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Report No: PAD2055

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON

A PROPOSED GRANT

IN THE AMOUNT OF SDR 86.9 MILLION
(US$118 MILLION EQUIVALENT)

AND

A PROPOSED CREDIT

IN THE AMOUNT OF SDR 19.9 MILLION
(US$27 MILLION EQUIVALENT)

TO THE

DEMOCRATIC REPUBLIC OF CONGO

FOR AN

ELECTRICITY ACCESS AND SERVICES EXPANSION PROJECT

APRIL 10, 2017

Energy and Extractives Global Practice
Africa Region

CURRENCY EQUIVALENTS
(Exchange Rate Effective February 28, 2017)

Currency Unit	=	
0.73861244 SDR	=	US$1
1.353890004 US$	=	SDR 1

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AfDB	African Development Bank
ANSER	*Agence Nationale des Services Énergétiques Ruraux* (National Agency for Rural Energy Services)
ARE	*Agence de Régulation de l'Électricité* (Electricity Regulatory Agency)
CAS	Country Assistance Strategy
CSF	Credit Support Facility
CSPP	*Cellule de Suivi des Programmes et Projets* (Programs and Projects Monitoring Unit)
DA	Designated Account
DFI	Designated Financial Intermediary
DFID	U.K. Department for International Development
DRC	Democratic Republic of Congo
EDC	*Electricité Du Congo* (Electricity of Congo)
EIRR	Economic Internal Rate of Return
ENK	*Energie du Nord Kivu* (Energy of North Kivu)
ESIA	Environmental and Social Impact Assessment
ESMAP	Energy Sector Management Assistance Program
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FIRR	Financial Internal Rate of Return
FM	Financial Management
FPM SA	*Fonds pour l'inclusion financière en République Démocratique du Congo* (Financial Inclusion Fund – Democratic Republic of Congo)
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIZ	*Deutsche Gesellschaft furInternationale Zusammenarbeit* (German Agency for International Cooperation)
GoDRC	Government of the Democratic Republic of Congo
GRS	Grievance Redress Service
GW	Gigawatt
ICB	International Competitive Bidding
IDA	International Development Association
IFC	International Finance Corporation
IFI	Intermediary Financial Institution
IFR	Interim Financial Report
IPPF	Indigenous People Planning Framework
KfW	*Kreditanstalt für Wiederaufbau (German Government-owned Development Bank*)

Km	Kilometer
kVA	Kilovolt Ampere
kWh	Kilowatt Hour
LV	Low Voltage
M&E	Monitoring and Evaluation
MALT	*Mise à la Terre* (Pole-mounted Transformer)
MERH	*Ministère de l'Energie et des Ressources Hydrauliques* (Ministry of Energy and Water Resources)
MoU	Memorandum of Understanding
MTF	Multi-Tier Framework
MV	Medium Voltage
MW	Megawatt
NCB	National Competitive Bidding
NGO	Nongovernmental Organization
NPV	Net Present Value
O&M	Operations and Maintenance
OP/BP	Operational Policy/Bank Procedure
PDO	Project Development Objective
PFI	Participating Financial Institution
PMEDE	*Projet de développement des Marches d'Electricité pour la consommation Domestique et à l'Exportation* (Regional and Domestic Power Markets Project)
PIU	Project Implementation Unit
REF	Rural Electrification Fund
RPF	Resettlement Policy Framework
SAPMP	Southern Africa Power Markets Project
SDR	Special Drawing Right
SE4ALL	Sustainable Energy for All
SNEL	*Société Nationale d'Electricité* (National Electricity Utility)
SSS	Single-Source Selection
ToR	Terms of Reference
UCM	*Unité de Coordination et de Management des Projets* (Project Coordination and Management Unit)
UNDB	United Nations Development Business
UNDP	United Nations Development Programme
USAID	U.S. Agency for International Development
WB	World Bank

Regional Vice President:	Makhtar Diop
Country Director:	Ahmadou Moustapha Ndiaye
Senior Global Practice Director:	Riccardo Puliti
Practice Manager:	Wendy Hughes
Task Team Leaders:	Alain Ouedraogo, Malcolm Cosgrove-Davies

DEMOCRATIC REPUBLIC OF CONGO
Electricity Access and Services Expansion Project

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PAD DATA SHEET

Congo, Democratic Republic of

DRC Electricity Access and Services Expansion (EASE) (P156208)

PROJECT APPRAISAL DOCUMENT

AFRICA

Energy and Extractives Global Practice

Report No.: PAD2055

Basic Information			
Project ID P156208	EA Category B - Partial Assessment		Team Leader(s) Alain Ouedraogo,Malcolm Cosgrove-Davies
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints [X] - Fragile States		
	Financial Intermediaries [X]		
	Series of Projects [ ]		
Project Implementation Start Date 01-May-2017	Project Implementation End Date 31-Oct-2022		
Expected Effectiveness Date 30-Oct-2017	Expected Closing Date 31-Oct-2022		
Joint IFC No			
Practice Manager/Manager Wendy E. Hughes	Senior Global Practice Director Riccardo Puliti	Country Director Ahmadou Moustapha Ndiaye	Regional Vice President Makhtar Diop

Borrower: The Democratic Republic of Congo (*Republique Democratique du Congo*)			
Responsible Agency: *Unite de Coordination et de Management des projets* (UCM), Ministry of Energy and Water Resources (Ministère de l'Energie et des Ressources Hydrauliques, MERH)			
Contact:	Maximillien Munga	Title:	Coordonnateur
Telephone No.:	0024381750852	Email:	maxmunga@gmail.com

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

Total Project Cost:	147.00	Total Bank Financing:	145.00
Financing Gap:	0.00		

Financing Source	Amount
BORROWER/RECIPIENT	2.00
International Development Association (IDA)	27.00
IDA Grant	118.00
Total	147.00

Expected Disbursements (in US$ Million)

Fiscal Year	2018	2019	2020	2021	2022	2023
Annual	0.50	2.50	27.00	60.00	35.00	20.00
Cumulative	0.50	3.00	30.00	90.00	125.00	145.00

Institutional Data

Practice Area (Lead)

Energy & Extractives

Contributing Practice Areas

Finance & Markets

Proposed Development Objective(s)

The Project development objective is to expand access to electricity in target areas.

Components

Component Name	Cost (USD Millions)
Network Upgrades and Access Expansion in Selected SNEL Service Areas	95.00
Private Sector Based Access Expansion	25.00
Sector Development and Implementation Support	25.00

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	High
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 [ ]
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**

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Legal Covenants

Name	**Recurrent**	**Due Date**	**Frequency**
Counterpart Fund Account. Schedule 2, Section V, C, 1 of the Financing Agreement.	X		

Description of Covenant
For purposes of the Project (other than Part B.1 thereof), the Recipient shall open, in a commercial bank acceptable to the Association, and on terms and conditions acceptable to the Association, a

counterpart fund account ("Counterpart Fund Account") to be operated and maintained by UCM, into which the Recipient shall deposit from time to time its local counterpart contribution to the cost of the Project.			
Name	**Recurrent**	**Due Date**	**Frequency**
Initial Deposit into the Counterpart Fund Account. Schedule 2, Section V, C, 2 of the Financing Agreement.	**X**		
Description of Covenant The Recipient shall make an initial deposit of US$150,000 into the Counterpart Fund Account, and thereafter replenish the Counterpart Fund Account on a quarterly basis, by depositing therein an amount equal to the difference between the outstanding balance of the Counterpart Fund Account and the Recipient's estimated counterpart funding contribution to the cost of the Project for the next quarterly period, or such other amount as shall have been agreed between the Recipient and the Association.			
Name	**Recurrent**	**Due Date**	**Frequency**
Completion of Compensation and Resettlement Measures prior to Civil Works. Schedule 2, Section I, F, 5 (c) of the Financing Agreement.	X		
Description of Covenant In the case of any Subproject involving potential adverse impacts or the threat of potential adverse impacts upon Displaced Persons, the Recipient or the Designated Financial Intermediary shall ensure that no physical works shall commence or be allowed to commence, and no displacement or restriction of access to legally designated parks and protected areas shall occur or be allowed to occur, unless and until all necessary upfront resettlement measures consistent with the RPF, RAP, ARAP, as the case may be, have been undertaken, and, except as otherwise agreed with the Association, full payment of monetary compensation and other relocation and relocation-related assistance effected in favor of Displaced Persons.			
Name	**Recurrent**	**Due Date**	**Frequency**
Monitoring of Safeguards Instruments Implementation. Schedule 2, Section I, H, 1 of the Financing Agreement.	X		
Description of Covenant The Recipient shall take steps to monitor on a continuing basis the implementation of the Safeguard Instruments and ensure that the Project is executed in strict accordance with such Safeguard Instruments, and, upon the occurrence of any event or condition likely to interrupt or interfere with the smooth implementation of the Safeguard Instruments, the Recipient shall act promptly to deal with or address such event or condition, and inform the Association accordingly.			
Name	**Recurrent**	**Due Date**	**Frequency**
Monitoring of Safeguards Instruments Implementation. Schedule 2, Section I, F, 5 (a) of the Financing Agreement	X		

Description of Covenant

The Designated Financial Intermediary (DFI) shall take steps to monitor on a continuing basis the implementation of the Safeguard Instruments and ensure that Part B.1 of the Project is executed in strict accordance with such Safeguard Instruments, and, upon the occurrence of any event or condition likely to interrupt or interfere with the smooth implementation of the Safeguard Instruments, DFI shall act promptly to deal with or address such event or condition, and inform the Recipient and the Association accordingly.

Conditions

Source Of Fund	Name	Type
IDA	Subsidiary Agreement Execution. Artivel V, 5.01 (a) of the Financing Agreement.	Effectiveness

Description of Condition

The SNEL Subsidiary Agreement has been executed on behalf of the Recipient and the Project Implementing Entity.

Source Of Fund	Name	Type
IDA	Project Implementation Manual. Article V, 5.01 (b) of the Financing Agreement.	Effectiveness

Description of Condition

The Project Implementation Manual (other than the Part B.1 Operations Manual and Part B.2 Operations Manual) has been prepared and adopted, in form and substance acceptable to the Association.

Source Of Fund	Name	Type
IDA	Designated Account. Article V, 5.01 (c) of the Financing Agreement.	Effectiveness

Description of Condition

The Recipient has opened a designated account in a financial institution acceptable to the Association, and caused UCM to upgrade its computerized information system.

Source Of Fund	Name	Type
IDA	Recruitment of Key Personnel. Article V, 5.01 (d) of the Financing Agreement.	Effectiveness

Description of Condition

The Recipient has recruited the key personnel, including the Project coordinator, social development specialist, environmental safeguards specialist, procurement specialist, administrative and financial officer, internal auditor and accountant, and prepared draft terms of reference, acceptable to the Association, for the recruitment of an external auditor.

Source Of Fund	Name	Type
IDA	Retroactive Financing. Schedule 2, Section IV, B, 1 (a) of the Financing Agreement.	Disbursement

Description of Condition

Notwithstanding the provisions of Part A of this Section, no withdrawal shall be made for payments made prior to the date of this Agreement, except that withdrawals up to an aggregate amount of the Grant not to exceed SDR 21,000,000 may be made for payments made prior to this date but on or after May 26, 2016, for Eligible Expenditures under Categories (1) and (3) (a).

Source Of Fund	Name	Type
IDA	Counterpart Funding prior to civil works. Schedule 2, Section IV, B, 1 (b) of the Financing Agreement.	Disbursement

Description of Condition

Notwithstanding the provisions of Part A of this Section, no withdrawal shall be made, under Categories (1) (b), 2 (b) or 3 (b), unless the Counterpart Fund Account has been opened, and the amount of the initial deposit specified in Section V.C.2 of the Project execution Schedule of the Financing Agreement, duly deposited therein.

Source Of Fund	Name	Type
IDA	DFI Subsidiary Agreement. Schedule 2, Section IV, B, 1 (c) (i) of the Financing Agreement.	Disbursement

Description of Condition

Notwithstanding the provisions of Part A of this Section, no withdrawal shall be made under Category (2), unless the DFI Subsidiary Agreement has been executed on behalf of the Recipient and the Designated Financial Intermediary, and there has been furnished to the Association an opinion or opinions, satisfactory to the Association, of counsel acceptable to the Association, or, if the Association so requests, a certificate satisfactory to the Association of a competent official of the Recipient, showing, on behalf of the Recipient, that the DFI Subsidiary Agreement has been duly authorized or ratified by the Recipient and the Designated Financial Intermediary, and is legally binding upon the Recipient and the Designated Financial Intermediary in accordance with its terms.

Source Of Fund	Name	Type
IDA	Operations Manual of the Credit Support Facility. Schedule 2, Section IV, B, 1 (c) (ii) of the Financing Agreement.	Disbursement

Description of Condition

Notwithstanding the provisions of Part A of this Section, no withdrawal shall be made under Category (2), unless the Part B.1 Operations Manual has been prepared and adopted, in form and substance acceptable to the Association, by the Designated Financial Intermediary.

Source Of Fund	Name	Type
IDA	DFI participation Agreement. Schedule 2, Section IV, B, 1 (c) (iii) of the Financing Agreement.	Disbursement

Description of Condition

Notwithstanding the provisions of Part A of this Section, no withdrawal shall be made under Category (2), unless the Designated Financial Intermediary has concluded at least one Participation Agreement with a Participating Financial Institution and identified a pipeline of at least one Subproject.

Source Of Fund	Name	Type

IDA	Operations Manual and decision-making process framework of the Electrification Fund. Schedule 2, Section IV, B, 1 (d) (i) (ii) of the Financing Agreement.	Disbursement

Description of Condition
Notwithstanding the provisions of Part A of this Section, no withdrawal shall be made under Category (3), unless (i) the Part B.2 Operations Manual has been prepared and adopted, in form and substance acceptable to the Association, by UCM; and (ii) there is in place a decision-making process framework, acceptable to the Association.

Team Composition

Bank Staff

Name	Role	Title	Specialization	Unit
Alain Ouedraogo	Team Leader (ADM Responsible)	Energy Specialist	Energy Specialist	GEE07
Malcolm Cosgrove-Davies	Team Leader	Lead Energy Specialist	Energy Access Global Lead	GEEDR
Clement Tukeba Lessa Kimpuni	Procurement Specialist (ADM Responsible)	Senior Procurement Specialist	Procurement Specialist	GGO07
Francis Tasha Venayen	Financial Management Specialist	Financial Management Specialist	Financial Management Specialist	GGO25
Abdoulaye Gadiere	Safeguards Specialist	Senior Environmental Specialist	Sr. Environment	GEN07
Allison Berg	Team Member	Senior Operations Officer	Operations	GEE08
Amadou Mamadou Watt	Team Member	Energy Specialist	Economist	GEE07
Claude Lina Lobo	Safeguards Specialist	Consultant	Environmental Safeguards Specialist	GENDR
Claudia M. Pardinas Ocana	Counsel	Senior Counsel	Legal	LEGAM
Daniel Pajank	Team Member	Young Professional	Financial Sector Specialist	GFM07
Ezgi Canpolat	Team Member	Consultant	Gender	GSP06
Grace Muhimpundu	Safeguards Specialist	Jr Professional Officer	Social Development Specialist	GSU01

Issa Thiam	Team Member	Finance Officer	Finance	WFALA
Jeannine Kashosi Nkakala	Team Member	Program Assistant	Administration	AFCC2
Jose Francisco Perez Caceres	Team Member	Energy Specialist	Energy Specialist	GEE08
Lucienne M. M'Baipor	Safeguards Specialist	Senior Social Development Specialist	Senior Social Safeguards Specialist	GSU01
Marie-Paule Ngaleu	Team Member	Senior Executive Assistant	Administration	GEE01
Natalie Tchoumba Bitnga	Team Member	Program Assistant	Administration	GEE07
Renganaden Soopramanien	Counsel	Consultant	Legal	LEGAM

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
DRC	**Kinshasa Province**		**X**		
DRC	**North Ubangui Province**		**X**		

I. STRATEGIC CONTEXT

A. Country Context

1. The Democratic Republic of Congo (DRC), located in Central Africa and bordering nine countries, is the largest and fourth most populous country in Sub-Saharan Africa, with a land surface area of 2.3 million km^2 and an estimated population of about 77 million inhabitants. In 2015, the country was divided into 26 provinces (from 11 previously), including the capital city of Kinshasa. Fifty-eight percent of the population live in rural areas, a figure expected to decrease to 40 percent by 2050 according to United Nations' forecasts, due to ongoing rapid urbanization. The DRC has vast natural resources, including the world's third largest hydropower potential (behind China and Russia), the world's second largest tropical forest area, and substantial concentrations of mineral wealth.

2. The DRC has been negatively affected by declining commodity demand and prices, which has worsened the already weak resource mobilization. The DRC combines one of the highest ratios of natural resources rent to gross domestic product (GDP) in the world (36 percent of GDP in 2012 and 16^{th} position) with one of the lowest domestic revenues to GDP ratios (14.4 percent of GDP and 104^{th} position out of 117 countries for which data was available in 2012). These low levels of revenues reduce the fiscal space and the ability of the Government of the Democratic Republic of Congo (GoDRC) to implement economic and social development programs. In addition, high dollarization (86 percent of deposits and 91 percent of loans) is not allowing monetary policy to play any role in strengthening the resilience of the economy.

3. GDP growth in 2015 declined to 6.9 percent from 9.5 percent in 2014 and may not exceed 2.7 percent in 2016. The quantities of oil and mining products during the first half of 2016 declined by 8.6 percent compared to 2015. The quantities of cement sold and port activities also declined, pointing to a slowdown. Preliminary figures show revenues dropping by 12.4 percent over the first seven months of 2016. This decline motivated the GoDRC to cut the 2016 budget by 22 percent to keep spending under control. Nonetheless, subject to significant downside risks, the medium-term outlook could be positive. Growth in 2017–2018 would benefit from a gradual recovery in the extractives sector and from the expansion in agriculture and services. In the longer term, the DRC has the potential to achieve significant economic growth and job creation. However, unlocking this potential requires substantial policy and governance reforms and investments in infrastructure and human capital.

4. Poverty is declining but remains widespread. In 2014, 73.7 percent of the population lived below the US$1.90 international poverty, a decrease from 77.2 percent in 2012. Nonetheless, with a 2015 gross national income per capita of US$410 and pervasive inequality, the DRC's population is among the poorest in the world. In 2015, the country ranked 176 out of 188 on the Human Development Index, and the country did not achieve any of the Millennium Development Goals by the end of 2015. The poverty level underscores major challenges to provide, maintain, and expand services (transport, water, electricity, and so on) following the collapse of infrastructure as a result of the 1997–2003 civil war.

5. Political tensions have recently increased because of the presidential election. Originally scheduled for December 2016, the election has been postponed to April 2018. In the meantime, a caretaker Prime Minister and a new cabinet has been appointed.

B. Sectoral and Institutional Context

6. The power sector faces major challenges, including low generation capacity, limited and fragmented networks, inefficient institutions, and low electricity access. The DRC's total hydropower potential of 40 Gigawatt (GW) could yield transformative returns for the country's economic development. Yet, despite hydropower being abundant, resilient to seasonality, inexpensive, and clean, only 2.5 percent of this hydropower potential has been exploited. The installed hydropower capacity is estimated at around 2,563 Megawatt (MW), of which almost half is not operational. In contrast, peak power demand reached 4,051 MW in 2012, revealing a huge demand-supply gap. The gap is expected to widen further, with demand forecasts projecting a need for an additional 4,000 MW by 2020.

7. **Power transmission and distribution, under the management of the state-owned utility, has suffered from various ailments, and service has been limited.** The majority of the installed generation capacity is connected to limited and fragmented grids. There are three separate major transmission grids: (a) the Inga-Katanga backbone; (b) the North Kivu grid; and (c) the South Kivu grid. Aside from these grids, the overall network picture is one of scattered, relatively small pockets of independent grids, including mini- and micro-grids, ranging from 10 Kilowatt Hour (kWh) to 10 MW. Towns and villages where power is available are mainly supplied by medium-scale private operators (for example, *Electricité du Congo* in Tshikapa, in the Kasai Province); mining companies that supply neighboring households as part of their corporate social responsibility engagement; faith-based and nongovernmental organizations (NGOs); public-private partnerships at provincial levels; and the rural electrification department of the state-owned power utility, (*Société Nationale d'Électricité,* SNEL). Many mini-grids that date back to independence have been abandoned, leaving cities with new provincial capital-status towns without grid-connected electricity service.

8. Key power delivery institutions have suffered from lack of investments, operational inefficiencies, and governance issues. SNEL, the vertically integrated, state-owned, power generation, transmission, and distribution utility, has been operating with tariffs that are below cost-recovery levels in urban areas, opaque power purchase agreements and special arrangements with mines (its highest revenue customer segment), low billing collection rate (especially from high-revenue customer segments), poor commercial and technical performance, and poor financial health. As such, SNEL has been unable to make adequate capital and operational investments to maintain and/or expand the network, thus vast portions of the distribution networks in major cities are dilapidated and below technical standards. In Kinshasa, many elements of the distribution network date back to the 1960s, and maintenance/upgrades have been limited, patchy, and uneven. Hence, there remain several urban/peri-urban settlements without grid-connected electricity (known as *poches noires*, or dark pockets), and parts of the existing grid are unsafe, with about 60 deaths from electrocution documented each year. To begin addressing operational inefficiencies and poor financial health, the GoDRC and SNEL signed a performance contract, and SNEL has been receiving technical assistance, under a service contract, from Manitoba Hydro International (hired under the World Bank-financed Regional and Domestic Power Market Development Project - P097201). Manitoba Hydro International developed a comprehensive recovery plan, which was reviewed by the World Bank and approved by the GoDRC in August 2016. However, the performance contract remains dysfunctional, and financing is still needed to implement the recovery plan.

9. Until 2014, SNEL was the monopoly supplier of electricity in the DRC and struggled to serve existing customers with little access expansion. As a result, access to electricity in the DRC is abysmally low. No more than 16 percent of the DRC's population has access to electricity according to household

surveys reviewed for the 2014 Sustainable Energy for All (SE4ALL) Global Tracking Framework report[1]. Estimates derived from SNEL's database suggest an even lower access rate of 9 percent. Despite the discrepancy, it is clear that the DRC's access rate remains far below Sub-Saharan Africa's average rate of 31 percent.[2] The access rate also masks significant disparities between urban and rural areas and across provinces. About 35 percent of the urban population has access to electricity compared to only 1 percent in rural areas. While Kinshasa, the capital city-province, stands out with an access rate of 37 percent, half of the country's provinces have a rate below 10 percent.

10. The few households and businesses with electricity connections receive unreliable service. Across the country, power outages average over three hours daily for 180 days per year, with an estimated economic cost of 1.7 percent of GDP. In Kinshasa, households experience power outages due to interruptions in the high-voltage transmission network as well as the low-voltage (LV) network. About 392 medium-to-low-voltage substations are heavily overloaded and have to be switched on/off manually on a daily basis to avoid damage.[3] Estimates suggest that a significant number of residential customers in Western and Central Kinshasa receive electricity service less than five hours per day. SNEL reports that about 95 percent of its customers are unmetered. Moreover, considering that formal customers often informally connect three to five households—which leads to unsafe and degraded service as well as lost revenue to SNEL—many more households receive low-quality service. Similar issues are encountered outside of Kinshasa. For example, in Gbadolite, the capital city of the North Ubangi Province, quality of service is poor as two out of the three generator units at the Mobayi Hydropower Plant (which supplies to the city) have been out of service for years.

11. **The GoDRC has opened the power sector to the private sector, but further public and concessional financing support is required to enable the private sector to play a significant role in the medium to long term.** Recognizing the challenges, the GoDRC has acted to enable private sector involvement. In 2014, the GoDRC approved and the President signed a new Electricity Act in an effort to make the power sector an effective engine of economic growth, increase electricity access, and attract private sector investments. Among others, the law liberalizes the power sector, removing SNEL's monopoly status, and provides a new legal and regulatory framework to promote public-private partnerships. This includes new provisions for concessions, leases, management contracts, and licenses, as well as provisions allowing for the implementation of differentiated and cost-recovery electricity tariffs. However, more than two years after the Electricity Act, there is no regulator established, and no procedures or guidelines to obtain concessions, leases, or management contracts exist, leaving a regulatory vacuum. Furthermore, with presidential elections postponed to April 2018, the political and social environment is volatile. Hence, private sector investment in the electricity sector has been limited and SNEL remains the dominant player. It owns the majority of transmission, distribution, and some of the generation assets in its service areas.

12. The private sector faces major constraints to access commercial financing, and resources for risk instruments in the power sector are lacking. The latest 2013 Enterprise Survey revealed that the portion of private investments financed by banks is negligible—0.9 percent—and compares poorly against the Sub-Saharan African average of 9.7 percent. Only 9.4 percent of surveyed firms had a bank loan or line

[1] Available at: https://openknowledge.worldbank.org/handle/10986/16537

[2] A new national survey is being conducted in the context of the SE4ALL Multi-Tier Framework which will provide greater clarity on the extent and quality of energy access in DRC.

[3] Despite these efforts, transformers regularly burn out, reducing average life to two to three years, only 10 percent of their normal lifetimes.

of credit, compared to the Sub-Saharan African average of 22.7 percent. Access-to-finance challenges can be partly explained by conditions in the banking sector. There is neither a stock market nor a debt capital market. The financial system is dominated by relatively small banks, including 18 licensed banks representing 95 percent of the total financial system. Licensed banks lack long-term resources, provide loans with short-term maturities, and contend with very high operating and liquidity costs. Operations are not very sophisticated and consist of collecting deposits and short-term financing operations. Corporate lending mainly consists of providing short-term financing to the largest companies or loans that are cash collateralized or benefit from offshore guarantees. There is a lack of medium and long-term financing, little experience with financing in the energy sector, and no resources for risk instruments in the power sector.

13. Given the uncertain environment and the lack of commercial financing and risk mitigation instruments, private sector involvement has been constrained. Private participation in electricity access is currently limited to a handful of investors (for example, *Electricité du Congo* in Tshikapa*, Virunga Sarl* in the North Kivu*, Energie du Nord Kivu* in the North Kivu, and *Enerkac* in Kananga) who have relied heavily on grant finance and/or high tariffs to achieve an acceptable financial return. Other potential subproject sponsors include private companies, NGOs, provincial entities, religious organizations, local cooperatives, or a combination of these actors (loosely categorized as 'private sector').[4] In addition to the private sector, SNEL also remains a major stakeholder in energy access, and in view of the DRC's access challenge, also has a significant role to play.

14. Public and/or concessional financing is needed to enable the private sector to play a greater role in access expansion. Further private participation in access expansion is hindered by the financial unviability that characterizes all rural electrification efforts because of low affordability (owing to rural poverty) and high cost of serving dispersed rural areas. Additional factors which diminish private interest include high perceived project and country risk without prospects for a commensurate high return, lack of financing, and absence of regulation. For these reasons, unassisted private participation is unlikely to emerge in the near to medium term, even for more the densely populated areas. A public/private approach is needed, which includes firming up the regulatory regime and provision of partial financial (credit, grant) support to private implementers, at least to start. In rural areas, this support will be needed over the longer term. The demonstration effect of the initial projects should also provide a track record to help financiers better assess the risk profile of this subsector. The team is engaging with the International Finance Corporation (IFC) on the critical developments needed to make the sector attractive for private investment. While IFC is unable to engage at this early stage of market development, continued interaction is expected to provide inputs to allow this.

15. The 2014 Electricity Act also targets institutional development. The Ministry of Energy and Water Resources (*Ministère de l'Energie et des Ressources Hydrauliques,* MERH) remains responsible for the energy sector, including planning, policy, and program development and oversight. To strengthen its oversight and coordination roles, the MERH established in October 2015 a new unit, Project Coordination and Management Unit (*Unité de Coordination et de Management des Projets du Ministère,*UCM), dedicated to coordinating and managing all donor-financed energy projects. The Electricity Act also calls for the creation of an electricity regulatory agency (*Autorité de Régulation de l'Électricité,* ARE) and an agency to promote and finance rural and peri-urban electrification, National Agency for Rural Energy Services (*Agence Nationale des Services Énergétiques Ruraux,* ANSER). Decrees

[4] These are loosely categorized as 'private' in the sense that their financing and operation will be commercially oriented.

establishing the two agencies have been signed. The MERH set up two committees (*Comité de Préparation de l'ANSER*, CPANSER for ANSER and *Comité de Préparation de l'ARE*, CPARE for ARE) to make the agencies operational by April 2015. The U.S. Agency for International Development (USAID) has been providing legal and technical assistance. Nevertheless, progress on the ground has been slow, and more time and effort are needed to get ANSER and ARE up and running.

16. **Amid complex and diverse sector needs, electricity access stands out as an important Government priority.** Moving forward, the GoDRC wishes to electrify new provincial capital cities in the short term and envisions achieving universal electricity access in the long term. However, it lacks both a strategic vision and a specific access rollout plan. Under the SE4ALL initiative, the African Development Bank (AfDB) and the United Nations Development Programme (UNDP) supported the development of the DRC Action Agenda. Though the Action Agenda is not yet formally completed, it calls for US$33.4 billion in investments over the next 15 years to provide access to electricity to 26.5 million households by 2030, through grid extension and off-grid technologies. This implies tripling the current electrification rate until 2020 and, thereafter, multiplying the current rate sevenfold. In view of the high-level nature of the Action Agenda and the huge financing gap, there is a need to develop, in a consultative manner, a more detailed, comprehensive electricity access strategy and rollout plan led by the GoDRC, with strong buy-in from civil society, donors, and the private sector. The strategy must provide clarity on grid and off-grid compatibility, regulatory approaches, sectoral roles and responsibilities, financing, tariffs, connection costs, subsidies, and so on. While some elements of the strategy, such as differential tariffs, are already in place, many others remain to be defined.

17. The development community has been supporting the GoDRC's efforts in the power sector. The AfDB is financing a peri-urban electrification project (*Projet d'Electrification Peri-urbaine et Rurale*) to strengthen part of the transmission network supplying Kinshasa and the northern zone of the Kinshasa distribution network. The AfDB also recently approved financing for a new electricity access and sector governance improvement project, which would expand the rehabilitation of the distribution network in Northern Kinshasa, develop the Lungundi II Hydropower Plant to add supply in Tshikapa (Kasai Province), and assist MERH to improve sector governance. The German bank *Kreditanstalt für Wiederaufbau* (KfW) intends to support the rehabilitation of selected hydropower plants for private operation. USAID is supporting the establishment of ARE and ANSER. The U.K. Department for International Development (DFID) is funding technical assistance programs that promote private sector involvement in the development and operation of solar-based independent grids. Donors are coordinating in these efforts, and the World Bank has recently convened an energy donor coordination group.

18. The World Bank has been a major development partner in the DRC's power sector, with investments largely targeting generation and transmission and assistance on utility reform. These include two power projects, the Southern Africa Power Market Project (SAPMP, P069258, which closed on September 30, 2016) and the Regional and Domestic Power Markets Development Project (*Projet de développement des Marches d'Electricité pour la consommation Domestique et à l'Exportation,* PMEDE, P097201, slated to close on June 30, 2018), which together totaled US$1.1 billion in financing. The SAPMP reinforced the power transmission line between the Inga hydropower station in the DRC and Zambia (4,000 km) and improved the power transfer capability along the Inga-Katanga backbone up to Zambia. The PMEDE aims to increase the power output by rehabilitating the Inga 1 and 2 power generation stations, adding 600 MW of generation to the network, and address transmission and distribution bottlenecks to Kinshasa. The PMEDE also targets the improvement of SNEL's operational and technical performance and funds the Manitoba Hydro International's service contract with SNEL. As

mentioned earlier, an early contract deliverable has been a near-term recovery plan for SNEL, which includes strategic, priority investments aimed at improving SNEL's financial position. While the plan is realistic and solid, it relies in large part on external financing for implementation. Besides the SAPMP and PMEDE, the World Bank has recently engaged in a power sector reform dialogue, which may pave the way for future support on sector governance and utility reform.

19. The sector needs are immense and multifaceted, and the implementation environment remains weak and uncertain. The proposed project will focus on electricity access expansion. Overall, access expansion has received relatively limited financing over the last decade and is an essential requirement underpinning plans to enable social development and boost shared prosperity. The project, therefore, would complement the World Bank's investments in generation, transmission, and utility strengthening, with financing to improve access and quality of service. This will be an initial effort which, if successful, could be followed by additional support. Access expansion will be pursued in a pragmatic manner by tapping into existing 'low-hanging' fruit, while supporting the establishment of key institutions and development of a more comprehensive access rollout plan. The pragmatic approach is reflected in the project design by including multiple investment paths, recognizing that some may proceed more slowly than others. The project would also support selected activities as a bridge to possible future projects supported by the World Bank (or other development partners).

C. Higher Level Objectives to which the Project Contributes

20. The proposed project aims to support the GoDRC in advancing toward its universal energy access goal while responding to urgent needs for electricity in unserved and poorly served areas. In January 2016, the GoDRC adopted a series of 28 emergency measures to promote economic growth, following the economic contraction due to declining commodity demand and prices. The project offers a relevant framework that supports the implementation of many of these emergency measures, in particular, the implementation of an electrification program with SNEL (Measure 22), the electrification of new provincial capitals (Measure 11), the financing of feasibility studies of electrification subprojects (Measure 25), and the improvement of revenue collection through the promotion of prepaid meters (Measure 21).

21. The project is consistent with the World Bank's FY 2013–2016 Country Assistance Strategy (CAS).[5] The CAS focuses on the following four strategic objectives: (a) increase state effectiveness and improve good governance; (b) diversify the economy to accelerate growth and create employment; (c) improve social services delivery and increase human development indicators; and (d) address fragility and conflicts in the DRC's eastern provinces. By improving institutional capacity in the energy sector, providing financing to both the private sector and the national power utility for sustainable electricity access expansion and improvement, the project supports the CAS focal areas, particularly Pillars 2 and 3. A Systematic Country Diagnostic, to be followed by a new Country Partnership Framework, are under preparation, and the energy sector is expected to be a key element of both documents. The project seeks to advance the enabling environment for private investment by supporting the fledgling ARE and ANSER and designing and piloting credit and grant facilities. Private investors would also be encouraged to seek equity/debt participation from IFC and other international finance institutions.

[5] Report No. 66158-ZR.

22. The proposed project is also aligned with the World Bank's Energy Directions Paper[6] and twin goals of reducing poverty and boosting shared prosperity. The project aims to lay the foundation for sustainably expanding access to electricity, thereby contributing to help the DRC secure affordable, reliable, and sustainable energy, which are the objectives advocated in the World Bank's Energy Directions Paper and consistent with Sustainable Development Goal 7. As new or improved access to electricity is a critical enabler of access to basic services, including health, education, security, and information and communication technologies as well as to promote income-generating revenues and enhance private sector competitiveness, the project outcomes are also expected to contribute to the twin goals.

II. PROJECT DEVELOPMENT OBJECTIVES (PDO)

A. PDO

23. The project development objective is to expand access to electricity in target areas.

Project Beneficiaries

24. The project is expected to provide new or improved electricity service to about two million[7] people, including households and businesses in urban, peri-urban, and rural areas where investments are undertaken. The beneficiaries can be categorized in three groups. The first involves households and non-household users who will receive access to new electricity service for the first time. Their electricity use will replace consumption of kerosene and other fuels for lighting and will enable productive activities.

25. The second group of beneficiaries are current electricity users—both formal customers and informal users who will be 'regularized'—for whom the service quality will be improved. Service quality will be assessed using the Multi-Tier Framework (MTF) methodology for measuring access and remote monitoring devices. Elevation by at least one 'tier' will signify service improvement. In most cases, this will be through additional nighttime hours of service (two hours for Tier 1, four hours for Tier 2[8]). A baseline MTF survey is being undertaken,[9] and follow-up surveys will be conducted as part of the project to assess impact. Also, the acquisition and installation of remote monitoring devices is envisioned.

26. The third group of beneficiaries are key power sector stakeholders, including MERH, SNEL, ANSER, ARE, participating financial institutions (PFIs), and private concessionaires. These stakeholders will benefit from financing, technical assistance, and capacity-building activities.

PDO Level Results Indicators

27. The achievement of the project development objective will be assessed using the following project outcome indicators:

[6] *Toward a Sustainable Energy Future for All: Directions for the World Bank Group's Energy Sector,* 2013.
[7] This assumes eight people per household.
[8] Tier 1 provides access to basic applications such as task lighting, radio, and phone charging. Tier 2 provides access to Tier 1 services plus additional applications such as a television and a fan.
[9] Survey expected to be completed by December 2017.

- People provided with new or improved access to electricity service (number) (Corporate Results Indicator);
- Generation capacity of energy constructed or rehabilitated (MW) (Corporate Results Indicator).

28. See Annex 1 for the project's full results framework.

III. PROJECT DESCRIPTION

29. Given the enormous challenges faced in increasing access to electricity in the country, the proposed project will support 'low-hanging' fruit in the first instance, which entails network upgrades and access expansion in selected SNEL service areas (Component 1). Moving beyond the 'low-hanging' fruit, the project will develop approaches to support private sector-based access expansion outside of Kinshasa, particularly in provincial capitals (Component 2). Finally, the project will support sector planning, capacity development, and investment preparation (Component 3) to set the stage for increased access expansion going forward. Considering both the nascent stage of private participation in electricity access and the fragile context, the institutional development aspects of the project design represent a 'high-risk, high-reward' approach. The SNEL investments are intended to help balance that risk with a more experienced implementation partner.

30. Within the first two project components, three pathways will be pursued:

(a) Rehabilitation and expansion of the Kinshasa network (Subcomponent 1.1);

(b) Rehabilitation and expansion of a SNEL-owned independent grid system (Subcomponent 1.2); and

(c) Support to currently active private sector developers outside of Kinshasa (Subcomponents 2.1 and 2.2).

31. Recognizing the need for planning and development and reflecting capacity constraints, Subcomponents 2.1 and 2.2 will be carried out in two phases to ease implementation and ensure that robust planning/development (Phase 1) is completed before investments are made (Phase 2). As the DRC is in the early stage of access expansion and there is no clear path as to the best approach, the project is supporting the three approaches with the expectation that the project may need to adjust course at midterm (or sooner as the case may be) based on implementation experience so that the approach(es) that show the most promise and progress can be built upon.

A. Project Components

Component 1: Network Upgrades and Access Expansion in Selected SNEL Service Areas (US$97 million equivalent: GoDRC US$2 million and IDA US$95 million equivalent, of which US$90 million equivalent IDA grant and US$5 million equivalent IDA credit)

32. Component 1 is aimed at increasing and improving access by addressing critical rehabilitation needs in the SNEL-operated distribution network zones where power is either available from high voltage/medium voltage (MV) substations or can be restored in generation plants. It will target investments identified as 'priority' by SNEL in its recovery plan and aligned with the GoDRC's drive to electrify provincial capitals. On this basis, the distribution networks in Western and Central Kinshasa and Kimbaseke, as well as in the provincial capital of Gbadolite, one of the growth pole regions of the

country, were selected as near-term priority investments. Nonetheless, the component will provide a framework and potential avenue for improving other assets served by SNEL in Kinshasa and other provinces. The component will also assist SNEL to ensure effective implementation of the component investments through the technical assistance delivered in Subcomponent 1.3.

Subcomponent 1.1: Investments in Kinshasa

33. This subcomponent will (a) add new distribution network segments to rebalance the loads—thus improving the level of service—and provide additional households currently living in 'dark pockets' with new electricity connections; and (b) rehabilitate the existing network in the targeted areas. SNEL is targeting improvement of 13 service zones, including 32 separate 'dark pockets' within those zones. The design includes 148 MV/LV substations, 270 km of MV line, 1,200 km of LV line, and associated poles, conductors, and other hardware, as well as consumer connections including prepayment meters. The subcomponent will also prepare detailed engineering studies to pilot the electrification of a few peri-urban, lower-density 'dark pockets' using a lower-cost electrification design (pole-mounted transformer, or *Mise a la Terre* [MALT]). While this design is standard practice in many countries, it is new for SNEL and implementation may prove challenging, particularly given SNEL's capacity constraints. Thus, based on progress and budget availability, construction, and installation could be considered.[10]

Subcomponent 1.2: Mobayi Hydropower Plant and Gbadolite Distribution Network

34. This subcomponent will finance the rehabilitation of the run-of-river Mobayi Hydropower Plant (3 x 3.75 MW turbines) and the associated transmission and distribution network in Gbadolite, the capital city of the new province of North Ubangi. Two of the three turbines are currently out of service because of faulty balance-of-plant (ancillary) equipment, which will be repaired where feasible and replaced when needed. The ancillary equipment of the third unit will also be refurbished and strengthened to sustain its operation over time. Critical spare parts will be supplied, together with adequate training for local operations and maintenance (O&M) staff toward sustainable operation of the plant. In parallel, the Gbadolite system will also be upgraded and expanded, including network substations, MV/LV lines, service drops, and the installation of prepaid meters for both current, 'informal,' and new customers.

Subcomponent 1.3 : Technical Assistance for SNEL Investments

35. This subcomponent will provide services, capacity strengthening, and operational equipment needed to ensure effective implementation and operation of upgraded and new SNEL infrastructure. As some of the proposed lower-cost investments (pilot of single phase pole-mounted transformers, prepaid meters, and installation of devices monitoring electricity service quality remotely) represent an excursion from SNEL's standard practices, services from owners' engineers, training, and other types of assistance will be provided. Also, the subcomponent will finance a gender-informed communications and awareness campaign and other citizen engagement activities (such as periodic surveys, publication of key survey results, and the upgrade of a customer call center) to help reduce residential and commercial electricity theft, address customer complaints, monitor improvements, and promote transparency. Technical assistance will be coordinated with the AfDB and other partners also supporting SNEL.

[10] Expected new electricity connections from the second phase are not accounted in the proposed results framework.

Component 2: Private Sector Based Access Expansion (US$25 million equivalent, of which US$22 million equivalent IDA credit and US$3 million equivalent IDA grant)

36. This component will promote private sector access expansion. It was conceptualized based on recommendations from a study funded by the Energy Sector Management Assistance Program (ESMAP)[11] that was carried out during project preparation. The study assessed over 30 electricity access subprojects from various developers, identified the most advanced subproject developers, analyzed selected developers' business plans, and highlighted the financial barriers faced by the private sector to be able to expand electricity access. To address the financing constraints, the component will provide debt and grant support to implement qualifying access subprojects. Early investments are expected to include subprojects under active development by experienced private developers[12] that have been identified under the study. The component comprises two subcomponents. The first will develop, and potentially pilot the implementation of a Credit Support Facility (CSF) to provide commercial term financing for commercial investments. The second would set up an Electrification Fund, which would provide connection cost subsidies and grants to address consumer affordability and fill the 'viability gap' for near-commercial investments. Further assistance from ESMAP is envisioned to support the development of this component during implementation.

Subcomponent 2.1 : Credit Support Facility:

37. As described above, access to finance is a binding constraint for private participation in electricity access expansion. The project will therefore build on current experience in the Financial Infrastructure and Markets Project (P145554) to establish a CSF that provides debt finance for eligible subprojects. An intermediary financial institution (IFI) will use these funds to onlend project funds to PFIs under commercial terms. The interest rates charged by PFIs to project sponsors will cover all costs (that is, cost of funds, administrative costs, risks, and a small profit incentive for taking credit risk). Local banks have expressed an interest in participating, and currently active project developers have expressed a strong need for accessing these funds. The first phase of CSF development includes preparation of an Operations Manual, satisfactory fiduciary oversight arrangements, participation agreements, and a credible pipeline of initial investments. Completion of this phase will be signaled by IDA's appraisal and no-objection on all necessary arrangements. This is expected to be completed by project midterm or earlier, at which point the second phase (operational phase) will commence. The second phase will pilot the provision of subloans to electricity access subprojects that meet commercial lending due diligence and program criteria including the ability to realize electricity connections within the project time frame. CSF beneficiaries may be allowed to access Electrification Fund support (see below) based on clear criteria and guidelines to be included in the CSF Operations Manual.

Subcomponent 2.2: Electrification Fund

38. Subsidy support for electricity access expansion has been a common element in successful programs worldwide. The 2014 Electricity Act directs the Government to create an Electrification Fund for this purpose. In its mature form, the Electrification Fund will provide transparent and predictable grant increments with a strong results focus (for example, number of new customers served). However,

[11] ESMAP is a global knowledge and technical assistance program administered by the World Bank. It is an integral part of the Energy and Extractives Global Practice of the World Bank.

[12] During project preparation, four private sector electricity access subprojects in advanced stages of readiness were identified. These are expected to be early beneficiaries of Subcomponent 2.1 and possibly 2.2 as well.

at present, there is a paucity of experience on which to base such an objective, quantitative approach to electricity access subsidies in the DRC.

39. This subcomponent will provide initial experience in design and operation of the Electrification Fund, focusing primarily on the delivery of electricity connection cost subsidies. Similar to the CSF, the subcomponent would be implemented in two phases. The first phase will develop an agreed Operations Manual based on a thorough study that will determine eligibility criteria and guidelines to ensure a three-way financial affordability balance among customers (who must be able to pay the up-front electricity connection costs and tariffs), developers (who must receive a fair return), and Government (which seeks to maximize leverage while accelerating access scale-up). The second phase is expected to disburse mostly electricity connection subsidies to distribution network densification subprojects according to the approved Operations Manual of the Electrification Fund.

Component 3: Sector Development and Implementation Support (US$25 million equivalent IDA grant)

40. The component will contribute to the implementation of key institutional provisions of the 2014 Electricity Law, critical to expanding private participation in electricity access outside of SNEL's current service area. It will also serve as a platform for developing follow-on investments, through comprehensive planning and feasibility studies, and provide needed resources for project implementation and monitoring. The component comprises four subcomponents.

Subcomponent 3.1:Institutional Strengthening

41. The subcomponent will support the establishment and operationalization of ANSER (rural and peri-urban electrification agency) and ARE (electricity sector regulator), complementing assistance from other multilateral and bilateral development agencies, including the AfDB and USAID. The support will include the provision of technical and advisory services covering various aspects: business plan preparation for subproject developers, technical appraisal and due diligence of business plan/subprojects for PFIs and ANSER/UCM, development of standard concession contracts and procedures for ARE, and communications campaigns targeting local communities and provincial governments. The support is expected to lead to the emergence of an entity capable of analyzing business proposals, approving funding, and overseeing the implementation of interventions, for access expansion outside of the SNEL service area. Institutional strengthening support related to energy access will also be provided to other stakeholders including the MERH and the Ministry of Finance's unit in charge of monitoring donor-financed programs and projects (*Cellule de Suivi des Programmes et Projets*, CSPP).

Subcomponent 3.2 : Planning and Investment Development

42. This subcomponent will be a vehicle for developing a pipeline of investments (beyond those identified during project preparation) for gradual access expansion based on sectorwide planning. It will finance the development of an electrification strategy and a least-cost geospatial electricity rollout plan in a participatory manner, bringing together the GoDRC, development agencies, private sector (including developers and financiers), and civil society. The electricity rollout plan will be complemented by the preparation of a short-term investment prospectus, which will provide a framework for leveraging financing. In addition, given the GoDRC's strong desire to electrify new provincial capitals with private sector involvement in operation, the subcomponent will fund feasibility studies and preparation of bidding documents for the electrification of some of the remaining unserved provincial capitals. For example, Kenge, the capital of the Kwango Province, will be targeted, and key bidding and contractual

documents will be developed in a concerted manner, using consultations and bidder conferences to tailor the intervention to private sector interest and capabilities. The procurement and construction of electrification subprojects could be considered under the Electrification Fund subcomponent.

Subcomponent 3.3: Mid-size Hydro Feasibility

43. Recognizing that development of the DRC's domestic hydro resources is a key enabler for access expansion, this subcomponent will contribute to the development of the DRC's vast mid-size hydro potential by making available technical, economic, environmental, and social safeguards information on selected sites, thereby improving the prospects of mobilizing public and private financing for their development. The subcomponent will support the identification of a long list of mid-size hydropower sites (both green and brown fields), the screening of the identified sites, and prefeasibility studies of the most promising sites. The project could finance feasibility studies for one or two sites.

Subcomponent 3.4: Project Management

44. The subcomponent will fund the operationalization and running of the Project Implementation Unit (PIU) for the duration of the project. The UCM will nurture the development of a core of ANSER staff at the initial implementation phase, until ANSER is operationally established. Operational services and goods to be funded would include (a) the recruitment of fiduciary, engineering, safeguard, and monitoring and evaluation (M&E) staff; (b) external auditing; (c) office space, equipment, and supplies; (d) transport; and (e) part-time experts as needed. Eligible travel expenses for the Ministry of Finance's CSPP unit related to their participation in supervision activities will also be included.

B. Project Financing

45. The lending instrument for the proposed project is Investment Project Financing. The total project cost is estimated at US$147 million equivalent, of which IDA support amounts to US$145 million—of which US$118 million grant and US$27 million credit—and the GoDRC financing amounts to US$2 million for the implementation of safeguard instruments**,** that is**,** resettlement compensation. Cost estimates have been prepared in consultation with MERH and SNEL**.** The cost estimates by component, including contingencies, are detailed in the table below. The Government will transfer the assets financed under Component 1 to SNEL with no service charge on the grant and a 0.75 percent additional service charge on the credit received on IDA terms.

Table 1: Project Cost and Financing

Project Components	Cost (US$m)	IDA Grant (US$m)	IDA Credit (US$m)	Counter part Funding (US$m)	% IDA Financing
1. Network Upgrades And Access Expansion in Selected SNEL Service Areas	**97.0**	**90.0**	**5.0**	**2.0**	**98**
1.1 Investments in Kinshasa	70.0	65.5	3.0	1.5	98
1.2 Mobayi Hydropower Plant and Gbadolite Distribution Network	22.0	19.5	2.0	0.5	98
1.3 Technical Assistance for SNEL Investments	5.0	5.0	0.0	0.0	100
2. Private Sector Based Access Expansion	**25.0**	**3.0**	**22.0**	**0.0**	**100**
2.1 Credit Support Facility	10.0	0.0	10.0	0.0	100

Project Components	Cost (US$m)	IDA Grant (US$m)	IDA Credit (US$m)	Counter part Funding (US$m)	% IDA Financing
2.2 Electrification Fund	15.0	3.0	12.0	0.0	100
3. Sector Development and Implementation Support	**25.0**	**25.0**	**0.0**	**0.0**	**100**
3.1 Institutional Strengthening	6.0	6.0	0.0	0.0	100
3.2 Planning and Investment Development	7.0	7.0	0.0	0.0	100
3.3 Mid-size Hydro Feasibility	5.0	5.0	0.0	0.0	100
3.4 Project Management	7.0	7.0	0.0	0.0	100
Total costs	**147.0**	**118.0**	**27.0**	**2.0**	**99**
Total financing required	**147.0**	**118.0**	**27.0**	**2.0**	**99**

C. Lessons Learned and Reflected in the Project Design

46. The design of the project has incorporated lessons from similar World Bank experience globally and in the DRC. More specifically, the lessons below have been reflected.

47. **Engage substantively with all relevant sector stakeholders.** In view of the centrality of electricity in the economy and the multiple stakeholders who have a strong interest in its development, engaging broadly with all relevant stakeholders is fundamental to successful project design. This includes all levels of the government, private sector, development partners, financiers, and consumers. During preparation, the GoDRC and World Bank team consulted with representatives of all of these actors, including through workshops, donor coordination meetings, field visits, and individual meetings. Numerous project details were designed to address specific concerns that arose. For example, the CSF has been explicitly designed to address financier risk perceptions to facilitate financing to project sponsors that enhances tariff affordability to the end-customer. In addition, the project design accounts for the support of other donors in a coordinated manner to promote synergies in implementation. Ongoing collaboration with other development partners, including DFID, KfW, German Agency for International Cooperation (*Deutsche Gesellschaft fur Internationale Zusammenarbeit,* GIZ), UNDP, and others is being actively pursued through the recently created energy donor coordination group.

48. **Access expansion requires a long-term, comprehensive approach.** Access expansion is a long-term process. Experience in numerous countries shows that this process tends to follow an S-shaped growth curve—the initial stages are relatively slow as delivery models are locally adapted and the institutional framework and capacity built. Once the models and sector structure are proven, subsequent scale-up can be at a much faster pace. Countries aiming at significant access scale-up typically require both on-grid and off-grid electrification solutions based on a least-cost approach and using appropriate low-cost technical solutions and corresponding technical/regulatory standards. In addition, an effective institutional, policy, and regulatory implementing framework is also a key basic requirement for expanding access. The proposed project seeks to test business models as the institutional structure grows in parallel, allowing each to benefit from lessons of the other. The project also seeks to retain flexibility in early stages to allow such learning before structures and rules are locked in.

49. **Early stages of electricity access may require testing of multiple approaches, as some will work better than others.** Especially in the context of the DRC's newly liberalized sector and its large and

dispersed population, it is important to test multiple business models, including the public sector, private sector, and public/private options with the objective of surfacing the most effective approaches. The focus on both grid and off-grid service delivery emphasizes this point, since experience has shown that these can have very different value chains and business models. As such, the proposed project seeks to support both SNEL and 'private' actors.

50. **Private sector participation is needed to finance and implement an ambitious expansion of the power sector.** The size of the investment needed in the DRC's power sector, coupled with the scarcity of government budget resources and donor funding available for such large and complex infrastructure projects, imply a key role for the private sector in the power sector generally, and access expansion specifically. The proposed project will promote private participation and financing by providing assistance to project developers, credit enhancement, testing of business models, and support for establishing a predictable, sustainable, and workable policy/regulatory environment.

51. **Careful selection of financial intermediaries, early identification of subprojects, and demand for financing from private developers are key ingredients for the successful implementation of a financial intermediation scheme.** These success factors have been considered in the conceptualization of Subcomponent 2.1. The need to design a CSF has emerged from consultations with private developers, financial institutions, and feedback from the MERH. The IFI to implement this facility will be selected considering the World Bank OP 10.00 Investment Project Financing Guidance on Financial Intermediary Financing. A pipeline of more advanced subprojects has been identified during project preparation. Others are expected to be developed during project implementation.

52. **Major institutional reform, particularly of a state-owned enterprise, requires dedicated focus.** Both the SAPMP and PMEDE have provided support to selected reforms of SNEL, and implementation has been challenging. It is not realistic for the proposed access project, which already aims to support operationalization of ANSER and ARE, to also focus on substantial reforms at SNEL. Hence, beyond implementation support, the proposed operation would provide technical support to SNEL only in areas directly related to the access agenda, such as lower-cost network design, gender sensitivity, and development of key technical standards. Broader support to SNEL is more appropriate under a dedicated utility reform project.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

53. The project is anchored within the MERH, which is responsible for the overall energy sector development and high-level program coordination exercised through a Steering Committee. Within MERH, UCM, a dedicated project coordination and management unit, will assume the overall project coordination function in close collaboration with SNEL, the IFI, ANSER, and ARE. UCM was established in 2015 with the mandate of coordinating all donor-funded energy sector projects. Hence, UCM has been selected as the implementing agency for the AfDB-financed Governance and Electricity Access Project and the KfW-financed Mini-hydro Power Plant Development Project. Consistent with the GoDRC's strategic decision to develop a single, strong project coordination agency in the energy sector, UCM will be the project coordination agency for the proposed project. Besides its coordination role, UCM will be responsible for the implementation of the project's Component 3 (sector development and implementation support) and Subcomponent 2.1 (Electrification Fund). For investments in SNEL service areas, UCM will act as a fiduciary agent, handling procurement and financial management (FM), while

SNEL as an implementing agency will remain responsible for the technical aspects including detailed project design, technical aspects of tender documents, participation in bid evaluation, construction supervision, and commissioning. To ensure full compliance with national and World Bank fiduciary and safeguard requirements, relevant UCM staff (procurement specialist, FM specialist, environment specialist, and social specialist) will be financed by the project. A memorandum of understanding (MoU) between UCM and SNEL, clarifying SNEL's technical responsibility, has been signed.

54. Over the implementation of the first phase of the Subcomponent 2.1, an IFI will be identified jointly by the GoDRC and IDA to operate the CSF during the second phase of Subcomponent 2.1. During the second phase, the designated IFI will provide term financing to PFIs for on-lending to subproject developers. Assistance will be provided to the IFI and PFIs to carry out technical due diligence of subprojects. The IFI will receive an administrative management fee for managing the credit line. Annex 3 provides more details on implementation arrangements.

B. Results Monitoring and Evaluation

55. UCM will be responsible for the overall monitoring and reporting of project progress with inputs from SNEL and the IFI. Both SNEL and the IFI will monitor their respective component activities and send progress reports to UCM, which will add M&E data and information on its components, consolidate, and send overall project progress reports in a form and substance satisfactory to the World Bank. As needed, to review progress and address issues that may arise, UCM will convene meetings (or may use the MERH's Steering Committee platform to convene meetings) with all involved stakeholders, including SNEL, ANSER, ARE, and the Ministry of Finance's CSPP (as part of their regular World Bank portfolio performance review).

56. Progress reports will be prepared for each semester of project implementation and will be submitted to the World Bank no later than 45 days after the end of the period covered by the reports. Monitoring of results and outcomes, in accordance with the project results framework (Annex 1), will be reported in the project progress reports. The project outcomes will be assessed through surveys before (for baseline),[13] during, and after project implementation. The baseline survey will follow the MTF to capture the current levels of electricity service. An M&E specialist will be hired and hosted at UCM to implement and coordinate all M&E activities under the project. Furthermore, the World Bank will supervise the project over its lifetime and monitor its results and outcomes on a regular basis to evaluate the achievement of the PDO and implementation performance.

57. A project midterm review will be conducted two years after project effectiveness. The midterm review will provide the opportunity to thoroughly assess overall project performance in achieving the development objectives and ensure that lessons learned thus far are considered in implementation over the remaining period. Adjustments, including funding reallocation and implementation arrangement changes, and wider restructuring to build on the approaches that work best will be discussed, agreed, and implemented as necessary.

C. Sustainability

58. In coordination with the GoDRC and other development partners, this project is intended to help establish the framework for significant private engagement on energy access in the DRC, opening

[13] The baseline surveys are being done in connection with the MTF survey (see paragraph 24).

the door for future support from the World Bank and other stakeholders. The sustainability of the project's achievements will mainly depend on effective institutions, financial viability of distribution utilities, and affordability of electricity to customers.

59. **Effective institutions.** Implementation of the DRC's electrification program, including this project, requires strengthening of institutions at the strategic, program coordination, planning, and project implementation levels. The promulgation of the 2014 Electricity Act and the initiation of the setup of related institutions constitute important first steps. Equally important is to make these entities fully functional with clearly defined responsibilities, adequate human resources, and institutional support. To this end, the project will provide technical assistance, in coordination with other development partners. Furthermore, the World Bank will sustain its engagement and policy dialogue with the GoDRC to fulfill its commitment to universal electrification and power sector development.

60. **Financial viability of distribution utilities.** Distribution is the main source of revenue in the power sector value chain. Investments in adequate power generation, transmission, distribution, and O&M of power assets, critically depend on the financial viability of distribution utilities. Reflecting this necessity, the project supports subproject developers to adopt commercial practices, characterized by operational efficiency, quality of service, and strong revenue collection, even when a capital subsidy may be involved in the investment. Such support is expected to enhance financial viability.

61. **Affordability.** High capital costs, including connection charges, prevent a sizeable number of households from connecting the grid. As a result, low-income households are likely to remain unconnected even after electricity arrives in their area. Building on experiences from other projects globally (for example, Lao People's Democratic Republic), the project will help the GoDRC develop and introduce a financing scheme to electrify households most vulnerable to exclusion, considering the current level of their energy spending. To bridge the affordability gap, the project will use part of the IDA funds (under Subcomponent 2.2) to help the lowest-income households afford connection charges. Loans under Subcomponent 2.1 will not be subsidized but priced at a marginally commercial rate of interest that covers all direct costs of providing that loan and a risk premium.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

62. The overall project risk is High because of the volatile political situation and weak governance framework, the ongoing development of key sector institutions, and limited capacity of various stakeholders. Key risks and mitigation measures are discussed below. While implementation challenges are likely to be considerable, the World Bank views the project as high risk and high reward.

63. **Political and governance.** The stability of the political environment might erode in 2017–2018, with presidential elections postponed and proposed to take place in April 2018. The untested efficacy of the current caretaker government also could impede decisions needed to advance the project. In addition, though progress was made in improving the institutional and policy framework in the power and mining sectors and regarding property rights, rules-based governance, and transparency, lack of accountability and corruption in the public sector remain recurrent, major issues. The weak governance context was reflected in the Country and Policy Institutional Assessment, which highlights that the DRC's governance score is well below the average of Sub-Saharan African IDA-eligible countries. The governance risks raise the prospect of negative political patronage around project implementation,

while the volatile political environment may lead to delays in project effectiveness and/or implementation. To mitigate probable delays, project preparation has involved government officials expected to remain in position until and after elections. Also, governance issues will be addressed by preparing early a detailed project implementation manual that will lay out clear and strict procedures and provide training on procedures. Frequent supervision during project implementation is also envisaged.

64. **Sector strategies and policies.** Despite the GoDRC's ambition to reach universal electricity access by 2030, there is no recent, national-level electrification strategy and access rollout plan. The absence of such a strategic road map can lead to uncoordinated and inefficient deployment of investments from various development agencies. Also, many provisions of the 2014 Electricity Act have yet to be implemented, resulting in a regulatory and legal vacuum. Thus, while the sector has been nominally opened to actors other than SNEL, considerable uncertainty remains with respect to financial and technical regulation of electricity providers, permissions, and concessions. In particular, any centralized attempt at setting tariffs in the provinces could cripple the financial viability of energy access subprojects and create disincentives to local or private sector investment. To address these planning and regulatory issues, the project includes activities to develop an electrification strategy and a least-cost electricity access rollout plan that will constitute rallying frameworks for aligning policies and coordinating investments, as well as providing support to set up ANSER, the rural electrification agency, and strengthen MERH's capacities.

65. **Institutional capacity for implementation and sustainability.** MERH and SNEL capacities are low for all aspects of electrification—policy making, planning, design, implementation, and supervision—which are critical to scale up electricity access in a sustainable manner. While SNEL has experience implementing World Bank projects, implementation has been challenging (for instance, with one recent misprocurement) and requires intensive supervision. Also, the inclusion of MALT in certain areas of Western and Central Kinshasa represents an innovation for SNEL. To bolster SNEL's capacity, the project will support the extension of the current management contract with Manitoba Hydro International and provide training. As a new agency, ANSER will need strong support (technical assistance, training, and so on) to establish itself as a future focal agency for implementation. Also, private sector actors who will be engaged under the project's Component 2 to extend electrification access are likely to need capacity-building and training support. The low institutional capacity of DRC entities and the lack of knowledge of international best practices will be mitigated through capacity building, use of in-house advisers, training, knowledge sharing on best practices, and strong implementation support by the World Bank team. The envisioned support will pave the way for developing effective institutions that can ensure a sustainable electricity access rollout.

66. **Fiduciary.** Given that project implementation capacity is low, there are significant risks to fiduciary integrity of the project. Though some UCM staff have acquired experience through the implementation of the now cancelled DRC Inga 3 and Mid-Size Hydropower Development Technical Assistance Project (P131027 under IDA Grant H9090-ZR), a learning curve is expected in FM and procurement. The fiduciary risks will be mitigated by (a) staffing the UCM and the IFI with competent procurement and FM specialists and providing training and (b) strengthening procurement and FM controls within SNEL (which has experience with World Bank projects) and extension of SNEL's management contract with Manitoba Hydro International.

67. **Stakeholders.** The low capacity of some private sector enterprises at the subproject level could be a major constraint to expanding electricity connections. Many operators, currently servicing

consumers outside of SNEL's territory are local cooperatives, faith-based organizations, and/or entrepreneurs that lack the capacity to design technically sound power infrastructure, operate it in a commercially oriented manner, and/or expand existing distribution. Stronger private sector players will be needed to support the financial viability and sustainability of electricity access expansion. The risk will be mitigated by (a) including capacity requirement as a criterion to receive funding from the CSF and (b) providing operators with technical assistance to develop subprojects and run them in a commercially oriented manner. With respect to the CSF, the key risks are that it will not disburse, will be inappropriately priced, and may crowd out commercial actors in the medium to long term. Disbursement risks will be addressed through fund reallocation as and when needed. Pricing and market risks will be addressed through careful design based on best practice. The CSF will be designed to encourge 'crowding in' of new financial actors by creating experience and tracking records that reduce risk perception.

68. **Climate and disaster risks.** Potential climate and disaster risks that could affect the project's activities relate to expected changes in precipitation causing increased frequency and intensity of floods and droughts. These factors might damage or reduce the effectiveness of grid distribution and off-grid electrification infrastructure. Grid and off-grid power infrastructure generally has a long life span. The major risks for project investments are (a) flood-related physical damage to the generation and distribution infrastructure and (b) reduced effectiveness of off-grid power supply due to floods or droughts. Sensitive technical design and implementation should mitigate these risks.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

69. The project will produce economic benefits to existing and new electricity customers through the provision of new or improved service. This service will be made available through the proposed investments in distribution infrastructure, accompanied in some instances by generation and/or transmission investments. These investments will be financed through three pathways, as described earlier. In view of the uncertainty as to which pathway(s) will be the most successful, the economic analysis assesses each of the three pathways separately**.** As described earlier (paragraph 30) these are (a) rehabilitation and expansion of the Kinshasa network (Subcomponent 1.1); (b) rehabilitation and expansion of a SNEL-owned independent grid system (Subcomponent 1.2); and (c) support to currently active private sector developers outside of Kinshasa (Subcomponents 2.1 and 2.2). The analysis assesses representative investments as follows: pathway (a) Kinshasa; pathway (b) Mobayi; and pathway (c) Tshikapa. Tshikapa is being selected as representative of the current private investors. A full discussion of the economic and financial analysis is given in Annex 5.

70. Investment costs were derived from estimates provided by SNEL and the private project developers. The analysis accounted for factors such as the cost and availability of generation resources, technical and commercial losses, demand increase due to growth in customer base as well as demand increases per customer, cost of distribution network strengthening and expansion, connection and/or prepayment meter fees, and so on.

71. Economic benefits include those deriving from additional consumption of electricity by newly connected households, as well as improved reliability and increased consumption of electricity by already connected households. Benefits for newly connected households were estimated by considering the lowest electricity retail tariff (US$0.25 per kWh) offered by independent suppliers as a proxy to the

willingness to pay, given the lack of consumer energy consumption data. Benefits for already connected households were conservatively estimated by assuming that the value consumers derive from increased electricity consumption is equal to the price they already pay for it measured by the retail electricity tariff. Other potential benefits that the project could induce that are not quantified for the economic analysis include environmental benefits resulting from reduced diesel-based generation and benefits that electricity brings through employment opportunities, health, and safety.

72. In line with the World Bank's new Guidance on Discount Rates for the Economic Analysis of Investment Projects, the discount rate for the economic analysis is set at twice the medium- to long-term real per capita GDP growth forecast for the DRC—this yields a social discount rate of 4.3 percent.

73. In the case of Kinshasa, the investments yield a robust economic internal rate of return (EIRR) of 18.2 percent based on the assumption that all new connections made possible by the project are actually realized. If improvements in hours of service to existing customers from 4 to 16 hours per day, which is conservatively assumed to result in an increase in consumption of 25 percent, are considered, the EIRR rises to 45.5 percent. In both cases, it is assumed that the additional demand can be met by existing hydropower resources at relatively low cost. Despite positive results from the economic analysis, the financial internal rate of return (FIRR) of the Kinshasa investments for SNEL is negative (though financing terms for capital investments are favorable) due to a retail tariff of only US$0.07 per kWh, below the financial cost of supply. However, with the high FIRR in Mobayi, the overall FIRR for SNEL investments—both in Kinshasa and Mobayi—is positive at 9.1 percent. Thus, given that (a) investments in service quality improvements are a prerequisite for tariff increases; (b) the overall FIRR for SNEL investments is positive (9.1 percent); (c) the network expansion/rehabilitation will substantially increase SNEL's cash flow through the installation of prepaid meters; and (d) the economic benefits are significant, it is concluded that the proposed investments should be pursued.

74. Both Mobayi and Tshikapa show robust returns. Investments in these subprojects are not only in distribution but cover also generation. For Mobayi, the analysis assumes that all newly available power (from the rehabilitation of the Mobayi hydropower plant) could immediately be absorbed by users in Gbadolite and in the Central Africa Republic border. In the case of Tshikapa, the excess generation would be absorbed by the REGIDESO water pumping station, which currently uses expensive diesel.

Table 2: Internal Rates of Return

IRR	Kinshasa O&C SNEL	Mobayi SNEL	Tshikapa EDC	Combined
EIRR	18.2	82.7	15.3	26.3
FIRR	<0	270	43.3	30.6

Note: EDC = *Electricité Du Congo*

75. The implementation of the project will result in an estimated net reduction of greenhouse gas (GHG) emissions of 0.5 million tons of CO_2 equivalent over the lifetime of the project due primarily to the displacement of diesel generation that occurs when a household gains access to electricity. While the associated switching value of CO_2 is actually negative, suggesting that this is an attractive form of GHG mitigation, the absolute value of the savings is small and adds no more than one percentage point to the EIRR.

B. Technical

76. The selected access expansion approach draws from successful access experiences financed by the World Bank. Access expansion in the project is primarily pursued through the existing grid (main grid and independent grid) rehabilitation, densification, and extension, which has been the least-cost means for rapidly scaling up access in countries that are nearing universal access (for example, Vietnam, Lao PDR, and Tunisia). The project also seeks to establish a framework for promoting off-grid access by providing short-term loans and grants to crowd in private sector actors and make off-grid access expansion subprojects financially viable. Such an option has been a complementary way for providing high-tier-level access using grid-compatible mini grids. It also has supported lower-tier-level access to households while waiting for higher-tier (grid-tied electricity) access level.

77. The proposed technical investments have incorporated lower-cost design options. A review of SNEL investments in Western and Central Kinshasa revealed overdesigned practices, leading to higher costs. Guidance on lower-cost options practiced in similar contexts including in West Africa was provided. As a result, the cost of the proposed grid rehabilitation investments has been reduced significantly, and investments are now consistent with regional standards. Besides the optimization of SNEL practices, an innovative, lower-cost, grid expansion technique—pole-mounted transformer network (MALT)—has been introduced and will be piloted for the electrification of selected peri-urban dark pockets, where the density of settlements and network configuration are more appropriate. Appropriate mainstreaming of this approach will lead to further cost reductions and contribute to maximizing the impact of the financing.

C. Financial Management

78. The FM system of UCM has been assessed to determine whether (a) adequate FM arrangements (staffing, budgeting, accounting, internal control, reporting, and external audit) are in place to ensure that the project funds will be used for their intended purposes efficiently and economically; (b) financial reports will be prepared accurately, reliably, and on time; (c) the project's assets will be safeguarded properly; and (d) the auditing arrangements are acceptable. The assessment concluded that UCM's FM arrangements meet the World Bank's minimum requirements under the World Bank's Financial Management Directive. To strengthen UCM's FM, a number of actions and their implementation time frame were proposed (see Table 3 and further details in Annex 3). After consideration of the FM action plan, the overall residual FM risk is Substantial, given the UCM's lack of extensive experience in managing World Bank-financed projects. To mitigate the risk, the project will be supervised twice per year to ensure that project FM arrangements operate well and funds are used for the intended purposes and in an efficient way. The supervision intensity will be adjusted over time considering the project's FM performance and FM risk level.

Table 3: Financial Management Action Plan

Action	Entity Responsible	Deadline for Completion
Open a Designated Account (DA) in a financial institution acceptable to the World Bank	UCM	Effectiveness
Recruit an internal auditor on a competitive basis	UCM	Effectiveness
Recruit an administrative and financial officer on a competitive basis	UCM	Effectiveness
Recruit an accountant on a competitive basis	UCM	Effectiveness

Finalize terms of references (ToRs) for the recruitment of the external auditor acceptable to IDA	UCM	Effectiveness
Upgrade the computerized information system	UCM	Effectiveness

D. Procurement

79. Procurement for the proposed project will be carried out in accordance with the World Bank Guidelines, including (a) 'Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers', dated January 2011 (revised July 2014); (b) 'Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers', dated January 2011 (revised July 2014); and (c) 'Guidelines: On Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants', dated October 2006 (revised January 2011). The overall responsibility for project implementation rests with UCM, whose procurement team does not yet have experience in World Bank projects. Because of this as well as country conditions, the overall unmitigated risk for procurement is Substantial. Agreed corrective measures focus on (a) strengthening the procurement team with new staff as well as training on project software and World Bank procedures; (b) agreement on a Procurement Plan for the first 18 months of the project; and (c) diligent oversight by the World Bank supervision team. The prevailing risk can be improved to Moderate if the corrective measures are implemented. UCM has also begun work with SNEL and other counterparts to prepare the initial procurement packages, with a view to contract signing shortly after project effectiveness. Further details are in Annex 3.

E. Social (including Safeguards)

80. Overall, there are no major negative social impacts expected from the proposed project. Planned activities focus on improvements of existing power generation infrastructure, construction, and rehabilitation of distribution networks, turbines, and transformers, to improve the quality of service by the national power company, SNEL, and the private sector. Potential limited impacts are expected from Component 1 where a number of physical works might have an impact on communities living in the urban centers in and around Kinshasa, and in the (semi) rural areas where there could be presence of indigenous peoples, specifically in the North Ubangi Province, in Mobayi and Gbadolite. OP/BP 4.10, Indigenous Peoples, and OP/BP 4.12, Involuntary Resettlement, are both triggered.

81. The safeguards framework instruments include an Environmental and Social Management Framework (ESMF), a Resettlement Policy Framework (RPF), and an Indigenous Peoples Planning Framework (IPPF). The frameworks include an assessment of labor influx issues and incorporate appropriate mitigation measures such as safeguard monitoring responsibilities within construction and supervision contracts. The potential gender-related risks as a result of labor influx, including increased risk for gender-based violence, have been assessed. The RPF and IPPF were approved by the World Bank and disclosed in-country in newspapers on March 9, 2017. The frameworks were also disclosed by the World Bank on March 10, 2017. As sites where the rehabilitation and densification of the Western and Central Kinshasa network will take place are not yet identified, the Environmental and Social Impact Assessment (ESIA) and Resettlement Action Plan will be prepared during implementation. They will introduce mitigation measures and provide management and implementation procedures. In their preparation, there will be an emphasis on the consultation process, which will be conducted in a gender-sensitive manner and ensure broad community support of the project by indigenous peoples and organizations representing local communities.

82. In terms of capacity in safeguards management and implementation, UCM is working closely with SNEL, which has the technical responsibility for implementing its component and has experience in safeguards implementation from previous World Bank-financed energy sector projects: SAPMP and PMEDE. UCM will be staffed with both a social development specialist and an environmental safeguards specialist, who will work with (and learn from) SNEL's social and environmental safeguards specialist, who has monitored the implementation of safeguards measures under the two World Bank-financed projects and has benefitted from two World Bank safeguards capacity-building initiatives in October 2015 and November 2016. A training on gender and energy will be provided to SNEL's social and environmental specialist and SNEL's project staff with the support from the Africa Renewable Energy Access Gender and Energy Program (P149119). These training activities will be undertaken as part of the ongoing wider capacity-building efforts in the DRC. Initial trainings were held in November 2015 and subsequently in November 2016. Additional trainings are planned in fiscal year 2017, with an emphasis on wider social issues, including labor influx. In addition, construction/installation contracts will include requirements for contractors to implement all aspects of Environmental and Social Management Plans (ESMPs), including explicitly aspects related to labor influx issues and worker safety. Also, UCM, SNEL, and owners engineers will be responsible for supervising not only technical aspects but also progress on ESMPs.

F. Environment (including Safeguards)

83. Activities in all the investment components will generate potential adverse impacts on the environment, especially network rehabilitation, electrification of 'dark pockets' in Kinshasa, rehabilitation of the run-of-river Mobayi Hydropower Plant, and rehabilitation and expansion of the distribution network in Gbadolite. The generated impacts are expected to be localized and can be avoided, mitigated, or compensated. Consequently, the environmental category of this project is 'B'. To address these environmental risks and expected impacts, the following policies are triggered: OP/PB 4.01 -Environmental Assessment, OP/BP 4.04 - Natural Habitats, OP/BP 4.36 - Forests, OP/BP 4.11 - Physical Cultural Resources, and OP/BP 7.50 - Projects on International Waterways.

84. Because design details are not yet known for expected investments, an ESMF, which is recommended in such a case, has been prepared. The ESMF outlines an environmental and social screening process, including institutional responsibilities for screening, review, and clearance, and implementation of mitigation and monitoring measures for future investments. It includes specific sections to address all issues related to OP/BP 4.04 - Natural Habitats, OP/BP 4.36 - Forests, and OP/BP4.11 - Physical Cultural Resources. The ESMF has been reviewed, consulted upon, and disclosed both within the DRC and by the World Bank on March 4, 2017, and March 7, 2017, respectively. The ESMF is also designed to serve as a guide for developing ESIAs and ESMPs, as needed, once the exact sites are known. The ESIA will be prepared by the Client in accordance with OP 4.01 to meet the World Bank safeguards policies and the national applicable legislation. The ESIA will include a diagnostic of the project areas, potential environmentally adverse impacts, potential issues related to labor influx, and mitigation measures to manage properly expected adverse impacts. In particular, the ESIA will highlight specific provisions that need to be included in construction/installation contracts to ensure that contractors' ESMPs address relevant mitigation measures. Though no works on dam structures and water reservoirs are envisioned in the project and potential sub-projects from the private sector are not yet known, the OP/BP 7.50 on international waterways was preventively triggered as the Mobayi hydropower plant (whose ancillary equipment in the power house will be rehabilitated) is located along the Ubangui River, a tributary to the Congo River, an international waterway; and prefeasibility studies (including environmental and social impact aspects) sites might be located on the Congo River or the

Nile River (another international waterway). As required under OP/BP 7.50, a riparian notification was prepared, and 16 riparian countries[14] were notified in December 2016. As of March 31, 2017, no responses or comments/objections from the notified riparian countries have been received. In addition, the World Bank staff has assessed that the project will not cause appreciable harm to the other riparians, and will not be appreciably harmed by the other riparians's possible water use.

G. Gender

85. Opportunity and outcome gaps between women and men persist in the DRC. In addition to gaps in access to more and better jobs and discrepancies in health outcomes, according to the Demographic and Health Survey 2013–2014, 25 percent of households in the DRC are headed by women (that is, widows, divorced women, and single mothers). Of these, 24.4 percent of urban households and 25.2 percent of rural households are headed by women.[15] Female-headed households tend to be poorer and lack access to economic opportunities according to a 2014 study funded by USAID.[16] In addition, as main users of electricity at the household level, women are likely to be negatively affected by unreliable and/or low-quality electricity supply. In the context of the DRC, against this backdrop, the project will seek to better understand gender interfaces and issues, and develop and implement relevant actions to foster gender integration and social inclusion.

86. The project will also finance a gender-informed communication and awareness campaign to reduce residential and commercial electricity theft and address safety and bill collection concerns. The campaign will target both male-headed and female-headed households. The consumer outreach activities will aim to change community perceptions around entitlement to free electricity and to increase consumer knowledge about dangers associated with using shared and illegal connections. The communication campaign will provide information about the use of prepaid meters, planned improvements in electricity service, and positive impacts of using legal electricity connections. It will also increase consumer awareness about energy efficiency measures and waste prevention. Communication and awareness-raising activities will be designed and conducted in a gender-sensitive and inclusive way, which will consider particular challenges female-headed households might experience in having legal electricity connections and women's concerns related to service quality. These activities will reach out to specific social circles of women, utilize channels women are more likely to use, and tailor messages in a way that is accessible for both women and men. The communication and awareness-raising campaign will be conducted in parallel to improvements in service delivery.

87. A second gender-focused activity will prioritize the connection of female-headed households (that is, widows, divorced women, and single mothers). Given the significant percentage of female-headed households in the DRC and their socioeconomic vulnerabilities, the project will assist female-headed households with connection charges. During the MTF survey, the project will help identify particular problems female-headed households might experience in accessing to electricity. To the extent possible in light of SNEL's weak customer interface, the project will monitor the percentage of female-headed households provided with new electricity connections.

[14] Riparian countries that were notified are: Angola, Burundi, Cameroon, Egypt, Eritria, Ethiopia, Gabon, Kenya, Malawi, Republic of Central Africa, Republic of Congo, Rwanda, South Sudan, Tanzania, Uganda, Zambia

[15] *Democratic Republic of Congo: Demographic and Health Survey 2013-2014: Key Findings, Ministry of Monitoring, Planning and Implementation.*

[16] *Frontiers in Development: Ending Extreme Poverty*, USAID, Washington, DC, 2014.

H. Citizen Engagement/Beneficiary Feedback

88. Community engagement activities financed by the project will include a national survey to analyze access to electricity under the MTF. The survey can be adapted to better fit with country/client conditions, and SNEL is interested in measuring the satisfaction degree of their customers. The survey will be repeated to measure the impact of the project and thus the evolution of the customers' degree of satisfaction. In an effort to promote transparency and accountability, key survey findings will be published. The survey will pay special attention to women's satisfaction with electricity service and women's awareness of available consumer feedback mechanisms (that is, call centers) that they can use to raise their complaints and grievances. The survey sample will include married women, widows, and single mothers, and the survey will collect and report gender-disaggregated data. The PMEDE, financed by the World Bank and currently ongoing, is financing a call center to improve SNEL's commercial management. The call center will serve to take note of the faults and trigger the maintenance department to solve the problem in the determined time. The project will also finance the expansion of this service to document, monitor, and communicate improvements while addressing customers' complaints and informal electricity connections. This consumer feedback mechanism will be strengthened in a way that will be accessible to women and consider particular concerns and needs of women.

I. World Bank Grievance Redress

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

Annex 1: Results Framework and Monitoring

DEMOCRATIC REPUBLIC OF CONGO: Electricity Access and Services Expansion Project

PDO Statement: The project development objective is to expand access to electricity in target areas.
These results are at: project level.

Project Development Objective Indicators							
Indicator Name	**Baseline**	**Cumulative Target Values**					
		2018	**2019**	**2020**	**2021**	**2022**	**End Target**
People provided with new or improved electricity service (number) (Corporate Results Indicator)	0	0	0	500,000	1,250,000	2,000,000	2,000,000
Generation capacity of energy constructed or rehabilitated (MW) (Corporate Results Indicator)	0	0	0	0	3.75	7.5	11.25
Intermediate Results Indicators							
Indicator Name	**Baseline**	**Cumulative Target Values**					
		2018	**2019**	**2020**	**2021**	**2022**	**End Target**
Component 1: Network Upgrades and Access Expansion in Selected SNEL Service Areas							
Households with new electricity connections (number)							
• Kinshasa	0	0	0	10,000	30,000	50,000	50,000
• Gbadolite	0	0	0	500	1,500	3,000	3,000
Households (formal customers and informal users) that will receive improved service with prepaid meters under the project (number)							
• Kinshasa	0	0	0	40,000	100,000	230,000	230,000
• Gbadolite	0	0	0	1,000	2,000	5,000	5,000
Number of hours of available electricity per day that customers receive in the project intervention areas (hours)							

Project Development Objective Indicators							
Indicator Name	**Baseline**	**Cumulative Target Values**					
• Kinshasa • Gbadolite	4 TBD[17]	4 TBD	4 TBD	8 8	12 12	16 16	16 16
Average voltage drop of electric current in the project intervention areas (percentage) • Kinshasa • Gbadolite	 40 35	 40 35	 40 35	 30 20	 15 15	 10 10	 10 10
Female-headed households provided with new or improved electricity connection under the project (percentage)	0	0	0	2	7	10	10
Customer satisfaction survey conducted	No survey	Baseline survey conducted	Survey report prepared and circulated to 2 ministries		Customer satisfaction survey on few areas	Customer satisfaction survey at large scale and report published on SNEL website	Customer satisfaction survey conducted at project closure and report published on SNEL website
Component 2: Private Sector-based Access Expansion							
Households with new electricity connections from 'private sector' (number)	0	0	0	500	1,500	2,500	2,500
Subprojects that have received loans under the project (number)	0	0	0	0	1	3	3
Volume of IFI wholesale loans (US$)	0	0	0	0	3	8,000,000	8,000,000
Subprojects that have received grants/subsidies (number)	0	0	0	1	3	5	5
Component 3: Sector Development and Implementation Support							

[17] This will be determined by January 2018.

Project Development Objective Indicators							
Indicator Name	**Baseline**	**Cumulative Target Values**					
Operationalization of a rural electrification entity (text)	Law passed to establish agency	Core staff recruited	Operations Manual adopted	1 subproject under analysis	1 subproject approved for funding	2 subprojects approved for funding	Functioning rural electrification agency
National geospatial electricity access plan and investment prospectus developed (text)	No plan and investment prospectus	Study launched			Plan adopted	Prospectus developed and adopted presented to donors and investors	Plan and prospectus presented to donors and investors
Mid-size hydropower prefeasibility studies for 2 sites completed (text)	No prefeasibility study	Long list of sites approved and prefeasibility studies launched	Prefeasibility studies completed				Completed prefeasibility studies
Prefeasibility studies conducted for the electrification of the new provincial capitals (text)	No studies	Studies launched		Studies completed	Studies presented to the private sector	Studies presented to the private sector	Studies presented to the private sector
Staff from UCM, ANSER, and MERH trained (number)	0	0	10	50	100	150	150

Indicator Description				
Project Development Objective Indicators				
Indicator Name	**Description (indicator definition etc.)**	**Frequency**	**Data Source/Methodology**	**Responsibility for Data Collection**
People provided with new or improved electricity service (number)	The indicator measures the number of people who have received new or improved electricity service through operations supported by the project. The baseline value for this indicator is expected to be zero. The people concerned are those in households, businesses, and community facilities who have received new electricity connection or improved electricity service. For households, the number of people provided with new or improved electricity service will be based on the number of households multiplied by an estimated 8 people per household. Improved electricity service refers to the additional hours of electricity available for households with an existing connection to the grid.	Annual	Annual Report	UCM
Generation capacity of energy constructed or rehabilitated (MW)	The indicator measures in MW the generation capacity of conventional (thermal) and renewable energy facilities constructed or rehabilitated through operation supported by the World Bank.	Annual	Annual Report	UCM
Intermediate Results Indicators				
Indicator Name	**Description (indicator definition etc.)**	**Frequency**	**Data Source/Methodology**	**Responsibility for Data Collection**
Component 1: Network Upgrades and Access Expansion in Selected SNEL Service Areas				
Households with new electricity connections (number)	The indicator measures the number of households that have received new electricity connection through operations supported by the project. The baseline value for this indicator is zero.	Annual	Annual Report	SNEL/UCM
Households (formal customers and informal users) that will receive improved service with	The indicator measures the number of households that are either formal customers of SNEL or informal users (receiving electricity informally from formal customers) that will receive improved service (higher number of hours of available electricity and/or better voltage of current) with prepaid meters	Annual	Annual Report	SNEL/UCM

prepaid meters under the project (number)	under the project.			
Number of hours of available electricity per day that customers receive in the project intervention areas (hours)	This indicator measures the number of hours that electricity is available on average per day at households in the targeted project areas. This indicator will be estimated based on multitier electricity access surveys and measurements from electricity monitoring devices.	Annual	Annual Report	SNEL/UCM
Average voltage drop of electric current in the project intervention areas (percentage)	This indicator measures the percentage of voltage drop at the farthest household connected to the network that will be rehabilitated/expanded under the project	Annual	Annual Report	SNEL/UCM
Female-headed households provided with new or improved electricity connection under the project (percentage)	This indicator measures the percentage of female-headed households connected under the project.	Annual	Annual Report	UCM
Customer satisfaction survey conducted (text)	This indicator measures the completion of both the baseline survey and at least one follow-up survey during the course of the project.	Annual	Annual Report	SNEL/UCM
Component 2: Private Sector Based Access Expansion				
Households with new electricity connections from 'private sector' (number)	This indicator measures the number of households that had no electricity connection before but have gained electricity connection from a 'private sector' service provider that received a grant/subsidy or loan from the project. As indicated in the project description, 'private sector' includes private developers, NGOs, provincial entities, religious organizations, local cooperatives, SNEL, or a combination of these actors.	Annual	Annual Report	UCM
Subprojects that have received loans under the project (number)	This indicator measures the number of subprojects that have received loans under the project.	Annual	Annual Report	UCM
Volume of IFI wholesale loans (US$)	This indicator measures the total amount of loans provided by the participating credit institutions.	Annual	Annual Report	IFI
Subprojects that have received grants/subsidies (number)	This indicator measures the number of subprojects that have received grants/subsidies under the project.	Annual	Annual Report	UCM/ANSER

Component 3: Sector Development and Implementation Support				
Operationalization of rural electrification entity (text)	The operationalization of the rural/peri-urban electrification entity is characterized by developed and approved procedures for financing (grants/subsidies) electrification subprojects, dedicated staff in place for processing subprojects, and at least one subproject approved. The entity should, ideally be ANSER or could be a transitioning entity playing the role of ANSER, such as UCM.	Annual	Annual Report	UCM
Mid-size hydropower prefeasibility studies for 2 sites completed (text)	The achievement of this indicator is characterized by the availability of validated prefeasibility reports on two hydropower sites. The sites will be selected based on a preliminary long list of sites that will be screened against a agreed set of criteria.	Annual	Annual Report	UCM
Prefeasibility studies conducted for the electrification of new provincial capitals (text)	The achievement of this indicator is characterized by the availability of validated prefeasibility reports on the electrification of new provincial capitals.	Annual	Annual Report	UCM
National geospatial electricity access plan and investment prospectus developed (text)	This indicator tracks the development of the national geospatial electricity access plan and investment prospectus, using key milestones such as (a) study launched, (b) plan adopted, (c) prospectus developed and adopted, and (d) plan and prospectus presented to donors.	Annual	Annual Report	UCM
Staff from UCM, ANSER, and MERH trained (number)	This indicator measures the number of beneficiaries trained under the project.	Annual	Annual Report	UCM

Annex 2: Detailed Project Description

DEMOCRATIC REPUBLIC OF CONGO: Electricity Access and Services Expansion Project

Background

1. The proposed project will be the cornerstone of the GoDRC's larger national electrification program to be financed by the Government and other donors. Toward this end, the project will include financing for investments as well as technical assistance and capacity strengthening. The former is intended to add substantive numbers of new customers and current customers with improved service, which is expected to build momentum in the program. The latter is aimed at supporting the establishment of a strategic framework and institutional mechanism for significantly scaling up electrification to facilitate an increase in momentum. In doing so, and in response to the DRC's pressing energy needs across all geographies and consumer segments, the project seeks to balance the delivery of access through established practices in the near term with the creation, testing, and scale-up of new access models in the mid to long term. Flexibility in program design is important in this early stage to allow for the inevitable changes that will be needed to address ongoing learning as the project proceeds. At the same time, capacity and governance constraints necessitate a phased implementation approach and the inclusion of checks and balances into the project design as well.

2. At the present juncture, it is not clear whether a public sector (SNEL-based) approach or a private sector approach will be more effective in scaling up the DRC's energy access. The current legal framework allows for both, and there is a possibility that both will succeed in a largely complementary fashion. For this reason, the proposed project supports both paths. However, it is recognized that the DRC context remains complex and uncertain, and that paths that today may look promising may in future not proceed as expected. Instead of selecting 'winners' ex ante, the project is designed to support each path with a clear understanding that some may not proceed past the initial phases during the project lifetime. This is especially true for Subcomponents 2.1 and 2.2. In view of SNEL's advanced state of readiness for Subcomponent 1.1 (designs prepared before appraisal) it is expected that this may be the first investment component to disburse. In addition, SNEL will be supported to complete energy access investments—such as the electrification of Kimbaseke—in the PMEDE and preparing additional access-related investments. If appropriate, uncommitted funds in other components could be reallocated for them.

3. Concrete outputs, namely upgraded distribution networks and metered electricity connections, will target both selected parts of the nationally owned grid through SNEL (Component 1), as well as SNEL grid extensions, independent grids, and service provision to currently unserved urban, peri-urban, and rural areas that will be financed through a credit mechanism and subsidy fund (Component 2). Some of the investments outside of SNEL may be owned by the Government but operated by concessionaires such as the private sector, NGOs, provincial entities, religious organizations, local cooperatives, SNEL, or a combination of these actors. These are loosely categorized as 'private' in the sense that their financing and operation will be commercially oriented, which is a hallmark of the private sector. The project also includes sector development and technical assistance (Component 3) to support the implementation of the first two components and also develop follow-on investments, through comprehensive planning, feasibility studies, and other analytical work to grow the DRC's access program.

4. Overall, the project will support three investment pathways. Under SNEL, the project supports (a) reinforcement and extension of the Kinshasa network (Subcomponent 1.1) and (b) rehabilitation of a hydro-based independent grid network in Mobayi (Subcomponent 1.2). Under the private sector, the project supports developer-led initiatives powered by renewable (hydro and

solar) generation, through the provision of financing (Subcomponent 2.1) and/or connection subsidies/grants (Subcomponent 2.2).

5. The proposed project will build on achievements from past projects financed by the World Bank and other development agencies and complement ongoing initiatives from other donors. In Kinshasa, access to electricity will be provided (Component 1) from power currently available owing to investments in generation and transmission lines realized through the World Bank-financed SAPMP and PMEDE and the AfDB-financed *Projet d'Electrification Peri-urbaine et Rurale*. Also, the proposed project will rehabilitate and extend distribution networks in Kinshasa, complementing similar investments in Northern Kinshasa envisioned through the AfDB's Governance and Electricity Access Project approved in December 2016, as well as investments in Eastern Kinshasa from the PMEDE project. Moreover, the proposed technical assistance activities are informed by preliminary work funded by the European Union Energy Initiative Partnership Development Facility and designed to be complementary to the ongoing USAID-funded technical support to both the rural electrification agency (ANSER) and the electricity sector regulator (ARE). Ongoing collaboration with these and other partners, including IFC, DFID, KfW, GIZ, UNDP, and others is being actively pursued through a recently created energy donor coordination group to maximize the combined impact of the development partners.

6. The long-term success of the 'private' investments hinges on two primary factors:

(a) Institutional capacity of the rural electrification agency, ANSER, and the electricity sector regulator, ARE; and
(b) Local and private sector participation.

7. To maximize institutional capacity, the project emphasizes a learning-by-doing process that combines organizational development, technical learning from other decentralized national access initiatives, and the gradual roll-out of access investments as described above.

8. The project has three components: (1) Network Upgrades and Access Expansion in Selected SNEL Service Areas; (2) Private Sector-based Access Expansion; and (3) Sector Development and Implementation Support.

Component 1: Network Upgrades and Access Expansion in Selected SNEL Service Areas (US$97 million equivalent: GoDRC US$2 million and IDA US$95 million equivalent, of which US$90 million equivalent IDA grant and US$5 million equivalent IDA credit)

9. The component seeks to address critical issues highlighted in the SNEL Recovery Plan by contributing to reduce the utility's technical and commercial losses while improving and expanding access. It will finance investments in SNEL grids in selected areas and provide technical assistance to support effective implementation and operation. The investments in SNEL grids will, in the short term, target densely populated urban areas (for example, the capital city, Kinshasa) and provincial capitals with pressing power needs and potential for synergies with other World Bank-financed projects to maximize development impacts (for example, Gbadolite).

Subcomponent 1.1: Investments in Kinshasa

10. This subcomponent will focus on improving and expanding electricity access in high-density areas of Kinshasa where power is relatively available but service is poor. Kinshasa West and Center, which encompass 10 communes, will be the target areas. The electrification of 'dark pockets' in Kimbaseke is also included. The subcomponent will include the electrification of 'dark pockets' and network strengthening, resulting in new electricity connections and improved level of electricity

service for currently formal and regularized customers. Other co-benefits include reduced technical and commercial losses and enhanced management of electricity sales and consumption. The subcomponent will support the following investments in two phases. Additional similar investments may also be considered depending on progress and funding availability.

- **Network strengthening and electrification of 'dark pockets'.** SNEL's Kinshasa distribution network includes about 392 MW/LV substations that are currently heavily overloaded and have to be switched on/off manually on a daily basis to avoid damage, resulting in power outages and poor quality service. Within the western and central parts of Kinshasa service areas, there is a significant number of high-to-low density settlements with no electricity service (known as 'poches noires' or 'dark pockets') but surrounded by served areas. To improve the level of service and provide new electricity connections in 'dark pockets', the subcomponent will install 148 new MV/LV substations, associated MV and LV lines, services drops, and prepaid meters to households.[18]

- **Network rehabilitation.** Some elements of the Kinshasa network date back to the 1960s. With the utility's poor financial situation, network maintenance/upgrades and expansion over the years have been limited, patchy, and uneven. As a result, many parts of the distribution network are in a dilapidated state and unsafe (about 60 documented human deaths from electrocution each year). Also, there are significant numbers of users who are illegally and unsafely either 'hooked up' to the network or wired out from formal customers who pay a flat fee and resell electricity, without any revenues to SNEL. Against this backdrop, the component will finance rehabilitation and upgrade of distribution networks, including substations, poles, conductors, and associated hardware to ensure compliance with relevant technical and safety requirements. The component will also provide prepaid meters for current formal customers as well as 'informal/unauthorized' users that will be regularized. Project provision of ready boards is also being considered for households who otherwise would be unable to connect due to the cost of house wiring or if the house structure is unsuitable for normal house wiring.

- **Electrification of low-density 'dark pockets' using the MALT technique.** In selected low-density 'dark pockets' where the network configuration, density of settlements, and terrain are appropriate, a lower-cost electrification technique (MALT) will be piloted. This design is standard practice in North America and other regions but new to SNEL, and implementation might turn out to be challenging. Therefore, this phase will prepare detailed engineering studies to pilot the electrification of a few peri-urban, lower-density dark pockets. Based on progress and budget availability, procurement, and construction might be launched, but expected new electricity connections are not accounted in the proposed Results Framework.

Subcomponent 1.2: Mobayi Hydropower Plant and Gbadolite Distribution Network

11. Besides Kinshasa, the project will also target provincial capitals in line with the GoDRC's priorities. Mobayi has been selected as the initial investment in this category in part due to its advanced preparation status and synergies with other World Bank-financed projects. The Mobayi Hydropower Plant is interconnected with the Republic of Central Africa and services Gbadolite, the capital city of the North Ubangi Province, where two World Bank projects in the agriculture and transport sectors are being implemented. Considering that the Mobayi Hydropower Plant is the only hydropower plant delivering power to this network, its operating status is considered as crucial for maintaining electricity service in this area. The plant has three turbines of 3.75 MW each, two of

[18] Inclusion of ready boards to remove the cost of house wiring as a barrier is also being considered.

which are currently out of service, while the third is operating in critical conditions with defective protection equipment including speed regulation.

12. This subcomponent will finance the rehabilitation of key balance-of-plant equipment to restore the run-of-river hydropower plant to full operation. This will include (a) repair or replacement of faulty ancillary equipment on the two nonoperating groups (their existing turbines being in functional condition); (b) emergency refurbishment of key protection and ancillary equipment of the third functioning turbine to sustain the operation of one group while others are rehabilitated; and (c) repair or replacement of common equipment delivering services to the whole plant including the gantry and overhead travelling cranes, water supply and drainage systems, and key measuring and maintenance instruments. Key supply spare parts will be provided, and the local O&M team will be trained to ensure adequate maintenance of the plant.

13. Rehabilitation of the short transmission line from the Mobayi Plant to Gbadolite and the distribution network within Gbadolite will be undertaken in parallel with the hydropower plant rehabilitation. Goods and works similar to Subcomponent 1.1 will be provided, but on a smaller scale. The investments are expected to result in about 10,000 new and improved electricity connections.

Subcomponent 1.3: Technical Assistance for SNEL investments

14. This subcomponent will provide services, capacity strengthening, and operational equipment needed to ensure effective implementation and operation of upgraded and new infrastructure financed by the project. Some of the proposed investments (pilot of single phase pole-mounted transformers, prepaid meters) represent an excursion from SNEL's standard practices with the aim of incorporating international best practice and thereby reducing investment costs as well as electricity losses and improving service. To assist SNEL in mainstreaming the new design, implementation, and O&M practices, the subcomponent will provide services from two owners' engineers (for Kinshasa and Mobayi investments), as well as training and assistance in the management of prepaid meters and other issues. Also, network design software and expertise to develop corporate standards and procedures will be offered both as part of the project preparation advance as well as the project.

15. The subcomponent will also finance a gender-informed communication and awareness campaign to reduce residential and commercial electricity theft and address safety and bill collection concerns. Activities to better engage consumers, such as periodic surveys, and support to the rehabilitation of SNEL's customer call center are also envisioned to document, monitor, and communicate improvements while addressing customer complaints and informal electricity connections.

Component 2: Private Sector Based Access Expansion (US$25 million equivalent, of which US$22 million equivalent IDA credit and US$3 million equivalent IDA grant)

16. This component will promote energy access expansion from the private sector. An ESMAP-funded study highlighted insufficient capital from the private sector to finance access expansion subprojects as a major constraint. Local banks (some of which are already engaged in these projects) have a liquidity constraint and are incapable of providing longer-term resources without a line-of-credit support. Further, households have generally a low ability to pay up-front connection fees. Component 2 has been conceptualized to respond to these constraints, on the one hand through the provision of sub-loans to project developers through a CSF that will be established and piloted under Subcomponent 2.1 and on the other hand through the provision of subsidies and grants through a Rural Electrification Fund (REF) that will be established and piloted under Subcomponent 2.2.

17. During preparation, the ESMAP-funded study identified about 30 subprojects as potentially suitable for support under Component 2. These include provincial capitals, which are a high priority for electrification, as well as other urban and peri-urban population clusters. From this list, the four most advanced subprojects were identified as early financing candidates.

- ***Electricité Du Congo*** **(EDC) - Tshikapa (capital city of the Kasai Province).** High up-front electricity connection costs (about US$760 per connection) constitute a significant barrier to the densification of the current distribution network powered by the Lungundi I hydropower plant, which has an excess power capacity of 0.7 MW currently unused. Also, with the expected operation of the Lungundi II power plant in January 2018 (financed through an AfDB project), about 2.5 MW would be available for residential customers. The provision of connection cost subsidies could enable electricity access to about 4,200–4,400 households. EDC holds a 25-year concession for service to Tshikapa.

- **Virunga SARL - Rutshuru and surroundings (North Kivu Province).** Virunga is adopting a more commercially-oriented approach for the operation of the transmission and distribution grids powered by the Matebe hydropower plant (13.6 MW), which currently runs at 10 percent of its installed capacity. It envisions densifying its network by making about 6,000 new electricity connections in 2017 and much more from 2018 onwards with the completion of the Matebe-Goma transmission line (40 km) and the operation of the 12.8 MW Lubero hydropower plant (currently under construction). A total of about 15,000 new electricity connections could be expected by 2019. Virunga is seeking support for connection costs as well as building more hydropower plants. Virunga SARL holds a 25-year concession for its service area.

- ***Energie du Nord Kivu*** **(ENK).** Beni and Butembo (North Kivu Province): ENK, a public-private partnership between the North Kivu Province, *Société de Techniques Spéciales* (STS, a private power operator), and Nethys SA (a Belgium-based private company), has initiated the implementation of the Beni-Butembo subproject, which involves the construction of the 2.38 MW Ivugha hydropower plant to service the city of Butembo, and the 12 MW Taliah hydropower plant to service the city of Beni. About 20,000 to 40,000 new electricity connections could be provided. ENK has negotiated a concession contract, but the project has not reached financial closure, and ENK is seeking affordable loans and guaranties.

- **ENERKAC - Kananga (Kasai Central).** ENERKAC, a public-private partnership between the Kasai Central Province and private developers (FLOW and STAR), is interested in constructing a 7.5 MW hydropower station (Tshibuyia) in the River Miao. ENARKAC has already connected to SNEL's grid an hybrid power station (hydro and solar) of 2.5 MW. The existing network is in a poor condition, and less than 3 percent of the population have access to electricity. About 4,000 new connections are initially targeted. A concession contract is under negotiation.

18. This detailed subproject work during preparation (funded by ESMAP) has permitted stakeholders –especially UCM, the private sector, and the World Bank team—to have a more nuanced understanding of the challenges and barriers to private participation. The needs of these subprojects have been used as a practical guide for the design of Component 2, as well as technical assistance needs in Component 3. They are expected to be early participants in the project. Additional subprojects are also under development, including with the support of development partners such as KfW and DFID.

19. To be eligible for financing, subprojects must be consistent with the overall project objective of promoting energy access and must be viable from a commercial banking perspective. Investment viability will be assessed using standard due diligence criteria, including technical soundness, economic and financial viability, compliance with national and World Bank environmental and social

safeguard requirements, project sponsor's financial strength, relevant experience, track record, and so on. Note that financial viability would consider any subsidies provided to the subproject. All viable subprojects which meet the project criteria will be eligible for consideration under the project.

Subcomponent 2.1: Credit Support Facility

20. The project will build on the current experience under the Financial Infrastructure and Markets Project (P145554) to establish a CSF with the aim to provide debt finance at market terms for eligible subprojects. A wholesale IFI will use project funds to provide lines of credit to PFIs. The PFIs will onlend the funds to eligible private sector entities for eligible subprojects. Private project developers have expressed a strong need for such funds and local banks have voiced an interest to participate as PFIs in an IDA-funded credit line scheme. *Fonds pour l'inclusion financière en République Démocratique du Congo* (FPM SA), which serves as an IFI under the Financial Infrastructure and Markets Project, has offered to provide advice on the design of the CSF. FPM SA will also be considered as a potential IFI to implement the CSF.

21. This first phase will include the preparation of an Operations Manual, satisfactory fiduciary oversight arrangements, participation agreements, and a credible pipeline of initial investments. The Operations Manual will provide details on the following topics among others: (a) design details (for example, on the flow of funds); (b) eligibility criteria for the IFI and PFIs (for example, adequate profitability, capital, and portfolio quality; acceptable levels of loan collections; appropriate capacity; capacity to mobilize domestic resources; adequate managerial autonomy and commercially oriented governance; and appropriate prudential policies, administrative structure, and business procedures); (c) market efficiency issues (for example, macroeconomic environment, financial sector framework, interest rates, directed credit, and subsidies); (d) onlending terms (including potential market distortions and determination of interest rates at all levels); and (e) M&E arrangements.

22. The CSF will be implemented by an IFI that complies with the eligibility criteria as defined in the Operations Manual approved by IDA. It will be selected jointly by the GoDRC and IDA. The IFI will serve as an intermediator between local banks and the GoDRC on the one hand and between international development institutions and project sponsors on the other. To avoid any conflict of interest, this institution should be separate from financial actors that engage in direct private sector lending in the Congolese market. Further, it should have a credible track record in refinancing local financial institutions such as commercial banks, microfinance institutions, or cooperatives. Finally, the institution should already have strong linkages with external development partners to help mobilize their funding, especially for the longer term. The first phase will end as soon as the World Bank has provided its no-objection to the Operations Manual, concluded a fiduciary and financial assessment of the designated IFI (including an institutional development plan to address any shortcomings), and lifted the disbursement conditions for Subcomponent 2.1.

23. The second phase will begin with the operationalization of the CSF, that is, as soon as the IFI concludes the first onlending agreement with an eligible PFI. This phase will pilot the provision of subproject loans to electricity access subprojects that meet commercial lending due diligence and program criteria. It is expected that up to three such subprojects will be financed during this pilot phase. During this phase, the Operations Manual and implementation arrangements will be revisited on a regular basis (for example, annually) to suggest improvements as needed. The World Bank also conducts a parallel fiduciary and financial due diligence of each PFI and may request an institutional development plan (for example, as an annex to the on-lending agreement between the IFI and the PFI). The IFI, as an implementing agency of the project CSF, will support eligible PFIs in identifying a pipeline of private sector energy access projects that are eligible for funding.

24. The IFI (potentially with the help of a specialized institution) will also play an advisory role to mobilize private finance for energy access in the DRC. The IFI will use its position as an apex institution of the CSF to lead the identification of potential financing opportunities with international lenders able to offer longer tenor loans. In this capacity, the IFI will provide introductions between project developers and potential financiers. Subsequent discussions and formal financing arrangements will be strictly between the developer and the financier with no further role of the IFI.

25. The CSF will facilitate the provision of debt for electricity access investments in areas that are currently not served by the SNEL national grid (nor likely to be served between now and 2025). This subcomponent will provide term financing to local financial institutions for onlending primarily to private sector entities (for example, utilities, NGOs, faith-based organizations, cooperatives, or off-grid solar home systems distributors/service providers). In view of its commercial status under the 2014 Electricity Act, SNEL could be also considered for financing provided it meets the eligibility criteria as defined in the Operations Manual. Off-grid products to be supported will center on solar portable lanterns and solar kits that are quality verified under the Lighting Africa/Lighting Global test methods.

Subcomponent 2.2: Electrification Fund

26. The Electricity Act of 2014 calls for the establishment of an REF, to be capitalized from fees, levies, government and donor contributions, and other sources. It will be established as a pilot under Subcomponent 2.2 of the project and will provide subsidies and grants to address high up-front electricity connection costs, and close the viability gap of eligible subprojects. The project sponsor will need to produce equity and debt to cover the remaining capital costs. Besides, the REF will serve as a framework for providing grants to implement subprojects that are not commercially viable, such as those with currently no private developers. Similar to the CSF, the REF will also be implemented in two phases.

27. In a first phase the REF will be designed. This phase will be concluded with an appraisal by the World Bank of the REF Operations Manual and implementation arrangements in place, including clear and transparent criteria and processes for establishing grant amounts. This will include a decision structure including ANSER (or predecessor) as secretariat for an Electrification Board (or equivalent). ANSER will evaluate proposals and forward to the board with a recommendation. The board will be the final decider.

28. The second phase will begin with the operationalization of the REF. Each project proposal will be reviewed on its merits, and assessed against core principles such as impact (that is, the number of new customers to be served); compliance with engineering and safety standards; efficiency (especially lower-cost engineering designs); financial and administrative strength of the project sponsor; and compliance with fiduciary, environmental, and social safeguards. Proposals deemed acceptable on these criteria will be assessed against a three-way affordability balance: affordability for the customer to pay both initial and recurrent costs,[19] affordability for the project sponsor to provide satisfactory service with a fair return on investment, and affordability for the Government seeking to maximize its leveraging of grant resources while also accelerating energy access scale-up.

29. During this second phase, the Operations Manual and implementation arrangements will be regularly revisited and further improved based on acquired experience. The reason for this incremental approach is as follows: outside of SNEL's efforts, electrification in the DRC remains at a

[19] Note that the 2014 Electricity Act permits private providers to offer a tariff different from the SNEL tariffs.

nascent stage and is limited to a small number of investments which are highly leveraged with grant funds. This experience is insufficient to establish standardized subsidy delivery mechanisms or levels aimed at maximizing grant leveraging while at the same time scaling up electrification rates. The operation of the pilot REF will therefore be undertaken to establish a baseline of experience on which to improve the design towards a more objective subsidy delivery mechanism.

30. The CSF and the REF will be designed as independent mechanisms implemented by two different institutions. From the perspective of a private project developer, however, they will not be mutually exclusive but potentially complementing instruments. Eligible subprojects can receive either subsidies or only loans, both or neither. The eligibility criteria for private project developers will be defined during the first phase of each subcomponent and will consider, among others, key principles (such as cost and tariffs affordability for consumers, a fair return for the private sector, and the Government's ability to provide grants/subsidies) that will be outlined under the development of the national electrification strategy.

31. Developers will be expected to explore commercial financing (including through the CSF, which will provide financing at commercial terms only) before approaching the REF. At the same time, it is recognized that financiers would only confirm financing once the grant/subsidy element is clear. The possibility exists that this would result in an incomplete financing package. Should this occur, the developer could appeal to the REF for a second-round review. IDA no-objection will be required for release of subsidy/grant funds, which would be disbursed against agreed subproject milestones.

Component 3: Sector Development and Implementation Support (US$25 million equivalent IDA grant)

32. This component will center on establishing and/or strengthening the institutional capacity needed for the expansion of energy access outside of SNEL's service area. It will also serve as a platform for developing follow-on investments, contributing to the development of mid-size hydro power, and provide needed resources for project implementation and monitoring.

Subcomponent 3.1: Institutional Strengthening

33. The subcomponent will contribute to the implementation of key institutional provisions of the 2014 Electricity Law, which liberalizes the power sector and calls for the creation of ANSER and ARE. The subcomponent will provide technical assistance to strengthen MERH's role, enable ANSER and ARE to become operational, support due diligence for the credit facility, and provide access related to institutional strengthening support to other sector stakeholders such as SNEL. The assistance will build on the operationalization road maps developed under support from USAID and the European Union Energy Initiative Partnership Development Facility and complement assistance from the AfDB. The assistance will include technical and advisory services to enable the provision of concessions, carry out technical and financial appraisal of subprojects for loans/subsidy delivery, and support the involvement of provincial governments as outlined by the Electricity Law.

34. In particular, the assistance will cover various aspects for the following entities:

- **ANSER.** Review and analysis of grants for solicited and unsolicited investment projects, assistance in business plan preparation and analysis, engineering assistance, business development services to promote productive uses, gender-sensitive awareness raising, education and communication campaigns targeting local communities and provincial governments, and development of an Operations Manual for the Electrification Fund.

- **ARE.** Development of standard concession contracts, and transparent manual of procedures, regulatory assistance in setting tariffs, and consumer feedback mechanisms.

- **IFI.** Technical due diligence of subprojects.

Subcomponent 3.2: Planning and Investment Development

35. The subcomponent will be a vehicle for developing a pipeline of investments (beyond those identified during project preparation) for gradual access expansion based on sectorwide planning. It will finance the development of a least-cost geospatial electricity rollout plan, which will build on the GoDRC's Country Action Plan developed under the SE4All initiative with assistance from the AfDB. Recognizing that the 'process' is perhaps as important as the 'product', the electricity rollout plan will be developed in a participatory manner, bringing together the GoDRC, donors, private sector (including developers and financiers), and civil society. The electricity rollout plan will be complemented by the preparation of a short-term investment prospectus, which will provide a rallying framework for leveraging financing. The participatory aspect will be designed to allow early identification by potential financiers of potential financing opportunities, so that they can plan the investments into their multiyear financing programs.

36. The GoDRC also wishes to accelerate the electrification of provincial capitals through competitive concessions. The subcomponent will fund feasibility studies, preparation of bidding documents, and elaboration of key contractual documents through consultations and bidders conferences to tailor the intervention to private interest and capabilities. For example, Kenge, the capital of the Kwango Province, will be targeted, and key bidding and contractual documents will be developed in a concerted manner, using consultations and bidders conferences to tailor the intervention to private sector interest and capabilities. The procurement and construction of such subprojects could be considered under the Electrification Fund subcomponent, if additional financing later materializes.

Subcomponent 3.3: Mid-size Hydro Feasibility

37. In view of the importance of domestic power generation as an integral part of electricity access scale-up, the subcomponent will contribute to the development of the DRC's vast mid-size hydro potential by making available technical and economic information on selected sites, thereby improving the prospects of mobilizing public and private financing for their development. The subcomponent will support the identification of a long list of mid-size hydropower sites. This will include rehabilitation of existing sites if appropriate. The long list of perhaps 30 or more sites will first be screened to identify the most promising candidates for prefeasibility assessments. Screening criteria will include parameters such as proximity to load centers and/or transmission corridors, data availability, previous analysis, likely safeguard impacts, credible stakeholder interest, regional distribution, river basin considerations, and potential environmental and social impacts. Prefeasibility studies will then be undertaken for at least three sites emerging from the prescreening. These will be prioritized for detailed feasibility studies. These feasibility studies for about one or two sites may be undertaken under the project, depending on timing, funding availability, and so on.

Subcomponent 3.4: Project Management

38. This subcomponent will support the operationalization and running of the UCM/ANSER PIU for the duration of the project. UCM will nurture the development of a core ANSER staff at the initial implementation phase untill ANSER is operationally established. Specifically, costs will include (a) the

recruitment of fiduciary, engineering, safeguard, community development consultants; (b) external auditing; (c) office space, equipment, and supplies; (d) transport for project supervision in the provinces; and (e) part-time experts as needed. Eligible travel expenses for the MoF's CSPP unit related to their participation in supervision activities will also be included.

ANNEX 3: IMPLEMENTATION ARRANGEMENTS

DEMOCRATIC REPUBLIC OF CONGO: Electricity Access and Services Expansion Project

Overview

1. **The project will be overseen by the MERH, as the government entity with the responsibility for the policy oversight of the sector.** Within MERH, UCM has been assigned to oversee all donor-financed operations in the sector, including the proposed project. In the mature sector structure envisioned in the 2014 Electricity Act, ANSER, under the oversight of MERH, is expected to play a critical role in expanding access to electricity in the DRC's unserved areas. This agency is still in a nascent stage. SNEL is expected to retain a role with regard to access expansion, including within its service area as well as one of the participants in the broader access expansion program. Commercial financing to project sponsors will be provided through a CSF that will be established and managed by an IFI. The IFI will provide lines of credit to PFIs for onlending to project sponsors for energy access investments. Domestic and international financiers may provide parallel financing. The entire program, including the proposed project, is aimed at providing electricity service to end-use customers. UCM will be responsible for overall project management, implementation, and consolidated project reporting, and will have full responsibility for Subcomponent 2.2 and Component 3. UCM will also be responsible for the fiduciary aspects of Component 1, under an MoU with SNEL. The MoU provides for UCM to be the contractual fiduciary agent and for SNEL to retain responsibility for all technical aspects of their investments including preparation of detailed designs, specifications, and bills of quantities; participation in the procurement process; supervision of contractors; and final commissioning. SNEL will assume ownership of these assets after commissioning. During the course of project implementation, consideration may be given to having SNEL become a full implementing agency for Component 1. The IFI will manage Subcomponent 2.2 once it becomes effective. Before this, the IFI may need to access technical assistance support through the UCM.

Stakeholder Roles

2. **Ministry of Energy and Water Ressources (MERH).** In keeping with the power sector reforms which feature a shift in the GoDRC's role from market maker to market enabler, MERH will adopt a role focusing on strategy, policy, and plan development and overall monitoring of the sector, with other key actors taking the more active implementation roles for rural electrification as described below. To help MERH adopt and mainstream these important, high-level activities, the project will include consultant support to MERH, channeled through the UCM. These will include preparation of a national electrification plan, investment prospectus to promote donor participation, and continued elaboration of the sector structure in support of the ongoing sector reform articulated in the Electricity Act of 2014.

3. **Project Management and Coordination Unit** (**UCM**)**.** UCM has been designated by the Minister of MERH to oversee all donor-funded activities in the energy and hydrology sectors. In this role, UCM serves as the ministry's donor liaison, which includes oversight of project preparation activities as well as ensuring that monitoring, reporting, and feedback functions are duly carried out. UCM has the authority from the ministry for procurement of goods, works, and services that may be necessary in fulfilling its duties. In line with its role, the MERH has designated UCM as the implementing agency/fiduciary for most of the project components with the exception of the CSF subcomponent. UCM's supervision role will not be limited to technical aspects but will also involve social and environmental aspects, including ensuring (through both direct monitoring/supervision and inclusion in contractors' ESMPs) that all ESMF requirements are met.

4. **Rural Electrification Agency (ANSER).** The Electricity Act of 2014 calls for the creation of ANSER as the entity in charge of promoting the expansion of access to electricity in the DRC. In view of the act's broader focus on private participation in the sector, ANSER has an important role in attracting and supporting sustainable private provision of electricity access. The decree creating ANSER calls for it to provide technical support to MERH on matters related to the planning, promotion, and financing of access expansion in peri-urban and rural areas, as well as the provision of technical assistance to key sector actors, such as project sponsors and financiers, and administration of an REF to provide subsidies on a transparent and efficient basis for access expansion. ANSER will report to a Rural Electrification Board appointed by the President and drawn from relevant ministries (MERH, Finance, Rural Development, and Regional Planning) as well as ANSER's Executive Director. The cost of ANSER's operation will be funded by the REF, which will be capitalized from sector levies and fees as well as contributions from the GoDRC, donors, and so on. ANSER will be responsible for analysis of rural electrification policy issues, planning in collaboration with other sector actors, M&E of peri-urban and rural electrification nationally, and information dissemination. ANSER also will act as a secretariat for the Rural Electrification Board. In this capacity, it will review subsidy applications from rural electrification project sponsors and provide recommendations to the Rural Electrification Board for action. Once the funding has been approved by the Board, the Trust Agent for the fund will administer the payments of funds to the applicant. The process will be subjected to close auditing of the flow of funds, compliance with the criteria for the awarding of grants that are fixed by the Board, and efficiency in the processing of applications and requests for funding.

5. ANSER is currently at a nascent stage of development. To become operational, it is proposed that ANSER's institutional development be supported by the UCM, with a critical number of staff initially embedded within UCM. Once the critical staff has matured and demonstrated fiduciary capacity, they would be spun off to become an autonomous entity.

6. ***Societe Nationale de l'Electricite*** **(SNEL).** Under the Electricity Act of 2014, SNEL's former monopoly on electricity supply has been lifted, and SNEL has been directed to act on a commercial basis. SNEL continues to be a fully state-owned enterprise. It is run by a Chief Executive Officer who reports to a Management Committee, overseen by a Board of Directors which in turn reports to the Ministry of Portfolio. As the national power utility in the DRC, and former sole provider of electricity, SNEL owns and operates the largest grid network in the country. With respect to access expansion, SNEL is expected to retain an important role for the foreseeable future. This includes expanding access in its current service areas, that is, primarily Kinshasa, but also including other urban areas such as Gbadolite, Kalemie, and Kisangani. SNEL also will be encouraged to participate along with other project sponsors in ANSER's access expansion program.

7. While the fidicuary role related to SNEL investments and technical assistance in the project (Component 1) will be handled by UCM, SNEL will be responsible for the technical aspects of the component. SNEL's infrastructure investments that will be commissioned and realized in the project will be transferred as assets to SNEL.

8. **Project sponsors.** These are expected to be primarily private sector firms and NGOs, who may form partnerships with local government authorities and/or the communities concerned. They will be eligible for support from the REF for advisory technical assistance on a cost-shared basis to facilitate advancement of their projects. Financial support to project sponsors will come through two paths: the REF and financing from financial institutions

9. These instituions will be primarily local banks and possibly other financial instutitons. Each eligible PFI will enter into a formal agreement with the IFI to receive lines of credit under the Project. The PFI will use these funds for on-lending to project sponsors for eligible subprojects. The PFIs will

be responsible for the appraisal of the subprojects and provide term loans at market terms and with commercial discipline.

10. **IFI**. At present there are only a few private sector energy access investments in the DRC, none of which have received substantial financing from local banks. This is mainly due to a mismatch in the financing needs of these projects compared to the resources available from local financial institutions. To address this financial sector shortcoming, a CSF will be established and provide a level of 'de-risking' necessary for domestic and international financial institutions to finance access subprojects. The CSF will be established at a designated IFI. The IFI will provide refinancing for term loans provided by PFIs to subproject developers. It would also seek to be a 'matchmaker' between project developers and international financiers able to offer longer tenor debt and more sophisticated financing packages such as guarantees. The IFI will receive an administrative management fee. Project reporting will be channeled through UCM.

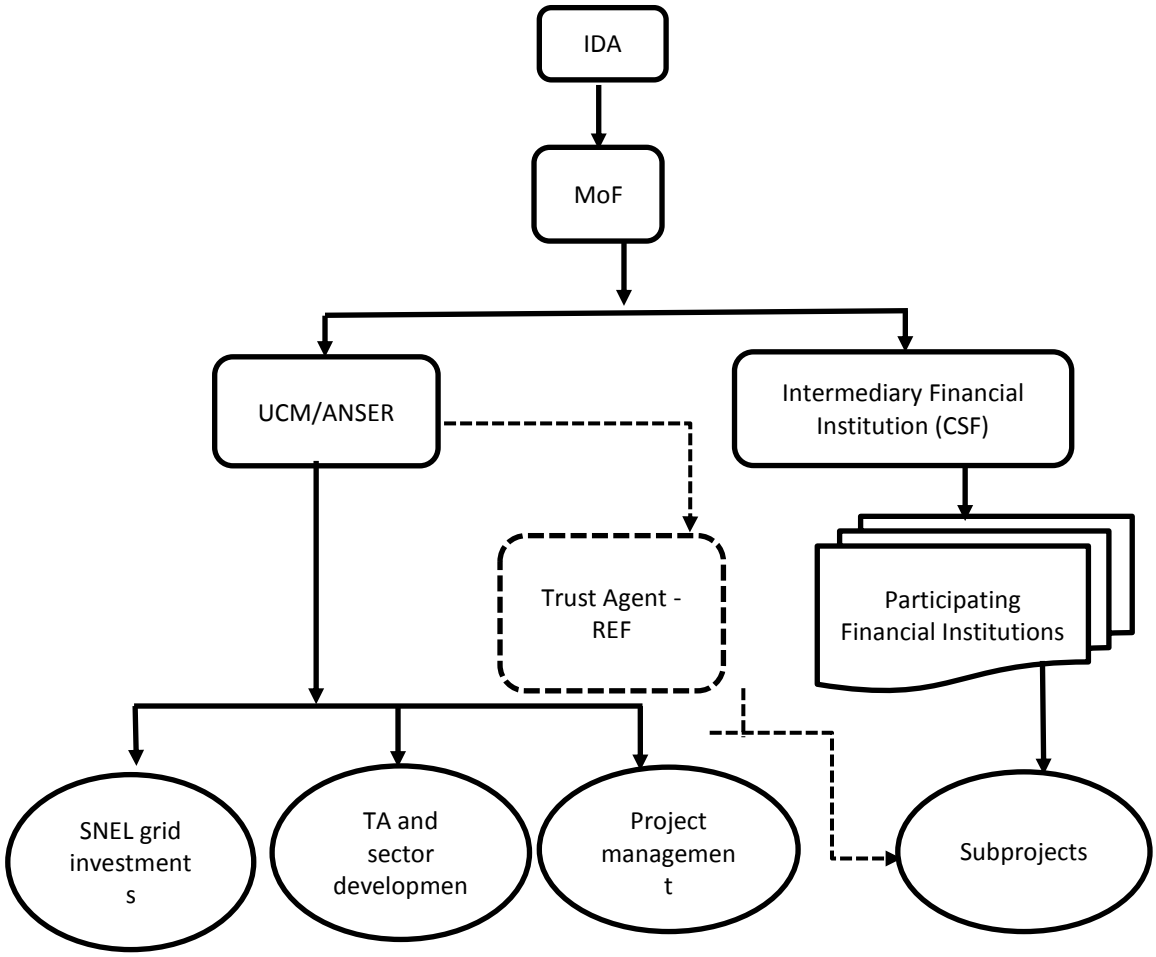
11. **Development partners.** Several development partners are already involved in the DRC energy sector generally, and many have activities specifically aimed at energy access. These include the AfDB, the European Union, USAID, DFID, and KfW. The World Bank task team is actively collaborating with these partners to maximize the synergies among donor contributions. On the GoDRC side, UCM has been tasked with coordinating donor support.

12. **Consumers.** The GoDRC's electricity access program is fundamentally aimed at providing reliable, available, affordable, safe, and legal service to the entire population as well as social services and commercial and industrial enterprises. Hence, the end consumers are to be the primary beneficiaries of the project and program. Ultimately, the intention is to ensure all consumers have access to electricity service which meets their needs and is within their means. Thus as the electrification program matures, customers are expected to have the right to electricity service and the corresponding obligation to pay for services rendered. In practice, new customers frequently start with a low demand for electricity services, in many cases limited to lighting and cell phone charging, which can be met with stand-alone solar products. As demand increases, demand will generally migrate to grid based systems, either the main grid or independent grid systems. To match affordability with demand, strategies such as prepayment and up-front electricity connection cost subsidies will be provided.

Flow of Funds

13. The project will provide funding through two channels: UCM/ANSER and a designated IFI. UCM/ANSER will administer funds for (a) a SNEL access expansion and rehabilitation investments in both Kinshasa and a provincial capital (Component 1); (b) an REF (Subcomponent 2.2); and (c) institutional strengthening, sector development, and project management (Component 3). The IFI will administer a CSF that will provide lines of credit to to PFIs (Subcomponent 2.1). The same IFI or another institution will be the Trust Agent for the REF (Subcomponent 2.2), releasing subsidy funds on instructions from ANSER or its predecessor.

Figure 3.1: EASE Project Flow of Funds



Financial Management, Disbursements and Procurement

14. The project implementation entities will be UCM of the MERH, which is a World Bank project implementing agency, for Component 1, Subcomponent 2.2, and Component 3 and the IFI for Subcomponent 2.1. UCM will have sole responsibility for project fiduciary management. The proposed FM and disbursements arrangements for the implementation of the project comply with the provisions of the World Bank Directive: Financial Management Manual For World Bank Investment Project Financing Operations (Catalogue Number OPCS5.05-DIR.01), issued (retrofitted): February 4, 2015, and effective from March 1, 2010, and World Bank Guidance: Reference material - Financial Management in World Bank Investment Project Financing Operations (Catalogue Number OPCS5.05-GUID.02),issued and effective from February 24, 2015. The assessment concluded that the overall residual FM risk is Substantial.

Implementation Arrangement

15. UCM had been managing the now cancelled DRC Inga 3 and Mid-Size Hydropower Development Technical Assistance Project (P131027 under IDA Grant H9090-ZR). The current project fiduciary team is made up of a recently appointed Chief Financial Officer (*Responsable Administratif et Financier*). The FM performance rating following the last FM supervision rating is Moderately Satisfactory.

16. The FM systems of UCM has been assessed to determine if (a) adequate FM arrangements (staffing, budgeting, accounting, internal control, reporting, and external audit) are in place to ensure that the project funds will be used for their intended purposes efficiently and economically; (b) financial reports will be prepared accurately, reliably, and on time; (c) the project's assets will be safeguarded properly; and (d) the auditing arrangements are acceptable.

17. FM arrangements were found to be adequate subject to meeting the following requirements:

For UCM

(a) Opening the DA in a financial institution acceptable to the World Bank.

(b) The updating of the current Manual of Procedures to consider the grant specificities.

(c) The upgrading of the existing computerized information system to record the project's transactions and prepare quarterly, unaudited interim financial reports (IFRs).

(d) Agreeing on the ToRs for the recruitment of a Chief Financial Officer to ensure their adequacy with minimal World Bank FM Guidelines and proceeding with the recruitment.

(e) The recruitment of an internal auditor.

(f) The recruitment of an accountant.

(g) Agreeing on the ToRs for the recruitment of the external auditor acceptable to IDA.

Country Public Financial Management Situation and Use of Country System

18. The World Bank and other donors' assessments, notably the Country Financial Accountability Assessment, Public Expenditure Review, and Public Expenditure and Financial Accountability Assessment 2008 and 2012, have shown an unsatisfactory economic and financial control environment, including weak budgeting preparation and control, financial reporting, external audit, and human resources. As a result, the overall country fiduciary risk is considered High. The repeated Public Expenditure and Financial Accountability Assessment, concluded at the end of 2012, took stock of the areas of progress and revised the existing public FM strategy plan accordingly. The project 'Strengthening Public Financial Management and Accountability' (P145747), effective since May 2014, is strengthening the public financial management system both at the central and provincial levels. The outcomes of the report on use of the country national public financial management systems assessment, which had been undertaken in April 2013, will be gradually implemented for World Bank-financed projects. Concerning internal and external audits, consultations will be conducted to involve the Ministry of Finance's audit units (*Inspection Générale des Finances* and *Cour des comptes*).

Risk Assessment and Mitigation Measures (UCM)

19. 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). Risks are summarized in Table 3.1.

Table 3.1: Risk Assessment and Mitigation Measures

Risks	Risk Rating	Risk Mitigating Measures	Residual Risk Rating
Inherent Risk			
• **Country Level** Poor governance and slow pace of implementation of PFM reforms that might hamper the overall PFM environment.	**H**	• Some PFM reform programs are currently ongoing through IDA-financed projects: DRC Enhancing Governance Capacity (P104041), and DRC Establishing Capacity for Core Public Management (P117382), in addition to the project DRC: Strengthening Public Financial Management and Accountability (P145747) approved on January 2014 by the World Bank's Board. These reforms will address the key new challenges the country is facing.	H
• **Entity Level**	**S**	• The UCM has some experience in the matter of management of IDA funds. Reinforce the existing fiduciary arrangements, which had been put in place under the World Bank-financed project INGA 3. Provide technical assistance to the UCM by rolling out the fiduciary training plan which aims at strengthening the capacity of UCM fiduciary staff, update UCM's existing Manual of Procedures to capture the specificities of the new project, and extend the work program of the UCM Internal Audit Unit to the new project.	S
• **Project Level** Risk of additional workload. Duties and responsibilities may not be properly understood	**M**	• Recruit one more accountant on competitive basis. • Review the ToRs for existing staff and incorporate a performance element. • For Coordination des Projets-Société Nationale d'Électricité (Project Coordination Unit at the National Electricity Utility) CDP/SNEL—replacing the entire core fiduciary team—the current core project fiduciary team will have to be reviewed and entirely replaced by staff recruited on a competitive basis—the unit will need to recruit a Chief Financial Officer, an accountant, and an internal auditor.	M
Overall Inherent Risk		**S**	
		Control Risk	
• **Budgeting**	**M**	• Annual work plan and budget will be prepared each year. The project FM Manual of Procedures will define the arrangements for budgeting, budgetary control, and the requirements for budgeting revisions. Annual detailed disbursement forecasts and budget required. IFRs will provide information on budgetary control and analysis of variances between actual and budget.	M
• **Accounting**	**S**	• UCM staffing arrangement will be strengthened with an accountant recruited on competitive basis and by reviewing of the ToRs of the recently appointed Chief Financial Officer to ensure their adequacy with minimal World Bank FM Guidelines. The UCM's accounting software will be customized to consider the new project's specificities.	S
• **Internal control**	**S**	• Recruitment of an internal auditor. • The current Manual of Procedures will be upgraded. (a) Regular internal audit missions will be conducted during the project implementation	S

Risks	Risk Rating	Risk Mitigating Measures	Residual Risk Rating
		with a focus on fraud and corruption risk. (b) The work program of the current Internal Audit Unit will be updated to reflect the new project specificities.	
• **Funds flow**	**S**	• A DA in a financial institution acceptable to the World Bank will be opened. • Frequent controls in each involved actor to help prevent and mitigate the risk of diversion of funds will be organized. • Payment requests will be approved by the coordinator and the FM specialist before disbursement of funds. • The FM team is required to ensure monthly submission of the withdrawal application. • An external audit will be performed.	S
• **Financial reporting**	**M**	• Recruitment of an accountant and a Chief Financial Officer • Computerized accounting system. Appropriate accounting software needs to be purchased and customized to generate the financial reports of the project. • The IFR of the new project will use a World Bank-prescribed format and content, subject to material amendments being made to this format and content.	M
• **External auditing**	**M**	Recruitment of an independent external auditor based on agreed ToRs developed in line with International Accounting Standards (including fraud and corruption). ToRs will be subject to approval by IDA.	M
• **Fraud and corruption**	**H**	• Frequent controls of each actor need to be organized to help prevent and mitigate the risk of diversion of funds. • Procurement committes will involve not only UCM and SNEL but also Owners' Engineers, MHI, and MERH. • Payment requests will be approved by the Coordinator and the Financial Manager before disbursement of funds. • The future FM team is required to ensure monthly submission of the withdrawal application.	S
• **Governance and accountability** Possibility of circumventing the internal control system with colluding practices as bribes, abuse of administrative positions, misprocurement and so on, is a critical issue.	**M**	• The ToRs of the external auditor will comprise a specific chapter on corruption auditing. • FM Procedures Manual approved before project effectiveness. • Quarterly IFR including budget execution and monitoring; measures to improve transparency such as providing information on the project status to the public and to encourage participation of civil society and other stakeholders are built into the project design.	M
Overall Control	**S**		**S**

Risks	Risk Rating	Risk Mitigating Measures	Residual Risk Rating
Risk			
Overall FM Risk	**S**		**S**
The overall risk rating is deemed **Substantial**.			

20. The overall risk rating is Substantial.

Table 3. 2: Key FM Weaknesses and Action Plan to Reinforce the Control Environment

Issue	Remedial Action Recommended	Entity Responsible	Deadline for Completion	Effectiveness Conditions
1	Open a DA in a financial institution acceptable to the World Bank	UCM/DRC Government	Effectiveness	Y
2	Upgrading of the existing computerized information system to record the project's transactions and prepare quarterly IFRs	UCM/DRC Government	Effectiveness	Y
3	Updating of the current Manual of Procedures to consider the grant and credit specificities, as well as the World Bank's Financial Management Guidelines and Directives. The overall project manual (including the CSF and EF sub-manuals) will be used by both implementing agencies.	UCM/DRC Government	Effectiveness	Y
4	Agreeing on the ToRs for the recruitment of a Financial Officer to ensure their adequacy with minimal World Bank FM Guidelines and proceeding with the recruitment on a competitive basis	UCM/DRC Government	Effectiveness	Y
5	Recruit an internal auditor on a competitive basis.	UCM/DRC Government	Effectiveness	Y
6	Recruit an accountant on a competitive basis.	UCM/DRC Government	Effectiveness	Y
7	Finalize ToRs for the recruitment of the external auditor acceptable to IDA.	UCM/DRC Government	Effectiveness	Y

21. **Governance and anticorruption considerations.** The country's political situation has weakened the governance and corruption environment. In the context of the project, the following governance and anticorruption measures will contribute to enhance transparency and accountability during project implementation: (a) an effective implementation of the fiduciary mitigation measures should contribute to strengthen the control environment; (b) the ToR of both an Internal Audit Unit and external auditor will comprise a specific chapter on corruption auditing; (c) the FM Manual of Procedures will include anticorruption measures with a specific safety mechanism that will enable individual persons and NGOs to denounce abuses or irregularities; (d) measures to improve transparency such as providing information on the project status to the public and to encourage participation of civil society and other stakeholders will be strengthened during project implementation; and (e) finally, an anticorruption action plan will be prepared in addition to the robust FM arrangements designed to mitigate the fiduciary risks.

22. **Staffing and training.** The current FM staffing arrangement under the UCM will be reinforced to implement the project. The work program of the Internal Audit Unit will be revised within three months after the project effectiveness to consider the new project specificities. The team will have the overall FM responsibility over budgeting, accounting, reporting, disbursement, internal control, and auditing.

23. **Budgeting.** The budgeting arrangements will include an annual work plan and budget to be prepared for each year. The project FM Manual of Procedures will define the arrangements for budgeting, budgetary control, and the requirements for budgeting revisions. Annual detailed disbursement forecasts and budgets will be required. IFRs will provide information on budgetary control and analysis of variances between actual and budget values. Current budget mechanisms will be revised to incorporate the new project specifics.

24. **Accounting policies and procedures.** The accounting systems, policies, and administrative and financial procedures designed for the project will be drafted by an independent consultant and reviewed before approval. This Manual of Procedures will be revised to include the new project's specifics. The accounting software for the UCM will be used after its configuration for reflecting the new project specificities. Appropriate accounting procedures will be implemented for the bookkeeping of the transactions such as advances and fixed assets. The members of the financial team to be recruited must have experience and qualifications acceptable to the World Bank.

25. **Internal control and internal auditing.** The Internal Audit Unit work program of the UCM will be revised to consider the new project specificities. The internal auditor to be recruited will report directly to the coordinator (and/or Steering Committee). He will undertake periodic assessments on the strengths and weaknesses of the internal control system at all levels. All control deficiencies or circumvented practices identified will be communicated on time to the overall senior management of the project for immediate corrective action as appropriate. One of each such report will also be communicated to the World Bank. The auditor will prepare relevant manuals and guidelines. In line with the DRC Use of Country System Report to fully rely on IGF for the project's internal audit, the current project's internal control system could be strengthened by establishing a channel of collaboration between IGF and the current project's Internal Audit Unit to agree on project's risk mapping and work program.

26. **Financial reporting and monitoring.** The Manual of Procedures will indicate provisions for quarterly and yearly financial reporting, including physical progress. The quarterly reports will include a table on budget execution. The format of this report will include (a) the statements of sources and used funds, and utilization of funds per category; (b) an updated Procurement Plan; (c) the physical progress; and (d) the summary of missions of internal audit, as well as implementation status of the recommendations of internal or external audit and supervision missions.

27. **External auditing.** The project financial statements and internal control system managed by UCM will be subject to annual audits by an independent external auditor and will be renewed every two years. The audit will include the activities under implementation by the private firm. The external auditor will give an opinion on the annual financial statements in accordance with auditing standards of IFAC.[20] In addition to audit reports, the external auditor will also produce a management letter on internal control to improve accounting controls and compliance with financial covenants under the Financing Agreement. The project will be required to submit, not later than June 30 of each fiscal year, the annual audited financial statements. In line with the new access to information policy, the project will comply with the disclosure policy of the World Bank of audit reports (for instance, making available to the public without delay after receipt of all reports, the final financial audit, including audit reports qualified), and place the information on its official website within one month after acceptance of the final report by IDA. The project will be required to produce a final audit report no later than six months after closing of project. In compliance with the DRC UCS Report, the DRC's Supreme Audit Institution (*Cour des Comptes*) could start being involved in the process of the external auditors' selection and review of their reports.

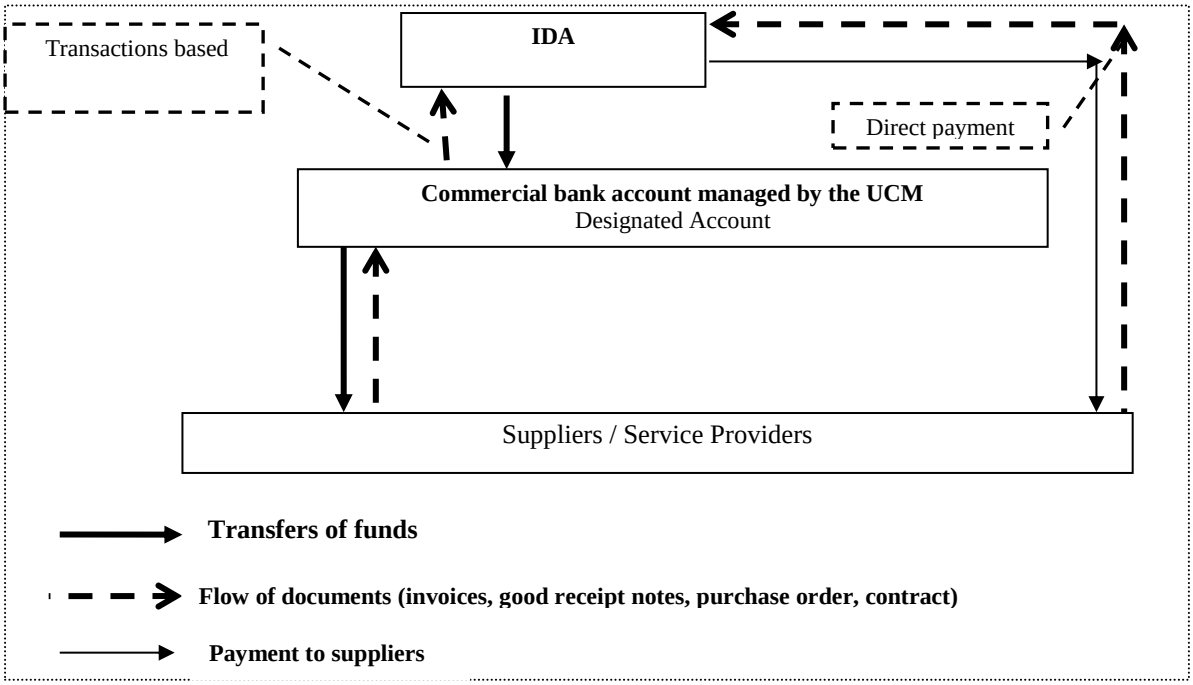
[20] IFAC: International Federation of Accountants.

28. **Implementation support plan.** FM implementation support missions will be consistent with a risk-based approach, and will involve a collaborative approach with the project team. A first implementation support mission will be performed six months after project effectiveness. Afterwards, the missions will be scheduled by using the risk-based approach model and will include the following: (a) monitoring of the FM arrangements during the supervision process at intervals determined by the risk rating assigned to the overall FM assessment at entry and subsequently during the Implementation Status and Results Reports; (b) integrated fiduciary review on key contracts; (c) review of the IFRs; (d) review of the audit reports and Management Letters from the external auditors and follow up on material accountability issues by engaging with the task team leader, client, and/or auditors; (e) close monitoring of the quality of the audit (internal and external) to ensure that it covers all relevant aspects and provide enough confidence on the appropriate use of funds by recipients; (f) physical supervision on the ground; and (g) assistance to build or maintain appropriate FM capacity.

Disbursements

29. The transaction-based disbursement method will be applied for the DA which will receive an initial advance of up to US$5 million. The DA will be used for all payments inferior to 20 percent of the ceiling (US$5 million) and replenishment will be submitted as often as possible. Funds flows for the DA are as follows:

Figure 3.2: Disbursements



30. **Disbursement of funds to other service providers and suppliers.** UCM will make disbursements to service providers and suppliers of goods and services in accordance with the payment modalities, as specified in the respective contracts/conventions as well as the procedures described in the section on Administrative, Accounting, and Financial procedures of the overall project manual. In addition to these supporting documents, the project will consider the findings of the Internal Audit Unit while approving the payments. UCM, with the support of their Internal Audit Units, will reserve the right to verify the expenditures ex post, and refunds might be requested for non-respect of contractual clauses. Misappropriated activities could result in the suspension of financing for a given entity.

31. **Disbursements by category.** Table 3.3 sets out the expenditure categories to be financed by the credit and grant. This table considers the prevailing country financing parameter for the DRC in setting out the financing levels except for local expenditures which will be financed at 100 percent excluding local taxes. In accordance with World Bank standard procurement requirements, contracts will continue to be approved 'all taxes included' for local expenditures. The project will, however, claim invoiced amounts excluding taxes. The Government will take appropriate steps to cover the tax portion of contracts signed by the project with contractors and suppliers of goods and services.

Table 3.3: Disbursement Categories

Category	Amount of the Credit Allocated (expressed in US$)	Amount of the Grant Allocated (expressed in US$)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) (a) Goods, non-consulting services, and consultants' services for the project (other than under Categories (2) and (3) below	0	41.5 million	100%
(b) Works for the project (other than under Categories (2) and (3) below	5 million	70 million	
(2) (a) Goods, non-consulting services and consultants' services for Part B.1 subprojects	2 million	0	100%
(b) Works for Part B.1 subprojects	8 million	0	
(3) (a) Goods, non-consulting services and consultants' services for Part B.2 subprojects	4 million	3 million	100%
(b) Works for Part B.2 subprojects	8 million	0	
(4) Refund of Preparation Advance	0	3.5 million	Amount payable pursuant to Section 2.07 of the General Conditions
Total Amount	**27 million**	**118 milion**	

Procurement

Applicable Guidelines

32. Procurement for the proposed project will be carried out in accordance with the World Bank guidelines, including (a) 'Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits by World Bank Borrowers,' dated January 2011 (revised July 2014); (b) 'Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers,' dated January 2011 (revised July 2014); (c) 'Guidelines: Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants,' dated October 2006 (revised January 2011); and (d) the provisions stipulated in the Financing Agreement. The various items under different expenditure categories are described in general terms in the sections that follow. For each contract to be financed by the Credit (IDA) and Grant (Trust Fund), the different procurement methods or consultant selection methods, the need for prequalification, estimated costs, prior review requirements, and time frame are agreed between the recipient and the World Bank in the Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

Reference to the National Procurement Regulatory Framework

33. For all contracts awarded through National Competitive Bidding (NCB), the World Bank may authorize the use of the national institutions and regulations that comprise the law, including its texts of application, the institutions set up for the control and regulation of procurement, and the institutions responsible for implementing procurement activities. The NCB procedures currently in force in the DRC deviate slightly from the World Bank Procurement Guidelines on NCB procedures for procurement of works, goods, and services (other than consultants' services); for that reason, they have been reviewed and appropriate modifications have been proposed to assure economy, efficiency, transparency, and broad consistency with the provisions included in Section I and paragraphs 3.3 and 3.4 of the World Bank Procurement Guidelines (refer to the paragraph below).

Requirements for NCB

34. The procedures to be followed for NCB shall be those set forth in the recipient's Procurement Code of April 27, 2010, as revised from time to time in a manner deemed acceptable to the Association, subject, however, to the modifications described in the following paragraphs required for compliance with the Procurement Guidelines:

(a) **Standard Bidding Documents.** All Standard Bidding Documents to be used for the project under NCB shall be found acceptable to the World Bank before their use during the implementation of the project.

(b) **Eligibility.** Eligibility of bidders and acceptability of their goods and services shall not be based on their nationality and/or their origin, and association with a national firm shall not be a condition for participation in a bidding process. Therefore, except for the ineligibility situations referred to in paragraphs 1.10(a) (i) and 1.10(a) (ii) of the Procurement Guidelines, the eligibility of bidders must be based solely on their qualification, experience, and capacity to carry out the contract related to the specific bidding process.

(c) **Advertising and bid preparation time.** Bidding opportunities shall be advertised at least in a national newspaper of wide circulation and on the website of the Recipient's Procurement Regulator (*Autorité de Régulation des Marchés Publics*), and bidders should be given at least 30 days from the date of invitation to bid or the date of availability of the bidding documents, whichever is later.

(d) **Criteria for qualification of bidders.** Qualification criteria shall only concern the bidder's capability and resources to perform the contract, taking into account objective and measurable factors. Such criteria for qualification of bidders shall be clearly specified in the bidding documents.

(e) **Evaluation and contract award.** A contract shall be awarded to the substantially responsive and lowest evaluated bidder provided that such bidder meets the qualification criteria specified in the bidding documents. No scoring system shall be allowed for the evaluation of bids, and no 'blanket' limitation to the number of lots which can be awarded to a bidder shall apply. The criteria for bid evaluation and the contract award conditions shall be clearly specified in the bidding documents;

(f) **Preferences.** No preference shall be given to domestic/regional bidders, to domestically/regionally manufactured goods, and to bidders forming a joint venture

with a national firm or proposing national subcontractors or carrying out economic activities in the territory of the recipient.

(g) **Publication of contract award.** Information on all contract awards shall be published in at least a national newspaper of wide circulation or in the Recipient's Procurement Regulator (*Autorité de Régulation des Marchés Publics*) website.

(h) **Fraud and corruption.** In accordance with the Procurement Guidelines, each bidding document and contract shall include provisions stating the World Bank's policy to sanction firms or individuals found to have engaged in fraud and corruption as set forth in the Procurement Guidelines.

(i) **Inspection and audit rights.** In accordance with the Procurement Guidelines, each bidding document and contract shall include provisions stating the World Bank's policy with respect to inspection and audit of accounts, records, and other documents relating to the bid submission and contract performance.

(j) **Requirement for administrative documents and/or tax clearance certificate.** The bidding documents shall not require foreign bidders to produce any administrative or tax-related certificates before confirmation of awarding a contract.

(k) **Modifications of a signed contract.** Any change in the contract amount which, singly or combined with all previous changes, increases the original contract amount by 15 percent or more must be done through an amendment to the signed contract instead of signing a new contract.

Items to be Procured and Methods to be Used

35. **Advertisement.** General Procurement Notice, Specific Procurement Notices, Requests for Expression of Interest, and results of the evaluation and contracts award should be published in accordance with advertising provisions in the following guidelines: 'Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers,' dated January 2011 (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 (revised July 2014). For this purpose, the Implementing Unit, UCM of the MERH, will prepare and submit to the World Bank, a General Procurement Notice. Specific Procurement Notices for all goods, non-consulting services, and works to be procured under International Competitive Bidding (ICB) and Requests for Expressions of Interests for all consulting services costing the equivalent of US$300,000 and above will be published in United Nations Development Business (UNDB) online on the World Bank's external website, and in the national press, in addition to other media with wide circulation. All other Specific Procurement Notices and other Requests for Expression of Interest shall be published at a minimum in the national press with wide circulation.

36. **Civil works.** Civil works procured under this project will include mainly the establishment **of** substationsrehabilitation of distribution networks and the Mobayi power plant, and network expansion. Depending on the size of the contracts, procurement will be done either under ICB using World Bank Procurement Guidelines that include the related Standard Bidding Documents or under NCB using National Standard Bidding Documents agreed with or satisfactory to the World Bank. Works of small value may be procured under Shopping procedures. Direct Contracting may be used where necessary if agreed in the Procurement Plan in accordance with the provisions of paragraphs 3.7–3.8 of the Procurement Guidelines. The prequalification processes for all contracts for works to be procured using ICB are subject to prior review by the World Bank.

37. **Procurement of goods and non-consultancy services.** Goods procured under this project will include turbines, transformers, prepaid meters, solar portable lanterns, solar kits and others electrical equipment's including mainly office equipment (computer, scanner, server, printer, and copier). Depending on the size of the contracts, procurement will be done either under ICB using World Bank Procurement Guidelines that include the related Standard Bidding Documents or under NCB using National Standard Bidding Documents agreed with or satisfactory to the World Bank. Goods of small value may be procured under Shopping procedures. Direct Contracting may be used where necessary if agreed in the Procurement Plan in accordance with the provisions of paragraphs 3.7–3.8 of the Procurement Guidelines.

38. Procurements of goods such as vehicles, motorcycles and others could be undertaken by the agency of the United Nations Office for Project Services in accordance with the provisions of paragraph 3.10 of the Procurement Guidelines.

39. **Selection and employment of consultants.** Consultancy services required for the project would cover advisory services, consultancies, and technical assistance and studies. The selection method for consultant services will be Quality- and Cost-Based Selection method whenever possible. Contracts for specialized assignments estimated to cost less than US$200,000 equivalent may be contracted through Selection based on Consultants' Qualification. The following additional methods may be used where appropriate: Quality-Based Selection, Selection under a Fixed Budget, and Least-Cost Selection .

(a) Short lists of consultants for services estimated to cost less than the equivalent of US$100,000 per contract for ordinary services and US$200,000 for design and contract supervision 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.

(b) Single-Source Selection (SSS) may be employed with prior approval of the World Bank and will be in accordance with paragraphs 3.8–3.11 of the Consultant Guidelines.

(c) All services of Individual Consultants (IC) will be procured under contracts in accordance with the provisions of paragraphs 5.1–5.6 of the Consultant Guidelines**.**

40. Operating costs shall consist of O&M costs for vehicles, office supplies, communication charges, equipment, utility charges, travel expenses per diem and travel costs, training costs, and workshops and seminars and associated costs, among others. Operating costs will not include salaries of civil servants.

41. Training and workshops will be based on capacity needs assessments. Detailed training plans and workshops activities will be developed during project implementation and included in the project's annual work plan and budget for World Bank review and approval.

Implementation Arrangements for Procurement and Capacity Assessment

42. UCM will have the overall responsibility of implementing this project in fiduciary aspects (FM and Procurement). To strengthen the UCM team procurement capacity, a procurement specialist will be recruited through a competitive process. The World Bank will have the right to review the resume of the identified expert before formal appointment. The procurement team will be trained on the use of World Bank procedures as well as project's software.

43. The institutional arrangements for the implementation of the project have considered the need to improve the procurement capacity and other fiduciary areas of staff from the UCM team who will be responsible for coordinating and supervising all project activities.

44. **Midterm review.** A midterm review is planned to take place two years after effectiveness date to assess the capacity of all government entities involved in the project execution including SNEL which should establish an action plan in aim to restructure his current procurement unit.

45. The midterm review report will integrate the results of the procurement activities performed during the period preceding the date of such report, and will set out measures recommended concerning the (a) use of SNEL and (b) the national procurement code for the remaining activities of the project, if the implementation of the national code has been determined to be satisfactory to the World Bank.

46. The overall unmitigated risk for procurement is Substantial. Corrective measures that have been agreed upon to mitigate that risk are summarized in Table 3.4. The prevailing risk can be improved to Moderate, provided that the corrective measures are implemented.

Assessment of Risks and Mitigation Measures

47. Assessment **of risks and mitigation measures.** The risk factors for procurement performance include the country context is likely to involve the following risks:

(a) A weak governance environment, weaknesses in accountability arrangements, and an overall lack of transparency in conducting procurement processes, which create significant risks of corruption, collusion and fraud.

(b) The administrative system, as it operates in practice, creates opportunities for informal interference in the procurement process by senior officials—creating opportunities for waste, mismanagement, nepotism, corruption, collusion and fraud.

(c) Government officials likely to be involved in project procurement through tender committees and the national control system ensuring that the rules are respected and able to handle complaints from bidders may not be familiar with procurement procedures.

(d) The control and regulatory systems are not fully operational and independent.

48. **Measures to mitigate the risks.** The following strategy has been developed to mitigate procurement risks identified:

(a) To mitigate the risks of collusion, fraud, corruption, waste and mismanagement, implementation arrangements will be geared toward achieving a high level of transparency in project implementation.

(b) All consulting contracts costing above US$300,000, ICB contracts for goods will be published in UNDB online and on the World Bank's external website, in accordance with World Bank Guidelines.

(c) A project launch workshop will be conducted for the UCM staff and relevant staff of all other entities involved in project implementation.

(d) For all procurement, the Project Implementaiton Manual includes procurement methods to be used in the project along with their step by step explanation, as well as the standard and sample documents to be used for each method.

Table 3.4: Schedule of Procurement Risk Mitigation Action Plan to be Carried Out

	Action	Responsibility	Due Date	Remarks
1	Update of UCM team project record management system.	UCM team	Expected within 6 months after project effectiveness	To better keep procurement documents and reports
2	Training of all staff on World Bank procurement procedures in specialized institutions	UCM team	Within a year after project effectiveness	To improve project staff skills in World Bank's procurement
3	A maximum period of 60 days after bids opening is allowed for contract award signature, in order to avoid delays and reduce the scope for corruption	UCM team	Ongoing	To be maintained during the whole life of the project

49. **Implementation readiness.** The following actions were initiated/carried out/agreed upon during the preparation of this project:

(a) A detailed Procurement Plan for the first 18 months of the project has been agreed.

(b) The selection of consultants for studies for all major components has been initiated and is expected to be completed by the project effectiveness.

(c) The most important procurement activities for the critical contracts of the first year are initiated and completed at the stage of contract award but without signed contracts.

50. **Fraud, coercion, and corruption.** All procuring entities, as well as bidders, suppliers, and contractors, shall observe the highest standard of ethics during the procurement and execution of contracts financed under the project in accordance with paragraphs 1.16 and 1.17 of the Procurement Guidelines and paragraphs 1.23 and 1.24 of the Consultant Guidelines. The Anti-corruption plan to be prepared for the project and discussed above will also focus on procurement-related matters.

Frequency of Procurement Supervision

51. In addition to the prior procurement review carried out by the World Bank, the procurement specialist recommends two missions per year for the following years to provide support to the implementation of procurement activities. This support will include not only the organization and functioning of the Procurement Unit but also the implementation of procurement activities listed in the Procurement Plan. One post review of procurement activities will be also carried out every year. As agreed with the Government, contracts will be published on the web. Annual compliance verification monitoring will also be carried out by an independent consultant and will aim to:

(a) Verify that the procurement and contracting procedures and processes followed for the project were in accordance with the Financing Agreement;

(b) Verify technical compliance, physical completion, and price competitiveness of each contract in the selected representative sample;

(c) Review and comment on contract administration and management issues as dealt with by the implementation entity;

(d) Review capacity of the implementation entity in handling procurement efficiently; and

(e) Identify improvements in the procurement process in light of any identified deficiencies.

Contract Management and Expenditure Reports

52. As part of the Procurement Management Reports, UCM will submit contract management and expenditure information in quarterly reports to the World Bank for the project. The Procurement Management Report will consist of information on procurement of goods, works, and consultants' services and compliance with agreed procurement methods. The report will compare procurement performance against the agreed annual plans and as appropriately updated at the end of each quarter. The report will also provide any information on complaints by bidders, unsatisfactory performance by contractors, and information on contractual disputes, if any. These contract management reports will also provide details on payments under each contract, and will use these to ensure that no contract over-payments are made or no payments are made to sanctioned entities.

Procurement Plan

53. The borrower prepared a Procurement Plan for the first 18 months of project implementation (which was approved prior to negotiations), to provide the basis for the procurement methods. It will also be available in the project database and the World Bank external website. The Procurement Plan will be updated in agreement with the project team annually or as required to reflect the actual project implementation needs.

54. Table 3.5 indicates the thresholds for procurement methods and prior review.

Table 3.5: Thresholds for Procurement Methods and Prior Review (See Table of Clearance Thresholds based on risk assessment) New Risk-based PS/PAS, RPM, and OPRC Clearance Thresholds

Procurement Category in Current PROCYS	Procurement Category in New Matrix	PS/PAS Thresholds				RPM Thresholds as a function of Risk				OPRC Thresholds as a function of Risk			
		Estimated Contract Cost in US dollars, millions				Estimated Contract Cost in US dollars, millions				Estimated Contract Cost in US dollars, millions			
		High	Substantial	Moderate	Low	High	Substantial	Moderate	Low	High	Substantial	Moderate	Low
• Design, Build & Operate Solid Waste facility • Output and Performance-based Road Contracts • Plant Design, Supply, and Installation • Works	Works, Turnkey, and S&I of Plant and Equipment	≥5 and <25	≥10 and <25	≥15 and <25	≥20 and <25	≥25 and <50	≥25 and <75	≥25 and <115	≥25 and <200	≥50	≥75	≥115	≥200
• Goods • Health Sector Goods • Textbooks	Goods	≥0.5 and <10	≥1 and <10	≥3 and <10	≥5 and <10	≥10 and <30	≥10 and <50	≥10 and <75	≥10 and <125	≥30	≥50	≥75	≥125
• Information Systems • Non-Consulting Services • Procurement of Management Services	IT Systems and Non-Consulting Services	≥0.5 and <5	≥1 and <5	≥3 and <5	≥5 and <5	≥5 and <20	≥5 and <40	≥5 and <60	≥5 and <100	≥20	≥40	≥60	≥100
• Consultant Services - Firm	Consultant Services	≥0.2 and 3	≥0.5 and 3	≥1 and 3	≥2 and 3	≥3 and <15	≥3 and <20	≥3 and <30	≥3 and <40	≥15	≥20	≥30	≥40
	All Direct Contracting and Single-Source Contracts with Consultant (Firms)	Works, Turnkey and S&I		≥0.1 and <0.5		≥0.5 and <50	≥0.5 and <75	≥0.5 and <115	≥0.5 and <200	≥50	≥75	≥115	≥200
		Goods		≥0.1 and <0.5		≥0.5 and <30	≥0.5 and <50	≥0.5 and <75	≥0.5 and <125	≥30	≥50	≥75	≥125
		IT Systems…..		≥0.1 and <0.5		≥0.5 and <20	≥0.5 and <40	≥0.5 and <60	≥0.5 and <100	≥20	≥40	≥60	≥100
		Consultant Services…..		≥0.1 and <0.5		≥0.5 and <15	≥0.5 and <20	≥0.5 and <30	≥0.5 and <40	≥15	≥20	≥30	≥40
• Consultant Services-	Individual Consultants (Single-Source Contracts)			≥0.1 and <0.25		≥0.25 and	≥0.25 and <20	≥0.25 and <30	≥0.25 and	≥15	≥20	≥30	≥40

Individual Consultants			<15			<40				
	Individual Consultants (Based on Comparison of CVs)	≥0.2 and 3	≥3 and <15	≥3 and <20	≥3 and <30	≥3 and <40	≥15	≥20	≥30	≥40

Note: All ToRs and justifications of SSS/Direct contracting regardless of the value of the contract are subject to prior review.

Annex 4: Implementation Support Plan

DEMOCRATIC REPUBLIC OF CONGO: Electricity Access and Services Expansion Project

Strategy and Approach for Implementation Support

1. The proposed project will support the DRC in implementing an electricity access expansion program, built on the foundation of the 2014 Electricity Act. This includes both the policy/regulatory/institutional structure as well as initial investments. In view of the new territory this project seeks to chart, there will be an ongoing need for close coordination with the project stakeholders, especially during the initial years. There will also be a need for flexibility to embrace the inevitable challenges that will arise from new learnings as well as changes and evolution in the implementation environment.

2. The implementation support plan, therefore, adopts a form of 'continuous supervision' which will include periodic missions, with regular client interaction from both field- and headquarters-based staff in between. This interaction will include face-to-face support from Kinshasa-based team members as well as e-mail, telephone, and videoconference contact with World Bank staff in headquarters in Washington, DC.

3. During project supervision, the team will use the PDO and the Annex 1 Results Framework as the primary lens for monitoring progress, evaluating impact and effectiveness, and adjusting the project.

Implementation Support Plan

4. Implementation support will initially focus on helping the institutional structures (ANSER, CSF) to become operational as well as support initial investments. It will also focus on advancing SNEL's investments toward early implementation. As a result, the World Bank expects an intensive supervision agenda during the first two years, after which the tempo should moderate, focusing on maintaining progress and addressing key bottlenecks. The World Bank team will include headquarters and country office-based staff as well as consultants.

Procurement and Technical Aspects

5. The World Bank procurement specialists will regularly participate in implementation support missions to assist in monitoring procurement procedures and plans. The Procurement Plan indicates those contracts that are subject to prior review. All other contracts will be subject to post review. During the early phase of the project implementation, more frequent supervision is envisaged to ensure that procurement guidelines are followed. The World Bank team will include an engineer and financing specialist to review due diligence on subprojects. Field supervision will be conducted whenever practical. The Procurement Plan will be updated at least once each year (or more often as required to reflect the actual project implementation needs) and postprocurement reviews will be carried out, at a minimum, once annually.

6. IDA will carry out sample post review of contracts that are below the prior review threshold for contracts implemented to ascertain compliance with the procurement procedures as defined in the legal documents. The procurement post reviews should cover at least 15 percent of contracts subject to post review, because the risk rating is Substantial.

Financial Management Aspects

7. FM supervision will start by assessing the progress of the project management unit staffing and reviewing the plan in place to execute disbursements following FM guidance. This supervision will take place before contracts are awarded in case improvement measures need to take place before disbursement. The FM supervision will also review quarterly progress and financial audits. In terms of resources, the expected requirement is a country office-based staff for eight weeks.

8. Based on the outcome of the FM risk assessment, the following implementation support plan is proposed. The objective of the implementation support plan is to ensure that a satisfactory FM system is maintained throughout the project's life.

Table 4.1: FM Implementation Support Plan

FM Activity	Frequency
Desk reviews	
IFR review	Quarterly
Internal audit report review of the project	On a risk-based approach
External audit report review of the project	Annually
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	Semiannual (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	During implementation and as and when needed

Environmental and Social Aspects

9. Environmental safeguards support will include visits to project areas and the monitoring of mitigation measures. During construction, monitoring is necessary to ensure compliance with environmental and social safeguards related to the infrastructure projects, including attention to gender differences and impacts.

Table 4.2: Implementation Support Plan

Time	Focus	Skills Needed	Resource Estimate (US$)
First 12 months	• Establish working arrangements (PIU, ANSER, SNEL, CSF, and so on) • Capacity building (safeguard, FM, and procurement) • Finalize subprojects • Procurement • Safeguard assessments and implementation	• Task management • Financial sector • Technical • Safeguards • FM • Procurement	350,000

Time	Focus	Skills Needed	Resource Estimate (US$)
12–48 months	• Technical implementation support • Social and environmental safeguard implementation support • Gender mainstreaming activities support • M&E implementation support • FM and procurement • Implementation support	Specialists in • Energy, • Power, • Financial sector, • Social, • Environment, • Gender, • M&E, • FM, and • Procurement.	800,000

Table 4.3: Required Skills Mix

Skills Needed	Annual Number of Staff Weeks	Annual Number of International Trips	Comments
Energy Specialist (Task Team Leader)	10	4	International
Power Engineer	10	0	Field based
Hydropower Specialist	4	3	International
Financial Sector Specialist	6	3	International
Regulatory Specialist	3	2	International
Procurement	4	0	Field based
Social	4	0	Field based
Environmental	4	0	Field based
Gender	2	1	International
FM	3	0	Field based
M&E	3	1	Field based

Annex 5: Economic and Financial Analysis

DEMOCRATIC REPUBLIC OF CONGO: Electricity Access and Services Expansion Project

1. The project will produce economic benefits to existing and new electricity customers through the provision of new or improved service. This service will be made available through the proposed investments in distribution infrastructure, accompanied in some instances by generation and/or transmission investments. These investments will be financed through three pathways, as described earlier. In view of the uncertainty as to which pathway(s) will be the most successful, the economic analysis assesses each of the three pathways separately. A cost and benefits analysis approach was used for the economic analysis of each pathway. Investment costs were derived from estimates provided by SNEL and the private project developers. The analysis accounted for factors such as the cost and availability of generation resources, technical and commercial losses, demand increase due to growth in customer base as well as demand increases per customer, cost of distribution network strengthening and expansion, connection and/or prepayment meter fees, and so on. Benefits to households include the displacement of alternatives such as kerosene and batteries, as well as improvements in economic opportunities and quality of life. However, data to assess these benefits are scarce and unreliable. Instead, it is conservatively assumed that the benefits derived from the consumption of a unit of electricity are in monetary terms equal to the electric tariff rate.

Table 5.1: Summary Characteristics of Subprojects

Town	Kinshasa	Mobayi	Tshikapa
Investment pathway	1	2	3
Operator	SNEL	SNEL	EDC
Investment (US$, millions)	67.9	3.1	11.9
Billed customers	151,479	5,500	3,000
Number of new connections	55,000	4,690	6,500
Capacity rehabilitated (MW)	0	11.4	3.8

2. The subprojects will involve rehabilitation of existing infrastructure, combined with grid extension and installation of prepaid meters and in some cases rehabilitation or new generation. In the case of the Kinshasa and Tshikapa investments, only distribution infrastructure will be affected. The Mobayi investment also includes hydropower rehabilitation, as well as transmission and distribution assets. Given the nature of the intervention, economic benefits will include both (a) first-time electricity connections resulting from grid extension as well as (b) improvements in the reliability of service to existing customers, including both formal and informal. In addition, there may be environmental benefits associated with switching from polluting fossil fuels such as kerosene and diesel used by households without grid access to clean electricity generated from hydropower.

Economic Returns

3. The background data for these subprojects, particularly those implemented by local independent operators, are extremely sparse, creating significant challenges for the economic analysis. For the SNEL projects, there is information about the number of existing customers and existing consumption patterns. It is also known that SNEL currently provides only four hours of electricity per day. The supply is expected to improve because of the hydropower and transmission rehabilitation through ongoing World Bank and AfDB projects. The proposed project investments are expected to further improve the quality of service. For this analysis, the supply is expected to improve to 16 hours

per day upon completion of the project. For the independent operators, there is not enough information about the number of existing customers and the current availability of service and only sketchy information about consumption patterns.

4. To capture the benefits of first-time electricity supply to new households, it is assumed that the consumption of new households will be similar to that for households already connected to the grid. Due to the lack of a detailed household energy survey, there is no information available regarding the spending of unconnected households on alternative sources of energy, such as candles, kerosene, and batteries. The tariffs offered by the independent suppliers offer an indication of the willingness to pay. For this analysis, the lowest of these (Virunga US$0.25 per kWh) has been selected.

5. The benefits of improved reliability to existing customers can only be imperfectly captured for the two SNEL subprojects, where at least some information is available on the existing customer base. It is to be expected that when availability of electricity increases from 4 hours per day to 16 hours per day, the level of consumption will increase somewhat. However, there is no solid basis on which to estimate how large this reaction might be. For instance, a recent pilot survey conducted as part of the MTF project found that while connected households in Kinshasa were receiving a service level that amounted to no more than Tier 1–2 on average, their inventory of electric appliances was consistent with the aspiration to consume at a higher level of close to Tier 4. For the economic analysis, the starting assumption is that households with improved connections increase consumption by 25 percent.

6. While conceptually there could be environmental benefits expected of switching from diesel and kerosene used by unconnected households to clean electricity generated by hydropower, in practice, this is difficult to capture. The absence of data sources documenting the energy demand patterns of unconnected households and firms makes it difficult to estimate the amount of diesel generation capacity that is likely to be displaced when the grid becomes accessible. Nonetheless, there is evidence that the use of diesel generation by firms in the DRC is widespread. A now somewhat dated study finds that in 2005, for instance, the total installed capacity of own generation by firms was equivalent to 40 percent of the installed capacity of the entire national power system.[21] In the absence of actual figures, a [conservative] assumption is made that 30 percent of the energy consumption switching to the grid might previously have been supplied by diesel power generation.

7. There are a range of other important benefits that result from increased and improved access to electricity, including increased returns on education and wage income; improved access to modern communication and information devices; social benefits to the community (streetlighting increases safety, allowing women to participate in the community life at night); health benefits (reduced burn injuries from kerosene lamps); and time savings (for example, avoiding trips to battery charging). These are all very difficult to quantify and are excluded from the economic analysis, but they nevertheless represent a significant part of the social benefits of rural and peri-urban electrification.

8. Economic costs include the investment and O&M costs for new generation and distribution capital, the costs of supplying electricity to meet demand not met by new generation, and the cost of connecting households. It is assumed that the utility bears the financial burden of the connection cost minus a US$60–US$100 connection cost subsidy from the Government.

[21] Steinbuks, J., and V. Foster. 2009. "Paying the Price for Unreliable Power Supplies: In-House Generation of Electricity by Firms in Sub-Saharan Africa." Policy Research Paper 4913, World Bank, Washington, DC.

9. In line with the World Bank's new Guidance on Discount Rates for the Economic Analysis of Investment Projects, the discount rate for the economic analysis was determined by examining the medium- to long-term real per capita GDP growth forecast for the DRC and multiplying by two. The World Bank's latest DRC Macroeconomic Brief sees real GDP growth trending toward 5 percent over the period to 2018, while the United Nation's long-term population growth forecast for the DRC is 2.8 percent. This gives a real per capita GDP of 2.15 percent and a corresponding discount rate of 4.3 percent. A summary of the key assumption for the economic analysis is listed in Table 5.2. These are grouped by (a) assumptions relevant to investments in generation capacity and (b) assumptions relevant to access expansion. The next section discusses the economic viability of the subprojects.

Table 5.2: Main Assumption of the Economic Analysis

	Unit	Kinshasa O&C SNEL	Mobayi SNEL	Tshikapa EDC
Generation				
Capital cost	US$, millions	0	9.0	21.0[a]
Installed capacity	MW	0	11.4	3.8
Availability factor	%	0	79	79
Marginal generation cost	US$/kWh	0.07	0.07	0.09
Distribution				
Investment cost	US$, millions	67.9	3.1	11.9
technical losses	%	15	15	15
Connection cost	US$	60	700	364/600[c]
Prepaid meter cost	US$	50	50	50
New connections				
Number	#	55,000	4,690	6,500
Consumption	kWh/month	160	140	50/25[b]
Improved connections				
Number	#	107,000	5,500	0
Additional consumption	kWh/month	40	35	12.5/6.3[b]
Connection cost	US$	60	700	364
Tariff	US$/kWh	0.07	0.07	0.41
Willingness to pay (base case)	US$/kWh	0.25	0.25	0.41

Results

Economic Internal Rate of Return

10. The EIRR in Kinshasa is 18.8 percent excluding the benefits from improved connections and 45.5 percent when including them. This high rate of return rests on a critical assumption that increased demand can be met with existing hydro generation: with no new generation capacity and a marginal cost of supply of hydro at US$0.07, the benefits of the project in Kinshasa readily outweigh the costs. Should increased consumption need to be met using diesel generators, the marginal cost of supply would rise and thereby reduce the EIRR. Excluding improved connections, the marginal cost of generation would have to exceed US$0.14 per kWh before the EIRR drops below 4.3 percent. Including improved connections, this switching value lies around US$0.19 per kWh.

11. In addition to the improvements in the distribution network and rollout of prepaid meters, the subproject in Mobayi includes the rehabilitation of a hydropower plant. The new plant would produce substantially more than could be absorbed by newly connected households. In fact, newly connected

households would only be able to absorb 9 GWh of the 39 GWh that is being generated. However, Mobayi has a cross-border connection with the Central African Republic, and it is assumed that any excess generation can be sold through this means. Weighing the entire cost of investment against the benefits of the newly connected households, nevertheless, yields an EIRR of 10.8 percent. If all newly available power could immediately be absorbed, the EIRR would jump to 82.7 percent.

12. As in Mobayi, investments in Tshikapa are in distribution and generation. However, the expected volume of consumption per newly established connection in Tshikapa is lower than that in Mobayi. As a result, the economic feasibility of this component rests more heavily on the ability of existing consumers to absorb additional power. New connections can absorb only 4 GWh of the 26 GWh that becomes available. However, in the case of Tshikapa, the excess generation would be absorbed by the REGIDESO water pumping station, which currently uses expensive diesel.

13. Table 5.3 summarizes the results for the EIRR. The combined EIRR is the one calculated from the discounted economic benefits and costs of all three investment pathways combined. The weight of the Kinshasa component on the rate of return is apparent.

Table 5.3: Economic Rate of Return

Kinshasa O&C SNEL	Mobayi SNEL	Tshikapa EDC	Combined
18.8%	82.7%	15.3%	26.3%

14. Table 5.4 provides a deeper look into the results of the economic analysis by breaking down the net present value (NPV) into the cost and benefit components as well as calculating the added benefit of reduced GHG emissions. GHG emissions decline as a result of displaced consumption of diesel fuel. In this example, it is assumed that each 1.0 kWh of service provided displaces 0.3 kWh of diesel generation when the grid is extended and 0.1 kWh when the grid is densified.

Table 5.4: NPV Breakdown When All New Power Is Immediately Absorbed

	Unit	Total	Kinshasa	Mobayi	Tshikapa
Discount rate	%	4.3	4.3	4.3	4.3
EIRR without GHG accounting	%	26.3	18.8	82.7	15.3
EIRR with GHG accounting	%	26.8	19.6	82.9	15.3
NPV of costs					
Existing generation cost	US$, millions	−135	−135	0	0
New generation capital cost	US$, millions	−28.0	0.0	−8.3	−19.7
New generation O&M	US$, millions	−27.5	0.0	−3.0	−24.5
Distribution capital cost	US$, millions	−76.2	−62.5	−2.9	−10.9
Distribution O&M	US$, millions	−79.6	−65.2	−3.0	−11.4
Connection costs	US$, millions	−8.1	−2.9	−2.9	−2.3
Prepaid meters	US$, millions	−2.9	−2.8	−0.2	−0.3
Total costs	US$, millions	−357	−268	−20.2	−69.2
NPV of benefits					
Consumer benefits, extension	US$, millions	302	251	31.6	19.2
Consumer benefits, densification	US$, millions	170	168	0.0	2.9
Consumer benefits, other consumers	US$, millions	280	0.0	184	95.9

	Unit	Total	Kinshasa	Mobayi	Tshikapa
Avoided self-generation	US$, millions	0.0	—	—	—
Total benefits	US$, millions	752	419	216	118
NPV without GHG accounting	US$, millions	395	151	195	48.8
GHG emissions avoided benefit	US$, millions	12.8	11.7	0.8	0.3
NPV with GHG accounting	US$, millions	408	163	196	49.1
Lifetime GHG emissions	Tons, thousands	−509	−466	−30.0	−12.8

Financial Internal Rate of Return

15. The financial analysis takes into account favorable investment terms for the utilities. In particular, the Government will transfer the assets financed under Component 1 to SNEL with no service charge on the grant and a 0.75 percent additional service charge on the credit received on IDA terms. In Tshikapa, EDC will take over the new power station without financial obligation except O&M; it, therefore, only pays capital costs of distribution.

16. The most important finding of the financial analysis is that the access expansion project for Kinshasa, though economically attractive, is not financially viable. This is because SNEL's tariffs at US$0.07 per kWh fall short of the financial cost of supply. However, the installation of meters in currently unmetered area is expected to significantly reduce consumption, because consumers will need to pay for what they consume. In addition, the rehabilitated system is expected to reduce theft as well. The net result is an improvement in SNEL's financial position through improved cash recovery, although as long as a below-cost tariff prevails, SNEL will still incur some losses in Kinshasa. In Mobayi and Tshikapa, the financial returns are high, due to the subsidized capital costs and lower costs of new generation capacity. It is of interest to note that the joint FIRR of Kinshasa and Mobayi areas under SNEL is 9.1 percent.

Table 5.5: Financial Rate of Return

Kinshasa O&C SNEL	Mobayi SNEL	Tshikapa EDC	Combined
<0%	270%	43.3%	30.6%

Sensitivity Analysis

17. Table 5.6 repeats the structure of those above, but shows the switching values that answer the following questions:

- **What is the willingness to pay necessary for the investment to achieve an EIRR equal to social opportunity cost of capital of 4.3 percent?** While there is a lot of uncertainty surrounding the real value of willingness to pay, the results suggest that the willingness to pay considered in the analysis (US$0.25 per kWh) is almost equal to the one required to achieve social opportunity cost (US$0.24 per kWh).

- **What is the tariff necessary for the investment to achieve an FIRR equal to a private opportunity cost of capital of 10 percent?** The analysis indicates that to retain financial viability and under the assumption that all excess generation can be sold, SNEL would have to increase tariffs to US$0.11

per kWh in Kinshasa and US$0.15 per kWh in Tshikapa. In its mini-grid service area at Mobayi, SNEL would only require a tariff of US$0.0042.

Table 5.6: Switching Values

Internal Rate of Return	Kinshasa O&C SNEL	Mobayi SNEL	Tshikapa EDC
Willingness to pay (US$/kWh)	0.16	0.0240	0.24
Tariff (US$/kWh)	0.11	0.0042	0.15

18. Finally, there are a number of key risks that are not considered here that could significantly affect the results of the economic analysis.

19. First, while it is expected that the project would lead to improvements in the hours of service to existing customers in addition to providing new connections, there is a lot of uncertainty regarding how significant these benefits might be. In the analysis of results, it was found that whether or not the benefits of improved connections are considered (where an improved connection leads to a 25 percent increase in consumption) did not change the EIRR past the threshold social discount rate. Further analysis could be done to vary additional consumption from improved connections both on the external margin (number of connections) and internal margin (increased consumption per connection).

20. Second, although the project is targeting 100 percent uptake of connections in all areas benefiting from grid extension and this is what is assumed in the analysis, experience indicates that it is rarely the case that all households within reach of the new grid infrastructure would actually take up the offer of a connection. Recent work by Kojima and others[22] finds that in urban areas, the percentage of households connecting to the grid once it becomes available ranges from 30 percent in Malawi and Niger to 92 percent in Nigeria, with substantially lower percentages for rural areas.

21. Finally, due to uncertain hydrology and reliance on relatively small hydropower schemes with limited storage capabilities, it may be important to consider the hydrological risk that would reduce the yield of the investments in hydropower generation.

[22] Kojima, M., X. Zhou, J. Han, J. De Wit, R. Bacon, and C. Trimble. 2016. “Who Uses Electricity in Sub-Saharan Africa? Evidence from Household Surveys.” Policy Research Working Paper Series 7889, World Bank, Washington, DC.