**BASIC INFORMATION**

A. Basic Project Data

<table>
<thead>
<tr>
<th>Country</th>
<th>Project ID</th>
<th>Project Name</th>
<th>Parent Project ID (if any)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Africa</td>
<td>P166042</td>
<td>Guinea – Mali Interconnection Project</td>
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</table>

<table>
<thead>
<tr>
<th>Region</th>
<th>Estimated Appraisal Date</th>
<th>Estimated Board Date</th>
<th>Practice Area (Lead)</th>
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<tr>
<td>AFRICA</td>
<td>08-May-2018</td>
<td>29-Jun-2018</td>
<td>Energy &amp; Extractives</td>
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<table>
<thead>
<tr>
<th>Financing Instrument</th>
<th>Borrower(s)</th>
<th>Implementing Agency</th>
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</thead>
<tbody>
<tr>
<td>Investment Project Financing</td>
<td>Republic of Guinea, Republic of Mali</td>
<td>EDG, EDM</td>
</tr>
</tbody>
</table>

Proposed Development Objective(s)

The Project Development Objectives are to: (i) increase electricity supply to the Eastern part of Guinea; (ii) enable electricity trade between Guinea and Mali; and (iii) increase Guinea’s electricity export capability towards other West African Power Pool countries.

Components

- Power Transmission Infrastructure (Project US$ 343.8 million, of which IDA Credit US$ 71.8 million)
- Implementation Support and Capacity Building (Project US$ 37.0 million, of which IDA Credit US$ 12.2 million)

**PROJECT FINANCING DATA (US$, Millions)**

**SUMMARY**

<table>
<thead>
<tr>
<th>Total Project Cost</th>
<th>380.80</th>
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<tr>
<td>Total Financing</td>
<td>380.80</td>
</tr>
<tr>
<td>of which IBRD/IDA</td>
<td>84.00</td>
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<tr>
<td>Financing Gap</td>
<td>0.00</td>
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</table>

**DETAILS**

**World Bank Group Financing**

<table>
<thead>
<tr>
<th>International Development Association (IDA)</th>
<th>84.00</th>
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</thead>
<tbody>
<tr>
<td>IDA Credit</td>
<td>84.00</td>
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</table>
### B. Introduction and Context

**Country Context**

1. Despite Sub-Saharan Africa’s (SSA) significant endowment of natural resources, approximately 600 million people, or two-thirds of its population, do not have access to electricity. For those with access to electricity, average residential electricity consumption per capita is equivalent to about half the average level of China or one-fifth that of Europe (in 2014). While SSA is energy poor, it is rich in natural resources, that if harnessed, could meet the needs of the continent for reliable and affordable electricity. Excluding solar, McKinsey estimates that there are 1.2 terawatts (TW) of generation capacity potential. Solar generation capacity was estimated at a staggering potential of 10 terawatts, particularly in the Sahel sub-region (including Mali).

2. While current levels of consumption are among the lowest in the world, demand for electricity in SSA is expected to increase many fold over the next couple of years. A 2015 study on African electricity markets prepared by McKinsey estimates that demand for electricity in SSA will register a four-fold increase between

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2010 and 2040, representing an average growth of 4.5% per annum.\textsuperscript{2} This strong growth will be sustained by an increase in industrial and commercial demand for electricity averaging 4.1% per year, and an increase in residential demand averaging 5.6% per year. This increase in demand could vary significantly between sub-regions. In West Africa, for instance, it is expected that demand for industrial and commercial electricity would grow faster than average, at 5.3% per year.\textsuperscript{3}

3. If every country builds infrastructure to fulfill its electricity needs, the McKinsey study estimates that the region would require about US$490 billion of capital for new electricity generation capacity by 2040, plus another US$345 billion for transmission and distribution. In this context, regional integration is a game changer that could shape the energy landscape of SSA. The study estimates that significantly increasing regional integration could save more than US$40 billion in capital spending, and save the African consumer nearly US$10 billion per year by 2040, as the levelized cost of energy would fall from US$70 to US$64 per megawatt-hour (MWh). The World Bank estimates that power trade within the West Africa Power Pool (WAPP) could lead to cost savings of US$5-8 billion per year, by enabling WAPP countries to benefit from more cost-effective hydro or gas-based imports\textsuperscript{4}. The overall range of cost saving arising from greater regional integration for the beneficiary countries in SSA is estimated to be in the range of US$0.01 to US$0.07 per kWh\textsuperscript{5} and the cost of electricity could be cut by more than half in many countries in West Africa.

4. In that context, and particularly for the West Africa sub-region where the demand-supply gap is likely to reach more than 100 GW by 2040, it is fundamental to optimize supply through regional integration that maximizes economies of scale and links sources of supply to distant centers of consumption, as well as the development of cost-efficient sources of supply, such as hydropower.

5. Faced with the task of expanding the power system to meet development needs of countries in the sub-region, the fifteen-member states\textsuperscript{6} of the Economic Community of West African States (ECOWAS) have acknowledged that past efforts to achieve national self-sufficiency in electricity supply have been uneconomic due to the high cost of establishing power generation and transmission infrastructure at national levels. They have decided instead to opt for a regional approach to effectively address their growing energy needs.

6. To foster the expansion of regional energy markets, ECOWAS has put in place, in 1999, the West African Power Pool (WAPP), a cooperative mechanism for integrating national power systems (except Cape Verde) into a regional electricity market, with the expectation that this mechanism would help to provide a stable and reliable electricity supply at affordable cost over the medium to long-term. It was created as a “flagship infrastructure project” of the New Partnership for African Development (NEPAD), aiming to foster the development of electricity in all ECOWAS member states.


\textsuperscript{3} This strong growth of electricity demand results from relatively high economic growth, rapid urbanization, large population increases, and active policies to expand access.


\textsuperscript{5} Foster, V., Briceño-Garmendia, C. Africa’s Infrastructure: A Time for Transformation, World Bank, 2010.

\textsuperscript{6} Benin, Burkina Faso, Cape Verde, Côte d’Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo.
7. The Implementation Road Map of the WAPP Infrastructure Program consists of five distinct but mutually reinforcing sub-programs that will converge into a regional power pool as outlined in the table 1 below.

<table>
<thead>
<tr>
<th>Sub-programs</th>
<th>Countries</th>
<th>Expected Date of Commissioning</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal Transmission Backbone</td>
<td>Côte d'Ivoire, Ghana, Benin/ Togo, Nigeria</td>
<td>June 30, 2016</td>
<td>Establish a robust interconnection link between the ECOWAS Coastal Member States.</td>
</tr>
<tr>
<td>Inter-zonal Transmission Hub</td>
<td>Burkina Faso &amp;Mali via Ghana, OMVS via Mali, Liberia-Sierra Leone-Guinea via Côte d'Ivoire</td>
<td>December 31st, 2018</td>
<td>Establish more secure, reliable transmission corridors for transfer of low cost energy to displace diesel-based sources especially in Burkina Faso, through Ghana and Côte d'Ivoire, and OMVS (Organisation pour la mise en valeur du fleuve Sénégal) through Mali.</td>
</tr>
<tr>
<td>Organisations pour la mise en valeur du fleuve Gambie / Senegal (OMVG / OMVS) Regional Projects</td>
<td>Gambia, Guinea, Guinea Bissau, Mali, Senegal</td>
<td>June 30, 2022 (OMVG) December 31st, 2022 (OMVS)</td>
<td>OMVG and OMVS projects interconnect national systems of The Gambia, Guinea, Guinea Bissau, Mali, and Senegal and secures access to sources of low cost energy to be built on the Gambia River and the Senegal River.</td>
</tr>
<tr>
<td>Côte d'Ivoire–Liberia-Sierra Leone-Guinea (CLSG) Regional Interconnector</td>
<td>Côte d'Ivoire, Liberia, Sierra Leone, Guinea</td>
<td>October 30th, 2019</td>
<td>Interconnect Côte d'Ivoire, Liberia, Sierra Leone, and Guinea into the WAPP Energy System and develop the hydropower resources in the sub-region.</td>
</tr>
<tr>
<td>North Core/Dorsale Nord Regional Interconnection Project</td>
<td>Nigeria, Niger, Burkina Faso, Benin/Togo</td>
<td>December 31st, 2022 (TBC)</td>
<td>Upgrade and extend capacity to transfer low cost energy supply in the short term from Nigeria to Niger, Burkina Faso, and northern Benin, and in the longer term also from Niger to the other countries.</td>
</tr>
</tbody>
</table>

8. The World Bank has developed a strong partnership with the WAPP and is financing, together with other donors, part of all the above mentioned five WAPP Master Plan sub-programs. It is also supporting the preparation of key generation projects for cost efficient electricity for the region, and assisting member countries to build commercial and technical instruments to create a regional energy market. To channel this support, the Bank uses various instruments including so far: (i) credits/loans, (ii) technical assistance, and (iii) guarantee instruments. The WAPP is on track to finalize the primary interconnectors shown in Figure 1 (which includes both current and planned interconnectors) by the early 2020s, which will significantly change the energy landscape in West Africa.

Figure 1. Map of the WAPP Infrastructure
9. In the context of the WAPP, Mali has experience trading electricity with Mauritania and Senegal through the OMVS system as well as Cote d’Ivoire via a 225 kV transmission interconnection running from Segou in Mali via Koutiala and Sikasso. In fact, imports from those countries represented 35% of Mali’s energy mix in 2016. On the other hand, Guinea has no experience in electricity trading. However, with the power interconnection projects currently under construction, including this project, Guinea will be at the heart of the WAPP system and will be connected to thirteen (13) ECOWAS countries. Currently and in the short term, both Mali and Guinea would import electricity if the interconnectors were available, as both depend partly on expensive rental power to meet their current electricity needs. In the medium to long term, Guinea is uniquely positioned to play an important role in the future regional power market, as it has an estimated hydropower potential of 6,200 MW (largely untapped), or more than 10 times the current size of its national grid, under active development.

10. Guinea’s ambition to become a net exporter of hydropower to the sub-region will be realized only if it succeeds in developing its hydropower resources at lower cost and exporting electricity at a competitive price. Indeed, potential importers of Guinean hydropower (Senegal, Guinea Bissau, The Gambia, Liberia, Sierra Leone and Mali) have domestic or regional sources of power at higher than USD 0.12 per kWh from gas fired plants, solar energy and coal fired plants. For Guinea to capture part of the regional power market and fully utilize the rapidly expanding regional power transport network under the West Africa Power Pool (WAPP), Guinea will need to be selective in the hydropower plants it develops and focus on those with the capacity to supply electricity all year around at a low cost.
11. Table 2 below summarizes key sector indicators for the two countries.

Table 2. Key Sector Indicators

<table>
<thead>
<tr>
<th></th>
<th>Guinea</th>
<th>Mali</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to electricity (%) of population</td>
<td>18%</td>
<td>30%</td>
</tr>
<tr>
<td>Number of customers</td>
<td>250,000</td>
<td>400,000</td>
</tr>
<tr>
<td>System losses (%)</td>
<td>35%</td>
<td>23%</td>
</tr>
<tr>
<td>Average electricity tariff ($/kWh)</td>
<td>0.09</td>
<td>0.16</td>
</tr>
<tr>
<td>Average cost of service ($/kWh)</td>
<td>0.20</td>
<td>0.25</td>
</tr>
</tbody>
</table>


Guinea

12. The energy sector in Guinea is currently undergoing a major restructuring towards a full liberalization of the sector, although it currently remains dominated by public sector players. The Ministry of Energy and Hydraulics (MEH) sets the sector’s policy and plays an overarching surveillance role of the sector. The state-owned electricity utility (Electricité de Guinée, EDG), which was created following the failure of the privatization of the sector in the 1990s, is currently under a four-year Management Services Contract (MSC) until October 2019. After the MSC, it is expected that the utility will be operated by local staff who would have benefited from peering and on-the-job training during the MSC period. There are currently two independent power producers (IPPs), the AON Group and ‘La Guinéenne d’Électricité’ GDE. The China International Water & Electric Corporation (CWE) operates the Kaleta hydropower plant. The recently established agency, “Agence Guinéenne d’Electrification Rurale (AGER),” created on May 9, 2017, will oversee the development of rural electrification programs including decentralized off grid electrification solutions. The law establishing an independent regulator has been adopted by the parliament in November 24, 2017 and the GoG is planning to operationalize it in 2018. The electricity law is being updated with the support of the African Development Bank (AfDB) to reflect new developments in the sector and to encourage private sector participation in solar, and eventually in hydropower. A set of regulations will follow to enforce the law in 2018. The Electricity Generation, Transmission and Distribution master plan that will define a least cost generation plan and grid extension plan is being updated with financing from the AfDB.

13. Despite its vast hydropower potential, Guinea’s energy sector performance has remained below that of regional peers. The official access rate in 2016 stood at 18%, while reaching 29% when including significant proportion of illegal connections (compared to 57% in Senegal, 53% in Cote d’Ivoire and 30% in Mali in 2016). The access rate in rural areas is as low as 3% in rural areas, which is significantly lower than the Sub-Saharan Africa (SSA) average of 15% in rural areas. With these figures of access, electricity demand has grown by 13% in 2015 and it is expected to grow at 9 to 10% per annum in the next five years. The installed capacity in 2017 is about 630 MW, of which 367.5 MW (59%) is from hydropower plants. In 2016, EDG produced 1531.5 GWh to meet the needs of its 246,527 customers, of which 65% live in the capital city of Conakry. About 45% of the energy was produced by the Kaleta hydropower plant (240 MW), 31% by thermal IPPs and 24% by EDG’s legacy power plants, mainly composed of hydropower plants.
14. Guinea is now actively developing its hydropower resources with the completion of the Kaleta hydropower project (240 MW) with Chinese financing in 2015 and the ongoing construction of the Souapiti hydropower project (450 MW) also with Chinese support. In addition to those two national hydropower projects, two other regional hydropower projects are under development: the Sambangalou (128 MW) regional hydropower project, being developed by the OMVG on the Gambia river (bordering Senegal and Guinea) with Chinese financing; and the Koukoutamba (294 MW) hydropower project, being developed by the OMVS on the Senegal river. Other projects that are being considered by the Guinean authorities include; Amaria (300 MW); Korafindi (100MW) and Kogbedou-Frankonedou (90 MW). Guinea is also exploring, with support from IFC Advisory, the development by private investors of solar photovoltaic (PV) projects. With the active development of all these projects, it is expected that Guinea will have enough capacity by 2021, once Souapiti is completed, to meet its future national demand and export excess supply on the regional market. Some of the projects under development, as well as the completed Kaleta project, already anticipate the possibility of exporting electricity to the neighboring countries once the transmission interconnection projects are completed by 2020. By doing so, Guinea will be able to quickly capture part of the demand for regional electricity trade.

15. The transmission line between Linsan and Fomi, which is critical to link the hydropower generation projects in Guinea to the proposed Guinea-Mali interconnection, is at an advanced stage of development. The GoG has already mobilized the required financing from the Industrial and Commercial Bank of China (ICBC). The line will be constructed by CWE, the developer of the completed Kaleta hydropower plant as well as the ongoing Souapiti hydropower plant, and commissioned in 2020 (before the completion of Souapiti). However, should the construction of the Linsan-Fomi line be delayed, the feasibility study determined that between 150 and 230 MW could be transited into the interconnector from the CLSG line with export from Côte d'Ivoire (through the Man substation) or/and Guinea (through the Linsan substation).

16. The IDA funded MSC of EDG is making some progress towards the improvement of the operational performance of the utility. The management contract became effective on October 9, 2015. To date, a few positive results have been achieved, in particular: (i) reduction in the number and duration of power supply interruptions; (ii) reduction of operational expenditures by 32 percent; (iii) increase in generation capacity in rural secondary cities with the installation of 14 small scale power generators; (iv) increase in the annual turnover by 28 percent; and (v) increase in bill collection rate by 19 percent. However, the midterm review of the MSC undertaken in November 2017 revealed that the contractor achieved limited results in improving the commercial performance of the utility and did not make sufficient efforts to build the capacity of the local Guinean staff. The improvement of these two areas have been prioritized for the remaining two years of the MSC. Therefore, the key activities to be managed by the MSC contractor for the next two years include: the installation of smart meters for non-residential large consumers (as part of the implementation of the Revenue Protection Program, which is a prior action of the Bank’s latest DPO and the IMF program) and both prepayment and post payment meters for residential consumers (depending on the preference of the customer); the implementation of an Integrated Management System (IMS) to modernize the management of the utility; and the rehabilitation of distribution and connection infrastructures to reduce system losses to within SSA averages or lower. The MSC is also committed to improve bill collection (currently at 79 percent). To build the capacity of the local staff of EDG, the MSC has developed a human resources capacity building plan which includes specific training sessions, on-the-job training through industrial attachment in better performing utilities in Africa, voluntary retirement and/or separation packages, etc. The plan will be implemented during the year 2018.

17. The Additional Financing to the Power Sector Recovery Project (P160771), approved by the Board on March 16, 2018, will further the achievement of the parent project’s PDO, which is to improve technical and commercial performance of EDG, by financing critical activities identified by the Internal Recovery Plan of
EDG (2016-2020) which was adopted by the GoG in October 2017. These activities include: the construction of a new substation in Kissosso to upgrade the distribution network in Conakry; the installation of smart meters for large consumers as part of the implementation of a Revenue Protection Program and installation of regular electronic meters for low voltage consumers; the implementation of a capacity building program for the local staff of EDG; and the financing of additional experts’ time for the implementation of the MSC.

18. EDG is in a critical financial situation as electricity tariffs are far from being cost reflective. Guinea’s power sector faces a quasi-fiscal deficit of 2.1 percent of the country’s GDP. This is higher than the 0.9 percent average of 39 countries in Sub-Saharan Africa - excluding South Africa. It is also large in comparison to the central government’s fiscal deficit (6.9 percent of GDP in 2015) and education expenses (3.2 percent of GDP in 2014). The project is expected to improve the financial situation of the utility through the generation of hard currency revenues from exports to EDM, in addition to providing reliable and affordable electricity service to the cities of Siguiri, Kankan, Kerouané, Beyla and Nzerekore, currently being supplied with expensive standalone thermal power generators. Furthermore, the Electricity Access Scale up Project (P164225), which is under preparation, with the objective to expand the access rate from the current 18% to 36% in the next four years, will contribute to the improvement of the financial situation of EDG as it will regularize the illegal connections in Conakry and in the regional cities (about 11% of the population) and hence reduce the commercial losses of the utility. In addition to the above-mentioned project, the GoG concluded a program with the IMF which includes about 25% electricity tariff increase for industrial and professional category and 10% electricity tariff increase for residential and tertiary category as part of gradual tariff adjustments to improve the financial viability of EDG.

Mali

19. Energie du Mali S.A (EDM) is the vertically integrated electricity utility of Mali that has monopoly over power transmission and distribution, while generation is open to the private sector. Since 1989, a variety of models have been experimented for the management of EDM. This includes a performance contract model (1989–1994), a management contract model (1995–1999), and a concession contract model. In 2000, the concession was awarded to a consortium formed by SAUR International (SAUR) and Industrial Promotion Services West Africa S.A (IPS (WA)).

A fundamental disagreement between the GoM and SAUR emerged because of divergent interpretations of the contractual obligations of each party concerning required investments and tariff adjustments, which led to SAUR’s departure from the company in October 2005. Since then, the GoM is the majority shareholder of EDM with 66 percent of the shares, while IPS (WA) holds the remaining 34 percent. EDM’s concession covers urban areas only. EDM is the single buyer for power supplied by independent power producers (IPPs).

20. The Malian Rural Electrification Agency (Agence Malienne pour le Développement de l’Energie Domestique et l’Électrification Rurale, AMADER), created in 2003, supplies electricity to rural areas through a public-private partnership (PPP) approach, whereby rural electrification concessions are granted to private operators.

21. Significant progress has been made in increasing access in Mali, with access to modern energy services reaching about 30% nationally, corresponding to an access rate of 55% in urban areas and 18% in rural areas. In fact, the access rate in rural areas has increased ten-fold from about 1-2% to 18% in less than a decade.

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7 The difference between the net revenue of an efficient utility and the net cash it collects.

8 IPS (WA) is an entity of the Aga Khan Fund for Economic Development.
Households still mainly rely on fuelwood for cooking, and wicks and kerosene lamps for lighting. The use of these traditional fuels poses both health and environmental hazards while requiring time-consuming foraging by women and children, and providing inadequate levels of service.

22. Total domestic installed generation capacity connected to the grid stands at 479 MW, although in 2016 only about 250 MW was available mainly due to lack of maintenance of existing generation facilities, resulting in breakdowns. Additionally, isolated centers in areas located far away from the grid are being served with stand-alone thermal generation units totaling an installed capacity of 57 MW. The demand for electricity in Mali is increasing on average by 10% per year. To serve that fast-growing demand, EDM has largely relied on expensive rental containerized diesel units, which have reached an aggregated installed capacity of 98 MW in 2016 (that is, 28% of grid-connected available capacity, including the capacity of rentals)\(^9\). Despite these expensive efforts, planned and unplanned outages have increased sharply in recent years in both frequency and duration. Moreover, total losses (including technical and commercial losses) have increased from 19.6% in 2011 to close to 22.6% in 2015, mainly due to the lack of investment in the rehabilitation of the network. Therefore, the unreliability of the existing generation facilities, the delays in procurement of new generation facilities, the limited investments in the network, and the fast pace of new customer connections leading to network densification have all contributed to the deterioration in the quality of service, while costs have continued to rise.

23. Mali is heavily dependent on expensive thermal generation (more than 50% of its energy mix) and is in dire need to diversify its sources of energy. Mali has until recently relied on expensive rental diesel units to meet its fast-growing demand, but that approach comes with a high financial cost. While Mali is embarking on the development of its solar resources, it does not have sufficient large-scale hydropower resources left to exploit and it does not have any known exploitable gas resources; therefore, the most feasible alternative for Mali to lower the cost of electricity in the short to medium term is to increase the import of electricity from its neighboring countries. With this project, Guinea and Cote d’Ivoire though the CLSG will play a strategic role in helping Mali diversify its energy mix and lower its cost of power generation, therefore contributing to the financial equilibrium of the sector.

24. The timely construction of the Sanankoroba substation is critical to supply power to the area of Bamako through this interconnection project. While the construction of the Sanankoroba substation, which is part of the Sikasso-Bougouni-Sanankoroba 225kV transmission line project, is being financed by BOAD and the Indian Exim Bank, the Bank will consider financing it, in case the said financing does not materialize.

25. Furthermore, with the supply of significant amount of power from Guinea towards Mali through this interconnection project, the Malian grid will need to be reinforced, particularly around the capital city of Bamako, to ensure that the energy supplied to the Malian national grid is absorbed and distributed all the way to the end users. In that regard, EDM, with assistance from the French Development Agency AFD is preparing technical feasibility as well as environmental and social studies for the construction of a 225 kV transmission ring around Bamako. The transmission ring will be composed of four new 225/30 kV substations (Kodialani, Kati, Dialakorodji and Dialakorobougou) and the associated 225 kV transmission lines and will create four infed points for the import of electricity from the Guinea-Mali interconnection towards the the Malian grid, particularly in the area of Bamako. The studies for the transmission ring are expected to be completed by

\(^9\) Oil-based generation products are imported and especially costly given that Mali is a landlocked country connected to neighboring countries’ ports through relatively poor transport infrastructure.
December 2018. The Bank will consider providing additional financing to this project to finance part of the 225 kV transmission ring around Bamako once the studies are completed.

26. The financial situation of EDM has been undermined by high production costs as well as high technical and commercial losses. As the country relies heavily on expensive imported fossil fuels for power generation, the average cost of electricity service to the end users is estimated at $0.25 per kWh. On the other hand, the electricity tariff stands at $ 0.16 per kWh on average and is not cost reflective. Despite that, the tariff is considered high for the average Malian household and business. On the other hand, EDM has been making losses totaling $100 million in 2015. EDM received a total subsidy amounting to US$73.6 million in 2015, translating into a subsidy of US$ 0.055 per kWh. Facing increasing liquidity challenges, EDM has been relying heavily on short-term borrowing to meet its obligations and has delayed payments to fuel and power suppliers, including neighboring countries such as Côte d’Ivoire. EDM’s profitability depends upon its ability to reduce its cost of service by reducing its dependency on rental power and expensive HFO-fired generation and improve its operational efficiency along the value chain.

27. In an effort to address the challenges in the sector and restore it profitability, EDM has set up a new organization in January 2017 to: (i) reinforce the control and the fight against fraud through the creation of a new internal audit position; (ii) strengthen the strategic planning function by strengthening the prerogatives of the Studies and Strategic Planning Department; (iii) optimize the procurement of supplies, assets and fuel through the creation of a Procurement Department; (iv) strengthen the information and management / data security systems through the creation of an Information System Department; and (v) improve the level of recoveries through the establishment of a department dedicated to that task. Finally, EDM has developed an emergency plan that has been under implementation since January 2017. The plan aims at: rehabilitating several power plants, including Sirakoro (56 MW), Balingue (33 MW), Sélingué (49 MW) and Sotuba (6 MW); rehabilitating and strengthening several transport and distribution substations; improving billing and collection; increasing the capacity of the existing interconnections with Côte d’Ivoire (from 40 to 75 MW) and Senegal and Mauritania (from 20 to 60 MW). In April 2018, the Bank agreed to review EDM’s domestic commercial debt and advise the utility on a financial sustainability plan.

28. The Mali Electricity Sector Improvement Project (P166796), which is under preparation, aims at improving the operational performance of the power utility, EDM-S.A., and expanding electricity access in selected areas of the country. The project will finance among others, the rehabilitation, the reinforcement, and the expansion of the transmission and distribution network in Bamako to reduce technical and commercial losses, improve the quality of supply, and increase access to electricity services. The ongoing IDA-funded Mali Energy Support Project (P108440) aims to improve the access and efficiency of electricity services in Bamako and other targeted (grid-connected) areas in the country (including reducing losses and improving revenue collection with the implementation of a revenue protection program).

29. The Electricity Subsidy Reform Study in Guinea, Mali, and Togo (P166128) will also undertake the analytical work required to guide the Governments of Guinea and Mali on the implementation of further sector reforms to increase the performance of EDG and EDM and ultimately reduce the government subsidies to the sector.

C. Proposed Development Objective(s)
Development Objective(s) (From PAD)
The Project Development Objectives are to: (i) increase electricity supply to the Eastern part of Guinea; (ii) enable electricity trade between Guinea and Mali; and (iii) increase Guinea’s electricity export capability towards other West African Power Pool countries.

Key Results

D. Project Description

30. The proposed Guinea Mali Interconnection Project starts in N’Zérékoré, in Guinea, near the Liberian border, stretches across the eastern part of Guinea from south to north, through Fomi and crosses the Malian border into Sanankoroba in Mali. The interconnector is complementary to the Cote d’Ivoire, Liberia, Sierra Leone and Guinea (CLSG) Power System Re-Development (P113266), the OMVS Transmission Expansion (P147921) and the OMVG Interconnection (P146830) projects being financed by the Bank. Indeed, the Guinea Mali Interconnection Project will be connected to: the CLSG system through the future N’Zérékoré substation in Guinea (to be constructed by the ongoing CLSG Power System Re-Development Project and extended with the construction of a new bay under this project); the OMVS system through the Sanankoroba substation in Mali (to be constructed by the ongoing Sikasso-Bougouni-Sanankoroba 225 kV transmission line project and extended with the construction of a new bay under this project); and the OMVG system through the future Fomi substation (to be constructed under the project) and the future Linsan-Fomi line in Guinea (to be constructed by the Guinean government with secured financing from China – the Linsan substation will be constructed under the CLSG Power System Re-Development Project). All these connections will contribute to the realization of Guinea’s electricity export potential towards West Africa Power Pool countries.

31. The proposed project includes two components. The first component is dedicated to the construction of the transmission line and associated substations. The second component will provide implementation support and technical assistance to the PIUs in the two participating countries to assist them to effectively implement the project and ensure the sustainability of its results.

32. To partly mitigate the environmental and social impacts of the project, the AfDB, IsDB and EU are financing the electrification of 201 rural communities located along the line route (121 in Guinea and 80 in Mali) through the 225/33 kV substations that will be constructed under the project. This will provide reliable and affordable access to electricity to the local populations in those communities, and contribute to the social development of the local population directly affected by the project, a key initiative to ensure strong citizen engagement ownership in the project. Since the Bank is already considering financing the ECOWAS-Regional Electricity Access Project (P164044), which includes Guinea and Mali and will be complementary to this component, it is not participating to the financing of that initiative.

33. The project’s main components are described below.

Component 1: Power Transmission Infrastructure (Project US$ 343.8 million, of which IDA Credit US$ 71.8 million)
34. This component finances the construction of the power transmission infrastructure (lines and substations) between Guinea and Mali.

**Sub-component 1-A: Construction of the Transmission Interconnector (Project US$ 317.3 million, of which IDA Credit US$ 61.6 million)**

35. This sub-component involves the construction of 714 km 225 kV double circuit transmission line from N’Zérékoré in Guinea to Sanankoroba in Mali as well as the construction of five substations in Guinea (Fomi, Beyla, Kankan, Kerouane, Siguiri) as well as the extension of one substation in Guinea (N’Zérékoré, planned to be built under the CLSG Power System Re-Development Project) and one in Mali (Sanankoroba). The 225 kV high voltage transmission line will be equipped with double circuit, one earthwire and one Optical Fiber Ground Wire (OPGW). The OPGW will provide grounding and communication capabilities to the line. This component includes also the substations: (i) the SCADA/telecommunication equipment and (ii) the compensation equipment (Reactance, Capacitor Bank and SVC). IDA will finance the extension of the substation in Sanankoroba, the construction of a portion of the transmission line between the Mali/Guinea border and Siguiri (53.7 km), as well as the construction of new substations in Siguiri, Kankan and Kerouane. This sub-component will be co-financed with African Development Bank (AfDB), European Union (EU), European Investment Bank (EIB), Islamic Development Bank (IsDB), ECOWAS Bank for Investment and Development (EBID) and West African Development Bank (BOAD).

**Sub-component 1-B: Implementation of the Environmental and Social Management Plans (ESMPs) and Resettlement Action Plans (Project US$ 26.5 million, of which IDA Credit US$ 10.2 million)**

36. The cost of the implementation of the Resettlement Action Plans (RAPs) will be financed by the respective Governments as part of their counterpart financing. The costs of the implementation of all the aspects of the Environmental and Social Management Plans (ESMPs) - other than the implementation of the RAPs - will be financed by the donors. Environmental mitigation measures under the Environmental and Social Management Plans (ESMPs) will be included in the construction contract. IDA will finance the cost of the ESMP in Guinea. The cost of the ESMP in Mali will be financed by BOAD.

**Component 2: Implementation Support and Capacity Building (Project US$ 37.0 million, of which IDA Credit US$ 12.2 million)**

**Sub-component 2-A: Implementation Support (Project US$ 29.8 million, of which IDA Credit US$ 5.5 million)**

37. In each country, a Project Implementation Unit (PIU) will be responsible for implementing the portion of the project located in that country. This subcomponent will finance the procurement of one owner’s engineer for the whole project. The owner’s engineer, financed by the EU and BOAD (with terms of reference reviewed and approved by the Bank), will coordinate and assist the PIUs in the two countries with: (i) overall project
management and supervision of the procurement, design, construction and preparation for operation and maintenance of the complete investment, including the full transmission line, construction and upgrade of substations; (ii) supervision and monitoring of the implementation of the Environmental and Social Management Plans (ESMPs) and the Resettlement Action Plans (RAPs), based on an agreed monitoring plan.

38. This sub-component will also provide support to operationalize the implementation arrangements for the project. In addition to the two PIUs, a joint implementation steering committee will guide the implementation of the project during the construction phase. This sub-component will among others cover the operating costs of the two PIUs in the two countries during the construction of the line. It will provide support for setting-up the PIUs, including setting up of systems such as procurement and financial management systems and recruitment of staff, and the operational costs (per diems, acquisition of vehicles, office supplies, furniture and hardware/software, etc.) during the construction phase. It will also support the logistical expenses related to the organization of the joint implementation steering committee meetings. IDA will finance part of these costs.

**Sub-component 2-B: Capacity Building (Project US$ 7.2 million, of which IDA Credit US$ 6.7 million)**

39. This sub-component will finance the competitive recruitment of engineers highly experienced in implementing 225 kV or more transmission line projects who will reinforce the capacity of the PIU in Guinea as well as the carrying out of specialized studies as required. It will also support some analytical work to strengthen the two countries’ institutional and regulatory framework to facilitate the trade of electricity between them. This subcomponent will also finance the supply of equipment and tools to strengthen the capacity of the two utilities to operate and maintain the interconnected grid and it will finance specific training of the staff involved in operations and maintenance. Finally, this subcomponent will support the commercialization of the excess capacity of the fiber optic associated with the interconnection line. IDA will finance part of these costs.

**E. Implementation**

**Institutional and Implementation Arrangements**

40. A Memorandum of Understanding (MoU) was signed on June 21, 2017 between the governments of the two countries to combine their efforts for the construction of the power transmission line to interconnect the two power systems and exchange energy between them. The MoU confirms the willingness of the two countries to trade energy and authorizes the two utilities, EDG and EDM, to execute a Power Purchase Agreement (PPA). While the negotiation of a PPA will require some time and support (some technical assistance is provided by the project in that regard), the two countries have agreed to sign by 31 December 2018 a term sheet describing broadly the commercial terms of the energy exchange, including a commitment on a range of quantity and price for the energy, which will govern the negotiation of a PPA.

41. In each country, the Ministry in charge of Energy, through its National Directorate for Energy, will be the executing agency for the project. The Directorates will delegate the implementation of the project to two Project Implementation Units (PIU) hosted in the two national utility companies, EDG and EDM. Each PIU will be responsible for implementing the portion of the project located in its country.

42. The PIUs will more precisely be responsible for, among others: carrying out the bidding process for the works; supervising the implementation of the project; coordinating the activities of the various stakeholders, including consultants, manufacturers, installers, inspection services and all the public services concerned; approving technical documents; ensuring sound financial management of the project; preparing progress reports,
coordinating the commissioning of the project once completed; and ensuring the smooth handing over of the facilities to the two utilities that will be in charge of operating and maintaining them.

43. The PIUs are composed of existing staff from the public utilities, EDG and EDM, and the National Directorate for Energy in the Ministry in charge of the energy sector in each country. They will be reinforced, as needed, by consultants who will be procured and financed under the project. An owner’s engineer will assist the two PIUs in supervising and coordinating the construction works for the entire project in both countries.

44. A joint implementation steering committee composed of five representatives from Guinea, five representatives from Mali, one representative from the WAPP and one representative from the owner’s engineer has been created to guide and coordinate the implementation of the project during the construction phase, from procurement activities to the supervision of works and management of the project resources, as well as to ensure the smooth commissioning and handing over of the resulting facilities to the respective national utilities who will own the respective portions of the line in their territory and be responsible for its operation and maintenance. The joint implementation steering committee will meet quarterly. The venue of the meeting will alternate between the two countries and the meeting will be chaired by the representative of the national directorate for energy of the country where the meeting is taking place.

45. More precisely, the joint implementation steering committee will among others: guide and coordinate the project stakeholders in carrying out the studies and works related to the construction of the interconnection line and related substations; supervise and coordinate the activities of the PIUs in the two countries; guide and coordinate the project stakeholders in carrying out the studies and works related to the construction of the interconnection line and related substations; resolve any issues / disagreements arising between the PIUs; and prepare the transition to the operation phase.

46. The structure of the implementation arrangements is depicted in Figure 2. More details are provided in Annex 2.

47. In addition to being represented in the joint implementation steering committee, the WAPP secretariat will be playing an active role to ensure that the different parties, including the beneficiaries and the donors, are well coordinated. Furthermore, as the lead financier, the AfDB, in coordination with the WAPP, will organize monthly donors meeting to report on each donor’s progress and ensure proper coordination.

Figure 2. Implémentation Arrangements Structure
**F. Project location and Salient physical characteristics relevant to the safeguard analysis (if known)**

The project will cover two neighboring countries Guinea and Mali, spanning over a 714 km and 225 kV double circuit transmission line between N’Zerekore (Guinea) and Sanankororba (Mali), including the construction or extension of 7 substations and the electrification of several rural communities living along the T-line route. In Guinea, the transport line will involve two administrative regions (Kankan and Nzerekore), 7 divisions, 21 rural communes and 4 urban communes for a total 592 km. The Post stations will be built close of the following cities Siguiri, Fomi, Kankan, Kerouane, Beyla and Nzerekore. In Mali, the project will cover one key region (Koulikoro) and two circles (Kangaba and Kati) for 140 km. The two countries crossed by a network of (over 732 km) present sensitives areas that will be negatively impacted by the project.

**G. Environmental and Social Safeguards Specialists on the Team**

Cheikh A. T. Sagna, Social Safeguards Specialist  
Emeran Serge M. Menang Evouna, Environmental Safeguards Specialist
<table>
<thead>
<tr>
<th>SAFEGUARD POLICIES THAT MIGHT APPLY</th>
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<tr>
<td><strong>Environmental Assessment OP/BP 4.01</strong></td>
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<td><strong>Performance Standards for Private Sector Activities OP/BP 4.03</strong></td>
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<td><strong>Natural Habitats OP/BP 4.04</strong></td>
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<td><strong>Forests OP/BP 4.36</strong></td>
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<td><strong>Pest Management OP 4.09</strong></td>
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<tr>
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<tr>
<td>Indigenous Peoples OP/BP 4.10</td>
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<td>Involuntary Resettlement OP/BP 4.12</td>
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<td>Safety of Dams OP/BP 4.37</td>
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<td>Projects on International Waterways OP/BP 7.50</td>
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distribution and improvement of existing network in the two countries.

<table>
<thead>
<tr>
<th>Projects in Disputed Areas OP/BP 7.60</th>
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<tbody>
<tr>
<td>This policy is not triggered as the project activities are not expected to be implemented in the disputed areas as defined in this policy.</td>
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KEY SAFEGUARD POLICY ISSUES AND THEIR MANAGEMENT

A. Summary of Key Safeguard Issues

1. Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:

The ESIAs/ESMPs reports prepared by the two Governments (Mali and Guinea) identified the key safeguards issues and impacts associated with the project. As the project will cover more than 714 km and will imply civil works (stations and sub-stations, Transmission and distribution lines), the ESIAs helped in the identification and characterization of adverse and positive impacts.

The relevant negative impacts are the following: ecosystem fragmentation, labor influx, land acquisition, water pollution due to poor use of fuel, vegetation destruction, ornithology sites disturbance, Gender Based Violence, HIV/STI, destruction of farms, soil erosion; RAMSAR sites exposure, forest cleanup of about 2364 hectares in Guinea and 570 hectares of Savannah, fallow and farms in Mali, risk of accidents, risk of electrocution, production and poor management of hazardous wastes.

The ESIAs/ESMPs also evaluated the cumulative impacts and the most important was the project GHG contribution. In Guinea, the project will contribute to GHG emission by 690,157 TeqCO2 during 40 years and 119,550 TeqCO2 in Mali during 40 years.

The most positive impacts identified, are related to job creation during the construction phase, and possibly during operationalization, and the access to electricity to several people in the two countries.

2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:

The most potential indirect and long term impact to anticipate will be the risk of encroachment and creation of new settlements along or close of the project Right of Ways due mainly to the electricity access facility that the project will create.

3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts.

During the preparation of the ESIAs/ESMPs and RAPs, the most relevant alternatives were proposed in terms of project Right of ways. Most of the sensitive areas were rerouted to reduce negative impacts on RAMSAR sites. During the execution studies, corrections will also be suggested to reduce negative impacts of the project.

4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described.

The two governments prepared two ESIAs/ESMPs reports since 2015 that were reviewed by the Bank and national environmental agencies. The two ESIAs/ESMPs reports were updated after the Bank comments and disclosed both in-
country and at World bank website prior to project appraisal. The two ESIA's reports identified the key positives and negative impacts including the project contribution to GHG emission. The two countries prepared two robust ESMPs that proposed relevant mitigation measures.

The two Governments have, with the support of the ongoing regional program of OMVG between 2013 and 2014, two RAPs to comply with the core requirement of OP/BP 4.12 policy. The two RAPs finalized in 2015 were reviewed by the Bank who recommended an update census. Both Governments have committed to update the census prior to the civil works. The task team will make sure that this condition will be met.

Institutional arrangement for safeguards implementation: Each country involved in the project will have its own Project Implementation Unit (PIU):

For Mali, Electricité du Mali, Société Anonyme (EDM SA) will be the implementing agency. Even though EDM SA has been implementing several Bank-financed projects, its capacity in safeguards implementation remains limited, and thus needs to be further strengthened. It was therefore agreed to strengthen the existing EDM social and environmental and social safeguards unit comprised of one full time environmental safeguards specialist and one full time social safeguards specialist with experience in gender. Both Environmental and Social Safeguards Specialists will be supported by an International Senior Social and Environmental Safeguards Specialist during a three-year period to strengthen their expertise and design, build and foster their in-house technical capacity on safeguards. The 3-person safeguards team will work in tandem and closely with DNACPN, the national environmental agency at the Ministry of Environment, Sanitation and Sustainable Development and the World Bank Safeguards Specialists to ensure that environmental and social safeguards are properly addressed during project implementation.

For Guinea, Electricité de Guinée, Société Anonyme- (EDG SA) will be the implementing agency. They are currently implementing several Bank-financed projects but their safeguards capacity continues to be limited, and thus needs to be further strengthened. It was therefore agreed to strengthen the existing EDG environmental and social safeguards unit comprised of one full time environmental safeguards specialist and one full time social safeguards specialist with experience in gender by hiring an international Senior Social and Environmental Safeguards Specialist during a three-year period to strengthen their expertise and design, build and foster their in-house technical capacity on safeguards. The 3-person safeguards team will work in tandem and closely with BGEE, the national Environmental Agency at the Ministry of Environment, Waters and Forests and the World Bank Safeguards Specialists to ensure that environmental and social safeguards issues are properly addressed during project implementation.

Furthermore, this project will serve as an opportunity for both implementing agencies to build and strengthen their in-house capacity on broader social and environmental safeguards aspects directly relevant to the energy sector, such as environmental management, land acquisition and involuntary resettlement, grievance redress mechanism, stakeholders engagement, as well as systematic screening of subprojects, preparation of site specific safeguards documents, safeguards monitoring and reporting, etc. Hence, the two international Senior Social and Environmental Safeguards Specialists will respectively support EDG and EDM to design, build, train and foster a robust internal Environmental and Social Safeguards Management Unit, both at central and regional levels, that will support EDM and EDG in properly managing safeguards related risks and impacts of their operations.

The Project Implementation Manuals will detail the safeguards implementation process including reporting mechanism.

Grievance Redress Mechanism: Both the ESIA/ESMPs and the RAP prepared by the two governments have
incorporated a detailed chapter on Grievance Redress Mechanism (GRM). This will be fully implemented and monitored during the whole project life cycle.

5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.

Consultation and disclosure: During the preparation of the ESIs/ESMPs and RAPs in 2015, the two governments conducted an intensive consultation process with the main stakeholders in both countries. The ESMPs prepared by the two governments have very detailed stakeholder consultation and communication plans. These consultation and communication will be implemented and monitored during the whole project life cycle.

In Mali, the ESIA/ESMP identified the following key stakeholder:
- EDM
- Direction Nationale l’Assainissement et du Contrôle des Pollutions et des Nuisances (DNACPN)
- Direction Nationale de l’Energie (DNE)
- Le chargé des questions Foncières et Domaniales ;
- Direction Nationale des Eaux et Forêt DNEF
- Chambre Régionale de l’Agriculture
- Direction Régionale de la Réglementation et du Contrôle
- Agence Malienne pour le Développement de l’Energie Domestique et de l’Electrification Rurale (AMADER)
- Direction Nationale du Patrimoine Culturel (DNPC)
- Mission Culturelle de Kangaba
- Agence pour l’Environnement et le Développement Durable (AEDD)
- Direction Régionale de la Santé (DRS)
- Direction Régionale de l’Hydrauliques et de l’Energie (DRHE)
- Direction Régionale de l’Energie
- Société civile ;
- Direction Régionale du Génie Rural
- Organisations non Gouvernementales ;
- Maires Communaux et Ruraux concernés par le projet ;
- Présidents de Conseil de Cercle (Kangaba et Kati)
- Représentant des jeunes pour chaque Commune Urbaine et Rurale concernée par le projet ;
- Représentante des femmes pour chaque Commune Urbaine et Rurale concernée par le projet ;
- Représentants des Groupements de Producteurs par Commune Urbaine et Rurale;
Partenaires techniques et financiers.

In Guinea, the ESIA/ESMP identified the following key stakeholder:
EDG SA;
BGEE;
Sous-préfectures et mairies;
ONG, groupements et programmes ;
Direction Nationale de l’Energie;
- Direction régionale ou préfectorale de l’Environnement des Eaux et Forêts;
- Direction régionale ou préfectorale de l’Habitat et de l’Urbanism;
- Direction régionale ou préfectorale de l’Agriculture;
- Direction régionale ou préfectorale de l’Elevage;
Partenaires techniques et financiers
B. Disclosure Requirements

Environmental Assessment/Audit/Management Plan/Other

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<th>Date of submission for disclosure</th>
<th>For category A projects, date of distributing the Executive Summary of the EA to the Executive Directors</th>
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"In country" Disclosure

Resettlement Action Plan/Framework/Policy Process

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"In country" Disclosure

C. Compliance Monitoring Indicators at the Corporate Level (to be filled in when the ISDS is finalized by the project decision meeting)

OP/BP/GP 4.01 - Environment Assessment

Does the project require a stand-alone EA (including EMP) report?
Yes
If yes, then did the Regional Environment Unit or Practice Manager (PM) review and approve the EA report?
Yes
Are the cost and the accountabilities for the EMP incorporated in the credit/loan?
Yes

OP/BP 4.04 - Natural Habitats

Would the project result in any significant conversion or degradation of critical natural habitats?
Yes
If the project would result in significant conversion or degradation of other (non-critical) natural habitats, does the project include mitigation measures acceptable to the Bank?
Yes

**OP/BP 4.11 - Physical Cultural Resources**
Does the EA include adequate measures related to cultural property?
Yes
Does the credit/loan incorporate mechanisms to mitigate the potential adverse impacts on cultural property?
Yes

**OP/BP 4.12 - Involuntary Resettlement**
Has a resettlement plan/abbreviated plan/policy framework/process framework (as appropriate) been prepared?
Yes
If yes, then did the Regional unit responsible for safeguards or Practice Manager review the plan?
Yes

**OP/BP 4.36 - Forests**
Has the sector-wide analysis of policy and institutional issues and constraints been carried out?
NA
Does the project design include satisfactory measures to overcome these constraints?
Yes
Does the project finance commercial harvesting, and if so, does it include provisions for certification system?
No

**The World Bank Policy on Disclosure of Information**
Have relevant safeguard policies documents been sent to the World Bank for disclosure?
Yes
Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs?
Yes
All Safeguard Policies

Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies?
Yes

Have costs related to safeguard policy measures been included in the project cost?
Yes

Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies?
Yes

Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents?
Yes

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APPROVAL

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<th>Yussuf Uwamahoro</th>
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Approved By

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<th>Maman-Sani Issa</th>
<th>24-May-2018</th>
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<td>Charles Joseph Cormier</td>
<td>24-May-2018</td>
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<tr>
<td>Country Director:</td>
<td>Michael Hamaide</td>
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