5.2. O&M and SG&A Costs

	2011	2012	2013	2014	2015
O&M and SG&A Costs					
MWh	894,520	997,000	1,039,031	1,107,942	1,171,744
FCFA	30,634,313,461	27,752,854,982	32,950,487,674	33,050,639,267	42,385,335,443
FCFA/kWh	**34.25**	**27.84**	**31.71**	**29.83**	**36.17**
Annual Increase	21.52%	-18.72%	13.93%	-5.93%	21.26%
Total Increase (FCFA)					38.36%
Total Increase (FCFA/kWh)					5.62%

18. SOGEM's financial charges per kilowatt per hour supplied have positively affected its total cost of energy supplied by falling from XOF 7.4 per kWh in 2011 to a low of XOF 2.2 per kWh in 2013 before reverting to XOF 5.5 per kWh in 2015, still a fall of 26 percent.

Figure 5.3. Financing Charges

	2011	2012	2013	2014	2015
Financing Charges					
MWh	894,520	997,000	1,039,031	1,107,942	1,171,744
FCFA	6,633,280,172	2,924,676,497	2,237,437,403	3,695,400,284	6,403,122,979
FCFA/kWh	**7.42**	**2.93**	**2.15**	**3.34**	**5.46**
Annual Increase	73.81%	-60.44%	-26.59%	54.89%	63.84%
					-26.31%

19. While SOGEM enjoyed an average positive margin on energy sold, it has fluctuated erratically suggesting that actions have not been taken to control and/or stabilize the cost of energy supplied.

Figure 5.4. Margin on Energy Sales

	2011	2012	2013	2014	2015
Margin On Energy Sales					
MWh	894,520	997,000	1,039,031	1,107,942	1,171,744
FCFA	-6,630,151,965	9,511,826,980	7,143,941,353	16,057,320,921	4,788,785,557
FCFA/kWh	**-7.41**	**9.54**	**6.88**	**14.49**	**4.09**
Annual Increase	174.10%	-228.72%	-27.93%	110.79%	-71.80%
Average margin (FCFA/kWh)					5.52
Average margin/average Cost of Supply					15.2%

20. Energy sales has increased steadily to cover the cost of energy supplied. In the period 2011–2015, the total increase in sales revenue is close to 75 percent, above the 31 percent increase in cost of energy supply, thus, providing an acceptable increase in the margin as mentioned above to support the large investment program. SOGEM's net margin per unit of energy sold has increased in tandem with the cost of energy supply from XOF 34 per kWh to XOF 46 per kWh, an increase of 34 percent.

Figure 5.5. Total Revenue from Energy Sales

	2011	2012	2013	2014	2015
Total Revenue from Energy Sales					
MWh	894,520	997,000	1,039,031	1,107,942	1,171,744
FCFA	30,637,441,668	40,189,358,459	42,331,866,430	52,803,360,472	53,577,243,979
FCFA/kWh	34.25	40.31	40.74	47.66	45.72
Annual Increase	15.15%	17.69%	1.07%	16.98%	-4.06%
Total Increase (FCFA)					74.9%
Total Increase (FCFA/kWh)					33.5%

21. On the positive note, there is a partial efficiency gain on one important metric: energy sold per employee. The metric is trending upward signaling that SOGEM had made some operating improvements on this metric. An improvement of 21 percent has been realized in the period 2011–15.

Figure 5.6. Operational Performance

	2011	2012	2013	2014	2015
Total Employees	35	35	36	35	38
Energy Sold	894,520	997,000	1,039,031	1,107,942	1,171,744
MWh Sold per Employee	25,558	28,486	28,862	31,655	30,835
Annual Increase		11.46%	1.32%	9.68%	-2.59%
Total Increase					20.65%

B. Historical Financial Position Analysis

22. As expected from SOGEM's operational performance analysis, the financial position of the company has gotten better from a negative XOF 6.6 billion deficit in 2011. SOGEM's profitability, liquidity, and leverage have all been positively impacted by its improved operating performance.

Profitability

23. SOGEM profitability has experienced an upward trend. All profitability metrics have improved from a mediocre position in 2011 to an improved and strengthened position. Figure 5.7 summarizes the profitability situation of SOGEM.

Figure 5.7. Profitability

Profitability	Actual				
	2011	2012	2013	2014	2015
Net Margin	-21.64%	23.67%	16.88%	30.41%	8.94%
Operating Margin	0.16%	30.94%	22.16%	37.41%	20.95%
Operating Charges Coverage Ratio	168%	263%	246%	286%	250%
ROE	-10.2%	13.4%	9.6%	18.6%	5.5%
ROCE	-2.27%	2.84%	2.03%	4.20%	1.23%

24. SOGEM's net margin has gone from negative (22 percent) in 2011 to positive (30 percent) in 2014 before reverting to 9 percent in 2015, while its operating margin has followed the same trend increasing from 0.16 percent to 21 percent. This is an outstanding achievement.

25. The operating charges coverage ratio has itself gone from a poor level of 0.168 to a level of 2.50, showing how impressively SOGEM's financial fortunes have improved.

26. Apart from 2012 with a poor operating charges coverage ratio, SOGEM has a strong and healthy ratio, allowing an additional financial slack to support its investment program.

27. As a result of its adequate financial improvements discussed above, SOGEM's return on capital employed has significantly improved, increasing from negative 2.3 percent in 2011 to positive 1.2 percent in 2015 with an exceptional 2014 (4 percent). Similarly, SOGEM's return on equity has also experienced the same luck going from negative 10 percent in 2011 to positive 6 percent in 2015, better in years in between.

Liquidity

28. SOGEM's liquidity position, relatively strong in 2011, has seen an improvement that has led to an enviable liquidity situation. All short-term liquidity metrics have strengthened and/or have been kept steady. Figure 5.8 provides a quick summary of the main metrics and their trends.

Figure 5.8. Liquidity

Liquidity (Short-term)	2011	2012	2013	2014	2015
Quick Ratio	5.14	2.56	2.89	1.85	2.70
Current Ratio	5.14	2.56	2.89	1.85	2.70
Collection Period	179	141	136	104	104
Days in Payable	22	67	131	128	38
Cash Conversion Cycle	156	74	5	-24	65
Days Cash On hand	334	370	580	620	589

29. SOGEM's quick and current ratios were strong and stayed above 1.85. Such a threshold suggests that the company was in good position to pay for its short-term obligations.

30. SOGEM's collection period (days) has improved steadily. A collection period of 100 days is average, as noted within the electric utility industry.

31. As can be seen from the trend in 'days in payable' compared to 'collection days,' SOGEM is paying its suppliers faster than it is collecting from its customers. This trend needs to be investigated for potential improvements.

32. A falling and lower cash conversion cycle is a sign that SOGEM is taking steps to optimize its cash management activities and needs to be encouraged.

33. A growing 'days cash on hand' (for operating expenses cover, higher number is good) is way above the average of 90 days noted for electric utilities' (even in developed countries) cash management ranges.

Leverage

34. SOGEM's capital structure and leverage have experienced a stable pattern with all leverage metrics in the range of a typical special purpose vehicle (SPV) known to have high leverage when the revenue structure is predictable and secured. The capital structure (total liabilities / total assets) of the company is around 75 percent, which is relatively acceptable for this type of company. Figure 5.9 summarizes the trends in the main metrics.

Figure 5.9. Solvency

Solvency (Leverage)	2011	2012	2013	2014	2015
Leverage (Debt/Equity Ratio)	2.93	3.12	3.06	2.81	2.92
Indebtedness (Liabilities/Assets)	72.83%	74.18%	74.08%	73.97%	75.42%
Interest Coverage Ratio (TIER)	1.64	6.28	5.23	5.85	2.11
Interest Coverage Ratio (TIER) - Incl. Interest Income	1.39	6.06	4.62	5.34	1.61
Debt Service Coverage Ratio (DSCR)	0.57	1.46	1.60	1.64	1.04

35. SOGEM's capital structure (long-term debt / equity) has been stable and around 3x, consistent with a high leverage SPV.

36. Total indebtedness (liabilities / assets) has stayed within a narrow range of 73 percent to 75 percent, which is a good sign that SOGEM carefully managed its balance sheet, thus, controlling its financial exposure as shown by a decrease in its financial charges.

37. Interest coverage ratio was adequate in the period 2011–15. It has been above 1.25, the customary threshold acceptable for an investment grade utility.

38. SOGEM's DSCR, while poor in 2011, has seen an improvement on 2012–14 before falling back to a level below 1.25 in 2015. This situation is worrisome and deliberate actions need to be taken to find a remedy for this shortcoming.

Asset Efficiency

39. SOGEM's asset utilization ratios were relatively stable with slight improvements. Figure 5.10 provides a summary of the metrics followed.

Figure 5.10. Asset Efficiency

Asset Efficiency	2011	2012	2013	2014	2015
Working Capital Turnover	1.21	1.80	1.79	2.16	2.03
Tangible Asset Turnover	0.12	0.15	0.14	0.17	0.17
Assets Turnover	0.10	0.13	0.12	0.14	0.14
Inventory Turnover	N/A	N/A	N/A	N/A	N/A
Receivables Turnover	2.04	2.59	2.68	3.52	3.52
Payables Turnover	89.74	51.04	31.04	43.31	56.91

40. A positive and growing working capital turnover characterizes a trend of not financing the company working capital needs through short-term liabilities (essentially through account

payables). SOGEM should obviously keep and strengthen this trend, as it will eventually prevent the company from experiencing severe interruptions of service and/or poor reliability.

41. SOGEM's asset turnover ratios are stable, reflecting a steady asset development and operation strategy that needs to be encouraged.

C. Projected Operational Performance Analysis

42. An analysis of the project operating performance and financial position of SOGEM during the period 2016–30, (only the period 2016–22 is shown) shows that SOGEM's operation and financial condition will stay strong.

43. SOGEM's projected cost of energy supplied, which is expected to grow by 87 percent in the period 2016–2022, will see a relatively lower increase in CFA francs per kilowatt per hour basis, ranging from a low of XOF 31 per kWh (2016) to a high of XOF 38 per kWh (2022). The main drivers of such growth are an increase in financial charges mitigated by a slower growth in O&M/SG&A cost.

Figure 5.11. Total Cost of Energy Supplied

	2016	2017	2018	2019	2020	2021	2022
Total Cost of Supplied							
MWh	1,185,000	1,142,000	1,142,000	1,142,000	1,496,083	1,749,000	1,749,000
FCFA	36,089,912,421	41,524,769,013	47,003,351,598	48,394,118,904	56,715,566,883	67,972,456,765	67,417,360,786
FCFA/kWh	**30.46**	**36.36**	**41.16**	**42.38**	**37.91**	**38.86**	**38.55**
Annual Increase	-26.86%	19.39%	13.19%	2.96%	-10.54%	2.52%	-0.82%
Total Increase (FCFA)							86.8%
Total Increase (FCFA/kWh)							26.6%

44. SOGEM O&M/SG&A unit cost will increase by 14 percent in the period 2016–2022 from XOF 24 per kWh in 2016 to XOF 27 per kWh in 2022. While the total cost will increase by 68 percent, it will be partially mitigated by a slower increase in financial charges.

Figure 5.12. O&M and SG&A Costs

	2016	2017	2018	2019	2020	2021	2022
O&M and SG&A Costs							
MWh	1,185,000	1,142,000	1,142,000	1,142,000	1,496,083	1,749,000	1,749,000
FCFA	28,493,249,866	30,392,349,523	32,325,210,580	33,074,808,166	37,956,730,268	46,833,359,044	47,743,713,101
FCFA/kWh	**24.04**	**26.61**	**28.31**	**28.96**	**25.37**	**26.78**	**27.30**
Annual Increase	-33.53%	10.68%	6.36%	2.32%	-12.40%	5.54%	1.94%
Total Increase (FCFA)							67.56%
Total Increase (FCFA/kWh)							13.53%

45. SOGEM's financial charges per kilowatt per hour supplied will have a significant negative impact on its total cost of supply by growing from XOF 6.4 per kWh in 2016 to a high of XOF 13 per kWh in 2019 before reverting to XOF 11 per kWh in 2022, still an increase of 160 percent.

Figure 5.13. Financing Charges

	2016	2017	2018	2019	2020	2021	2022
Financing Charges							
MWh	1,185,000	1,142,000	1,142,000	1,142,000	1,496,083	1,749,000	1,749,000
FCFA	7,596,662,556	11,132,419,490	14,678,141,019	15,319,310,737	18,758,836,615	21,139,097,721	19,673,647,685
FCFA/kWh	**6.41**	**9.75**	**12.85**	**13.41**	**12.54**	**12.09**	**11.25**
Annual Increase	17.31%	52.06%	31.85%	4.37%	-6.53%	-3.61%	-6.93%
Total Increase (FCFA)							159%

46. SOGEM will enjoy a growing average positive margin on energy sold, based on SOGEM's own tariff projections Should those tariffs increase not materialize, SOGEM will have to scale-down its investment program.

Figure 5.14. Margin on Energy Sales

	2016	2017	2018	2019	2020	2021	2022
Margin On Energy Sales							
MWh	1,185,000	1,142,000	1,142,000	1,142,000	1,496,083	1,749,000	1,749,000
FCFA	12,669,373,208	17,308,644,829	15,128,945,527	14,830,782,339	25,630,523,058	30,938,788,847	32,549,799,571
FCFA/kWh	**10.69**	**15.16**	**13.25**	**12.99**	**17.13**	**17.69**	**18.61**
Annual Increase	161.60%	41.76%	-12.59%	-1.97%	31.92%	3.26%	5.21%
Average margin (FCFA/kWh)							74.1%
Average margin/average Cost of Supply							39.7%

47. Energy sales will grow steadily to cover the cost of energy supplied. In the period 2016–22, the total increase in sale revenue is close to 105 percent, above the 87 percent increase in cost of energy supply, thus, providing an acceptable increase in the margin as mentioned above to support the large investment program. SOGEM's revenue per unit of energy sold will increase in tandem with the cost of energy supply from XOF 41 per kWh to XOF 57 per kWh, an increase of 39 percent.

Figure 5.15. Total Revenue from Energy Sales

	2016	2017	2018	2019	2020	2021	2022
Total Revenue from Energy Sales							
MWh	1,185,000	1,142,000	1,142,000	1,142,000	1,496,083	1,749,000	1,749,000
FCFA	48,759,285,629	58,833,413,842	62,132,297,126	63,224,901,242	82,346,089,941	98,911,245,612	99,967,160,358
FCFA/kWh	**41.15**	**51.52**	**54.41**	**55.36**	**55.04**	**56.55**	**57.16**
Annual Increase	-10.01%	25.20%	5.61%	1.76%	-0.58%	2.75%	1.07%
Total Increase (FCFA)							105.0%
Total Increase (FCFA/kWh)							38.9%

48. Should the number of employees stay the same, there will be an efficiency gain on the metric related to energy sold per employee of 48 percent in the period 2016–22.

Figure 5.16. Operational Performance

	2016	2017	2018	2019	2020	2021	2022
Total Employees	39	39	39	39	39	39	39
Energy Sold	1,185,000	1,142,000	1,142,000	1,142,000	1,496,083	1,749,000	1,749,000
MWh Sold per Employee	30,385	29,282	29,282	29,282	38,361	44,846	44,846
Annual Increase	-3.6%	0.0%	0.0%	31.0%	16.9%	0.0%	0.0%
Total Increase							47.6%

D. Projected Financial Position Analysis

49. As expected from SOGEM's projected operational performance analysis, the financial position of the company will improve significantly from XOF 12.7 billion in 2016 to close to XOF 32.6 billion in 2022. SOGEM profitability, liquidity, and leverage will all be positively affected by its projected improved operating performance.

Profitability

50. SOGEM's profitability will see an upward trend with significant improvement. All profitability metrics will strengthen from an already strong position in 2015 (and prior years).

51. Figure 5.17 summarizes the profitability situation of SOGEM.

Figure 5.17. Profitability

Profitability	2016	2017	2018	2019	2020	2021	2022
Net Margin	25.98%	29.42%	24.35%	23.46%	31.13%	31.28%	32.56%
Operating Margin	41.56%	48.34%	47.97%	47.69%	53.91%	52.65%	52.24%
Operating Charges Coverage Ratio	384%	452%	465%	460%	455%	532%	523%
ROE	13.2%	15.7%	12.5%	11.2%	16.6%	17.0%	15.4%
ROCE	3.27%	3.42%	2.46%	2.01%	2.90%	3.39%	3.51%

52. SOGEM's net margin will stay above 23 percent in the period 2016–22, a healthy margin, while its operating margin will also follow the same trend and will stay above 41 percent, a rosy picture.

53. The operating charges coverage ratio already strong at 3.84 in 2016 will stay above 4.0 in the period 2016–22, showing that SOGEM is in a stronger position to implement its investment program, which requires large borrowing.

54. As a result, of its forecasted financial improvements discussed earlier, SOGEM's return on capital employed will stay relatively stable above 2 percent in the period 2016–22. Similarly, SOGEM's return on equity will be comfortably above 11 percent in the same period.

Liquidity

55. SOGEM's liquidity position, already strong in 2016, will keep getting better. All short-term liquidity metrics will strengthen or stay steady.

56. Figure 5.18 provides a quick summary of the main metrics and their trends.

Figure 5.18. Liquidity

Liquidity (Short-term)	2016	2017	2018	2019	2020	2021	2022
Quick Ratio	4.58	2.50	1.51	0.91	0.84	1.94	3.52
Current Ratio	4.58	2.50	1.51	0.91	0.84	1.94	3.52
Collection Period	108	79	71	72	61	62	67
Days in Payable	145	249	366	227	164	130	93
Cash Conversion Cycle	-37	-170	-295	-156	-103	-68	-26
Days Cash On hand	1,283	671	229	139	120	135	521

57. Apart from 2019 and 2020, SOGEM's quick and current ratios will remain above 1.50. Such a threshold suggests that the company will be in a good position to pay for its short-term obligations. Still SOGEM needs to take proactive actions to improve its quick ratio in 2019 and 2020.

58. SOGEM's collection period (days), already good at around 110 days, will experience a steady decline, a good indicator of efforts planned to speed up bills collection.

59. 'Days in payable' will experience a slight increase in earlier years before falling below 100 days, a level appropriate for electric utilities. SOGEM should focus on ways not to let this metric grow, as it is important for SOGEM to pay its bills on time (especially those its O&M operator).

60. A lower cash conversion cycle is expected and, should that materialize, it will be a good sign that SOGEM is taking steps to optimize its cash management activities and needs to be encouraged.

61. 'Days cash on hand' (for operating expenses cover, a higher number is good) is expected to decrease to 120 days, still in the acceptable range of 90 days noted for electric utilities' (even in developed countries) cash management ranges. The excess cash could be invested profitably.

Leverage

62. SOGEM's capital structure and leverage will keep its historical pattern, with all leverage metrics in the range of a typical SPV known to have high leverage when the revenue structure is predictable and secured. The capital structure (total liabilities / total assets) of the company will grow from 71 percent to 81 percent before falling back to 76 percent in 2022. It will keep falling down to 46 percent in 2030.

63. Figure 5.19 summarizes the trends in the main metrics during 2016–22.

Figure 5.19. Solvency

Solvency (Leverage)	2016	2017	2018	2019	2020	2021	2022
Leverage (Debt/Equity Ratio)	2.53	3.15	3.66	4.15	4.33	3.76	3.17
Indebtedness (Liabilities/Assets)	71.12%	75.17%	77.71%	79.90%	80.75%	78.37%	75.55%
Interest Coverage Ratio (TIER)	3.66	3.28	2.92	2.95	3.26	3.69	3.72
Interest Coverage Ratio (TIER) - Incl. Interest Income	3.43	3.08	2.80	2.86	3.18	3.61	3.63
Debt Service Coverage Ratio (DSCR)	1.19	1.42	1.48	1.48	1.83	2.11	2.20

64. SOGEM's capital structure (long-term debt / equity) will grow up to 4.33x (2020) before reverting to around 3x, consistent with a high-leverage SPV.

65. Total indebtedness (liabilities / assets) will slightly grow to 81 percent and revert to the 73 percent–75 percent range, which is a good sign that SOGEM plans to carefully manage its balance sheet.

66. Interest coverage ratio was adequate in the period 2016–22 and will be above 2.8, acceptable for an investment grade utility.

67. SOGEM's DSCR while below 1.25 in 2016 will see an improvement in 2017–22 before falling back to a level below 1.25 in 2026–29. This situation is worrisome and deliberate actions need to be taken to find a remedy to this shortcoming, as it is a critical conditionality for financing covenants.

Asset Efficiency

68. SOGEM's asset utilization ratios are forecast to improve slightly. Figure 5.20 provides a summary of the metrics followed.

Figure 5.20. Asset Efficiency

Asset Efficiency	2016	2017	2018	2019	2020	2021	2022
Working Capital Turnover	1.27	1.76	4.37	24.44	-28.04	24.21	4.46
Tangible Asset Turnover	0.16	0.16	0.12	0.10	0.11	0.12	0.12
Assets Turnover	0.13	0.13	0.11	0.09	0.10	0.11	0.11
Inventory Turnover	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Receivables Turnover	3.39	4.60	5.13	5.10	5.99	5.92	5.45
Payables Turnover	82.76	59.73	41.72	66.35	116.21	170.65	233.75

69. A growing working capital turnover is expected, which is a characteristic trend of not financing the company's working capital needs through short-term liabilities (essentially through account payables). SOGEM should obviously keep and strengthen this trend, as it will eventually prevent the company from experiencing severe interruptions of service and/or poor reliability.

70. SOGEM's asset turnover ratios are forecast to stay stable, reflecting a steady asset development and operation strategy that needs to be encouraged.

Risks Going Forward

71. **Hydrological risk.** With all of its assets relying on water resource, SOGEM is naturally exposed to a hydrology risk. SOGEM has provisioned a reserve to partly mitigate this risk. The reserve is expected to amount to XOF 15.6 billion in 2020 (about three months of revenue) up from XOF 9 billion in 2014. This is enough to cover about half of its projected debt service.

72. **Currency risk.** SOGEM's results are very sensitive to the exchange rate of XOF versus the U.S. dollar. Over the past twelve months, the dollar has appreciated by about 35 percent from XOF 470 per US$ up to XOF 620 per US$ as a result of the European Central Bank monetary quantitative easing contrasting with a tightening by the U.S. Federal Reserve. The XOF being

pegged to the Euro, the West African currency has depreciated in dollar terms. This translates into a sales tariff dropping from US$0.08 per kWh down to US$0.065 per kWh over the forecast period against the backdrop of investments partly financed in dollars. The dollar appreciation has a direct impact on SOGEM's ability to service dollar-denominated debt, in particular, the China Exim loan financing the Gouina asset.

73. DSCR is just over one in 2026 when the grace period of the corresponding loan ends. To bring this ratio to a minimum healthy level of 1.25, the team has estimated that the variable part of the tariff will need to be increased from XOF 27 per kWh up to XOF 39 per kWh.

Figure 5.21. Debt Service Cover Ratio Profile

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
DSCR	0.57	1.46	1.60	1.64	1.04	1.19	1.42	1.48	1.48	1.83	2.11	2.20	1.44	1.35	1.41	1.15	1.09	1.12	1.20	1.41

74. **Payment risk.** Problems faced in the past by SOGEM, related to payments of electricity, have been solved. By 2008, SOGEM faced important arrears and a low collection rate from the three countries. To solve these issues, SOGEM and the three national utilities agreed in 2009 to a payment mechanism that included (a) enforcement of resolution No. 470 of OMVS' Council which requires that electricity supply be reduced and then cut if bills are not paid on time; (b) payment of new bills by bank draft within 15 days after reception of the bill; and (c) penalties for an electricity company which has not paid its bill within 15 days, the enforcement of resolution No. 470 which requires a reduction of between 30 percent and 100 percent of electricity supply and a further 10 days within which to regularize payment of its bill. Any future payment for this company will have to be made by a guaranteed bank draft. Since this payment mechanism was applied in 2009, bills have been paid on time. All arrears have been settled and the average collection period is below 90 days. However, EDM has not yet settled an arrear of XOF 1.4 billion since 2009. SOGEM's management team, backed by a decision from the OMVS's Council of Ministers, expects the arrears to be settled by 2017 (40 percent of arrears settled in 2015, 40 percent in 2016, and 20 percent in 2017).

Utilities' Finances

75. All three utilities—EDM, SENELEC, and SOMELEC—rely on a similar generation mix (essentially HFO production and a small share of regional hydropower) with tariffs of the same order of magnitude exceeding US$0.20 per kWh. They have suffered in the recent years from tangible financial losses, because of under-recovery of costs and have been relying strongly on government support.

76. The utilities have begun to pursue a more financially sustainable path through a projected shift in their generation mix with the development of transformational projects (Banda Gas to Power Project and renewable projects in Mauritania, Gouina Hydropower Plant in Mali, and coal in Senegal) in a context of increased regional power trade. The pace of market reforms has however lagged behind, in comparison to other markets such as Nigeria or Cameroon. The most notable change has been the increase in electricity tariff by 7 percent in Mali in February 2013.

77. Plummeting oil prices—more than half since June 2014—have had a positive impact on utilities' operating costs in the short term. It is estimated that the cost of HFO-based

generation has dropped as low as US$0.09–0.10 per kWh down from US$0.17–0.18 per kWh. However, this has also translated in delays in projects that were designed to reduce the utilities' reliance on HFO. In particular, the Banda Gas to Power Project is now being restructured with the exit of the gas developer Tullow subsequent to its decision to limit capital expenditures in the context of the downturn in crude oil price.

78. The strong appreciation of the U.S. dollar against the XOF over the past 18 months (from XOF 470 per US$ up to XOF 620 per US$) has had a negative impact, in particular on Senelec and EDM, to the extent they have U.S. dollar-denominated debt while their revenues are in CFA francs. The precise impact of the currency devaluation is yet to be quantified. This event has highlighted the importance of hedging for these utilities to soften the impact of variations in currency.

Figure 5.22. Historical Financial Ratios

Financial Ratios

	Actual							
Profitability	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Net Margin	-2.52%	2.39%	12.19%	-21.64%	23.67%	16.88%	30.41%	8.94%
Operating Margin	16.15%	23.12%	23.90%	0.16%	30.94%	22.16%	37.41%	20.95%
Operating Charges Coverage Ratio	169%	264%	283%	168%	263%	246%	286%	250%
ROE	-1.4%	1.3%	4.8%	-10.2%	13.4%	9.6%	18.6%	5.5%
ROCE	-0.41%	0.26%	1.24%	-2.27%	2.84%	2.03%	4.20%	1.23%
Liquidity (Short-term)	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Quick Ratio	1.86	1.07	4.57	5.14	2.56	2.89	1.85	2.70
Current Ratio	1.86	1.07	4.60	5.14	2.56	2.89	1.85	2.70
Collection Period		337	188	179	141	136	104	104
Days in Payable		318	33	22	67	131	128	38
Cash Conversion Cycle		18	155	156	74	5	-24	65
Days Cash On hand	60	301	573	334	370	580	620	589
Solvency (Leverage)	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Leverage (Debt/Equity Ratio)	1.74	3.04	2.40	2.93	3.12	3.06	2.81	2.92
Indebtedness (Liabilities/Assets)	63.92%	73.18%	68.77%	72.83%	74.18%	74.08%	73.97%	75.42%
Interest Coverage Ratio (TIER)	2.70	3.83	3.32	1.64	6.28	5.23	5.85	2.11
Interest Coverage Ratio (TIER) - Incl. Interest Income	2.63	3.77	3.09	1.39	6.06	4.62	5.34	1.61
Debt Service Coverage Ratio (DSCR)	0.89	0.97	1.14	0.57	1.46	1.60	1.64	1.04
Asset Efficiency	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Working Capital Turnover		2.66	2.19	1.21	1.80	1.79	2.16	2.03
Tangible Asset Turnover		0.12	0.12	0.12	0.15	0.14	0.17	0.17
Assets Turnover		0.10	0.10	0.10	0.13	0.12	0.14	0.14
Inventory Turnover		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Receivables Turnover		1.08	1.94	2.04	2.59	2.68	3.52	3.52
Payables Turnover		12.11	112.56	89.74	51.04	31.04	43.31	56.91

Figure 5.23. Projected Financial Ratios

Financial Ratios

Profitability

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Net Margin	25.98%	29.42%	24.35%	23.46%	31.13%	31.28%	32.56%	17.42%	19.03%	21.20%	25.45%	28.10%	32.91%	35.97%	37.31%
Operating Margin	41.56%	48.34%	47.97%	47.69%	53.91%	52.65%	52.24%	37.16%	36.35%	36.10%	41.33%	41.81%	44.25%	45.04%	44.20%
Operating Charges Coverage Ratio	384%	452%	465%	460%	455%	532%	523%	455%	441%	428%	454%	439%	424%	412%	401%
ROE	13.2%	15.7%	12.5%	11.2%	16.6%	17.0%	15.4%	7.0%	7.2%	7.5%	9.0%	9.1%	9.7%	9.6%	9.1%
ROCE	3.27%	3.42%	2.46%	2.01%	2.90%	3.39%	3.51%	1.71%	1.91%	2.17%	2.95%	3.36%	4.03%	4.51%	4.74%

Liquidity (Short-term)

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Quick Ratio	4.58	2.50	1.51	0.91	0.84	1.94	3.52	4.41	4.81	5.32	4.87	4.49	4.08	3.97	4.44
Current Ratio	4.58	2.50	1.51	0.91	0.84	1.94	3.52	4.41	4.81	5.32	4.87	4.49	4.08	3.97	4.44
Collection Period	108	79	71	72	61	62	67	75	75	75	72	75	76	76	76
Days in Payable	145	249	366	227	164	130	93	69	50	56	57	53	52	56	58
Cash Conversion Cycle	-37	-170	-295	-156	-103	-68	-26	6	25	20	15	22	24	19	18
Days Cash On hand	1,283	671	229	139	120	135	521	709	782	882	730	630	527	495	572

Solvency (Leverage)

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Leverage (Debt/Equity Ratio)	2.53	3.15	3.66	4.15	4.33	3.76	3.17	2.86	2.55	2.27	1.89	1.56	1.25	1.00	0.81
Indebtedness (Liabilities/Assets)	71.12%	75.17%	77.71%	79.90%	80.75%	78.37%	75.55%	73.74%	71.61%	69.26%	65.52%	61.26%	56.35%	51.11%	46.08%
Interest Coverage Ratio (TIER)	3.66	3.28	2.92	2.95	3.26	3.69	3.72	3.35	3.55	3.80	3.62	3.99	4.47	5.10	5.88
Interest Coverage Ratio (TIER) - Incl. Interest Income	3.43	3.08	2.80	2.86	3.18	3.61	3.63	3.20	3.34	3.53	3.36	3.70	4.13	4.72	5.42
Debt Service Coverage Ratio (DSCR)	1.19	1.42	1.48	1.48	1.83	2.11	2.20	1.44	1.35	1.41	1.08	1.09	1.13	1.21	1.41

Asset Efficiency

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Working Capital Turnover	1.27	1.76	4.37	24.44	-28.04	24.21	4.46	2.34	1.93	1.70	1.84	2.04	2.27	2.46	2.31
Tangible Asset Turnover	0.16	0.16	0.12	0.10	0.11	0.12	0.12	0.11	0.12	0.12	0.14	0.15	0.15	0.16	0.16
Assets Turnover	0.13	0.13	0.11	0.09	0.10	0.11	0.11	0.10	0.10	0.10	0.11	0.12	0.12	0.12	0.13
Inventory Turnover	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Receivables Turnover	3.39	4.60	5.13	5.10	5.99	5.92	5.45	4.88	4.86	4.85	5.08	4.86	4.83	4.83	4.83
Payables Turnover	82.76	59.73	41.72	66.35	116.21	170.65	233.75	272.58	357.77	315.46	325.40	338.76	332.79	295.95	279.13

Annex 6: Project Map

Senegal: OMVS - Transmission Expansion Project