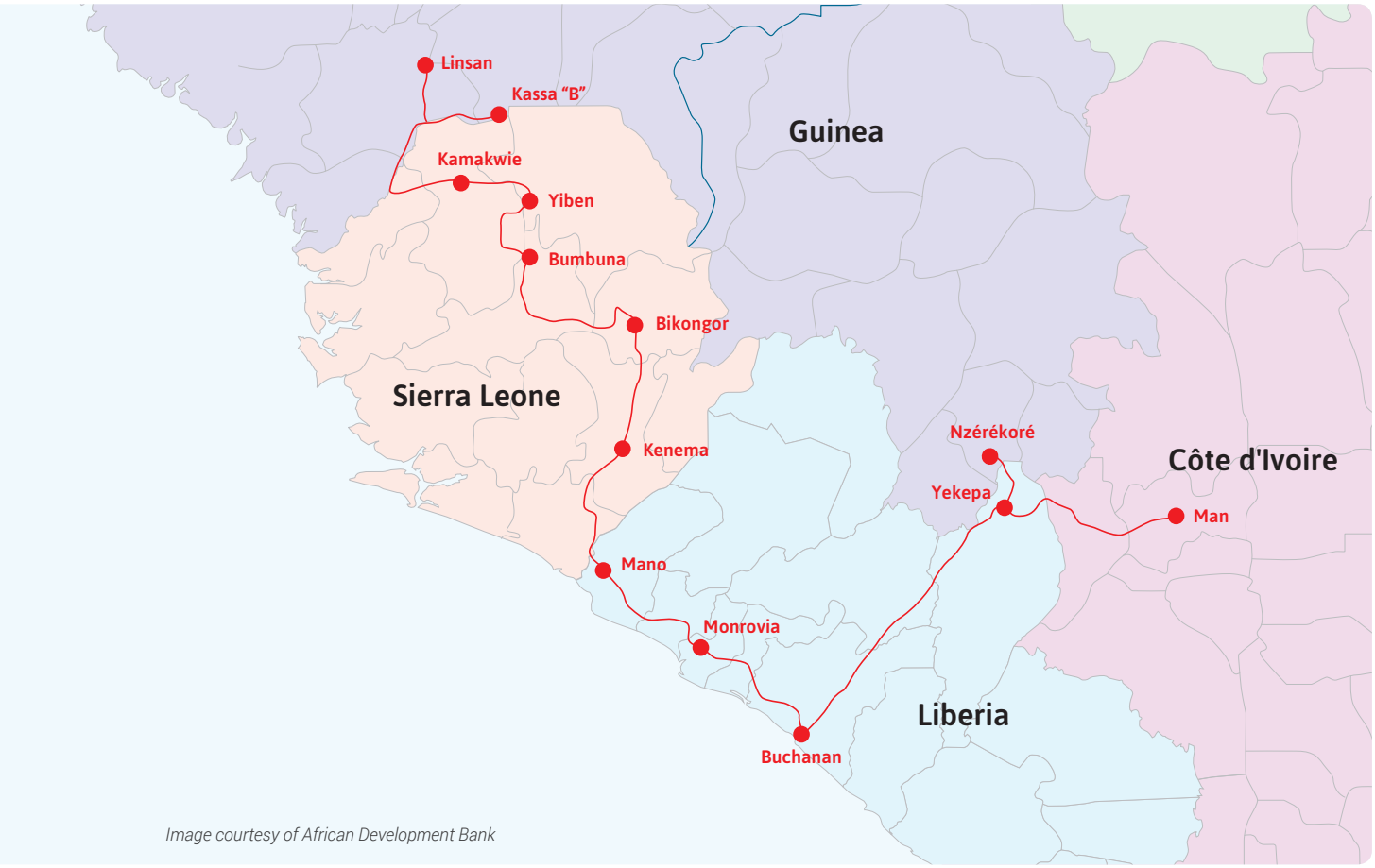

Image courtesy of African Development Bank

Côte d'Ivoire-Liberia-Sierra Leone-Guinea (CLSG) Interconnector Project

May 2019

PROJECT OVERVIEW

The USD 508.62 million CLSG Interconnector Project is a landmark cross-border project involving the construction of a transmission line of over 1,300km, with the aim to interconnect the CLSG countries' energy systems into the West Africa Power Pool (WAPP) regional energy network.

The CLSG countries are Côte d'Ivoire, Liberia, Sierra Leone and Guinea. West Africa suffers from very low levels of access to electricity and the project's goal is to balance regional energy generation resources and develop the hydropower resources in the sub-region, reducing the cost and increasing the supply of electricity to all the countries involved, thereby fostering regional economic growth.

It was accelerated as a priority project within the 2012 Economic Community of West African States (ECOWAS)'s WAPP Master Plan for the Generation and Transmission of Electrical Energy. The CLSG countries are among the most fragile countries in the ECOWAS region and the economic development impact of this project is expected to be significant. When constructed, it will constitute the first interconnection of power systems ever among these four countries, an impressive achievement given that civil and political unrest was rife in three of these four countries until only a few years ago.

The CLSG Interconnector Project will include the construction of a high voltage (225kV) transmission line through the four countries with associated substations. The expected power to be transmitted when the circuits are operational is approximately 406 MW[1]. In addition to connecting main economic centres, the project has been designed with substations to also allow for the electrification of villages along the transmission line. Construction on the line is currently underway in all four project countries.

TRANSCO CLSG, the regional transmission company owned equally by the national utilities of the four countries, was created in March 2012 by international treaty as a Special Purpose Vehicle (SPV) to finance, construct, own and operate the interconnector. The project is expected to cost a total of USD 508.62 million, financed by the European Investment Bank (EIB), the African Development Bank (AfDB), the World Bank and Kreditanstalt für Wiederaufbau (KfW), as well as the national governments involved. The project has been an impressive example of planning and collaboration, both between multiple countries and between multiple multilateral development banks (MDBs).

REGIONAL CONTEXT

Estimated demand for electricity in Sub-Saharan Africa is expected to increase fourfold between 2010 and 2040, representing an average growth of 4.5% per year. In West Africa, it is expected that demand for industrial and commercial electricity will grow faster than average, by 5.3% per year. Electricity access in West Africa, as of 2018, is at 52%; however, in many West African countries, it is much lower (see *Table 1: Overview of CLSG countries*).

While significant progress is being made in the development of the West African electricity sector, Liberia still has one of the lowest access rates in Africa, with an access rate of 20% nationally, but only 1.3% in rural areas. Similarly, in Sierra Leone, the national access rate is only 20% (2.5% in rural areas) and, with existing supplies, there are power interruptions 183 days per year, of an average duration of at least 10 hours. Like Sierra Leone, Guinea also reports a large number of power outages annually, at 1962 outages per year due to breakdowns. Of the four countries, Côte d'Ivoire enjoys the highest national electricity access rate and also has the highest installed generation capacity, hence the plan to initially export electricity from Côte d'Ivoire to the other CLSG countries once the interconnector is operational.

TABLE 1: OVERVIEW OF CLSG COUNTRIES

COUNTRY	POPULATION (2017)[2]	ANNUAL GDP GROWTH % (2017)[3]	ELECTRICITY ACCESS %, NATIONALLY (2016)[4]	INSTALLED GENERATION CAPACITY, MW (2016)[5]
Côte d'Ivoire	24,294,750	7.813	64	2178
Liberia	4,731,906	2.5	20	23
Sierra Leone	7,557,212	4.259	20	100
Guinea	12,717,176	8.207	34	566

[1] *The CLSG Interconnector has been designed as a double circuit line, but currently only one circuit is under construction. Simulations have shown that the maximum power transmitted when this first line is complete will be between 187 MW and 219 MW. When the second circuit is built, this is expected to double to between 376 MW and 440 MW, for an average of 406 MW. Detailed simulations have not yet been conducted for the transmission capacity of the second circuit.*

[2] *World Bank Open Data 2017*

[3] *World Bank Open Data 2017*

[4] *Energy Sector Management Assistance Program (ESMAP), Tracking SDG7 (using World Bank Open Data 2016)*

[5] *U.S. Aid Power Africa, Country Fact Sheets (2016)*

EXPECTED PROJECT BENEFITS

- Interconnect the four involved countries into the regional energy market in West Africa, thereby increasing opportunities for trade and the establishment of a regional power market.
- Increase access to electricity for up to approximately 24 million inhabitants.
- Increase access to electricity in rural areas, contributing to economic recovery and poverty reduction. A rural subcomponent along the transmission line is expected to benefit about 370,000 people in over 1000 local communities.
- Provide a major addition to the national transmission backbone in Liberia and Sierra Leone.
- Enable the countries, particularly Liberia and Sierra Leone, to obtain more electricity at a lower cost, by allowing power generators to access a larger regional market instead of being restricted by their respective smaller national economies.
- Improve the reliability and stability of national and regional electricity supplies by diversifying electricity sources, which will improve grid security and industrial development.
- Provide access to electricity from national or regional sources to large users that have, until now, been forced to generate their own electricity.
- Facilitate energy cost savings, particularly in Liberia and Sierra Leone, where cheaper imports through the CLSG Interconnector would replace thermal-based generation that currently constitutes the bulk of domestic electric supply.
- Reduce the use of hydrocarbon fuels (and expensive generators), resulting in the avoidance of more than 5.6 million tons of carbon over the lifetime of the project.
- Decrease the overall cost of energy production within the CLSG countries.
- Improve the financial performance of the national energy utilities involved in the project, by making available lower cost electricity for the buyers/importers (initially Liberia, Sierra Leone and Guinea), higher export revenue for the sellers (initially Côte d'Ivoire), and additional revenues by being able to dispatch more power than would otherwise have been available.

Figure 1: Project affected Persons (PAPs) receive compensation in Côte d'Ivoire.
Image courtesy of TRANSCO CLSG (https://www.flickr.com/photos/155323859@N02/albums)

West Africa Power Pool

ECOWAS BACKGROUND

The ECOWAS community, which has a total population of approximately 385 million people[6], covers a surface area of 5,105 million km² comprising 15 states[7], which differ significantly in terms of size, population, climate and availability of natural resources. An average of 60% of the total population of the ECOWAS community live in rural areas. The major energy resources for electricity production in West Africa are hydropower, oil and natural gas.

The economic community was established in 1975 with the signing of the ECOWAS Treaty, a multilateral agreement signed by the members of ECOWAS, with the aim of further economic development and integration of member states. The most recent revision of the treaty was in 1993.

The aims of the ECOWAS Treaty are as follows:

- Promote the establishment of joint production enterprises;
- Establish a common market;
- Promote joint ventures by private sector enterprises and other economic operators, in particular through the adoption of a regional agreement on cross-border investments;
- Adopt measures for the integration of the private sector, particularly the creation of an enabling environment to promote small- and medium-scale enterprises;
- Establish an enabling legal environment;
- Harmonise national investment codes leading to the adoption of a single ECOWAS community investment code; and
- Promote balanced development of the region.

Electricity consumption in West Africa is amongst the lowest in the world, but demand in the region is growing. The region's demand gap in 2040 is estimated to be 101 GW. Currently, the electricity sector in the West Africa Power Pool (WAPP) member states provides power supply to about 30% of the population. Constraints to electricity provision include inadequate generation and transmission infrastructure, limited interconnection for cross-border electricity trade, suboptimal electricity sector performance, electricity tariffs not recovering costs, low capacity diesel generators, and a lack of funding.

In recognition of the demand gap, the constraints to electricity provision, and the unequal distribution of power sources and transmission capabilities between countries, ECOWAS established WAPP, a regional power pool, in 1999, to foster a regionally integrated power market and facilitate the balanced development of diverse energy resources for the region's collective economic benefit. The WAPP Master Plan was first created in 1999, revised in 2004 and 2012, and was most recently updated in 2018 to account for changes in the sector. The WAPP has been instrumental in ensuring the coordination and cooperation of the four states involved, and their respective national utilities.

WAPP OVERVIEW

WAPP is a specialised institution of ECOWAS, covering 14 out of the 15 member states of the ECOWAS community. It was created in 1999 when the ECOWAS Heads of State and Governments came together with a vision to "*integrate the national power systems into a unified regional electricity market with the ultimate goal of providing regular and reliable energy at a competitive cost in the medium- to long-term to citizens of the ECOWAS region*".

The aim of WAPP is to facilitate the balanced development of diverse energy sources of ECOWAS member states for their collective economic benefit, through long-term energy sector cooperation, unimpeded energy transit and increasing cross-border electricity trade. Furthermore, the program aims to promote Foreign Direct Investment (FDI) in the sector.

WAPP members comprise public and private power generation, transmission and distribution entities involved in the operations of the power network system in West Africa.

[6] *ECOWAS Management of Information System for Post and Telecommunications, Member States Information*

[7] *The current ECOWAS member states are Benin, Burkina Faso, Cabo Verde, Côte d'Ivoire, the Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo.*

Figure 2: World Bank and TRANSCO CLSG site visit to Liberia
Image courtesy of TRANSCO CLSG (https://www.flickr.com/photos/155323859@N02/albums)

PLANNING AND POLITICAL COOPERATION

The WAPP Master Plan has been central to gaining financing and support to a pipeline of energy projects in the region, including the CLSG Interconnector, and provides the overall strategy and framework for preparing and implementing all WAPP priority projects[8]. The Master Plan is important, as it allows the various agents in the electricity sector to have a clear view of the future development of electricity generation and transmission infrastructure in West Africa and informs the decision-making of stakeholders during project implementation.
The 2018 Master Plan establishes a list of 75 priority projects in electricity generation and transmission and has established a total investment requirement of USD 36.39 billion for the period 2019-2033.

On 5 March 2012, TRANSCO CLSG, the SPV created for the CLSG Interconnector project, was established by international treaty signed by the Heads of States of the four concerned countries. The treaty provides the legal framework under which the entire project will be implemented, whilst the International Project Agreement (IPA) provides the details for operationalising the treaty's obligations and making the SPV operational (see the section on *Contractual Structure*). The IPA is an agreement between the four countries and the SPV, whereby the countries granted to the SPV the rights agreed to in the treaty and required the SPV to implement the project.

LEGAL FRAMEWORK

The ECOWAS Energy Protocol, adopted in 2003, establishes a legal framework in order to promote long-term cooperation in the energy field, based on complementarities and mutual benefits, with a view to achieving increased investment in the energy sector, and increased energy trade in the West Africa region. With respect to the electric power sector, the protocol provides for open and non-discriminatory access to power generation sources and transmission facilities and establishes an enforcement mechanism supported by the ECOWAS Commission.

[8] *Priority projects are taken from the WAPP Master Plan and have been defined by the Secretary General of the WAPP in collaboration with the Donor Coordination Committee, which consists of representatives of the major aid donors, energy sector development partners, and members of the WAPP Steering Committee. Selection criteria for priority projects includes a minimum size of 150MW, regional vocation (location, energy sharing between countries, regional importance), and conformance to the Regional Transmission Master Plan.*

PROJECT TIMELINE

Key dates in the project timeline are shown below:

2008
CLSG Interconnector identified as a priority project in the updated WAPP Master Plan.

October 2009
Scoping report of Environmental and Social Impact Assessment (ESIA) is issued and public consultation proceedings begin.

December 2011 – March 2012
Treaty is negotiated and signed between the four countries establishing the Special Purpose Vehicle 'TRANSCO CLSG'. The treaty establishes the main principles of the International Project Agreement.

May 2012
The project is approved by the World Bank Board.

August 2012
Initial financing for the project is provided by the World Bank.

December 2012
EIB loan of USD 75 million to Sierra Leone is signed.

December 2012
KfW provides a grant to the Government of Liberia.

August 2013
The Shareholder's Agreement and the Article of Association are signed by the national utilities of the CLSG countries.

November 2013
The International Project Agreement is signed by the four participating countries and TRANSCO CLSG.

November 2013
AfDB grants and loans to the four CLSG countries are signed.

September 2014
TRANSCO CLSG becomes operational following the appointment of its General Manager. Its headquarters are agreed to be in Abidjan, Côte d'Ivoire later in 2014.

2016
The first PPAs are signed under the CLSG Interconnector Project, for the sale of 81 MW from Côte d'Ivoire to Liberia, Sierra Leone and Guinea (27 MW each)[9].

June 2017
The project is inaugurated on the sideline of the ECOWAS Heads of State Summit in Monrovia, Liberia.

December 2017 – January 2018
Additional financing to fill financing gaps is approved by the World Bank.

January 2018
Construction activities begin in Liberia.

2019
Expected commissioning.

December 2020
Closing date of the project loans and technical assistance loans.

[9] *These PPAs are expected to become effective once the line is commissioned.*

CONTRACTUAL STRUCTURE

A Special Purpose Vehicle (SPV) was established to be contractually and legally responsible for project implementation, established by the four state-owned power utilities in accordance with an international treaty to ensure construction, ownership, exploitation and development of power transport infrastructure for the project.

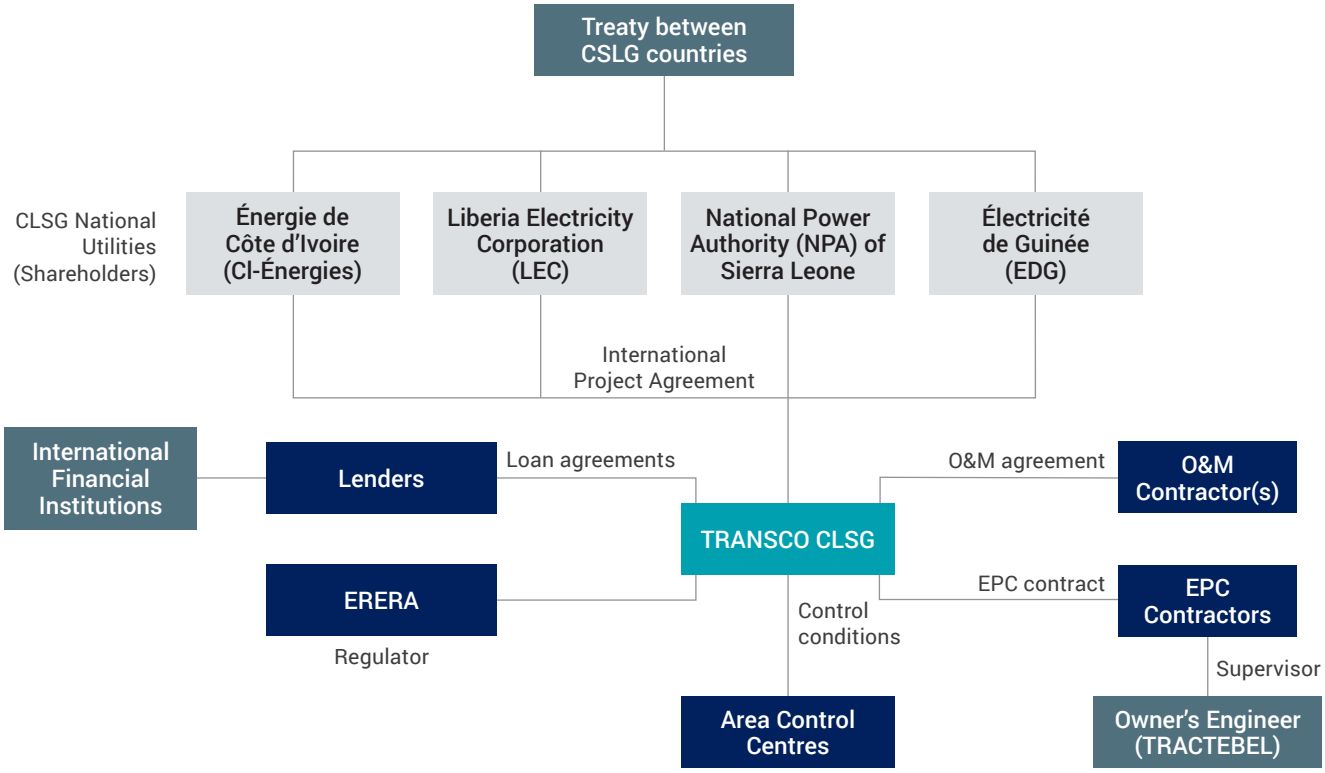

Diagram acknowledgement: CAREC Program

TRANSCO CLSG, i.e. the SPV (as the party purchasing electricity), will sign power purchase agreements (PPAs) with the various CLSG national utilities (as the parties generating electricity). There is also a Transmission Service Agreement between the CLSG national utilities and the SPV.

INSTITUTIONAL AND IMPLEMENTATION ARRANGEMENTS

TRANSCO CLSG will implement the transmission line components. The WAPP Secretariat will carry out capacity building for WAPP and the countries, and will monitor the construction of the rural electrification distribution network. The rural electrification sub-component will be implemented by the CLSG national utilities on behalf of each state.

Financing and Grant Funding

The project is jointly financed by the World Bank, the African Development Bank (AfDB), Kreditanstalt für Wiederaufbau (KfW) and the European Investment Bank (EIB) as lead financial institutions. An initial financing package of USD 445.5 million was approved in 2012.

Additional financing has also since been approved, due to losses from exchange rate fluctuations, variations of costs between estimates in 2009 and actual bid amounts in 2016, post-Ebola effects, additional budget for TRANSCO CLSG due to delays, and a provision for price and cost contingencies on all contracts. The total amount of additional financing was USD 109.5 million, provided by the World Bank (to Sierra Leone and Liberia) and KfW (to Liberia).

The project also benefited from a number of grant funds, such as those provided by the United Kingdom and other European Union (EU) countries through the EU-Africa Infrastructure Trust Fund (EU-AITF) for updating the WAPP Master Plan, pre-investment studies and Environmental and Social Impact Assessments (ESIA). In addition, a grant of EUR 12.5 million was blended with the EIB loan to Sierra Leone for the transmission line and substations in Sierra Leone to make the finance more concessional, and another EU-ATF grant was obtained by the AfDB to help support the rural electrification component in the villages alongside the transmission line. The EIB also requested grant funding from the EU-AITF to start the feasibility studies and to finance the owner's engineer for the project.

Final financing and grant funding amounts (as of December 31, 2017) can be found in the table below.

FINANCIAL INSTITUTION	RECIPIENT COUNTRY	FORM	AMOUNT (M)	TOTAL (USD M)
EIB	Sierra Leone	Interest Rate Subsidies	EUR 12.5	84.37
		Loan	EUR 75	
AfDB	Côte d'Ivoire	Grant	UA[10] 26.173	122.68
	Liberia	Loan	UA 8.102	
	Sierra Leone	Loan	UA 6.67	
		Loan	UA 14.5	
		Grant	UA 1.535	
	Guinea	Loan	UA 28.91	
		Grant	UA 0.834	
World Bank	Liberia	Credit	SDR[11] 93.3	238.97
		Grant	SDR 16	
	Sierra Leone	Credit	USD 59.75	
KfW	Liberia	Grant	EUR 31	41.95
CLSG Governments	All CLSG countries	Equity	USD 20.65	20.65
Total Financing and Grant Funding				**508.62[12]**

Source: CLSG Interconnection Auditor's Report, Year Ended 31 December, 2017. Financing amounts have been kept in their original currency to avoid conversion error.

[10] *UA is the official currency for AfDB projects. 1 UA = 1 SDR (see footnote below).*

[11] *Special Drawing Rights (SDR) are supplementary foreign-exchange assets created by the International Monetary Fund (IMF), which can be exchanged for the freely usable currencies of IMF members. The value of the SDR is based on the US dollar, the Euro, the Chinese renminbi, the Japanese yen and the British pound. The SDR value in terms of the US dollar is determined daily based on the spot exchange rates observed at noon London time.*

[12] *This final total financing amount is less than the sum of the two approved financing packages due to foreign exchange losses of the SDR and UA, and exchange rate fluctuations between 2012 and 2017.*

In addition to the amounts shown in the table opposite, the AfDB provided considerable financing and grant funding in the form of grants and loans to the CLSG countries for the rural electrification sub-component of the project (more details on this are provided in the section below on *Rural Electrification Sub-component*) and for capacity building activities.

An important aspect of the project has been the coordination between governments and different MDBs. The AfDB is financing infrastructure in all four of the participating countries. The World Bank is financing infrastructure contracts in Liberia and Sierra Leone, as well as the institutional framework and oversight of the project, including the assignment of the owner's engineer and the functioning of the SPV. The EIB has provided a loan to the Government of Sierra Leone that is on-lent to TRANSCO CLSG. It has also accessed the EU-AITF to provided interest rate subsidies to the Government of Sierra Leone, allowing the nation to borrow on concessional terms and boosting the financial viability of the project. KfW has provided a grant to the Government of Liberia, which has been on-granted to TRANSCO CSLG. The four CLSG countries have also contributed equity to the project for the implementation of the Environmental and Social Management Plan (ESMP) and Resettlement Action Plan (RAP), and for the payment of interest during construction and cost contingencies.

The blending of finance with grant funds along with the involvement of the MDBs has been an important aspect of the project, given the low-income status of the countries involved and debt sustainability concerns.

Figure 3: Corridor clearing in Côte d'Ivoire
Image courtesy of TRANSCO CLSG (https://www.flickr.com/photos/155323859@N02/albums)

Rural Electrification Sub-component

The rural electrification sub-component of the project refers to the electrification of rural communities living in the vicinity of the 225kV CLSG Interconnector line. Since this sub-component mainly has a social focus, the selection of localities is predominantly based on the geographical situation of the locality in relation to the route of the line, and is limited to communities within 10km on either side of the line.

Four types of supply were considered:

- supply from the source sub-stations of the CLSG network;
- supply from 34.5kV insulated overhead ground wires;
- the use of photovoltaic solar energy for individual or collective supply; and
- supply from the existing network.

This sub-component is co-financed by the African Development Bank and the EU-AITF and, according to the budget allocated to each country for this component, 54 localities have been electrified in Côte d'Ivoire; at least 18 (and potentially up to 32) localities will be electrified in Guinea; at least 18 (and potentially up to 28) localities in Liberia; and 26 localities in Sierra Leone.

This sub-component will provide electricity to thousands of homes, hundreds of schools, health centres, community centres and places of worship which are located in the vicinity of the CLSG Interconnector line.

Risk Mitigation

RISK	MITIGATION TECHNIQUE
Political Risk	The project involves four fragile post-conflict countries, giving rise to significant political risks. A treaty between the four states was signed to establish a regional transmission company, confirming their commitment to the project, and a comprehensive legal framework has been developed to minimise the risk of political interference.
Governance Risk	The WAPP Secretariat will continue to promote regional integration among the CLSG countries. Furthermore, TRANSCO CLSG will develop, own, maintain and operate the transmission line, minimising direct involvement of the governments and stakeholders, and making potential interference by third parties more transparent.
Financial Risk	Significant risks exist in the early years due to the potentially low utilisation of the line, and in setting up and maintaining the financial stability of the SPV. A financial model has been prepared by the World Bank for the project, with financial forecasts for the SPV, addressing the project's feasibility. The EU contribution aims at securing financial stability in the initial phase. An upfront subsidy was used to make the EIB loan to Sierra Leone more concessional, and this will be used to cover loan repayments due from the SPV. This support will help limit the financial risk of the project in the early years of operation by reducing the costs the SPV will have to face at a time when trading through the line is gradually increasing.
Performance Risk	The electricity sector performance in three of the countries involved, namely Liberia, Sierra Leone and Guinea, remains weak. Their national power utilities suffer from a lack of capacity and low financial viability, and as the main off-takers of the project, this presents a risk for the SPV. The PPAs between Côte d'Ivoire's CI-Énergies and the three other national utilities, signed before the project comes into effect, will ensure the regional line will be put into use as soon as it enters service, generating revenue for TRANSCO CLSG. In addition, the financing agreements between the international financiers and the participating countries stipulate that, in the event that TRANSCO CLSG's revenues fall short of covering the project's debt service obligations, the four governments are responsible for making up the shortfall.
Environmental Risk	The Environmental and Social Impact Assessment (ESIA) was prepared in accordance with the Environmental Impact Assessment Guide in ECOWAS related to the energy sector, the regulation of the CLSG countries, and the requirements of the funding institutions. Environmental Protection Agencies (EPAs) are responsible for validating the Terms of Reference of the ESIA, assessing the ESIA report and monitoring the implementation of the Environmental and Social Management Plan (ESMP) to ensure compliance. There are environmental mitigation measures in the four project countries, which include implementing reforestation programs to reconstruct the natural environment.

RISK	MITIGATION TECHNIQUE
Social Risk	The Korean Electric Power Corporation (KEPCO), with funding from the EU-AITF, the EIB and KfW, was contracted by WAPP to prepare a full Resettlement Action Plan (RAP) for each country to establish the nature and extent of the impact on the communities along the transmission line. The Project Affected Persons (PAPs) fall within the following categories: people who live within the Right of Way (RoW), people who farm in the RoW, people who only live and cultivate seasonably in the RoW, and people who own structures in the RoW. Generally, lack of legal ownership to land will not prevent PAPs from compensation if customary authorities confirm proof of occupancy of land. In Côte d'Ivoire, approximately 692 people (in 43 villages) and 37 businesses will have to be resettled. In Liberia, 1151 people (in 35 villages) and 32 businesses will be affected by the project. In Sierra Leone, 3312 people (in 24 chiefdoms) and 38 businesses will require resettlement. In Guinea, 112 people (in six rural communities) plus 35 businesses will be affected by the project. In total, the project will result in the physical and/or economic displacement of a total of 5267 PAPs in the four countries. TRANSCO CLSG will ensure compensation at fair market value of agricultural property and land expropriated, allocation of new housing or better conditions, and training and/or mentoring for new jobs to all PAPs. Cash compensation is anticipated based on national regulations and in compliance with the AfDB's Involuntary Resettlement Policy and the World Bank's Operational Policy OP 4.12. Monitoring and evaluation mechanisms are an integral part of all the RAPs, and include qualitative and quantitative indicators, including the social and economic welfare of PAPs, monitoring of vulnerable groups, and the effectiveness of grievance mechanisms.
Stakeholder Risk	The project company is collaborating with National Committees of the CLSG countries to launch local committees in the specific project-affected towns and villages, and awareness campaigns. Local committees include representatives of various sector ministries and agencies that are involved in the implementation of the project and local government authorities. They will hold meetings, make decisions on local matters at local level and report to the National Committees. Public consultation took place in all four countries with PAPs, using participatory and other approaches, including household surveys, structured questionnaires, public sensitisation, community meetings, focus group meetings, public meetings and work sessions with administrators. PAPs were able to provide feedback on project sites and compensation modalities. The consultation process will continue for the duration of the project, including throughout the construction and operations phases.

Additional details on the CLSG Interconnector Project can be found at:

https://www.transcoclsg.org/

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