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IDA/R2017-0371/1

December 27, 2017

**Closing Date: Wednesday, January 17, 2018
at 6:00 p.m.**

FROM: The Acting Vice President and Corporate Secretary

Central African Republic - Water and Electricity Upgrading Project

Project Appraisal Document

Attached is the Project Appraisal Document regarding a proposed grant to the Central African Republic for a Water and Electricity Upgrading Project (IDA/R2017-0371), which is being processed on an absence-of-objection basis.

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Report No: PAD2522

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED GRANT

IN THE AMOUNT OF SDR 14.3 MILLION
(US\$20 MILLION EQUIVALENT)

TO THE

CENTRAL AFRICAN REPUBLIC

FOR A

WATER AND ELECTRICITY UPGRADING PROJECT

December 21, 2017

Water Global Practice
Africa Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective {October 31, 2017})

Currency Unit = XAF (CFA Franc)

SDR 0.71190085 = US\$1

FISCAL YEAR

July 1 – June 30

ABBREVIATIONS AND ACRONYMS

ABSEA	<i>Agence de Bassin du Secteur de l'Eau et de l'Assainissement</i> (Agency for the Water Sector and Sanitation Basins)
ACER	<i>Agence Centrafricaine d'Electrification Rurale</i> (Rural Electrification Agency)
AFD	<i>Agence Française de Développement</i> (French Development Agency)
AfDB	African Development Bank
ANEA	<i>Agence Nationale de l'Eau et de l'Assainissement</i> (National Water and Sanitation Agency)
ARSEA	<i>Agence de Régulation pour le Secteur de l'Eau et de l'Assainissement</i> (Regulatory Agency for the Water and Sanitation Sector)
ARSEC	<i>Agence Autonome de Régulation du Secteur de l'Électricité</i> (Autonomous Electricity Sector Regulatory Agency)
BADEA	<i>Banque Arabe pour le Développement Economique en Afrique</i> (Arab Bank for Economic Development in Africa)
CAR	Central African Republic
CEMAC	<i>Communauté Économique et Monétaire des Etats de l'Afrique Centrale</i> (Central African Economic and Monetary Community)
CNEA	<i>Conseil National de l'Eau et de l'Assainissement</i> (National Council for Water and Sanitation)
CPIA	Country Policy and Institutional Assessment
CPF	Country Partnership Framework
DA	Designated Account
DGE	<i>Direction Générale de l'Energie</i> (Directorate General for Energy)
DGH	<i>Direction Générale de l'Hydraulique</i> (Directorate General for Water)
DRC	Democratic Republic of Congo
EIRR	Economic Internal Rate of Return
ENERCA	<i>Energie Centrafricaine</i> (Central African Energy Company)
EPRP	Emergency Power Response Project
EROM	Emergency Response Operational Manual
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan

ESMAP	Energy Sector Management Assistance Program
FCFA	Central African Franc (see also: XAF)
FIRR	Financial Internal Rate of Return
FM	Financial Management
FNEA	<i>Fond National pour l'Eau et l'Assainissement</i> (National Fund for Water and Sanitation)
FY	Fiscal Year
GBV	Gender Based Violence
GDP	Gross Domestic Product
GHG	Greenhouse Gas Emissions
GIS	Geographic Information System
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
HIPC	Heavily Indebted Poor countries Initiative
ICB	International Competitive Bidding
ICR	Implementation Completion and Results Report
ICRC	International Committee of the Red Cross
IDA	International Development Association
IDP	Internally Displaced People
IFR	Interim Financial Report
IFRS	International Financial Reporting Standards
IHME	Institute for Health Metrics and Evaluation
IPF	Investment Project Financing
IRI	Intermediate Results Indicator
IRR	Internal Rate of Return
ISP	Implementation Support Plan
KVA	Kilo-volt-ampere
KW	Kilo Watt
KWh	Kilo Watt Hour
LCS	Least-Cost Selection
M ³	Cubic Meter
M&E	Monitoring and Evaluation
MDEWR	<i>Ministère du Développement de l'Energie et des Ressources Hydrauliques</i> (Ministry of Development of Energy and Water Resources)
MEPC	<i>Ministère de l'Economie, du Plan et de la Coopération</i> (Ministry of the Economy, Planning and Cooperation)
MFB	<i>Ministère des Finances et du Budget</i> (Ministry of Finance and Budget)
MICS	Multiple Indicator Cluster Survey
MPWRM	<i>Ministère des Travaux Publics et de l'Entretien Routier</i> (Ministry of Public Works and Road Maintenance)
MTCA	<i>Ministère des Transports et de l'Aviation Civile</i> (Ministry of Transport and Civil Aviation)
MTR	Mid-term Review
MW	Mega Watt

MWh	Mega Watt Hour
NCB	National Competitive Bidding
NGO	Non-Governmental Organization
NPV	Net Present Value
NRW	Non-Revenue Water
O&M	Operations and Maintenance
OHADA	<i>Organisation pour l'harmonisation en Afrique du droit des affaires</i> (Organisation for the Harmonization of Corporate Law in Africa)
OP / BP	Operational Policy / Bank Procedures
PAP	Project Affected People
PDO	Project Development Objective
PIM	Project Implementation Manual
PIU	Project Implementation Unit
PP	Procurement Plan
PPA	Project Preparation Advance
PPIAF	Private Infrastructure Advisory Facility
PPSD	Project Procurement Strategy for Development
QCBS	Quality- and Cost-Based Selection
RAP	Resettlement Action Plan
RPBA	Recovery and Peacebuilding Assessment
RPF	Resettlement Policy Framework
SCD	Systematic Country Diagnostic
SDR	Special Drawing Rights
SODECA	<i>Société des Eaux de Centrafrique</i> (Water Company of the Central African Republic)
SC	Steering Committee
STEP	World Bank's Systematic Tracking and Exchanges in Procurement
TEN	Turnaround Eligibility Note
ToR	Terms of Reference
TTFP	Transport and Transit Facilitation Project
UN	United Nations
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VAT	Value Added Tax
WASH	Water, Sanitation, and Hygiene
WB	World Bank
WHO	World Health Organization
XAF	Central African Franc

Regional Vice President: **Makhtar Diop**

Country Director: **Ahmadou Moustapha Ndiaye**

Senior Global Practice Director: **Guang Zhe Chen**

Practice Manager: **Steven N. Schonberger**

Task Team Leaders: **Pierre Francois-Xavier Boulenger, Anas Benbarka**

BASIC INFORMATION

Is this a regionally tagged project? No	Country(ies)	Financing Instrument Investment Project Financing
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Situations of Urgent Need of Assistance or Capacity Constraints

Financial Intermediaries

Series of Projects

Approval Date 17-Jan-2018	Closing Date 30-Jun-2022	Environmental Assessment Category B - Partial Assessment
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Bank/IFC Collaboration No	
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Proposed Development Objective(s)

The Project Development Objective (PDO) is to enhance SODECA's and ENERCA's operational performance and to increase access to improved water supply and electricity in Bangui and selected towns.

Components

Component Name	Cost (US\$, millions)
Water Supply Infrastructure	6.70
Energy Infrastructure	8.40
Technical Support to Water and Energy Sectors	4.90
Contingent Emergency Response	0.00

Organizations

Borrower : Ministry of Economy, Planning, and International Cooperation



Implementing Agency : Ministry of Development of Energy and Water Resources (MDEWR)
 Société des Eaux de Centrafrique (SODECA)
 Energie Centrafricaine (ENERCA)

PROJECT FINANCING DATA (US\$, Millions)

<input type="checkbox"/> Counterpart Funding	<input type="checkbox"/> IBRD	<input type="checkbox"/> IDA Credit	<input checked="" type="checkbox"/> IDA Grant	<input type="checkbox"/> Trust Funds	<input type="checkbox"/> Parallel Financing
Total Project Cost: 20.00		Total Financing: 20.00		Financing Gap: 0.00	
		Of Which Bank Financing (IBRD/IDA): 20.00			

Financing (in US\$, millions)

Financing Source	Amount
IDA-D2690	20.00
Total	20.00

Expected Disbursements (in US\$, millions)

Fiscal Year	2018	2019	2020	2021	2022
Annual	0.50	2.00	8.00	6.00	3.50
Cumulative	0.50	2.50	10.50	16.50	20.00

INSTITUTIONAL DATA

Practice Area (Lead)

Water

Contributing Practice Areas

Energy & Extractives

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

Gender Tag

Does the project plan to undertake any of the following?

a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF

Yes

b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment

Yes

c. Include Indicators in results framework to monitor outcomes from actions identified in (b)

Yes

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

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

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

Yes No

Does the project require any waivers of Bank policies?

Yes No

Safeguard Policies Triggered by the Project

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

Legal Covenants

Sections and Description

Schedule 2, Section I.A.2.a. The Recipient shall, not later than one (1) month after the Effective Date, conclude, and throughout Project implementation adopt an inter-ministerial decree between MDEWR and MTCA for the purposes of ensuring adequate coordination between the relevant ministries relative to the PIU.

Sections and Description

Schedule 2, Section I.A.2.b. The Recipient shall, not later than one (1) month after the Effective Date, conclude, and throughout Project implementation maintain a Memorandum of Understanding between the PIU, SODECA and ENERCA for the purposes of ensuring technical support for the Project from the two utilities and to define their roles and responsibilities relative to the PIU.

Sections and Description

Schedule 2, Section I.A.3.a. The Recipient shall, within one (1) month of the Effective Date, establish, and at all times during Project implementation maintain, the Steering Committee (“SC”) with composition and mandate acceptable to the Association.

Sections and Description

Schedule 2, Section I.A.4.d. The PIU shall, no later than two (2) months after the Effective Date, recruit and thereafter retain a financial management specialist with terms of reference, qualifications, and experience satisfactory to the Association.

Sections and Description

Schedule 2, Section I.A.4.e. The PIU shall, no later than two (2) months after the Effective Date, have customized accounting software installed.

Sections and Description

Schedule 2, Section I.C.2. The Recipient shall, no later than one (1) month after the Effective Date, furnish the annual work plan and budget for the Project for the first year of implementation.

Sections and Description

Schedule 2, Section I.D.3.a. The Recipient shall ensure that for each activity under the Project of a type for which the ESAP provides that an ESMP or ESIA must be prepared that such ESMP or ESIA shall, within six (6) months of the Effective Date, be prepared, in form and substance satisfactory to the Association.

Sections and Description

Schedule 2, Section I.D.4.a. The Recipient shall ensure that for each activity of a type for which the ESAP provides that a RAP must be prepared that such RAP shall, within six (6) months of the Effective Date, be prepared, in form and substance satisfactory to the Association (including, without limitation to the above, the provision of funds for resettlement compensation when and if required under said RAP).

Sections and Description

Schedule 2, Section I.D.5. The Recipient shall, no later than six (6) months after the Effective Date, ensure that the diagnostic study on dam safety has been completed, in accordance with terms of reference satisfactory to the Association.

Sections and Description

Schedule 2, Section I.E. The Recipient shall, no later than six (6) months after the Effective Date, appoint an external auditor with terms of reference, qualifications and experience satisfactory to the Association.

Conditions

Type Disbursement	Description Notwithstanding the provisions of Part A of this Section, no withdrawal shall be made under Category 3 of the Financing Agreement, unless and until the Recipient has adopted an “Emergency Response Operational Manual (EROM)” referred to in Section I.F.1 of Schedule 2 to the Financing Agreement, in form and substance satisfactory to the Association.
Type Disbursement	Description Notwithstanding the provisions of Part A of this Section, no withdrawal shall be made for payments made prior to the Signature Date, referred to in Section III.B.1(b) (i) of Schedule 2 to the Financing Agreement, in form and substance satisfactory to the Association.
Type Disbursement	Description Notwithstanding the provisions of Part A of this Section, no withdrawal shall be made under Category (3), unless and until the Association is satisfied that the following conditions have been met : (i) the Recipient has determined that an Eligible Crisis or Emergency has occurred, has furnished to the Association a request to include such activities in the Project in order to respond to said Eligible Crisis or Emergency, and the Association has agreed with such determination, accepted said request and notified the Recipient thereof; (ii) the Recipient has adequate staff and resources for the purposes of said activities; and (iii) the Recipient has adopted the EROM in form, substance and manner acceptable to the Association ; referred to in Section III.B.1(b) (ii) of Schedule 2 to the Financing Agreement, in form and substance satisfactory to the Association.
Type Effectiveness	Description The Recipient has adopted the PIM in form and substance acceptable to the Association.

PROJECT TEAM

Bank Staff

Name	Role	Specialization	Unit
Pierre Francois-Xavier Boulenger	Team Leader(ADM Responsible)		GWA07
Anas Benbarka	Team Leader		GEE08
Haoussia Tchaoussala	Procurement Specialist(ADM Responsible)		GGO07
Rose Caline Desruisseaux-Cadet	Procurement Specialist		GGO07



Tahirou Kalam	Financial Management Specialist		GGO26
Carine-Reine Mbedo Ngassia	Team Member		AFMCF
Claude Lina Lobo	Environmental Safeguards Specialist		GEN07
Deo-Marcel Niyungeko	Peer Reviewer		GWA08
Dominick Revell de Waal	Peer Reviewer		GWA08
Evelyne Huguette Madozein	Team Member		AFMCF
Glenn Pearce-Oroz	Team Member		GWA01
Grace Muhimpundu	Social Safeguards Specialist		GSU01
Guy Tchakounte Tchabo	Team Member		GWA07
Inass Ayoub	Team Member		AFMCF
Jean Vincent Koua	Team Member		GWA07
Joelle Nkombela Mukungu	Environmental Safeguards Specialist		GEN07
Leopold Sedogo	Peer Reviewer		GEE09
Lucienne M. M'Baipor	Social Safeguards Specialist		GSU01
Manuel Jose Millan Sanchez	Team Member		GEE08
Marie Louise Felicite Soue	Team Member		GEE07
Marie Roger Augustin	Team Member		LEGAM
Maximilian Leo Hirn	Team Member		GWA08
Siobhan McInerney-Lankford	Counsel		LEGAM
Extended Team			
Name	Title	Organization	Location

CENTRAL AFRICAN REPUBLIC
WATER AND ELECTRICITY UPGRADING PROJECT

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I. STRATEGIC CONTEXT

A. Country Context

1. The Central African Republic (CAR) is a landlocked country with a history of political instability. The CAR borders six countries and has an area of 620,000 square kilometers, but is sparsely populated with a population of only 4.9 million of which 60 percent live in rural areas (World Bank, 2017¹). Because of the most recent conflict, which erupted at the end of 2012, roughly one-quarter of the population has been displaced internally or to neighboring countries. The CAR remains politically fragile with armed groups present in the territory and tense relations between communities.

2. Political fragility in the CAR has aggravated its extremely low socio-economic development.² In 2016, CAR ranked 188 out of 188 countries on the United Nation's Human Development Index. The last available data indicates that over two thirds of the CAR's population lived below the international poverty line of US\$1.90 per day even prior to the latest violent conflict (PovcalNet, 2016³). The health of the population has been negatively impacted by the lack of development and repeated conflict, with a present life-expectancy of only 51.4 years (compared to an average of 59 years for Sub-Saharan Africa) and an infant mortality rate over 60 percent above the Sub-Saharan average (World Bank, 2017).

3. The transitional government installed in 2014 drafted a new constitution and organized presidential and legislative elections, which were held relatively peacefully in February 2016 with strong international support. CAR is now heavily reliant on the international community as emergency aid is beginning to give way to long term development assistance. At the Brussels donor conference in 2016, the international community pledged an unparalleled US\$2.2 billion to cover urgent needs for the period 2017-2021 as outlined in the Recovery and Peacebuilding Assessment (RPBA). A key pillar of the RPBA are reforms to renew the social contract between the state and the population by building state presence and capacity for basic services such as education, health, energy and water.

B. Sectoral and Institutional Context

4. CAR is endowed with abundant water and energy resources, but these have not been developed into safe services for the population. Both the water and electricity sectors are marked by inadequate infrastructure, a weak policy and regulatory framework and utilities struggling to recover costs and thus to maintain and expand services.

5. **Water Access:** Even though the country's average annual rainfall is 1,343 millimeters and its annual renewable water resources of 37,000 m³ per capita are far above the Sub-Saharan average, the availability of safe drinking water is extremely low across the country. Less than a third of CAR's population has access to piped water and barely two percent pipe on-premises (World Health Organization (WHO) / United Nations Children's Fund (UNICEF), 2015⁴). In other words, over 98 percent of the population do not have access to "safely managed water" as per the Sustainable Development Goal. The CAR's population has to rely on unsafe water sources (open well, non-protected spring, surface water etc.), often at considerable distance from dwellings. The associated water fetching is usually done by women and girls in risky conditions, especially during dark hours. Water, Sanitation, and Hygiene (WASH) related diarrheal disease ranks among the top-five causes of morbidity and mortality in the CAR and is a key contributing

¹ World Bank, World Development Indicators, Washington DC, 2017

² The National Recovery and Peace Building Plan (RCPBA) is grounded in recognition of the need to address the five core drivers of fragility over time to break the cycle of violence: i) a lack of social cohesion; ii) political power and the capture of scarce resources concentrated in the hands of a small elite with little legitimacy; iii) imbalances between Bangui and the rest of the country, which have fueled a sense of marginalization and exclusion; iv) a cycle of violence and a population in distress; and v) a lasting state of insecurity.

³ <http://iresearch.worldbank.org/PovcalNet/home.aspx>

⁴ UNICEF and World Health Organization, JMP, Progress on sanitation and drinking water – 2015 update and MDG assessment, Geneva, 2015". The report is available on: <https://washdata.org/report/jmp-2015-report>

factor to child malnutrition (Institute for Health Metrics and Evaluation - IHME, 2017). This health issue affects everyone, but especially women who are often responsible for taking care of children and sick people in the household and thus are greatly affected in their other economic activities.

6. **Energy Access:** CAR's energy generation potential is large, especially its hydroelectric sources, yet electricity access is extremely low. Just 8 percent of CAR's population has access to electricity, with access rates ranging from about 35 percent in Bangui to about 2 percent in rural areas (World Bank, 2016⁵). While Bangui is supplied with a mix of hydro and thermal sources, outside the capital, electricity is largely reliant on expensive diesel generators. The World Bank *Doing Business*⁶ report highlights electricity as a major constraint in the CAR, with electricity cost more than three times higher than the Sub-Saharan average and minimal reliability of supply (World Bank, 2016). This discourages investment in industrial or service activities and thus limits the diversification of the CAR's economy.

Water Sector Overview:

7. The authorities have attempted to strengthen the institutional and legal framework for the water sector with mixed results. A revised Water Law adopted in 2006 forms the basis for the sector's institutional framework. The law called for the creation of five new institutions: (i) the National Water and Sanitation Agency (*Agence Nationale de l'Eau et de l'Assainissement*, ANEA); (ii) the National Council for Water and Sanitation (CNEA); (iii) the Agency for the Water Sector and Sanitation Basins (ABSEA); (iv) the Regulator for the Water and Sanitation Sector (ARSEA); and (v) the National Fund for Water and Sanitation (FNEA). So far only ANEA, responsible for rural water and sanitation policies, is operational, although with limited capacity. Sector leadership remains with the Directorate General for Water (*Direction Générale de l'Hydraulique*, DGH) in the Ministry of Development of Energy and Water Resources (*Ministère du Développement de l'Énergie et des Ressources Hydrauliques* - MDEWR).

8. The Water Corporation of Central African Republic (*Société des Eaux de Centrafrique*, SODECA) is the national urban water utility. SODECA was established in 1949, partially privatized in 1991, and largely renationalized by 2003. While SODECA is officially classified as a semi-public company, the Government currently holds 97.5 percent of SODECA shares with the remaining 2.5 percent held by the private Ecobank. A 2001 agreement between the Government and SODECA granted it a concession to manage drinking and industrial water production, treatment, distribution, and sale in Bangui and seven secondary towns (Bambari, Berberati, Bouar, Bozoum, Bossangoa, Carnot and Ndele).

9. A national water master plan elaborated in 2001 aimed to progressively incorporate all 16 district capitals into SODECA's concession. However, SODECA's presence remains concentrated in Bangui and the initial seven secondary towns. In fact, Bangui accounted for over 97 percent of the 13 million m³ of water produced by SODECA in 2016 and has an estimated 15,147 active accounts compared to only 1,300 accounts in all seven secondary towns combined (SODECA, 2017). Water facilities in secondary towns deteriorated during the crisis due to looting and lack of maintenance, as well as a dearth of qualified staff who fled provincial cities to seek refuge from the civil conflict.

10. Investments in water have been extremely limited in recent years even within SODECA's established concession area. Both the urban and rural water sectors are almost entirely dependent on CAR's development partners which have focused on short-term emergency support. A water master plan developed for Bangui estimated that a total of FCFA 210 billion (US\$420 million) will be required to increase the capital's piped water access rate to 80 percent by 2030 from its current level of approximately 15 percent. Little comprehensive planning has been done for other cities.

11. The present water facilities remain outdated and unable to meet demand. Bangui has only one drinking-water production plant supplied by one pumping station on the Ubangi River, which have not been rehabilitated in decades.

⁵ Central African Republic Policy Notes series (P157806)

⁶ <http://www.doingbusiness.org/>

The drinking water plant in Bangui has a daily capacity of only 36,000 m³, while demand is expected to reach at least 170,000 m³ per day by 2030. Up to 40 percent of the primary water-distribution system is made of aged asbestos-cement, causing high technical losses. SODECA does not collect enough revenue to cover its operating costs and is not able to purchase an adequate supply of water treatment chemicals, thus relying on external assistance.

12. A lack of reliable energy further reduces SODECA's operating capacity and increases operating costs. SODECA's facilities depend on power from the Central African Energy Company (*Energie Centrafricaine*, ENERCA), the national electric utility. However, the power supplied by ENERCA is unreliable and SODECA also uses expensive standby generators, increasing production costs. Expensive imported treatment chemicals and a workforce over-sized by industry standards (17 staff per 1,000 active connections) have further increased operating costs. SODECA has struggled to collect revenues with an estimated cost-recovery ratio of barely 50 percent. Tariff levels have not been increased since 1998, technical water losses due to leakages are estimated to be high and bill collection is low. The public-sector customers account for nearly a third of SODECA sales, but have generally left their water bills unpaid. Total arrears by clients reached over US\$12 million by 2016 – four times total annual sales.

13. SODECA's technical and operational performance is extremely weak as summarized in Table 1 below.

Table 1: Urban Water Sector - Key performance indicators (2016)

Parameter	Value
Piped Water Access (SODECA Perimeter)	15% ⁷
Total Accounts in Bangui	19,849
Active Accounts in Bangui	15,147
Active Accounts in seven secondary cities	1,311
SODECA Staff	284
Staff per 1000 active connections	17.3
Total Production, SODECA Perimeter	12,978,000 m ³
Volume Billed, m ³ (% of production billed)	5,017,000 m ³ (39%)
Water Sales net of taxes 2016	US\$3.1 million
Collections 2016 (excluding one-off government payment)	US\$2.2 million (US\$1.9 m)
Percentage of bills collected	71%
Non-revenue water (NRW) (production not resulting in collections)	72%
Cost Recovery (Regular Collections / Production Costs)	50%

Energy Sector Overview:

14. CAR's electricity sector is also governed by MDEWR but through its Directorate General for Energy (*Direction Générale de l'Energie*, DGE). In addition to the DGE, key public sector agencies include: (a) the state-owned, vertically integrated national power utility, ENERCA, which is responsible for the generation, transmission, and distribution of electricity; (b) the Autonomous Electricity Sector Regulatory Agency (ARSEC); and (c) the Rural Electrification Agency (ACER), launched in 2008 to promote electricity access outside ENERCA's service area.

15. CAR's total installed capacity is around 28 MW, including both hydropower and thermal generation, of which nearly 23 MW are operational. Two hydropower plants at Boali, approximately 85 kilometers from Bangui, remain functional with a combined installed capacity of 18.7 MW, however, actual production fluctuates between 13 and 16 MW. Most of the remaining capacity is provided by a set of diesel generators in Bangui. Of the 16 district centers that

⁷ Extrapolation by World Bank team based on number of known active accounts compared to urban population in SODECA's perimeter.

ENERCA was supplying with electricity using generators prior to the crisis, only three are still receiving electricity (Mongoumba, Mobaye, Bossangoa).

16. The total technical and commercial electricity losses, including electricity billed but not collected, are estimated at over thrice the Sub-Saharan African average of 18-20 percent, which is already high. Transport losses are estimated at 7.3 percent of energy production, and distribution losses at 41.2 percent of energy distributed, which is further aggravated by the low bill collection rate. Most technical losses are the result of obsolete and dilapidated infrastructure, while non-technical losses are caused by illegal connections, faulty meters, unmetered consumption, ineffective lump-sum billing practices, and electricity resale. The poor quality of electricity services discourages consumption among paying customers and creates incentives to use costly and environmentally damaging diesel generators.

17. Although the energy sector has been liberalized in principle, in practice ENERCA remains responsible for 100 percent of sector investment and operations. The 2013 security crisis compounded the already severe challenges. Key infrastructure was looted or destroyed, exacerbating the existing deficiencies in Bangui and the provincial cities. ENERCA lacks the funds to cover essential maintenance and operations, much less the enormous amount of capital required to rebuild infrastructure. Two key reasons for the unfavorable cost recovery ratio are the inefficient collection of electricity that is billed, coupled with the large amount of production lost during transmission and distribution and thus never billed at all. Bill collection is merely at 60 percent because many consumers are not paying. At the end of 2016, over US\$54 million in electricity bills remained unpaid, of which US\$24 million by private customers and over US\$28 million by state institutions with SODECA owing the single highest debt of US\$9.2 million.

18. Rehabilitating the Boali 1 and 2 hydropower plants was the first component of the World Bank's Emergency Power Response Project (EPRP, (P114111)), a US\$10.25 million initiative implemented from 2009 to 2017 in conjunction with *Agence Française de Développement* (French Development Agency – AFD) (US\$8 million IDA, US\$2.25 million State and Peace Building Fund – SPF). The EPRP's first component included the rehabilitation of generation in Boali 1. The second component included activities to reduce energy use, distributing a total of 101,000 energy-efficient fluorescent lamps to more than 25,000 households. Other tasks included new cables, transformers, and other upgrades to the distribution network to reduce technical and non-technical losses, as well as the installation of 5,500 prepaid meters to reduce commercial losses.

19. The energy sector's poor operational and commercial management is reflected in its high operating costs, poorly maintained infrastructure, frequent service interruptions, load shedding, very high technical and nontechnical losses, poor customer service, ineffective billing systems, lack of cost-recovery, unreliable accounting and financial management (FM) systems, persistent underinvestment, and lack of qualified staff. These weak performance indicators are interconnected; addressing them will therefore require a comprehensive, sustained effort.

Table 2: Energy Sector - Key performance indicators

Parameter	Value
Electricity Access rate	8% (35% in Bangui and 2% outside Bangui)
Number of active accounts (2016)	29,247
Installed capacity	28 MW of which 23 MW available (2016)
Energy mix	96% hydropower and 4% diesel (2015)
Average tariff	US\$0.14 / kWh (2016)
Transport losses (Production – Distribution)/Production	7.3% (2016)
Distribution losses (Distribution-Sales)/Distribution	41.2% (2016)
Bill collection rate	60% (2016)
Cost Recovery (Collections excl. all tax) / Production Costs)	55%

C. Higher Level Objectives to which the Project Contributes

20. The proposed project contributes directly to the objectives of the 2016 IDA Turnaround Eligibility Note (TEN) for CAR⁸, which in turn supports the RPBA process, and is aligned with the World Bank Group's twin goals of ending extreme poverty and promoting shared prosperity. Reliable and affordable sources of clean water and electricity are an essential precondition for a healthy population and robust economic activity, especially in the CAR context of high WASH-related disease rates and constrained economic activity. The project will reduce exposure to unsafe drinking water and hygiene, increase access to reliable electricity and lay the technical and institutional foundation for a more sustainable future service expansion. This is expected to reduce poverty and boost shared prosperity by reducing health-related costs (direct treatment costs and indirect costs through missed work), reduce negative impacts associated with lower school attendance due to water- and hygiene-related tasks and improve economic activity due to better power access.

21. The TEN provides the framework for the provision of preliminary support to recovery and development, and is the latest strategy document that outlines the rationale for World Bank support to CAR to rebuild after the events of 2012. The TEN focuses on a combination of stabilization efforts and development activities and outlines key projects to be prepared in the medium term, explicitly targeting the water, sanitation, and energy sectors in its proposed turnaround program (World Bank, 2016).

22. Consistent with TEN objectives, the proposed project will help to rebuild the state-citizenry social compact in target areas in and outside Bangui where there is currently no functioning water supply or electricity services, will strengthen the presence of state services, and help build trust between the state and its citizens.

23. A Systematic Country Diagnostic (SCD) is currently being prepared and the new Country Partnership Framework (CPF) for FY19-FY23 is expected to follow in FY18.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

24. The Project Development Objective (PDO) is to enhance SODECA's and ENERCA's operational performance and to increase access to improved water supply and electricity in Bangui and selected towns.

B. Project Beneficiaries

25. The proposed project will have three primary beneficiaries. Firstly, a greater number of inhabitants of the cities of Bangui, Bambari and Berberati will benefit from improved water and/or electricity services and associated gains in health and economic prosperity. At least 40,000 people are expected to benefit from new access to improved water services, and at least 16,000 from new or improved electricity services. Secondly, the water utility, SODECA, and energy utility, ENERCA, will benefit from enhanced production and distribution capacity, better service quality, an expansion in connections, as well as capacity building measures to translate these infrastructure improvements into higher revenues through improved billing and collections. Thirdly, the project will provide technical assistance to the Government of CAR to plan the long-term development of the water and energy sectors in an efficient and sustainable manner, and will improve its ability to regulate the energy sectors as new operators may appear.

C. PDO-Level Results Indicators

26. Progress towards this PDO will be measured by the following key performance indicators

⁸ Report no. 108882, discussed at the Board of the Executive Directors of the World Bank on October 20, 2016.

- | | |
|--|--------------------|
| • People provided with access to improved water sources (number) | [Core Indicator] |
| • People provided with new or improved electricity service (number) | [Core Indicator] |
| • Water production capacity constructed or rehabilitated (m ³ /h) | [Custom Indicator] |
| • Generation capacity of energy constructed or rehabilitated (MW) | [Core Indicator] |
| • NRW in the project area (percentage) | [Custom Indicator] |
| • Energy Bill Collection Ratio (percentage) | [Custom Indicator] |

III. PROJECT DESCRIPTION

A. Project Components

27. To achieve the PDO and key results, the project will provide a grant equivalent to US\$20,000,000 to fund four project components: (1) Water supply infrastructure; (2) Energy infrastructure; (3) Technical Support to Water and Energy Sectors; and (4) Contingent Emergency Response.

28. Five years after the last major crisis, the challenge is to combine an emergency response for populations without access to basic services, especially in secondary cities, with a longer-term perspective for the sustainable development of both sectors, including the financial and operational recovery of the respective utilities SODECA and ENERCA. Taking into account the limited envelope of the intervention, a balance needed to be struck between improving access to electricity and water and improving performance of both utilities. The project is planning to do so by combining targeted infrastructure interventions to restore and improve urgently needed services with technical assistance to the utilities, SODECA and ENERCA, to improve their longer-term operational and financial performance and to put in place realistic planning documents in both sectors. While the infrastructure investments could have warranted the full amount of the intervention, especially given the stark need to improve access to water and electricity, the rationale was to dedicate a significant amount of funding to restoring performance of the respective utilities, which would empower them to invest further in improving access in the medium term. This leverage effect was also sought through the joint-sector project design that capitalizes on energy investments in secondary cities to develop sustainable water infrastructure and provide affordable water access.

29. Under the planned components, the project will target investments in the capital Bangui, and in the secondary towns of Bambari and Berberati. Interventions in Bangui are critical not only due to the rapid urbanization and concentrated needs in the capital, but because services in Bangui are at the core of SODECA's and ENERCA's business and critical for their long-term operational and financial sustainability. Bambari and Berberati are important regional centers in strategic locations that offer quick wins through the restoration of pre-existing yet temporarily broken-down infrastructure. Though at first only a modest number of beneficiaries will gain improved access in secondary cities, the investments are important to begin the process of reversing the collapse of provincial services, contribute to state presence and improved security outside of the capital, and lay the ground toward stabilization.

30. The current project is a first attempt to address sector performance and access improvement in a holistic way, but the operation should not be viewed as stand-alone. In the energy sector, it capitalizes on previous experience from the EPRP which closed in April 2017, and is prepared in parallel with the Emergency Electricity Access Project (P164885) through which further support is planned to strengthen the sector performance and improve access to electricity (investment in generation using solar energy and in transmission and distribution to reduce losses). The project will also benefit from on-going regional projects being prepared, such as the Regional off-Grid Electrification Project (P160708), whose objective is to increase electricity access to households, businesses and communities using modern off-grid electrification technologies. Finally, the team mobilized additional support from existing World Bank-Executed Trust Funds (US\$300,000 from the Private Infrastructure Advisory Facility (PIIAF – P164885) and US\$90,000 from the Energy Sector Management Assistance Program - ESMAP) to accompany ENERCA in improving its performance, and build capacity for MDEWR to promote and develop solar solutions respectively. The team will keep

exploring other capacity support activities, like South-to-South exchanges supported by Trust Funds with well performing Sub-Saharan utilities, for the water and energy sector, and this throughout the project implementation phase. The current project is also preparing the ground for future interventions from the World Bank and other development partners by preparing various studies to increase access in other cities, and improving both sectors' development and planning.

31. The four project components will consist of the following key interventions:

32. **Component 1 – Water Supply Infrastructure (US\$6.7 million equivalent).** This component will carry out improvements of the water supply infrastructure in Bangui, Bambari and Berberati and thus help achieve the PDO targets of improving access and improving operational efficiency. This will involve the following activities:

- a) in the capital Bangui, the investments will secure the water intake station, in particular through the installation of a new backup generator. The project will also replace critical electro-mechanical equipment at the water treatment plant and pumping stations, install a remote control and monitoring system and new bulk meters, and extend the water distribution network to facilitate up to 3,000 new household connections and 15 new public standposts;
- b) in Bambari, the project will rehabilitate the broken-down intake and water treatment plant, the reservoir, and the transmission and distribution lines to facilitate up to 300 new household connections and 60 new and restored public standposts;
- c) in Berberati, two broken down boreholes and associated power source and disinfection equipment will be rehabilitated, and three new boreholes are expected to be drilled and equipped for use; the distribution network will be extended to facilitate up to 300 new household connections and 40 new and restored public stand posts.
- d) Detailed feasibility studies and supervision activities will also be supported for all three towns.

33. To ensure the functioning of rehabilitated facilities, SODECA will also be supported with inputs (e.g., chemical products and fuel for generators) to avoid any disruption of the water services during the first months of operation after rehabilitation and to help SODECA to recover the associated costs and enable the population to benefit from the improved water services. Furthermore, water facilities in Bambari and Berberati will be equipped with back-up power generators to enable to continued service in case of unavailability of energy provided by ENERCA.

34. Water investments will seek to maximize synergies with energy infrastructure investments (Component 2), in particular in Bambari and Berberati where new energy infrastructure supported by the project is expected to be critical to power the proposed water infrastructure. Switching from SODECA owned diesel generators to energy from the ENERCA solar-diesel hybrid plants, to be installed by the project, will reduce both the cost and climate footprint of water production.

35. **Component 2 – Energy Infrastructure (US\$8.4 million equivalent).** This component will enhance continuity of power supply, extend access and reduce losses in Bangui, and restore generating capacity and the distribution network in the secondary towns of Bambari and Berberati. This will be achieved through the following key activities:

- a) Improve resilience of production at the Boali 1 hydropower plant supplying Bangui by installing back-up equipment (e.g. transformers), and refurbishing existing turbine alternators. The project will also procure 500 smart meters for large customers and 6,000 pre-paid meters to reduce commercial losses (of which 3,000 expected to be for new household connections, and 80 percent installed while the rest will be used for as backup/spares), and fund a communication campaign to explain the purpose and use of the devices and educate the people about better energy efficiency. The project will also carry out targeted investments in distribution to reduce the impact of load-shedding in Bangui;

- b) In Bambari, the project will restore electricity production capacity through a new hybrid solar-diesel power station designed to supply a peak demand of 650 KW with partial battery storage, and rehabilitate the existing distribution network and the construction of a new distribution network with up to 600 connections;
- c) In Berberati, the project will improve electricity production capacity by converting the existing diesel generators into a solar-diesel hybrid power stations with partial battery storage, restore existing connections and supply new private connections as well as the planned SODECA boreholes in a more cost- and carbon efficient manner.
36. The energy investments will seek to maximize synergies with water infrastructure investments (Component 1), particularly in Bambari and Berberati where energy infrastructure supported by the project is expected to be critical to power the proposed water works alongside private connections for the population and businesses.
37. Project investments in all three towns are focused on renewable energy production: the Boali 1 hydropower station, and innovative solar-diesel hybrid plants to replace the original diesel-only generators in the secondary towns. The proposed hybrid solutions for Bambari and Berberati will decrease the cost of production for electricity and water, reduce reliance on erratic diesel supply to the two towns, and improve the carbon footprint relative to diesel-only production. Similar renewable solutions will be envisaged when preparing feasibility studies for other cities.
38. **Component 3 – Technical Support to Water and Energy Sectors (US\$4.9 million equivalent).** This component will support technical assistance to the utilities SODECA and ENERCA to improve their operational performance in line with the PDO, as well as activities aimed at better long-term sector planning of the umbrella MDEWR, and support to the project implementation unit (PIU) to ensure an efficient project implementation and compliance with World Bank procedures.
39. *Technical Assistance to SODECA:* The project will seek to strengthen SODECA’s planning, governance and operational performance with a particular focus on improving cost-recovery. The activities will include the compilation of a financial model, human resource plan and utility strategy for the next five-years to improve planning at SODECA. To prepare a next phase of investments, detailed technical feasibility studies for investments in four additional towns (Ndélé, Bria, Kaga-Bandoro and Sibut) will be prepared under the project.
40. Governance improvements at SODECA are expected through support to an independent audit, client enumeration to verify existing accounts and a digital network inventory. SODECA will also deploy new commercial and billing software to help improve its operational performance. Further technical assistance will promote South-South exchanges, train staff to be deployed to the secondary cities, and provide related management and operational support as necessary. To improve SODECA’s ability to limit technical losses, leak detection and repair equipment will also be financed by the project. This support will help reduce technical water losses and thus also make a positive contribution to reducing net greenhouse gas (GHG) emissions (see Section VI.F). Investments in operational efficiency will be reinforced by the use of mobile phone technology to increase the accuracy and frequency of transmission of operational data from secondary towns to headquarters in Bangui, mitigating the risks and difficulties of staff movements.
41. *Technical Assistance to ENERCA and Energy Sector Reform:* The project will focus on measures that could be implemented in the short to medium term to start the transformation of ENERCA into a more efficient entity. This will include an independent financial audit, dedicated support to improve FM and performance, training for key management staff and detailed technical feasibility studies for investments in Bambari, Berberati and four additional secondary towns.
42. The project will also provide support to the MDEWR to update and strengthen the energy sector strategy, develop a least cost development plan and tariff study, devise a rural electrification and investment strategy, draft

the Electricity Law's application decrees, and study a proposed regional project to extend electricity produced at Mobayi (Democratic Republic of Congo - DRC) to Bambari and Bangassou.

43. *Project Implementation (US\$1.6 million):* The project will rely on a current PIU under the tutelage of Ministry of Transport and Civil Aviation (MTCA) to ensure an efficient implementation of the project and compliance with World Bank procedures. The PIU will be responsible for the management of project tasks including fiduciary, safeguard, procurement, monitoring and evaluation (M&E), and will benefit from technical support and oversight from ENERCA and SODECA. As outlined in greater detail in Section IV below, support will focus on hiring additional expert staff to reinforce the existing PIU. The IDA grant will support new staff salaries, financial audits of the Project, key studies, and will contribute to the operational costs of the PIU.

44. **Component 4 – Contingent Emergency Response (US\$0).** The objective of this component is to improve the Government's ability to respond effectively in the event of an emergency, following the procedures governed by Paragraph 13 (disaster prevention and preparedness) in the World Bank Investment Project Financing (IPF) Policy. There is a significant risk that during the life of the project, the CAR may experience a disaster, which may result in a request to the World Bank to support mitigation, response, and recovery measures. This fourth component will enable a rapid project restructuring including reallocation of funds and disbursements. Once triggered, the component would be subject to the exceptional policy requirements set out in Paragraph 12 of World Bank IPF Policy. An Emergency Response Operational Manual (EROM) will be prepared during implementation to outline procedures should an emergency occur.

B. Project Cost and Financing

45. The lending instrument is an IDA IPF. The grant is in the amount of US\$20 million equivalent. The project activities will be financed by the IDA grant at 100 percent. Project costs are provided in the table below:

Project Components	Project cost (US\$)	IBRD or IDA Financing	Trust Funds	Counterpart Funding
1 – Water Sector Infrastructure	6,700,000	100%	0%	0%
2 – Energy Infrastructure	8,400,000	100%	0%	0%
3 – Institutional and Sector Reform	4,900,000	100%	0%	0%
4 – Contingent Emergency Response	0	100%	0%	0%
Total Costs	20,000,000			
Total Project Costs	20,000,000			
Front End Fees	-			
Total Financing Required	20,000,000			

C. Lessons Learned and Reflected in the Project Design

46. The proposed project benefits from the World Bank's extensive experience supporting the water and energy sectors in fragile states, and in particular from recent projects in the CAR. Specific lessons have been drawn from the CAR Emergency Urban Infrastructure Rehabilitation and Maintenance Project (P104595) and the CAR EPRP which closed in 2016 and 2017, respectively, and involved in-depth engagements with SODECA and ENERCA. This project can thus draw on direct experience with the proposed counterparts over the past years which yielded valuable insights reflected

in the project design. These include:

a. Development of a joint water and energy project. In the CAR, the water and energy utilities are closely linked and the implementation of the proposed project will help to improve cross-sectoral dialogue and planning as: (i) SODECA is the main client of ENERCA but also has become its main debtor due to its inability to pay energy bills, thus undermining ENERCA's financial stability; (ii) the running of the water facilities (pumping stations, water treatment plants etc.) at sustainable cost depends on the availability of the energy provided by ENERCA as the sole reliance on expensive diesel back-up generators is not affordable for SODECA; (iii) the intervention in two secondary towns, and eventually four others to restore sustainable and affordable water and electricity supply solutions will need careful planning and close collaboration between the two utilities, especially in sensitive security areas; and (iv) SODECA and ENERCA are under the control of the same Ministry (MDEWR). The development of a joint project is a key lesson stemming from the insight that SODECA relies on ENERCA for sustainable energy supply, and in turn ENERCA's financial success is intrinsically linked to that of SODECA, and that a joint-project also makes sense due to their shared leadership by the MDEWR.

b. Importance of an experienced PIU in low capacity environments: In the context of generalized weak capacity and political instability, a capable and experienced PIU is particularly important to anchor the project and to ensure its effective implementation. This was a key lesson of the EPRP and will be reflected in the proposed project by anchoring implementation in an existing and well-performing project management unit, while honoring the need for specific expertise by reinforcing it with a dedicated team hired for the project and by ensuring close links to focal points in the two utilities that retain technical responsibility of project implementation.

c. Straightforward project design and deliberate site selection: Even with a capable and experienced PIU, in fragile states, projects that are too complex in technical, institutional or security terms are less likely to succeed. The project design reflects this by proposing straightforward yet impactful infrastructure improvements in a limited number of comparatively well-understood locations, managed by established utility counterparts that have been cooperating with the World Bank for years. Works in and around Bangui build on prior projects in known sites (e.g. the Boali 1 plant previously targeted by the EPRP). Interventions in the two secondary towns aim for quick-wins by restoring and improving pre-existing, temporarily broken-down infrastructure that is well understood by utility counterparts.

d. Contribute to stabilization at macro- and micro-level: The CAR remains in an extremely precarious security situation, with a weak government, armed militias controlling large parts of the country and a high potential of ethnic tensions. A well-designed project in a fragile state should not just meet narrow project objectives, but make a positive contribution to wider stabilization and thus the sustainability of its outcomes. This project has been designed to contribute to reduced tensions both at the macro- and micro-level. At the national level, the inclusion of Bambari was a deliberate decision to re-establish state presence and services in a relatively volatile area at the edge of government controlled territory. At the city- and project level, discussions were held with the Government and MINUSCA, not only to manage project security, but to ensure that different communities can profit equally from interventions to avoid tension.

e. Close coordination with partners: Funding and expertise are scarce in the CAR. It is thus imperative to coordinate with partners to concentrate resources, share expertise and avoid duplication. The proposed interventions were chosen through in-depth discussions with the relevant ministries and partners, including the African Development Bank (AfDB), AFD, Arab Bank for Economic Development (BADEA), Chinese Embassy and major Non-Governmental Organizations (NGOs) such as International Committee of the Red Cross (ICRC), to reflect technical, commercial and political concerns. This was particularly valuable in the case of Bambari where the team managed to draw on detailed pre-feasibility studies and maps of ICRC and coordinate planned interventions with other investors including the BADEA which will complement this project by financing sanitation and drainage

activities.

f. Quality control in project preparation: Prior projects noted the importance of a direct and intensive quality control process by the World Bank during preparation as circumstances can change rapidly in fragile states and information quickly becomes outdated. The team has followed this advice and carried out field inspections of project sites to confirm needs, the state of pre-existing infrastructure and the security situation. The project is also funding detailed feasibility studies for the proposed interventions directly through a project preparation advance (PPA) to obtain high quality and timely planning information and a complete understanding of the available options as well as the scope of goods, works and services required.

g. Contingent Emergency Response component: Considering the fragile security environment and challenging implementation of previous projects in CAR (the EPRP took nine years of implementation and various restructurings), the team added the fourth project component to allow for flexibility and quick response to Government's requests in the event of an emergency during the life of the project, and to enable a rapid project restructuring including reallocation of funds.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

47. The Government counterpart for this project is the MDEWR, which controls both SODECA and ENERCA. The MDEWR and the utilities lack the capacity and experience to take direct fiduciary responsibility for the management of the project, as reflected in the high institutional capacity and substantial fiduciary risk ratings in Section V. As part of the pragmatic approach to project management, the World Bank and the Government of CAR have agreed on an interim arrangement for the management of IDA-funded projects relying on two existing, well-staffed PIUs, one focused on projects with a major infrastructure component hosted in the Ministry of Transport and Civil Aviation (MTCA), CEMAC Transport and Transit Facilitation Project (TTFP, P079736) PIU, and a second with a macroeconomic and financial focus based at the Ministry of Finance and Budget (MFB). This project will make use of these pre-existing arrangements, but reinforce them to meet project needs.

48. Specifically, the project will use the existing infrastructure PIU within MTCA and will reinforce its implementation capacity by hiring additional staff that will provide dedicated support to the current project and the Emergency Electricity Access Project presently under preparation. This combines the advantages of an experienced PIU with thorough knowledge of World Bank and government processes with the focus of a dedicated team committed to this water and energy project. The additional dedicated staff will consist of a FM specialist, a procurement specialist, monitoring specialist, and social and environmental safeguards experts. These staff are currently under recruitment and will be initially funded by the PPA that is under implementation. The additional staff will be partly financed and also help manage the Emergency Electricity Access Project currently under preparation. The PIU director will also have contingency resources to hire additional staff on ad-hoc basis if need arises, such as a water and energy specialist to provide sectoral support and link up with the focal points in SODECA's and ENERCA's internal project teams. For this project, the PIU will receive advice from a Steering Committee (SC) representing the main project stakeholders to be established within one month after the effectiveness of the project, and will sign an agreement with the MDEWR to specify its *modus operandi* and responsibilities for project implementation. The PIU will also have a tripartite agreement with SODECA and ENERCA to clarify its responsibilities (fiduciary, safeguards etc.) as well as those of the utilities during project implementation. A detailed outline of the institutional set-up is given in Annex 2.

B. Results Monitoring and Evaluation

49. M&E will be an integral part of the project. This function will be under the responsibility of the PIU in liaison with the project teams within ENERCA and SODECA. In general, existing baseline data and M&E systems are weak and

the PIU will thus be expected to carry out its own data collection and verification processes. Funding for activities critical for both utility operations and M&E are provided for in the project budget, for example, a client enumeration (which will help track new connections) and independent financial audits at both utilities (which will support tracking operational performance improvements).

50. The PIU Director will provide quarterly progress reports on the project to MDEWR and the management of ENERCA and SODECA through the SC. The M&E specialist that will be hired will compile the data necessary to monitor progress on project indicators. The procurement specialist, finance assistant and safeguards specialist will continuously monitor their areas of expertise, highlighting any exceptional or urgent issues immediately and systematically reporting developments in the quarterly reports. A Mid-Term Review (MTR) will be conducted by June 2020. An assessment of project impacts, including a beneficiary survey, will be carried out at project closing.

C. Sustainability

51. The basis for project sustainability is the strong commitment shown by the Government following the initial written request for financing by the Ministry of the Economy, Planning and Cooperation on February 6, 2017. The water and energy sectors are critical priorities for implementing the RPBA and commitments at the Brussels conference. The key activities and project sites were proposed by the Government and the utilities, and secondary towns correspond to priority centers that were successfully operated for years prior to the latest crisis, thus providing precedence for the expected sustainability of the interventions.

52. The primary risks to the sustainability of the project results are a continued lack of cost-recovery interfering with the operation of restored sites, and the general political and security risks. Through its PDO and associated activities, the project is directly targeting an improvement in operational performance, reduction in losses and thus increase in cost-recovery at both utilities to improve the sustainability of results. In Bambari and Berberati, the construction of a hybrid solar-diesel plant is also expected to reduce reliance on fuel, a critical cost factor and constraint on production outside Bangui, where relatively cost efficient hydropower is available. As outlined above, the project is also working to deliberately include security related aspects in the project design, though high macroeconomic and political risks remain as outlined in Section V below.

D. Role of Partners

53. The role of development partners is shifting. Many donors and NGOs currently present in CAR engaged with a focus on humanitarian relief after the 2012 crisis which resulted in the displacement of approximately 25 percent of the population and the destruction of critical water supply and energy infrastructure. An important part of these efforts has focused on aiding the numerous internally displaced peoples (IDP) camps that have sprung up in Bangui and across the country. Five years after the initial crisis, however, the challenge has become how to shift from the temporary nature of humanitarian response to a longer-term development program. This project is expected to play an important role in the water and energy sectors to help guide the sector into a post-crisis period, and will coordinate with other development partners going through this transition.

54. In terms of the water supply sector, the development partners with major roles include the ICRC with its support of water supply services to IDPs and reconstruction of critical SODECA transmission pipes in Bangui; the AfDB with a US\$14 million project to assist SODECA with the rehabilitation of a pumping station, the replacement of distribution lines and borehole construction, as well as of public latrines; the BADEA and Saudi Arabian Development Fund with its approved financing of infrastructure reconstruction in Bambari and Bozoum; and the Embassy of China which is studying the possible construction of an additional water supply treatment plant in Bangui. This project will coordinate its infrastructure investments with the other investments that are currently being negotiated with the Government and provide strategic advice to improve sector policies, strategies, and priorities, including specific technical feasibility

studies for water investments in four additional secondary cities.

55. Several of CAR's development partners are investing in the rehabilitation of the power sector. In partnership with ENERCA, the World Bank and the AFD are implementing projects to improve the functionality of Boali 1 and 2 hydropower systems. AfDB is supporting the rehabilitation of the Bangui thermal power plants and is also planning to finance the expansion of Boali 2 with the goal of doubling its capacity. Meanwhile, the Chinese Government will carry out the installation of 10 MW of new capacity at Boali ("Boali 3"). The BADEA is funding installation of diesel generators in Bangui. Development partners have welcomed the World Bank's role as investor and in advising the sector institutions on the long-term development of the energy sector, coordination and rationalization of efforts for production, transmission, and distribution.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

56. The overall risk of the project is high. This risk rating reflects high political, macro-economic, institutional capacity and fiduciary risks aggravated by substantial risks related to sector strategy.

57. **Political and governance risks.** The political situation of CAR after the severe crisis in 2012 remains fragile. The crisis severely disrupted the public administration and the Government is struggling to rebuild its institutions and resume its core functions. From mid-2013, the Government has restored treasury functions, re-launched the computerized accounting and budgetary system, and normalized expenditure procedures. However, the Government's already limited physical and institutional infrastructure was badly degraded during the crisis and will require long-term rehabilitation. In the case of ENERCA and SODECA, not only was infrastructure actively destroyed, but business was disrupted and experienced staff fled. There remains the risk of another political-military crisis which could severely impact project implementation. This risk is estimated as high. To mitigate this risk, project sites were chosen to be in comparatively well-secured areas with a strong presence of the United Nations (UN) stabilization mission. The political and governance situation will be continuously monitored and the project will closely coordinate with the UN mission on the ground.

58. **Macroeconomic risks.** Although the country has returned to positive gross domestic product (GDP) growth in 2015, the current growth rates are still anemic by the standards of Sub-Saharan African countries emerging from conflict. While inflation has receded from its double-digit peak at the height of the crisis, it remains above the three percent target set by the Central African Economic and Monetary Community (*Communauté Économique et Monétaire des États de l'Afrique Centrale*, Central African Economic and Monetary Community - CEMAC). Domestic resource mobilization is still insufficient to cover public sector wages and priority expenditures, leaving the economy highly dependent on external aid. The conflict severely degraded the capacity of the public administration in core areas, including revenue collection, expenditure management, public investment and the maintenance of a hospitable business climate, particularly in the agriculture, energy, forestry and mining sectors. A further worsening of the macro-economic situation could negatively impact ENERCA and SODECA, and thus the project, by limiting the ability of the Government to support its public utilities and by reducing the capacity of the population and state institutions to pay utility bills, thereby undermining the utilities' financial and operational sustainability. This risk is estimated as high. Mitigation of this risk will be provided by project activities aimed at reducing technical and commercial losses and strengthening cost-recovery of both SODECA and ENERCA. This will reduce dependency on direct or indirect state subsidies.

59. **Sector strategies and policies.** The prolonged political-military crisis has led to a situation where both the sector ministry MDEWR and the utilities have been primarily focused on short-term crisis management, rather than long-term planning. Both the water and energy sector are lacking a long-term sector strategy, and even at utility level, strategic documents and planning tools (e.g. financial models) are missing. There is thus a substantial risk that the PDO may be

adversely impacted as the sector framework and utility-level planning do not convey a clear strategy. The project is pro-actively mitigating and improving this situation by financing the development of strategy documents and tools at both sector and utility level. Under Component 3, the project will fund the creation of a strategic plan for SODECA including a financial model and a human resources plan. Similarly, the project will develop key strategic documents in the energy sector, including a least-cost development plan and tariff study, an energy sector strategy, proposed revision of the electricity law and drafting of relevant application decrees, and a rural electrification plan. These documents will be developed in close cooperation with the MDEWR and its partners to ensure national ownership as well as financially realistic targets. Further sector engagement and reforms will be supplemented under the Emergency Electricity Access Project, currently under preparation and expected to be implemented in parallel to the current project.

60. **Institutional capacity for implementation and sustainability.** Human capacity and technical resources of ENERCA and SODECA, as well as their governing ministry (MDEWR), are limited, in particular in the secondary towns the project will target. Implementation of reforms which are critical for the long-term sustainability of project outcomes, will depend on the correct incentivization and cooperation of management and political stakeholders. The institutional capacity risk is currently rated high. The project will support a number of mitigation measures including the training of management personnel and staff to be deployed to the restored secondary centers, the improvement of management tools (e.g. billing systems and asset inventories), technical resources (e.g. mobile devices for communication; leak detection equipment) and standard setting business processes (e.g. an independent audit) to improve institutional capacity and standards.

61. **Fiduciary risks.** Fiduciary risks are rated substantial. While ENERCA has recent experience with World Bank procedures under the recently completed EPRP, SODECA does not. Neither utility has up-to-date, reliable and independently audited and validated financial statements, and overall capacities in procurement and FM are low. The project will seek to reinforce existing capacities within the PIU to mitigate this risk (see also FM Action Plan in Annex 2).

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

62. The results of the economic and financial analysis show that the project is both financially and economically viable and robust to variations in key underlying assumptions. In the baseline scenario, which assumes achievement of project targets, a four-year capital investment timeline and standard economic discount rate of 6 percent, the model yields a positive economic net-present value (NPV) of approximately US\$3.4 million and a positive Economic Internal Rate of Return (EIRR) of 10 percent. The financial model evaluates changes in free cash flows due to the project, and with a financial discount rate equal to a Weighted Average Cost of Capital of 0 percent due to full IDA grant financing, the NPV of Component 1 (Water) is US\$9.5 million with a Financial Internal Rate of Return (FIRR) of 12 percent while the NPV of Component 2 (Energy) is US\$3 million with an FIRR of 3.8 percent. Both the economic and financial NPV are robust to a modelled 20 percent capital cost overrun (see Annex 4 for additional details).

63. The economic NPV estimates are conservative as some indirect positive economic effects and possible positive externalities could not be explicitly modelled due to a lack of reliable data in the CAR (e.g. expected reduction in diarrhea and work-time loss due to better water supply; security related gains due to more public lightning etc.), but these are likely to occur and would further improve the NPV profile.

64. The positive economic and financial cost-benefit balance of the water sector component is directly reliant on the energy investments without which SODECA would have to rely on less efficient diesel generators that would greatly increase the cost of producing potable water in Berberati and Bambari. In this sense the project yields real economic and financial synergies reflected in the NPV and Internal Rate of Return (IRR) values, which thus need to be viewed in

conjunction.

Table 3 - Results of Economic Model

Robustness analysis (<i>ceteris paribus</i>)	Discount Rate	Net Present Value			EIRR		
		Water	Energy	Total	Water	Energy	Total
Baseline Scenario	6%	US\$1,670,000	US\$1,750,000	US\$3,420,000	10%	10%	10%
10% capital cost overrun	6%	US\$950,000	US\$930,000	US\$1,880,000	8%	8%	8%
20% capital cost overrun	6%	US\$240,000	US\$115,000	US\$355,000	6%	6%	6%

65. The main economic benefits from the project result from the incremental supply of energy and potable water in the three cities which were valued at estimated willingness to pay. As the project does not directly invest in additional production in Bangui, realizing the incremental supply in the capital will depend critically on the successful reduction in technical NRW and energy transmission and distribution losses. From a financial perspective, the reduction in technical and commercial losses at both utilities, in particular the improvement of collection efficiency, is also a critical contributing factor to the expected improvements in free cash flows and thus the expected positive financial viability. Ameliorating the operational performance of ENERCA and SODECA is thus a key aspect of the PDO.

66. For both utilities, the investments in the secondary towns of Bambari and Berberati alone, that is, without the interventions in the capital Bangui, would not yield a positive financial NPV. For SODECA, Berberati, in particular, is the key financial challenge, because unlike Bambari, where a water storage tank can be pumped full in a few hours and then supply the city by gravity for the rest of the day, Berberati requires consistent energy-intensive pumping causing energy related costs unlikely to be fully earned back through local sales at prevailing tariffs. Similarly, while the innovative solar-diesel hybrid plants will greatly improve the cost- and climate profile of the provincial production sites relative to diesel-only generation, peak morning and evening demand will still require substantial fuel use. From a financial perspective, cost recovery for ENERCA in the provincial centers is expected to be around 65-85 percent depending on the extent of household demand and collection efficiency assumed, that is, most likely, the expected loss reduction and efficiency gains in Bangui will effectively have to cross-subsidize secondary town operations.

67. The financial status of SODECA is expected to continue to remain precarious over the next years in light of its very low cost recovery (see Table 1 and Annex 4) driven by low collection efficiency, high technical losses and elevated production costs in secondary centers. However, the expected increase of billings and collections facilitated by the project would significantly improve its financial situation. If projected increases in collections can be realized, cost recovery in terms of actual collections would increase from barely 50 percent to over 75 percent. This would still imply the necessity of direct or indirect operational subsidies, but at least these could now begin to decline and set the utility on a path towards financial stability. Importantly, increased ability to pay electricity bills would also benefit ENERCA which has effectively become its main creditor.

68. The financial situation of ENERCA remains similarly fragile (see Table 2 and Annex 2) due to the utility's problems in converting its energy production into sustainable cash flows due to high transmission and distribution losses and bill collection efficiency of only 60 percent. The financial situation of ENERCA is expected to remain precarious over the duration of the project, however, if the project realizes its targets, it will make a significant contribution to stabilizing ENERCA's finances. By 2021, an increase in retainable income (i.e. project related net increase in collections over increase in operational costs) of over US\$700,000 annually is expected which is equivalent to over 5 percent increase in cost recovery. The reason that the project is not expected to have a larger effect on cost recovery is primarily because of the high expected operational costs of the new secondary centers which will remain partly reliant on expensive diesel fuel. As noted above, the project related improvement of SODECA's financial situation

could become a major benefit in this sense, as the national water company remains ENERCA's single largest creditor.

69. **Rationale for public sector financing:** The World Bank's new cascade principle seeks to crowd-in private capital and resort to scarce public concessional financing only when necessary. This project will strengthen the financial position of SODECA and ENERCA, improve their operational performance and even work towards improving the legal framework (e.g. Electricity Law), and thus help position these public utilities for more commercially oriented financing in the future. For now, however, public financing remains essential for major capital investments in the water and energy sectors in CAR. This is due to:

- a) A lack of attractiveness to private capital due to low-cost recovery, significant existing debts of SODECA and ENERCA, and state ownership and leadership alongside major political and macroeconomic risks;
- b) Skepticism about private sector participation due to a relatively recent negative experience in the water sector prior to the crisis; and
- c) The public good nature of project related benefits.

70. As SODECA and ENERCA are currently not able to recover their operational costs, self-financed investments or borrowing at commercial interest rates to address critical infrastructure constraints are out of reach until commercial and technical loss reduction plans improve their financial sustainability. Moreover, high existing debt levels of the utilities and CAR's elevated macroeconomic and political risk further reduce the likelihood of viable private financing. By helping to overcome the present infrastructure gap and capacity constraints, World Bank financing will lay the foundation for additional public and possibly future private funding along the lines of the World Bank's vision to promote cascade financing. ENERCA will benefit from PPIAF technical support to improve its financial performance, start the financial restructuring process to meet *Organisation pour l'harmonisation en Afrique du droit des affaires* (Organisation for the Harmonization of Corporate Law in Africa – OHADA) standards (among others), and explore options of private sector participation in the management of the company. In parallel, the World Bank will also explore potential to attract private sector participation in solar generation under the Emergency Electricity Access Project, which is complementing the project.

71. In the water sector, the French private water services company SAUR withdrew from CAR in 1999-2003 after a ten-year management contract and partial ownership of SODECA, citing a lack of investments and accumulation of arrears by state institutions. Prior to substantial improvements in infrastructure and operational efficiency, a re-engagement of the private sector is unlikely in light of this past negative outcome.

72. The rationale for public sector financing is further strengthened by the expected positive externalities of safer water and more reliable energy supply, both in terms of collective health improvements and wider economic gains.

B. Technical

73. The project will support significant rehabilitations and extensions of water and energy infrastructure in Bangui, Bambari and Berberati. In general, the technical designs for these interventions will follow the pre-existing infrastructure that has been successfully operated by the utilities for years prior to being impacted or destroyed during the last political-military crisis. From a technical perspective, the project will thus pursue a low-risk approach with straightforward designs proven to be appropriate for local conditions.

74. Detailed technical design studies of the specific works required will be completed in early 2018 using the US\$1.8 million PPA, requested by the Government and approved by the World Bank. However, the key aspects of the technical approach are already clear based on the identification efforts during project preparation in close cooperation with technical departments of ENERCA and SODECA.

75. In Bangui, the project's water component will finance improvements in the existing plant and pumping stations using well-defined spare-parts or replacement machinery (e.g. generators) and extend the existing distribution network

and connections using a standard approach. The restoration of the water systems in Bambari and Berberati will similarly follow the original design, primarily within existing structures (e.g. surviving water works, storage tank and distribution lines in Bambari; pre-existing or pre-identified borehole locations and storage tank in Berberati). Likewise, investments under the energy component in Bangui and Boali are limited to rehabilitation works in existing plants, and the installation of additional prepaid and smart-meters, which were already deployed in an earlier project.

76. One technical innovation will be the construction of a solar-diesel hybrid plant for ENERCA in Bambari and Berberati in place of the former diesel-only generators. The objective will be to use largely solar energy relying on PV panels and associated battery storage, and use diesel generators as back-up. This hybrid technology is well understood and has been deployed in similar circumstances in other countries. Overall, the project technical risks are thus moderate.

C. Financial Management

77. A FM assessment of the implementing unit designated to manage this project, was carried out in June 2017. The objective of the assessment was to determine whether the MDEWR, ENERCA and SODECA have acceptable FM arrangements in place to ensure that the project funds will be used only for intended purposes, with due attention to considerations of economy and efficiency. The assessment shows a lack of capacity and experience to take direct fiduciary responsibility for the management of the project. The existing CEMAC Transport and Transit Facilitation Project (TTFP, P079736) PIU will have overall FM responsibilities during project implementation. Therefore, and in order to meet the World Bank policy on investment project financing operations effective August 18, 2017, the FM system will need to be supported by the following measures: (i) strengthening the PIU with the recruitment of a FM expert, no later than two months after effectiveness, and providing him/her with fiduciary training; (ii) customizing the accounting system, no later than two months after effectiveness; (iii) elaboration of a project implementation manual (PIM) before project effectiveness; and (iv) recruitment of external auditors, no later than six months after the project effectiveness.

78. Arrangements are acceptable if they are capable of accurately recording all transactions and balances, supporting the preparation of regular and reliable financial statements, safeguarding the project's assets, and are subject to auditing arrangements acceptable to the World Bank. These arrangements should be in place when project implementation starts and be maintained as such during project implementation.

79. The overall fiduciary risk rating is assessed as substantial and mitigation measures will strengthen the internal control environment and maintain the timeliness and reliability of information produced by the PIU as well as an adequate segregation of duties.

D. Procurement

80. **Applicable procurement rules and procedures:** All goods, works and non-consulting and consulting services required for the project and to be financed out of the proceeds shall be procured in accordance with the requirements set forth or referred to in the World Bank Procurement Regulations for Borrowers under Investment Project Financing, dated July 1, 2016 ("Procurement Regulations") and the provisions of the Procurement Plan (PP).

81. **Assessment of the MDEWR capacity to implement procurement procedures.** An assessment of the MDEWR's capacity to implement procurement activities for the project was carried out by the World Bank's Procurement Specialist in October 2017 and completed on November 16, 2017. This assessment showed that the MDEWR contains a Procurement Unit (*Service de Passation des Marches Publics*). The Procurement Unit of the MDEWR has knowledge of national procurement procedures only and it has no experience with procurement and management of projects funded by the World Bank. The MDEWR contains no qualified Procurement Specialist and its system for filing and archiving procurement documentation is inadequate.

82. **Procurement risk assessment.** A summary procurement risk assessment of the CEMAC TTFP PIU, in charge of the implementation of procurement activities for the project, was carried out and the overall procurement risk rating is moderate. It is important to note that the PIU has been created more than ten years ago, and it has extensive experience working with the World Bank and applying related policies and procedures.

83. **Measures to mitigate procurement risk.** The main procurement-related risks identified are: (a) Lack of knowledge and practice in application of the New Procurement Framework; and (b) Lengthy government approval processes. The following mitigation measures are proposed: (a) The CEMAC TTFP PIU will apply the procurement procedures detailed in the PIM and will develop detailed checklists to ensure consistent and compliant project procurement; and (b) the CEMAC TTFP PIU will also develop a contract management system to ensure that all contracts under the project are effectively and efficiently managed; this will include the tracking of key contract milestones and performance indicators as well as capturing all procurement and contract records.

84. **Project Procurement Strategy for Development (PPSD) summary.** A short form of the Project Procurement Strategy of Development has been prepared to ensure the procurement activities are packaged and prepared in such a way as to minimize risk. This document pays particular attention to project activities in areas of elevated security risks such as Bambari, which require specific responses in terms of project implementation and procurement strategy.

85. **PP.** The PP for the first 18 months has been prepared by the Borrower, and approved by the Association on November 18, 2017. The PP will be updated by the PIU on an annual or as-needed basis to reflect actual project implementation need. Updating of the PP will be submitted to World Bank No Objection and the PPSD updated accordingly.

86. **PP for the PPA.** The PP for the PPA was prepared and approved and is under implementation. The activities to be financed under the PPA include (i) feasibility studies, detailed technical studies and bidding documents for water and electricity infrastructure investments; (ii) preparation of environmental and social impact studies (Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP)) and Resettlement Action Plans (RAP) for water and electricity infrastructure investments in Bangui, Bambari and Berberati; and also (iii) recruitment of additional key staff to strengthen the PIU. The implementation of these PPA funded activities will enable the project to quickly start activities on the ground, once the project is effective.

87. **Procurement Planning and Tracking Tool.** In accordance with Paragraph 5.9 of the “World Bank Procurement Regulations for IPF Borrowers” (July 2016) (“Procurement Regulations”) the World Bank’s Systematic Tracking and Exchanges in Procurement (STEP) system will be used to prepare, clear and update PPs and conduct all procurement transactions for the Project.

88. **Procurement in Situations of Urgent need of Assistance or capacity constraints.** In Situations of Urgent need of Assistance or capacity constraints described under Paragraph 12 of World Bank IPF Policy, the World Bank may accept the use of the Borrower’s national procurement arrangement in accordance with the relevant provisions of the Procurement Regulations.

E. Social (including Safeguards)

89. **Gender.** Women are particularly affected by lack of access to basic services and typically the most burdened by household related service shortfalls, such as lack of water or electricity. Improving access to basic services such as water supply and electricity will benefit women by enhancing sanitary conditions and improving productivity with particular benefits stemming from reduced water fetching time and improved working conditions from electric lighting. In discussions with the population and local authorities during preparation, the following gender sensitive needs emerged as particularly important to women:

- a) To have access to safe water at home, or at least at a public stand post, at a reasonable walking distance,

to reduce time-requirements as well as security risks for women and girls fetching water;

- b) To benefit from better water quality to avoid waterborne disease, in particular diarrhea, and the associated personal toll and costs in terms of care and productive time lost.

90. To address these concerns specific gender sensitive actions to be taken under the project include:

- a) strongly encourage women's participation in the choice of the location of water public stand-pipe to be sure that the location responds to the following: (i) positioned at a reasonable walking distance from the beneficiary households; (ii) on the path from the house to the public taps, no unsecure place will be crossed; and (iii) the public tap will benefit from an electric lighting, and if possible, all along the path used to collect water. At every site where public stand pipes will be constructed, a specific study will be conducted to ensure that the concerns raised by the women are well taken into account and that the proposed gender sensitive actions are conducted in a satisfactory manner.
- b) the quality of water supplied by the water facilities will be regularly tested to ensure of its quality,

91. To monitor the impact of these gender sensitive actions, the following indicators are proposed to be followed in the Result Framework:

- a) Women engaged in public consultations related to the choice of location of public stand post (percentage);
- b) Water quality tests at rehabilitated utility water storage that meet required standards (percentage);

92. **A citizen engagement and feedback process** will be established by the project to ensure that any complaints about the project or the performance of the supported utilities can be effectively addressed. This process includes not only dedicated public consultation events, but improved customer complaint systems, to be supported under project capacity building, and the World Bank Grievance Redress Mechanism (GRM) (see Section H below). An indicator related to citizen engagement has been integrated into the results framework (Grievances related to delivery of project benefits that are actually addressed, percentage).

93. **One social safeguards policy is triggered - OP 4.12-Involuntary Resettlement:** This policy is triggered in case it is necessary to make slight modifications of the route or demolition of buildings located along the existing right of way for the realization of planned works along pavements. The project's activities will be screened for applicability of the resettlement policy involving involuntary resettlement or land acquisition will only be approved after preparation of a resettlement plan acceptable to the World Bank. Several issues will increase the complexity of land acquisition - the lack of reliable land record systems, and the inability of people losing land to either document ownership or be physically present to make their claims for eligibility. During project implementation, the screening process will determine whether land will be acquired and whether a sub-project specific RAP is required; in that case RAP(s) will be prepared, amply consulted upon and publicly disclosed both in-country and at the World Bank External Web site prior to the physical start of project activities civil works.

94. **Labor Influx:** While specific details will not be known until ESMPs and RAPs are developed covering construction activities, it is assumed that contractors will bring in engineers and experienced equipment operators from outside the region, and these are likely to be housed in work camps during construction. Rules for contractors to be inserted in the ESMP and works contracts include measures for managing the potential impacts of such an outside workforce on the local community.

F. Environment (including Safeguards)

95. The environmental and social impacts are expected to be limited in scope, easily manageable, and site specific. The project is therefore in the environmental and social Category B and would trigger OP/BP 4.01 (Environmental

Assessment), OP/BP 4.11 (Physical Cultural Resources), OP/BP 4.37 (Safety of Dams) and OP/BP 4.12 (Involuntary Resettlement). The operational policies OP 4.04, 4.09, 4.36, 7.50 and OP 7.60 have not been triggered by this project.

96. The project is proceeding under Paragraph 12 of the World Bank IPF Policy (Projects in Situations of Urgent Need of Assistance or Capacity Constraints) to defer the completion of the environmental and social safeguards instruments to project implementation stage. The CAR meets the conditions as it has a Harmonized Average Country Policy and Institutional Assessment (CPIA) score of only 2.4, significantly below the 3.2 or less required to qualify as a fragile state as per IDA guidance. The country has experienced violent conflict in the past years, remains at risk of violence and the capacity of government counterparts and proposed implementing agencies has been directly affected by the conflict, both in terms of technical and human capacity. An Environmental and Social Action Plan (ESAP), consistent with World Bank operational policies and procedures, investment operations subject to Paragraph 12 of World Bank IPF Policy, was prepared (see Annex 5); disclosed locally on November 15, 2017 and at the Association's external Website on November 17, 2017.

97. *OP 4.01-Environmental Assessment:* Project activities that focus on enhancing SODECA's and ENERCA's operational performance and increasing access to improved water supply and electricity in Bangui and selected towns can have environmental and social impacts. The nature and extent of these potential impacts are ambiguous during the project preparation phase. An ESIA / ESMP will be developed for the project activities no later than six months after the project effective date.

98. *OP 4.11-Physical Cultural Resources:* The proposed operation should not pose a risk of harm to cultural property. Due to the potential for artefacts discovery during the excavations for the project activities, safeguard documents will contain a "chance find" procedure to ensure that these aspects are taken into account and are then reflected in the specifications of the contractors.

99. *OP 4.37-Safety of Dams:* This Safeguard Policy is triggered because of activities under the Component 2 related to energy infrastructure under which the project will install electrical and mechanical back up equipment for the Boali 1 hydropower station. Thus, the project will launch a study to assess dam safety which was planned under the EPRP, but was never completed due to shortage of funding.

100. *Responsibilities for Safeguard Screening and Mitigation:* The PIU in close collaboration with the MDEWR will be responsible for following up on all safeguards concerns and would also ensure that all safeguard screening and mitigation requirements will be applied in each component.

101. *Consultation and Disclosure:* The ESAP was translated to French and shared with the Government of CAR, concerned NGOs and development partners, and was disclosed in country and at the World Bank's external web site. The PIU will consult project-affected groups and local NGOs on the project's environmental and social aspects, and will take their views into account. The PIU will initiate these consultations as early as possible, and for meaningful consultations, will provide relevant material in a timely manner prior to consultation, in a form and language(s) that are understandable and accessible to the groups being consulted.

102. *Climate Change:* The CAR is vulnerable to climate variability, notably through its effects on agricultural productivity and food security, forest production, water resources, health and exposure to natural disasters. Of particular relevance to this project is the potential impact of climate change on rainfall, with a predicted overall increase, but also more erratic precipitation. Extreme events "such as storms, floods and drought are likely to occur more often" (World Bank, 2010⁹). As both the production of drinking water and electricity in key target areas of the project rely on rivers, changes in rainfall and water resource availability could significantly affect infrastructure

⁹ World Bank. 2010. Central African Republic – Country environmental analysis: environmental management for sustainable growth. Washington, DC: World Bank

performance as well as the socio-economic and health situation of beneficiary populations. For example, periods of water scarcity can increase the amount of fungal and bacterial content which will reduce water quality and affect the treatment levels required. The investments in terms of water supply intake and treatment will include climate resilient measures, such as increased monitoring of water quality during periods of drought and modifications at treatment plants that adjust to the raw water envelope. The synergies with the energy component, in particular, the construction of solar-diesel hybrid plants in Bambari and Berberati and their connection to the respective water production facilities, are expected to have a positive impact on climate change relative to the earlier sole reliance on diesel for energy generation.

103. *GHG Accounting:* The project will result in an estimated net reduction in GHG emissions relative to the situation prior to the 2012-2014 crisis. The key driver of these emission savings is the change from purely diesel-based energy generation in the secondary cities Bambari and Berberati prior to the crisis, to the innovative solar-diesel hybrid plants to be installed by the project. The investments under Component 2 (energy) will result in net GHG emissions relative to the pre-crisis situation of -37,500 tons of CO₂ over the 20-year lifetime of project outcomes, which represents a net reduction in GHG emissions. Emissions related to water production under Component 1 in the secondary cities will also be reduced through this switch from diesel to at least partially solar-generated energy to power water production and distribution. Additional, if relatively minor, savings in GHG emissions are expected to be realized through a reduction in NRW due to technical water losses in Bangui (-163 tons CO₂-eq) due to the resulting energy efficiency gains. With this said, water supply service delivery in Bambari and Berberati and system expansion in Bangui will be emissive at 2,796 tCO₂-eq. Overall net emissions for the project are estimated at -34,867 tCO₂-eq. It should be noted that both energy and water production have ceased in Bambari and Berberati since the 2012-4 crisis. Relative to this ongoing outage, rather than the pre-crisis situation, restarting production from zero will be net-emissive, with up to 25,300 tons of additional tCO₂-eq emissions due to the energy component, and up to 2,633 tons CO₂-eq due to the water investments over the 20 year life of the project outcomes. Even viewed from this perspective, however, the total level of net emissions is kept in check by the investments in solar power.

G. World Bank Grievance Redress

104. 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/en/projects-operations/products-and-services/grievance-redress-service>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.



VII. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY : Central African Republic
Water and Electricity Upgrading Project

Project Development Objectives

The Project Development Objective (PDO) is to enhance SODECA's and ENERCA's operational performance and to increase access to improved water supply and electricity in Bangui and selected towns.

Project Development Objective Indicators

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Name: People provided with access to improved water sources	✓	Number	0.00	40000.00	Annual	Commercial Directorate of SODECA and Supervision Consultancy. See table below for detailed definition of the indicator.	Project Implementation Unit (PIU)
People provided with access to improved water sources - Female (RMS requirement)	✓	Number	0.00	20000.00	Annual	Commercial Directorate of SODECA and Supervision Consultancy. See table below for detailed definition of the indicator.	Project Implementation Unit (PIU)



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Description:							
Name: People provided with new or improved electricity service	✓	Number	0.00	16000.00	Annual	Commercial Directorate of ENERCA and Supervision Consultancy. See table below for detailed definition of the indicator.	Project Implementation Unit (PIU)
People provided with new or improved electricity service - Female	✓	Number	0.00	8000.00	Annual	Commercial Directorate of ENERCA and Supervision Consultancy.	Project Implementation Unit (PIU)
Description:							
Name: Water production capacity constructed or rehabilitated		Cubic Meter(m3)	0.00	300.00	Annual	Completion Certificate by Supervision Engineer	Project Implementation Unit
Description: Production capacity measured by Cubic Meters per hour. See detailed definition below.							
Name: Generation capacity of energy constructed or rehabilitated	✓	Megawatt	0.00	1.00	Annual	Completion certificate of supervision engineer. See table below for detailed definition of the indicator.	Project Implementation Unit (PIU)



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Description:							

Name: Non-Revenue Water in the project area		Percentage	72.00	62.00	Annual	Technical and Commercial Department of SODECA.	Project Implementation Unit (PIU)
Description: See table below for detailed definition of the indicator.							

Name: Energy Bill Collection Ratio		Percentage	60.00	70.00	Annual	Activity Report of ENERCA	Project Implementation Unit (PIU)
Description: See table below for detailed definition of the indicator.							

Intermediate Results Indicators

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Name: New piped household water connections that are		Number	0.00	3600.00	Annual	Commercial Directorate of SODECA and Supervision	Project Implementation



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
resulting from the project intervention (number)						Consultancy.	Unit (PIU)
Description: See table below for more detailed definition of the indicator.							
Name: Improved community water points constructed or rehabilitated under the project (number)		Number	0.00	115.00	Annual	Commercial Directorate of SODECA and Supervision Consultancy.	Project Implementation Unit (PIU)
Description: See table below for more detailed definition of the indicator.							
Name: Water quality tests at rehabilitated utility water storage that meet required standards		Percentage	0.00	85.00	Monthly tests, annual review.	Records published by SODECA and reviewed by PIU.	SODECA
Description: Test for E.coli / Coliform bacteria per 1 milliliter or 10 milliliters at restored water towers in Bambari and Berberati. See table below for more detailed definition of the indicator.							
Name: Prepaid and smart electricity meters installed		Number	0.00	5200.00	Annual	Completion certificate by supervision engineer	Project Implementation Unit (PIU)



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Description: See table below for more detailed definition of the indicator.							
Name: Turbine alternators of Boali 1 hydropower plant refurbished		Number	0.00	4.00	Annual	Completion certificate by project supervision engineer.	Project Implementation Unit (PIU)
Description: See table below for more detailed definition of the indicator.							
Name: SODECA - Independent Audit and Validated Financial Statements Available		Yes/No	N	Y	Annual	Independent Audit and Validated Financial Statements Available	Project Implementation Unit (PIU)
Description: See table below for more detailed definition of the indicator.							
Name: ENERCA - Independent Audit and Validated Financial Statements Available		Yes/No	N	Y	Annual	Independent Audit and Validated Financial Statements Available	Project Implementation Unit (PIU)
Description: See table below for more detailed definition of the indicator.							
Name: Least-cost development plan and tariff		Yes/No	N	Y	Annual	Plan Available and validated	Project Implementation



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
study available							Unit (PIU)

Description: See table below for more detailed definition of the indicator.

Name: Grievances related to delivery of project benefits that are actually addressed (percentage)		Percentage	0.00	80.00	Annual	Record keeping under World Bank Grievance Redress mechanism implemented locally by the Project Implementation Unit (PIU) and project focal points in utilities	Project Implementation Unit (PIU)
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Description: See table below for more detailed definition of the indicator.

Name: Women engaged in public consultations related to the choice of location of public stand posts		Percentage	0.00	50.00	Annual	Attendance records and pictures to be compiled and archived by the PIU	Project Implementation Unit (PIU)
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Description: See table below for more detailed definition of the indicator.



Target Values

Project Development Objective Indicators

Indicator Name	Baseline	YR1	YR2	YR3	YR4	End Target
People provided with access to improved water sources	0.00	0.00	15000.00	25000.00	40000.00	40000.00
People provided with access to improved water sources - Female (RMS requirement)	0.00	0.00	7500.00	12500.00	20000.00	20000.00
People provided with new or improved electricity service	0.00	0.00	5000.00	10000.00	16000.00	16000.00
People provided with new or improved electricity service - Female	0.00	0.00	2500.00	5000.00	8000.00	8000.00
Water production capacity constructed or rehabilitated	0.00	0.00	0.00	200.00	300.00	300.00
Generation capacity of energy constructed or rehabilitated	0.00	0.00	0.50	1.00	1.00	1.00
Non-Revenue Water in the project area	72.00	72.00	68.00	65.00	60.00	62.00
Energy Bill Collection Ratio	60.00	63.00	66.00	69.00	70.00	70.00



Intermediate Results Indicators

Indicator Name	Baseline	YR1	YR2	YR3	YR4	End Target
New piped household water connections that are resulting from the project intervention (number)	0.00	0.00	1500.00	2500.00	3600.00	3600.00
Improved community water points constructed or rehabilitated under the project (number)	0.00	0.00	35.00	50.00	115.00	115.00
Water quality tests at rehabilitated utility water storage that meet required standards	0.00	0.00	85.00	85.00	85.00	85.00
Prepaid and smart electricity meters installed	0.00	0.00	2000.00	4000.00	5200.00	5200.00
Turbine alternators of Boali 1 hydropower plant refurbished	0.00	0.00	0.00	2.00	4.00	4.00
SODECA - Independent Audit and Validated Financial Statements Available	N	N	Y	Y	Y	Y
ENERCA - Independent Audit and Validated Financial Statements Available	N	N	Y	Y	Y	Y
Least-cost development plan and tariff study available	N	N	N	Y	Y	Y
Grievances related to delivery of project benefits that are actually addressed (percentage)	0.00	0.00	50.00	75.00	80.00	80.00



Indicator Name	Baseline	YR1	YR2	YR3	YR4	End Target
Women engaged in public consultations related to the choice of location of public stand posts	0.00	50.00	50.00	50.00	50.00	50.00

**Detailed Definitions of PDO Indicators**

PDO Indicator	Definition
People provided with access to improved water sources	This indicator measures the cumulative number of people who benefited from improved water supply services that have been constructed through operations supported by the World Bank. The number of people provided with access will be estimated by multiplying (a) the actual number of piped household connections by the estimated number of people per household connection (assumed average household size of five in line with World Bank standard assumptions and the 2010 Multiple Indicator Cluster Survey household survey); and (b) the actual number of community water points by the estimated number of people per community water point (assumed to be 200).
People provided with access to improved water sources - Female (RMS requirement)	This indicator measures the cumulative number of women who benefited from improved water supply services that have been constructed through operations supported by the World Bank. The number of women provided with access will be estimated by multiplying (a) the actual number of piped household connections by the estimated number of women per household connection (assumed to be half of the assumed average household size of 5 in line with World Bank standard assumptions and the 2010 MICS household survey); and (b) the actual number of community water points by the estimated number of women per community water point (half of the total beneficiaries assumed to be 200).
People provided with new or improved electricity service	The indicator measures the number of people that have received new or improved electricity service through operations supported by the World Bank. The indicator aggregates the following data: (a) People provided with access to electricity services under the project by household connections (grid or off-grid); (b) New Community electricity services under the project; (c) Additional generation capacity under the project. The project assumes 5 beneficiaries per household connection in line with World Bank standard assumptions and the 2010 MICS household survey.
People provided with new or improved electricity service - Female	The indicator measures the number of women that have received new or improved electricity service through operations supported by the World Bank. The indicator aggregates the following data: (a) Women provided with access to electricity services under the project by household connections (grid or off-grid); (b) New Community electricity services under the project; (c) Additional generation capacity under the project. The project assumes 5 beneficiaries per household connection (of which 50 percent women) in line with World Bank standard assumptions and the 2010 MICS household survey.
Water production capacity constructed or rehabilitated	The capacity of the installed or rehabilitated water production plant and boreholes to produce treated, potable water, measured in cubic meters (m ³) per hour. The baseline is zero. As no production increases due to the project are expected in Bangui, this indicator primarily refers to Bambari (restoration of water plant to original capacity to 245 m ³ /hour) and Berberati (restoration of two boreholes with a capacity of 15 m ³ /hour and construction of three additional boreholes of equivalent capacity).
Generation capacity of energy constructed or	The indicator measures in MW the generation capacity of conventional and renewable energy facilities



rehabilitated	constructed or rehabilitated through operations supported by the World Bank.
NRW in the project area	NRW is here defined as the sum of SODECA’s technical losses (i.e. leakage and overflows), of water distributed but not billed (i.e. “unbilled authorized consumption” and “unbilled unauthorized consumption”) as well as, and of water distributed and billed but not paid for (collected on), divided by total water distributed in the project area (Bangui, Bambari, Berberati). ¹⁰
Energy Bill Collection Ratio	This indicator is measured by dividing ENERCA’s total cash-collections by ENERCA’s net sales in the project area (Bangui, Berberati and Bambari). Collections include all collections received in the year, whether for bills for the same or earlier periods, including taxes. Total sales are defined as net sales, that is, all sales in the billing categories “Basse Tension”, “Branchement direct”, “Forfait”, “Facture Manuelle”, “Moyenne Tension” and “Basse tension sur transformateur du courant” subtracting adjustments (“Avoirs”). In the terminology of ENERCA’s internal billing system records, the relevant figure in each billing category is the column “MT TOTAL” which includes charges to consumers beyond the actual energy tariff (e.g. meter rental charge; surcharge for public lightening etc.).

Detailed Definitions of Intermediate Results Indicators (IRI)

IRI Indicator	Definition
New piped household water connections that are resulting from the project intervention (number)	This indicator is measured as the cumulative number of new piped household water connections which result from the project intervention. The baseline value for this indicator is zero. The data is cumulative i.e. the cumulative number of new piped household water connections that results from the project intervention. A piped household water connection is defined as a connection that provides piped water to the consumer through either a house or yard connection. Hence, they do not include, inter alia, standpipes, protected well, borehole, protected spring, piped water provided through tanker trucks, or vendors, unprotected wells, unprotected spring, rivers, ponds and other surface water bodies, or bottled water. New piped household water connections are those connections that measure connections that are new (not rehabilitated) because of the project intervention. It should be noted that these connections could have been constructed by the project, or financed by the project (either directly through World Bank funds, or indirectly through counterpart funds such as household contributions). Even though these connections may not be constructed or financed by the World Bank funding itself, they are supposedly a result of the World Bank-funded project. If households could have connected without the interventions of the World Bank-funded project anyway, then they are not a result of the project.
Improved community water points constructed or rehabilitated under the project (number)	This indicator is measured as the cumulative number of improved community water points constructed or rehabilitated under the project. The baseline value for this indicator is zero. The data should be cumulative – meaning that the data in the ISR should represent the cumulative number of improved community water points

¹⁰ This definition extends the one by the International Water Association (IWA) because it includes “billed but unpaid” water. This category was approx. 15 percent of the total water input into the distribution system in the case of SODECA in 2016, and thus constitutes a significant loss in cashflows to the utility which is captured in the project’s definition of Non-Revenue Water.



	<p>constructed or rehabilitated under the project.</p> <p>A community water point is defined as a public outlet for the provision of water supply to a number of households. Improved community water points refer to standpipes, protected dug well, borehole, or protected spring. Hence, improved community water points do not include, inter alia, unprotected wells or unprotected springs.</p>
Water quality tests at rehabilitated utility water storage that meet required standards (percent)	Monthly test for E.coli and/or Coliform bacteria per 1 milliliter or 10 milliliters at restored water towers in Bambari and Berberati, respectively. The required standard is 0 E. Coli contamination in the tested 1 or 10 ml of water. Records to be published and kept by SODECA.
Prepaid and smart electricity meters installed	A count of pre-paid and smart electricity meters installed for ENERCA clients in the project implementation area (Bangui, Berberati and Bambari).
Turbine alternators of Boali 1 hydropower plant refurbished	Completion of rehabilitation works of turbine alternators at Boali 1 hydropower plant.
SODECA - Independent Audit and Validated Financial Statements Available	Availability of a full audit and validated financial statements for at least one reference year in line with IFRS and compiled by an external, independent auditor.
ENERCA - Independent Audit and Validated Financial Statements Available	Availability of a full audit and validated financial statements for at least one reference year in line with IFRS and compiled by an external, independent auditor.
Least-cost development Plan and tariff study Available	Availability of a new validated masterplan least-cost plan and tariff methodology for the development of the electricity sector in the CAR in line with principles of cost-efficiency.
Grievances related to delivery of project benefits that are actually addressed (percentage)	This indicator measures the transparency and accountability mechanisms established by the project so the target beneficiaries have trust in the process and are willing to participate, and feel that their grievances are attended to promptly. The project grievance mechanism is required to ensure beneficiaries can act on their entitlements to project benefits, can query decision-making processes within the project that may exclude them from benefits and register complaints about negative impacts of the project. project monitoring systems should usefully provide information on (a) the number of complaints made and (b) the number of these complaints that are resolved.
Women engaged in public consultations related to the choice of location of public stand posts (percentage)	Recorded participation of local women in public meetings to discuss and decide the placement of SODECA water stand posts in order to ensure these are positioned in line with the needs of their primary users.



ANNEX 1: DETAILED PROJECT DESCRIPTION

COUNTRY: Central African Republic Water and Electricity Upgrading Project

1. To achieve the PDO of enhancing SODECA's and ENERCA's operational performance and increasing access to improved water supply and electricity in Bangui and selected towns, the proposed project will provide an IDA grant of US\$20 million equivalent to fund four project components targeting the capital Bangui as well as the two towns of Bambari and Berberati.
2. In light of the pressing humanitarian emergency, the project envisages a rapid implementation timeline of four and a half fiscal years beginning with fiscal year 2018 and concluding in fiscal year 2022.
3. The first project component will invest US\$6.7 million into water supply infrastructure improvements, of which US\$2.9 million in Bangui, US\$2.2 million in the city of Bambari and US\$1 million in the city of Berberati complemented by US\$0.6 million in funding for works supervision and an water infrastructure energy audit. The second component will invest US\$8.4 million into energy supply infrastructure improvements, of which US\$3.2 million in Bangui and the Boali hydropower plant supplying the capital, US\$3.4 million in Bambari and US\$1.8 million in Berberati. The third component will invest US\$4.9 million in technical support to SODECA and ENERCA, and long-term sector planning, as well as provide financing for the implementation of the project. The fourth component is a contingent emergency response component with an initial allocation of zero funding, included in the project to improve the World Bank and Government's ability to respond and re-allocate funds effectively in the event of an emergency. Details of these components are outlined below.
4. Interventions in Bangui are critical not only due to the rapid urbanization and concentrated needs in the capital, but because services in Bangui are at the core of SODECA's and ENERCA's business and critical for the long-term operational and financial sustainability of both utilities. Over 95 percent of SODECA's and ENERCA's sales and production are in and for the capital, respectively. Bangui concentrates 16 percent of the CAR's population, and cities are expected to grow at more than twice the rate of rural areas over the next decade (UN, 2014¹¹). Investments in secondary towns are important to begin the process of reversing the collapse of provincial services of both national utilities, and to contribute to stabilization efforts and development activities in areas not traditionally well served by the state.
5. As outlined in the description of the project components below, a particular emphasis will be placed on achieving synergies between water and energy investments, and on linking infrastructure works to institutional and sector reforms that help make service improvements sustainable and pave the way for the future development of the water and energy sector. A focus on renewables is an important aspect of the energy component which focuses on maintaining the hydropower plant in Bangui-Boali, and will replace the original generators with more cost-efficient and climate-friendly solar-diesel hybrid plants in Bambari and Berberati.
6. The four project components were selected based on (a) summary policy notes on the overall sector status and needs; (b) in-depth discussion with counterparts during preparatory missions of the World Bank team; and (c) field visits to inspect proposed project sites in Bangui, Bambari and Berberati. The details are as follows:
7. **Component 1 – Water Supply Infrastructure (US\$6.7 million equivalent):** This component will carry out substantial improvements of the water supply infrastructure in Bangui and the secondary towns of Bambari and Berberati. The overall aim is to meet critical maintenance needs and restore and extend infrastructure to improve

¹¹ United Nations, Department of Economic and Social Affairs, Population Division (2014). World Urbanization Prospects: The 2014 Revision, CD-ROM Edition.



potable water supply in the targeted cities.

- a. *Bangui Water Supply Investments (US\$2.9 million)*: The investments in the capital will ensure the maintenance of the current production, reduce NRW, and facilitate new private connections and public standposts. Specifically:
 - i. Maintenance to safeguard the functionality of the water extraction station at the Ubangi river, in particular through the provision of a new back-up generator;
 - ii. Rehabilitation of the Bangui water treatment plant, including replacement of operating and monitoring equipment, bulk meters, a new generator and other works;
 - iii. Improvements to water distribution capacity, including new distribution pumps and network extensions;
 - iv. Allocations for consumables to ensure uninterrupted operation of the treatment plant (chemicals, fuels for backup generators);
 - v. Expansion of access through up to 3,000 new individual household connections and 15 new public water kiosks.
- b. *Bambari Water Supply Investments (US\$2.2 million)*: In this secondary city, investments will focus on
 - i. Rehabilitation of the pumping station with installation of new pumps at its original location to restore original capacity of 250m³/hour;
 - ii. Replacement of electromechanical equipment of the water treatment plant;
 - iii. Minor public works to rehabilitate the plant and surroundings;
 - iv. Replacement of the conveyor pipeline from the station (DN 300);
 - v. Rehabilitation of the 1,200 m³ storage tank;
 - vi. Extension of access through up to 300 individual connections as well as rehabilitation or construction of up to 60 public stand posts;
 - vii. Allocations for consumables to ensure uninterrupted operation of the treatment plant (chemicals, fuels for backup generators).
- c. *Berberati Water Supply Investments (US\$1 million)*: Investments in this secondary city will focus on rehabilitating two broken-down boreholes with a capacity of 15 m³ per hour, and the construction of three additional boreholes with equivalent capacity, including a backup generator and disinfection equipment. The project will also commence the restoration of the distribution network with up to 300 individual connections and 40 rehabilitated or newly constructed stand-posts. A particular emphasis will be placed on distributing the benefits of improved water supply equally among local communities in order to contribute to furthering peace and reducing political tensions.
- d. *Control and works supervision in all locations (US\$0.6 million)*: This subcomponent will finance a supervision engineering firm to support procurement and implementation of planned infrastructure works, as well as an energy audit for the production facilities in Bangui, as well as a detailed feasibility study for the planned works.

8. Water investments will seek to realize synergies with energy infrastructure investments (see Component 2 below), in particular in secondary cities where energy infrastructure supported by the project is expected to be critical to power the proposed water infrastructure. In both secondary towns, the planned (re-)connection of the water production facilities to the grid is expected to reduce production costs dramatically relative to the past sole reliance on diesel generators, as well as improve SODECA's carbon footprint.

9. **Component 2 – Energy Supply Infrastructure (US\$8.4 million equivalent)**: This component will carry out substantial improvements of the energy supply infrastructure in Bangui and the towns of Bambari and Berberati. In the capital, the focus will be on maintenance works at the Boali 1 plant, reducing the impact of load shedding, and limiting



losses by expanding the use of smart and prepaid meters. In the secondary towns, the restoration of regular electricity supply will go hand-in-hand with lower production costs and a better carbon footprint by moving from pure diesel to hybrid solar-diesel solutions. Specifically:

- a. *Bangui Energy Infrastructure (US\$3.2 million)*: This component will carry out investments to
 - i. Improve the resilience of the Boali 1 hydropower plant that supplies the capital, in particular, by providing a new back-up block transformer, supporting the installation of turbines, and procuring new current transformers, and rewinding alternators;
 - ii. Improvement works in the distribution system to reduce impact of load shedding in the capital;
 - iii. Procure up to 6,000 pre-paid meters and 500 smart meters to reduce commercial losses with a target of 80 percent (5,200) installed with the rest serving as spares; the project will also fund a communications campaign to explain pre-paid metering to customers.
- b. *Bambari Energy Infrastructure (US\$3.4 million)*: In place of the totally destroyed original diesel powered energy production facility, the project will install a new hybrid solar-diesel power station with partial storage and restore a basic distribution network with up to 600 connections for households and businesses; the project will put particular emphasis on synergies with the water component by connecting the restored power station to the rehabilitated SODECA water treatment plant.
- c. *Berberati Energy Infrastructure (US\$1.8 million)*: The electricity production and distribution facilities in Berberati have been significantly impacted by the recent political crisis. Of the original two diesel generators (800 kva and 630 kva), only one remains functional, and much of the original distribution network has been destroyed. The project aims to convert the remaining production facilities from pure-diesel into a solar-diesel hybrid plant to improve reliability, reduce production costs and improve the carbon footprint, and restore key parts of the network, notably to connect new customers, as well as the SODECA boreholes expected to be restored by the project.
- d. Control and works supervision in all locations.

10. **Component 3 – Technical Support to Water and Energy Sectors (US\$4.9 million equivalent)**: In recognition of present human and technical capacity gaps in the water and energy sectors, the project will fund a significant technical support program to ensure an efficient implementation and the operational and financial sustainability of project outcomes.

- a. *Technical Support to SODECA (US\$1.5 million)*: The technical support to SODECA will comprise of
 - i. The development of a strategic business plan for the period 2018-2022, including the development of a robust financial model and human resource plan, the completion of an independent audit and financial statements in line with international standards, and an in-depth feasibility study including bidding documents for expanding access in up to four additional secondary cities; also, an audit of energy use of water infrastructure in Bangui;
 - ii. The improvement of customer management, in particular, metering and billing operations; this will involve a full physical census of active accounts; a Geographic Information System (GIS) network inventory using new mobile technology; and the roll-out of a new customer management and billing software;
 - iii. Direct operational equipment support will provide SODECA with tools to reduce technical losses and better serve its customers, in particular, repair tools for meters; leak detection and repair equipment; light trucks and motor cycles.
- b. *Technical Support to ENERCA and MDEWR (US\$1.6 million)*: This will consist of
 - i. the updating of the energy sector strategy, including the development of a least-cost electricity



- development plan and tariff methodology; rural electrification investment strategy; a renewable energy policy; a review of the legal framework (Electricity Law) and drafting of relevant application decrees; a feasibility study of a regional power distribution plan from Mobayi-Mbongo (DRC) via Mobaye (CAR) to Bambari and Bangassou;
- ii. Direct capacity building at ENERCA, including a GIS mapping of key infrastructure; the training of management staff for hybrid-power solutions and smart-meters; a tariff study; the completion of an independent audit and financial statements in line with international standards; the realization of a dam safety plan at Boali, and in-depth feasibility study including bidding documents for expanding access in up to four additional secondary cities.
- c. *Project Implementation (US\$1.8 million)*: Under this sub-component, funding will be allocated to support hiring of additional key personnel in the PIU (incl. a procurement specialist, social and environmental safeguards experts, and a FM specialist, and other experts on ad-hoc basis), office equipment, vehicles and key consultancy inputs to carry out the project audit, PIM, and environmental and social impact studies for all locations.

11. **Component 4 – Contingent Emergency Response (US\$0)**: The objective of this component is to improve the Government’s ability to respond effectively in the event of an emergency, following the procedures governed by Paragraph 13 (disaster prevention and preparedness) of the World Bank IPF Policy. There is a significant risk that during the life of the project, the CAR may experience a disaster, which may result in a request to the World Bank to support mitigation, response, and recovery measures. This fourth components will enable a rapid project restructuring including reallocation of funds and disbursements. Once triggered, the component would be subject to the exceptional policy requirements set out in Paragraph 12 of the World Bank IPF Policy.

Table A1.1: Project Components and Funding Allocation

Project Component		Description of key sub-components	Estimated Cost	IDA Funds
1	Water Supply Infrastructure		US\$6,700,000	100%
(a)	Bangui Water Supply Investments	<ul style="list-style-type: none"> i. Maintenance of water extraction station (in particular new backup generator); ii. Rehabilitation of water treatment plant (in particular operating system and bulk meters); iii. Improvement of distribution network with up to 3000 connections and 15 stand posts; iv. Consumables for plant operation; v. Extension of access (private & public). 	US\$2,900,000	100%
(b)	Bambari Water Supply Investments	<ul style="list-style-type: none"> i. Restoration of water production plant; ii. Replacement/repair of transmission pipeline; iii. Rehabilitation of 1200 m³ storage tank; iv. Consumables for plant operation; v. Extension of access (private & public) with up to 300 connections and 60 stand posts. 	US\$2,200,000	100%
(c)	Berberati Water Supply Investments	<ul style="list-style-type: none"> i. Rehabilitation and construction of boreholes (incl. disinfection equipment and backup generator); ii. Rehabilitation of public tap stands; iii. Rehabilitation of storage tank; iv. Rehabilitation of distribution network with up to 300 	US\$1,000,000	100%



		connections and 40 stand posts.		
(d)	Works Supervision	Supervision engineering firm for all locations.	US\$600,000	100%
2	Energy Infrastructure		US\$8,400,000	100%
(a)	Bangui Energy Infrastructure	<ul style="list-style-type: none"> i. Resilience of Boali 1 hydropower plant (in particular backup block transformer, installation of turbines, rewinding of generator alternators); ii. Intervention in distribution to reduce the impact of load shedding; iii. Installation of pre-paid and smart meters. 	US\$3,200,000	100%
(b)	Bambari Energy Infrastructure	<ul style="list-style-type: none"> i. Hybrid solar-diesel electricity plant incl. rehabilitation of plant building; ii. Local distribution network with up to 600 connections and link to SODECA water plant; iii. Installation of pre-paid and smart-meters. 	US\$3,400,000	100%
(c)	Berberati Energy Infrastructure	<ul style="list-style-type: none"> i. Conversion of energy production plant from diesel to solar-diesel hybrid with partial storage; ii. Connection of network to SODECA boreholes. 	US\$1,800,000	
3	Technical Support to Water and Energy Sectors		US\$4,900,000	100%
(a)	Support to SODECA	<ul style="list-style-type: none"> i. SODECA Strategic Business Plan 2018-22; ii. Independent Audit & Financial Statements; iii. Feasibility study for expanding access to four secondary cities; iv. Human Resources Plan and other technical assistance; v. Improved Customer management tools incl. network inventory, customer census, and new customer management software; vi. Operational equipment for leak detection and repair, meter repair; light trucks and vehicles. 	US\$1,500,000	100%
(b)	Support to ENERCA and MDEWR	<ul style="list-style-type: none"> i. Updated energy sector strategy (incl. least-cost development plan, tariff study, rural electrification strategy and investment plan, review of Energy Law and application decrees and renewable energy policy); ii. Independent Audit & Financial Statement; iii. Feasibility studies for expanding access to four secondary cities; iv. Study on regional power distribution plan based on Mobayi-Mbongo hydropower plant; v. Dam safety plan for Boali plant; vi. Capacity building at ENERCA including GIS infrastructure inventory and management training. 	US\$1,800,000	100%
(c)	Project Implementation	<ul style="list-style-type: none"> i. Salaries of key PIU staff; ii. PIU office and equipment; iii. Transport for PIU; iv. Consultancies in support of PIU; 	US\$1,600,000	100%



	v. Key feasibility and safeguard studies.		
4	Contingent Emergency Response	US\$0	100%
Total Project Cost		US\$20,000,000	100%



ANNEX 2: IMPLEMENTATION ARRANGEMENTS

COUNTRY: Central African Republic Water and Electricity Upgrading Project

Project Institutional and Implementation Arrangements

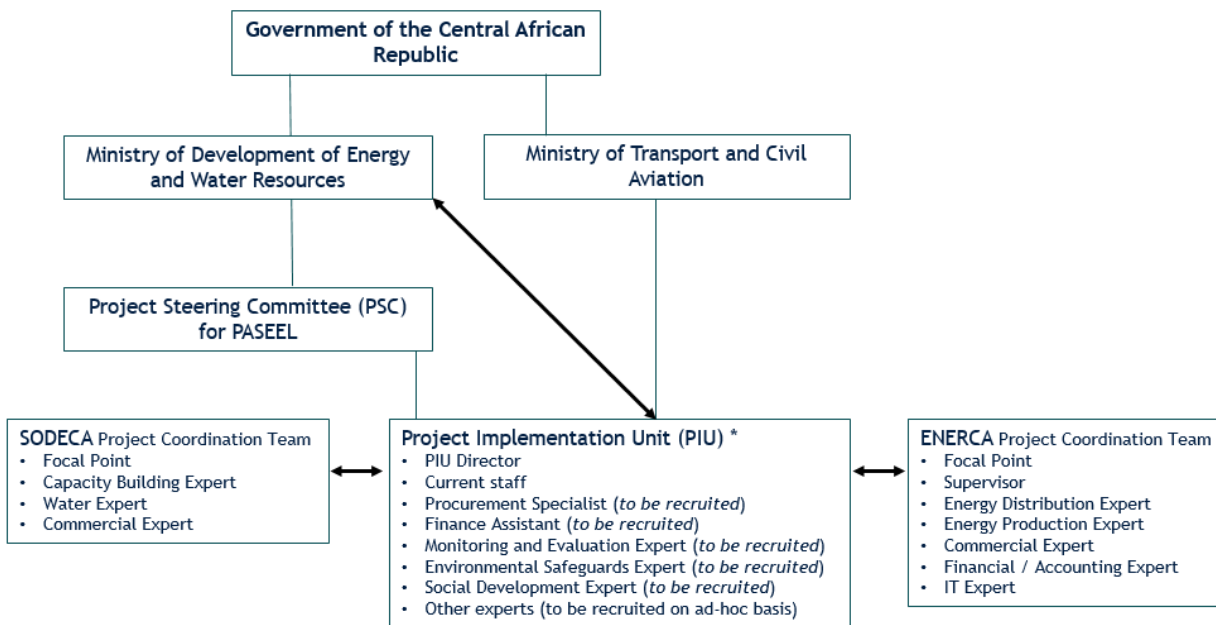
1. The counterpart for this project is the MDEWR. The MDEWR lacks the capacity and experience to take direct responsibility for the management of the project; as a consequence, and part of the pragmatic approach to project management, the World Bank and the Government of CAR have agreed to rely on an experienced Project Implementation Unit (PIU hereafter) existing under the tutelage of the Ministry of Transport and Civil Aviation (MTCA), to implement this project, as well as a World Bank Solar Energy Project (P164885) currently under preparation. This PIU has a long experience in preparation and implementation of World Bank projects, mainly in the transport sector, and has demonstrated a significant capacity to implement infrastructure components, requiring among other capacity in safeguards policy implementation. The project will make use of these pre-existing arrangements, but reinforce them to meet project needs.
2. This PIU is well-staffed for its current scope of activities, but is increasingly in demand for World Bank projects due to the growth of the World Bank's portfolio. To be realistic, while also taking the advantage of the experience of the PIU, it was decided to reinforce its implementation capacity by hiring additional staff that will provide dedicated support to the current project and the Emergency Electricity Access Project under preparation. This combines the advantages of an experienced PIU with thorough knowledge of World Bank and government processes with the focus of a dedicated team committed to these water and energy projects. The additional dedicated staff will consist of: (i) a FM specialist, a procurement specialist, an environment specialist, a social development specialist, a M&E specialist. These staff are currently under recruitment and will initially be funded by the PPA that is under implementation. The additional staff will also help manage the Emergency Electricity Access Project currently under preparation and will be jointly financed. The PIU director will also have contingency resources to hire additional staff on an ad-hoc basis if need arises, such as a water and energy specialists to provide sectoral support and to link up with the focal points in SODECA's and ENERCA's internal project teams. For this project, the PIU will receive advice from a SC representing the main project stakeholders, and an inter-ministerial decree between MDEWR and MTCA will be concluded to ensure adequate coordination between the relevant ministries relative to the PIU.
3. The PIU will work closely with all of the relevant departments within the MDEWR, the Directorate of Energy, the Hydraulic Directorate, ENERCA and SODECA to ensure the smooth execution of both investments and institutional support activities. Because of the significant investments for water and energy, ENERCA and SODECA will play a key role and will have responsibility and oversight on technical aspects of this project (review of terms of references (ToRs) or technical specifications, follow-up of works progression, participation in reception of works etc.); a Memorandum of Understanding between the PIU, SODECA and ENERCA will be concluded to clarify the PIU's responsibilities (fiduciary, safeguards, etc.) and the utilities' technical and oversight duties during implementation.
4. The PIU will conduct the daily tasks of World Bank project coordination and periodic assessments of its progress in close collaboration with SODECA and ENERCA. The PIU will also be responsible for the FM of the project and for the preparation of the quarterly unaudited Interim Financial Reports (IFRs) for the project. It will ensure that all of the project activities are performed and that quarterly IFRs, progress reports, and annual financial audits are submitted on time. The PIU will maintain a fixed-assets register for the assets to be generated by the project. The PIU will receive financial support through the project, thus ensuring that it has the technical and management resources necessary to oversee the technical studies as well as the technical, safeguards, and fiduciary aspects of implementation.



5. SC: A SC will be established to provide overall guidance to the project, ascertain project results, achieve the coordination of the project with the country's overall water and energy improvement programs, and to ensure that the beneficiaries' expectations are met. In that perspective, the SC will assume the following responsibilities: (a) Oversee project execution; (b) Monitor the physical progress (achievement of coverage objectives) and the financial execution on the basis of the progress reports prepared by the PIU; (c) Take measures to facilitate resolution of problems or conflicts that may arise during the course of the project; (d) Provide information to the line ministries and donors; (e) Monitor the environmental and social impacts of the project; and (f) Approve the annual work plans and budgets submitted by the PIU.

6. The SC would be formed by representatives of different Ministers (to be defined), and will include representatives from the MEPC, ENERCA and SODECA, and eventually local authorities. The SC shall be chaired by a representative from the MDEWR. Contractors, consulting firms, and consultants may be called to participate to the SC on ad-hoc basis. The SC would meet on a quarterly basis, to be convened by the PIU Director.

Figure A2.1: Institutional Set-up of the Project



↔ Responsibilities and relationships to be defined by Memorandum of Understanding (MoU) / subsidiary agreements

Financial Management

7. An FM assessment of the implementing unit designated to manage this project, was carried out in June 2017. The objective of the assessment was to determine whether the MDEWR, ENERCA and SODECA have acceptable FM arrangements in place to ensure that the project funds will be used only for intended purposes, with due attention to considerations of economy and efficiency. The assessment shows lack of capacity and experience to take on direct fiduciary responsibility for the management of the project. The existing CEMAC TTFP PIU will have overall FM responsibilities during project implementation. Therefore, and in order to meet World Bank policy on investment project financing operations effective August 18, 2017, the FM system will need to be supported by the following measures: (i) strengthening the PIU with the recruitment of a FM expert, no later than two months after effectiveness, and providing him/her with fiduciary training; (ii) customizing the accounting system, no later than two months after effectiveness;



(iii) establishment of a manual of procedures, prior to project effectiveness; and (iv) recruitment of external auditors, no later than six months after effectiveness.

8. Arrangements are acceptable if they are capable of accurately recording all transactions and balances, supporting the preparation of regular and reliable financial statements, safeguarding the project's assets, and are subject to auditing arrangements acceptable to the World Bank. These arrangements should be in place when project implementation starts and be maintained as such during project implementation.

9. The overall fiduciary risk rating is assessed as substantial and mitigation measures will strengthen the internal control environment and maintain the continuous timely and reliability of information produced by the PIU and an adequate segregation of duties.

10. **Internal control system.** The internal control system will comprise a SC to oversee the project activities, and an FM procedures manual to define control activities. The composition, the mandate and frequency of meetings of the steering committee will be strengthened to ensure an adequate oversight of the project. To maintain a good standard of internal control system in the project given the country high risk rating, an internal auditor will be recruited at national level to strengthen the internal control system. The modality of internal control system will be precisely defined in the PIM.

11. **Planning and budgeting.** The PIU will prepare a detailed annual work plan and a budget, which should be approved by the SC. The PIU will submit the approved annual work plan and budget to the World Bank, for no objection, before the end of previous calendar year.

12. **Accounting.** The SYSCOHADA, assigned accounting system in West and Central African Francophone countries, will be applicable. The PIU will customize the existing accounting software to meet project requirements.

13. **IFR.** The interim un-audited financial reports (IFR) are prepared every quarter and submitted to the World Bank regularly (e.g. 45 days after the end of each quarter) on time. The frequency of IFR preparation as well as its format and content will remain unchanged compared to current transport project (P079736) implemented by the CEMAC PFTT PIU.

14. **Annual financial reporting.** The PIU will produce project annual financial statements, which will comply with SYSCOHADA and World Bank requirements. Financial statements may comprise:

- a) project presentation and project developments and progress during the year, to provide context to (or other explanations of) financial information reported;
- b) statement of sources and uses of funds which recognizes all cash receipts, cash payments, and cash balances;
- c) a statement of commitments;
- d) accounting policies adopted and explanatory notes; and
- e) a management assertion that project funds have been expended for the intended purposes as specified in the relevant financing agreements.

15. **Auditing.** The PIU will submit audited project financial statements satisfactory to the World Bank every year within six months after closure of the fiscal year. A single opinion on the audited project financial statements in compliance with the International Federation of Accountants will be required. In addition, a management letter will be required. The management letter will contain auditor observations and comments and recommendations for improvements in accounting records, systems, controls, and compliance with financial covenants in the Financial Agreement. The PIU should recruit a technically competent and independent auditor by six months after the project effective date.



Table A2.1: Audit Report Requirements

Report	Deadline	Responsible
Audited financial statements including audit report and management letter	6 months after the end of the year	PIU

16. The project will comply with the World Bank disclosure policy of audit reports and place the information provided on the official website within one month of the report being accepted as final by the team.

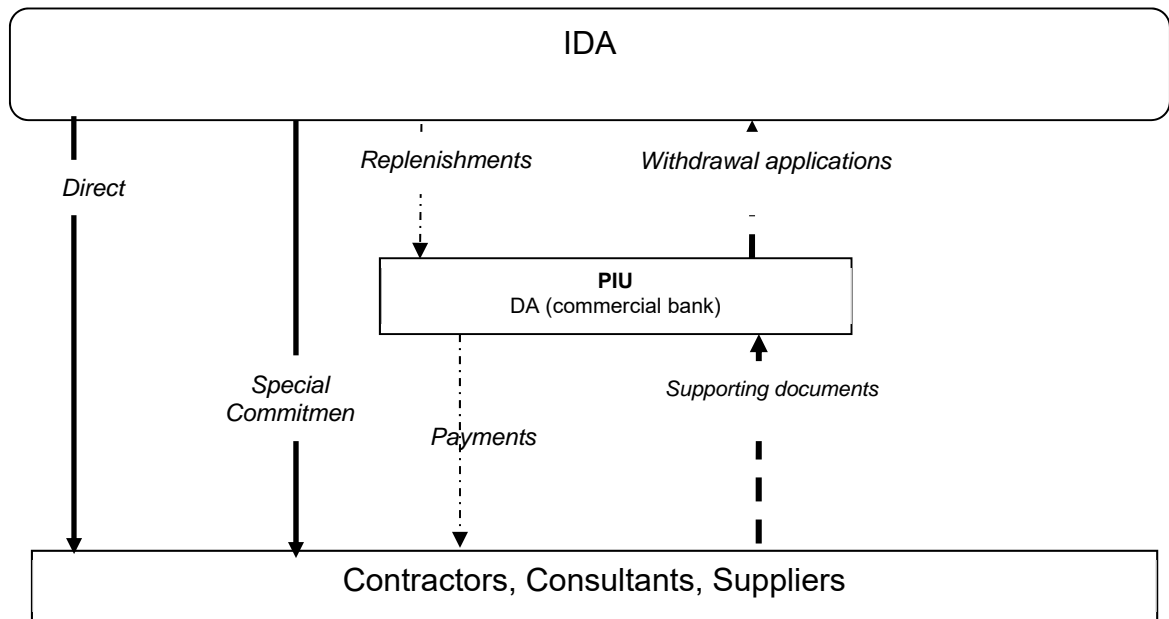
Disbursements

17. **Upon Grant effectiveness, Direct Payment disbursement will be used.** The project will finance 100 percent of eligible expenditures. This project will be part of a World Bank pilot program (as meeting the following criteria: (i) the project is financed by IDA 18; (ii) the project triggers paragraph 12 of Section III of the IPF Policy; and (iii) the Decision Review for the project is held on or after November 1, 2017). In that purpose, the Borrower is required to use the Direct Payment disbursement method for disbursement under contracts for goods, works, non-consulting services and consulting services procured/selected through international open or limited competition or Direct Selection, unless the Special Commitment disbursement method is used. A new Designated Account (DA) will be opened in a commercial bank under terms and conditions acceptable to IDA. An initial advance up to the ceiling of the DA will be made and subsequent disbursements will be made against submission of Statements of Expenditures (SOE), reporting on the use of the initial/previous advance. The option to disburse against submission of quarterly unaudited IFRs (also known as the Report-based disbursements) could be considered, as soon as the project meets the criteria. The other methods of disbursing the funds (reimbursement, transaction-based and special commitment) will also be available to the project. The project will sign and submit Withdrawal Applications (WA) electronically using the eSignatures module accessible from the World Bank’s Client Connection website.

Table A2.2: Disbursement Categories

Category	Amount of the Financing Allocated (expressed in US\$)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Goods, works, non-consulting services, and consulting services for the Project	18,200,000	100%
(2) Refund of Preparation Advance (PPA)	1,800,000	Amount payable pursuant to Section 2.07 of the General Conditions
(3) Emergency Expenditures under Part 4 of the Project	0	
TOTAL AMOUNT	20,000,000	

Figure A2.2: Funds Flow Chart



18. **Use of UN agencies.** The funds transferred to any UN agency will be managed by the Agency following UN Financial Regulations and Rules. As a result, reliance will be placed on the UN agency’s external auditor’s reports as necessary; a request for elimination of audit requirements will be then be prepared. To mitigate any risks of inappropriate use of the project funds, some alternative mechanisms should be established, including (a) at least one field-based visits being conducted during the first 12 months of the project implementation period. The supervision intensity will be adjusted over time considering the project’s FM performance and FM risk level; (b) the Government having the entire responsibility of ensuring that works, goods, and services are delivered effectively to the intended beneficiaries during project implementation. However, where deemed appropriate (for example, UN agency systems and IFRs have showed some weaknesses or deficiencies), the World Bank team may request the Government to establish adequate arrangements to conduct some physical inspections of goods and services delivered by the UN agency; and (c) the World Bank FM team will have adequate access to the financial information, documents, and records for activities implemented by the UN agency on behalf of the Government.

19. Based on the outcome of the FM risk assessment, the following implementation support plan (ISP) is proposed. The objective of the ISP is to ensure the project maintains a satisfactory FM system throughout its life.

Table A2.3. FM ISP

FM Activity	Frequency
Desk reviews	
IFR review	Quarterly
Audit report review of the program	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 (Implementation Support Mission)	At least twice in the year
Monitoring of actions taken on issues highlighted in audit reports, auditors’ management letters, internal audits, and other reports	As needed
Transaction reviews	As needed
Capacity-building support	
FM training sessions	During implementation and as and when needed

Procurement

20. **Applicable procurement rules and procedures.** Procurement for this project will be carried out in accordance with “World Bank Procurement Regulations for Investment Project Financing Borrowers, July 2016”. All goods and consulting and non-consulting services required for the project and to be financed out of the proceeds of the Grant shall be procured in accordance with the requirements set forth or referred to in the following sections:

- (a) **Section VI. Approved Selection Methods:** Goods, Works, and Non-consulting services of the ‘World Bank Procurement Regulations for IPF Borrowers - Procurement in Investment Project Financing: Goods, Works and Non-consulting and Consulting Services’, dated July 2016 in the case of goods and non-consulting services;
- (b) **Sections VII. Approved Selection Methods:** Consulting Services of the “World Bank Procurement Regulations for IPF Borrowers - Procurement in Investment Project Financing: Goods, Works and Non-consulting and Consulting Services,” dated July 2016 in the case of consulting services;
- (c) **Section IV. PPSD and PP:** the recipient prepares the PPSD in accordance with Paragraphs 4.1, 4.2 and 4.3 of the PP in accordance with Paragraphs 4.4 and 4.5 of this section;
- (d) **Annex IV. Fraud and corruption.** The procuring entity as well as all bidders, suppliers, contractors, and service providers should observe the highest standards of ethics during the procurement and execution contracts financed under this project in accordance with the provisions of the Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants (revised as of July 1, 2016,).

21. **Assessment of the MDEWR capacity to implement procurement procedures.** An assessment of the MDEWR’s capacity to implement procurement activities for the project was carried out by the World Bank’s Procurement Specialist in October 2017 and completed on November 16, 2017. This assessment showed that the MDEWR contains a Procurement Unit (Service de Passation des Marches Publics). The Procurement Unit of the MDEWR has knowledge of national procurement procedures only and it has no experience with procurement and management of projects funded by the World Bank. The MDEWR contains no qualified Procurement Specialist and its system for filing and archiving procurement documentation is inadequate.

22. **Institutional arrangement for procurement.** The CEMAC TTFP PIU, based in the Ministry of Transport and Civil Aviation, is retained to be responsible for the implementation of all fiduciary activities comprising procurement and FM. Based on the current procurement context characterized by the lack capacity and in order to mitigate the financial risk, the Word Bank team agreed with the project preparation team on the following measures (i) an inter-ministerial decree between MDEWR and MTCA will be concluded to ensure adequate coordination between the relevant ministries relative



to the PIU in order to manage all the project's procurement process, including the signing and approval of contracts during the project implementation; (ii) anticipating all procurement activities as indicated in the PPSD and the PP; and (iii) supervising closely all procurement activities. These measures will be pursued during the implementation of project.

23. Procurement risk assessment. A summary procurement risk assessment of the PIU based in the Ministry of Transport and Civil Aviation, in charge of the implementation of procurement activities for the project was carried out and the overall procurement risk rating is moderate. It is important to note that the PIU was created most than ten years ago, and it has good experience working with the World Bank and applying related policies and procedures.

24. Measures to mitigate procurement risk. The main procurement-related risks identified are: (a) Lack of knowledge and practice in application of the New Procurement Framework; and (b) Lengthy government approval processes. The following mitigation measures are proposed: (a) the PIU will apply the procurement procedures detailed in the PIM and will develop detailed checklists to ensure consistent and compliant project procurement; and (b) the PIU will also develop a contract management system to ensure that all contracts under the project are effectively and efficiently managed; this will include the tracking of key contract milestones and performance indicators as well as capturing all procurement and contract records.

25. National Procurement Arrangement. In accordance with Paragraph 5.3 of the Procurement Regulations, when approaching the national market (as specified in the PP tables in STEP), the country's own procurement procedures may be used. When the Beneficiary uses its own national open competitive procurement arrangements as set forth in Public Procurement Code, such arrangements shall be subject to Paragraph 5.4 of the Procurement Regulations and the following conditions: (i) the procurement is open to eligible firms from any country; (ii) the request for bids/request for proposals document shall require that Bidders/Proposers submitting Bids/Proposals present a signed acceptance at the time of bidding, to be incorporated in any resulting contracts, confirming application of, and compliance with, the World Bank's Anti-Corruption Guidelines, including without limitation the World Bank's right to sanction and the World Bank's inspection and audit rights; and (iii) maintenance of records of the Procurement Process. When other national procurement arrangements other than national open competitive procurement arrangements are applied by the Beneficiary, such arrangements shall be subject to Paragraph 5.5 of the Procurement Regulations.

26. Procurement methods. The various procurement methods to be used for activities financed by the proposed Credit will be set in the PP.

- a) *Procurement of works.* Works are envisaged to construct or rehabilitate water and energy infrastructures (pumping station, water storage, water treatment plant, solar power plant, electric grids, etc.).
- b) *Procurement of goods and non-consulting services.* Procurement of goods will include computer equipment, vehicles, furniture, water pipes, pre-paid electricity meters, etc.
- c) *Procurement of consulting services (firms and individuals).* Procurement of consulting services will be carried out in accordance with the World Bank Procurement Regulation for Investment Project Financing Borrowers. Consulting services also include the services of training, the recruitment of NGOs, UN Agencies, national or international consultants (firms) and individual comprising a procurement specialist, FM specialist, and accountant etc.

27. Use of UN Agencies. UN Agencies may be selected directly in situations where their expertise or rapid mobilization on the ground is critical, in particular, in circumstances of urgent need of assistance or capacity constraints. When entering into a contract with a UN Agency, the standard form of agreement between the Borrower and the UN Agency or a case-specific template approved by the World Bank. In circumstances in which the World Bank and a UN Agency

have established Financial Agreement, the Borrower may take advantage of the Financial Agreement when entering into a contract with the UN Agency.

28. Frequency of procurement supervision. In addition to the prior review to be carried out by the World Bank, supervision missions will be undertaken at least once per year. One in five procurement packages not subject to World Bank prior review will be examined ex post on an annual basis.

29. PP. The PP for the first 18 months has been prepared by the Client, and approved by the Association on November 18, 2017. The PP will be updated by the PIU of the PFTT on an annual or as-needed basis to reflect actual project implementation need. Updating of the PP will be submitted to World Bank No Objection and the PPSD updated accordingly.

30. Procurement Planning and Tracking Tool. In accordance with Paragraph 5.9 of the “World Bank Procurement Regulations for IPF Borrowers” (July 2016) (“Procurement Regulations”) the STEP system will be used to prepare, clear and update PPs and conduct all procurement transactions for the Project.

31. PPSD summary. A Project Procurement Strategy of Development has been prepared during the appraisal mission to ensure the procurement activities are packaged and prepared in such a way as to minimize the risk. This PPSD proposes a scope of different approaches of procurement to propose ad hoc solutions, considering the particular context of CAR, i.e. mainly the security constraints and the difficulties of circulation and transportation between the different towns, and also take the advantage of the experience of on-going projects like the LONDO project (P152512) which promoted a methodology to work in remote areas of the country using locally recruited staff when labor forces are required.

32. PIM. The PIM will define the project’s internal organization and its implementation procedures, and will include, among other things: (i) the procedures for calling for bids, selecting consultants, and awarding contracts; (ii) the procedures for community-based procurement and sample contracts; (iii) the internal organization for supervision and control, including operational guidelines defining the role of the service provider and reporting requirements; and (iv) disbursement procedures. The project specific PIM will be compiled based on the PIM currently in use by the existing PIU as well as a generic PIM under development by the Country Management Unit for new projects in the CAR.

Table A2.4: Thresholds for Procurement Approaches and Methods

Works (US\$)			Goods, IT and Non-consulting services (US\$)			Shortlist of national Consultants (US\$)	
Open international ≥	Open National <	RfQ ≤	Open international ≥	Open National <	RfQ ≤	Consulting services <	Engineering & Construction supervision ≤
5,000,000	5,000,000	200,000	500,000	500,000	100,000	100,000	200,000

Environmental and Social (including safeguards)

33. Environment category and justification. The proposed project has been classified under Environmental Assessment Category B and is expected to have a positive impact by increasing access to improved drinking water supply and electricity in Bangui and selected towns. There are no long-term, or irreversible adverse impacts expected from the implementation of activities to be financed under this project. Specific mitigation measures will be designed to address potential negative impacts.



34. **Deferral of safeguards instruments preparation.** Due to national context constraints - in particular, the urgent need of assistance - the preparation of safeguards instruments has been deferred. However, an ESAP, consistent with World Bank operational policies and procedures, investment operations subject to Paragraph 12 on Projects in Situations of Urgent Need of Assistance or Capacity Constraints of World Bank IPF Policy was prepared (see Annex 5). The objective of the ESAP is to ensure that the planned project activities and related Environmental and Social assessment and management instruments and processes will be in compliance with the national legislation of CAR and the World Bank's operational safeguards policies, and are duly and diligently implemented in a logical sequence with project activities.

35. **Environmental and social assessment and technical studies to carry out.** Four out of six environmental safeguards policies are triggered: OP/BP 4.01 (Environmental assessment), OP/BP 4.11 (Physical Cultural Resources), OP/BP 4.37 (Safety of Dams) and OP/BP 4.12 (Involuntary Resettlement).

36. **OP 4.01 Environmental Assessment.** This policy is triggered as the investments are likely to have environmental impacts. The following documents will be prepared and approved during the first six months of project implementation: An ESIA and ESMP and RAPs as required.

37. **OP 4.11 Physical Cultural Resources.** This policy is triggered as the investments and activities might be located in, or in vicinity of, physical cultural resources, notably sacred sites of local communities. Chance find procedures along with guidance on sensitization will be included in the ESIA/ESMP.

38. **OP 4.12-Involuntary Resettlement.** This policy is triggered in case it is necessary to make slight modifications of the route or demolition of buildings located along the existing right of way for the realization of planned works along pavements. The project's activities will be screened for applicability of the resettlement policy involving involuntary resettlement or land acquisition will only be approved after preparation of a resettlement plan acceptable to the World Bank. Several issues will increase the complexity of land acquisition - the lack of reliable land record systems, and the inability of people losing land to either document ownership or be physically present to make their claims for eligibility. During project implementation, the screening process will determine whether land will be acquired and whether a sub-project specific RAP is required; in that case RAP(s) will be prepared, amply consulted upon and publicly disclosed both in-country and at the World Bank External Web site prior to the physical start of project activities civil works.

39. **OP. 4.37 – Safety of Dams.** This Safeguard Policy is triggered because of activities in the Component 2 relative to energy infrastructure, where the project will install electrical and mechanical back up equipment for the Boali 1 hydropower station. Thus, the project will launch a study to assess dam safety which was planned under the EPRP, but was never completed due to shortage of funding.

40. **Responsibilities for Safeguard Screening and Mitigation.** The PIU within the Ministry of Transport and Civil Aviation will be responsible for monitoring safeguard measures and will be responsible for following up on all safeguards concerns and would also ensure that all safeguard screening and mitigation requirements are applied. The PIU will be responsible for setting up an efficient GRM mechanism related to the delivery of project activities, with adequate attention to GBV. In addition, the PIU will take care of the sensitization of the enterprises in charge of civil works on their responsibilities to prevent the risk of GBV taking place, like GBV related clauses to be part of the contractual agreement, training sessions, etc., especially in the context of labor influx.

41. **Consultation and Disclosure.** The ESAP was translated to French and shared with the Government of CAR, concerned NGOs and development partners, and was disclosed locally on November 15, 2017 and at the Association's external Website on November 17, 2017. The PIU will consult project-affected groups and local NGOs on the project's



environmental and social aspects, and will take their views into account. The PIU will initiate these consultations as early as possible, and for meaningful consultations, will provide relevant material in a timely manner prior to consultation, in a form and language(s) that are understandable and accessible to the groups being consulted.

42. **Gender.** Women are particularly affected by lack of access to basic services and typically responsible for resolving and the most burdened by household related service shortfalls, such as lack of water or electricity. Improving access to basic services such as water supply and electricity will benefit women by enhancing sanitary conditions and improving productivity with particular benefits stemming from reduced water fetching time and improved working conditions from electric lighting. Gender sensitive actions to be taken under the project include (a) encouraging women's participation in the choice of the location of water public stand-pipe; and (b) testing regularly the quality of water supplied by the water facilities to ensure of its quality.

43. **A citizen engagement and feedback process** will be established by the project to ensure that any complaints about the project or the performance of the supported utilities can be effectively addressed. This process includes not only dedicated public consultation events, but improved customer complaint systems, to be supported under project capacity building, and the World Bank GRM (see section H in main body of PAD above).

44. **Climate Change.** The CAR is vulnerable to climate variability, notably through its effects on agricultural productivity and food security, forest production, water resources, health and exposure to natural disasters. Of particular relevance to this project is the potential impact of climate change on rainfall, with a predicted overall increase, but also more erratic precipitation. Extreme events "such as storms, floods and drought are likely to occur more often" (World Bank, 2010). As both the production of drinking water and electricity in key target areas of the project rely on rivers, changes in rainfall and water resource availability could significantly affect infrastructure performance as well as the socio-economic and health situation of beneficiary populations. For example, periods of water scarcity can increase the amount of fungal and bacterial content which will reduce water quality and affect the treatment levels required. The investments in terms of water supply intake and treatment will include climate resilient measures, such as increased monitoring of water quality during periods of drought and modifications at treatment plants that adjust to the raw water envelope. The synergies with the energy component, in particular the construction of solar-diesel hybrid plants in Bambari and Berberati and their connection to the respective water production facilities, are expected to have a positive impact on climate change relative to the earlier sole reliance on diesel for energy generation.

45. **GHG Accounting.** The project will result in an estimated net reduction in GHG emissions relative to the situation prior to the 2012-14 crisis. The key driver of these emission savings is the change from purely diesel-based energy generation in the secondary cities Bambari and Berberati prior to the crisis, to the innovative solar-diesel hybrid plants to be installed by the project. The investments under Component 2 (energy) will result in net GHG emissions relative to the pre-crisis situation of -37,500 tons of CO₂ over the 20-year lifetime of project outcomes, which represents a net reduction in GHG emissions. Emissions related to water production under Component 1 in the secondary cities will also be reduced through this switch from diesel to at least partially solar-generated energy to power water production and distribution. Additional, if relatively minor, savings in GHG emissions are expected to be realized through a reduction in NRW due to technical water losses in Bangui (-163 tons CO₂-eq) due to the resulting energy efficiency gains. With this said, water supply service delivery in Bambari and Berberati and system expansion in Bangui will be emissive at 2,796 tCO₂-eq. Overall net emissions for the project are estimated at -34,867 tCO₂-eq. It should be noted that both energy and water production have ceased in Bambari and Berberati since the 2012-2014 crisis. Relative to this ongoing outage, rather than the pre-crisis situation, restarting production from zero will be net-emissive, with up to 25,300 tons of additional tCO₂-eq emissions due to the energy component, and up to 2,633 tons CO₂-eq due to the water investments



over the 20-year life of the project outcomes. Even viewed from this perspective, however, the total level of net emissions is kept in check by the investments in solar power.¹²

Monitoring and Evaluation

46. The PIU will be assigned overall responsibility for M&E; it will compile the data, produce progress and monitoring reports, and initiate specific evaluation studies by independent consultants as needed. The PIU would be responsible for the validation, analysis, and dissemination of data.

47. A M&E specialist will be recruited by the PIU to compile the data and prepare quarterly and annual reports on the progress made by the project and on the impact of the different components.

48. Data related to performance and results indicators will be obtained from the following sources: (i) progress reports produced by the consultants in charge of control and supervision of the water and electricity works in the different towns would provide an adequate reporting of indicators of the project's intermediate results; (ii) systems for tracking data on inventories and management information systems (SIGs) from SODECA and ENERCA; and (iii) site visits and direct reviews by the M&E specialist, as well as other PIU staff.

49. Quarterly meetings of the SC will offer a specific forum for the transmission and validation of information furnished by the PIU.

Role of Partners (if applicable)

50. The role of development partners is shifting. Many donors and NGOs currently present in CAR engaged with a focus on humanitarian relief after the 2012 crisis, which resulted in the displacement of approximately 25 percent of the population and the destruction of critical water supply and energy infrastructure. An important part of these efforts has focused on aiding the numerous IDP camps that have sprung up in Bangui and across the country. Five years after the initial crisis, however, the challenge has become how to shift from the temporary nature of humanitarian response to a longer-term development program. This project is expected to play an important role in the water and energy sectors to help guide the sector into a post-crisis period, and will coordinate with other development partners going through this transition.

51. In terms of the water supply sector, the development partners with major roles include the ICRC with its support of water supply services to IDPs and reconstruction of critical SODECA transmission pipes in Bangui; the AfDB with a US\$14 million project to assist SODECA with the rehabilitation of a pumping station, the replacement of distribution lines and borehole construction, as well as of public latrines; the BADEA and Saudi Arabian Development Fund with its approved financing of infrastructure reconstruction in Bambari and Bozoum; the EU with its support to SODECA for treatment chemicals and drilling wells; and the Embassy of China which is studying the possible construction of an additional water supply treatment plant in Bangui. This project will coordinate its infrastructure investments with the other investments that are currently being negotiated with Government and provide strategic advice to improve sector policies, strategies, and priorities, including specific technical feasibility studies for water investments in four additional secondary cities.

¹² The Water GP calculated the net emissions for the water supply activities under Component 1, while the Energy GP calculated the net GHG emissions for the energy activities under Component 2. The Water GP used the current business-as-usual baseline, which includes a lack of piped service in Bambari and Berberati where local residents use zero-emissions sources for water, including wells, springs, hand pumps, and surface water. Due to this zero-emissions baseline, the water supply activities were inevitably going to be net emissive. The Energy GP assumed a baseline of an alternative form of energy generation producing an equivalent level of service, which in this case was diesel generation. In both of these cases, each GP followed their standard practices for establishing baselines for GHG accounting.



52. Several of CAR's development partners are investing in the rehabilitation of the power sector. In partnership with ENERCA, the World Bank and the AFD are implementing projects to improve the functionality of Boali 1 and 2 hydropower systems. AfDB is supporting the rehabilitation of the Bangui thermal power plants and is also planning to finance the expansion of Boali 2 with the goal of doubling its capacity. Meanwhile, the Chinese Government will carry out the installation of 10 MW of new capacity at Boali ("Boali 3"), in addition to a planned investment in a solar energy plant near Bangui. Development partners have welcomed the World Bank's role as investor and in advising the sector institutions on the long-term development of the energy sector and rationalization of efforts for production, transmission, and distribution.



ANNEX 3: IMPLEMENTATION SUPPORT PLAN

COUNTRY: Central African Republic
Water and Electricity Upgrading Project

Strategy and Approach for Implementation Support

1. The objective of the ISP is to ensure that the Government of the CAR is enabled to implement the project successfully to achieve the PDO while remaining fully in line with World Bank policies and procedures. To achieve this aim and allocate the necessary resources in terms of World Bank staff and supervision budget, the strategy of implementation support is designed to mitigate the high political and governance, institutional capacity and fiduciary risks. World Bank staff will work closely to reinforce and supervise the newly recruited experts within the PIU, as well as the host MDEWR.
2. The ISP will be centered around formal semiannual missions, participation in coordination meetings of the PIU, regular videoconference calls between the task team and the PIU and MDEWR, visits to the project sites and fiduciary compliance reviews. A MTR will be held after approximately 24 months of implementation to review performance in depth, and to make necessary adjustments to project substance and schedule. The use of an existing and tested PIU structure for the implementation of the project reduces implementation risks, however, as the PIU will have newly recruited, particular attention will have to be paid to new staff selection, training and initial supervision. To build a well-functioning implementation structure, the World Bank will encourage close coordination between the PIU and the project coordination teams within the implementing agencies ENERCA and SODECA.

ISP and Resource Requirements

3. In the initial phase of the project, World Bank implementation support will focus on assisting the client in meeting the conditions of effectiveness, and in particular, the successful recruitment of new staff in the PIU, the timely completion of feasibility studies as well as the environmental and social safeguard documents, which were deferred under Paragraph 12 of World Bank IPF Policy due to the Borrower's capacity constraints related to state fragility. Following effectiveness, Bank support will prioritize procurement processes to ensure the major infrastructure contracts are prepared in time and to the highest quality standards, a critical condition for the project to stay on track.
4. Once infrastructure works and key studies commence, the World Bank's implementation support will focus on monitoring construction processes, contract management, disbursements, and effectiveness of capacity building and technical assistance activities. The World Bank team will include staff and consultants, complemented with specialized expertise as required. As an ongoing concern, particular attention will be paid to the following aspects:
 - a. *Safeguards:* Enforcing safeguards requirements will be a particular concern in light of the high degree of instability, low capacity and difficult governance situation in the CAR. The World Bank safeguards team will provide implementation support for (i) implementation of safeguards requirements through regular supervision missions, including visits to the project sites; (ii) review of grievances submitted through the GRM, and not resolved directly; (iii) review of environmental monitoring reports and following up on any safeguards issues that may arise during to project implementation with the relevant government authorities; and (iv) provision of safeguard's training to the PIU and other relevant stakeholders. The environmental and social specialist, appointed for the supervision of the project, will pay specific attention to the risk and mitigation measures identified and will regularly report updates on environmental and social safeguard compliance to the task team leader and management, bringing to attention any issues in a timely manner.
 - b. *Procurement and technical support:* The World Bank team, and in particular its procurement specialists, will provide implementation support for reviewing procurement documents, including technical specifications, and



providing timely feedback and ‘no objection’; monitoring procurement progress against the PP developed by PIU in coordination with SODECA and ENERCA; moreover, the World Bank will provide procurement training on World Bank guidelines to the PIU. During the regular implementation support missions, the PPs will be updated at least once each year (or more often as required to reflect the actual project implementation needs) and post-procurement reviews will be carried out at a minimum once annually.

c. *FM*: The World Bank team will provide implementation support for reviewing the project's FM system, including but not limited to accounting, reporting, and internal controls. In particular, the FM supervision will review quarterly progress and financial audits. The World Bank’s project team will closely monitor FM activities to identify in advance potential delays in the preparation of the financial and audit reports and undertake corrective measures.

5. The following skills mix and resource needs are expected:

Time	Focus	Skills Needed	Resource Estimate	Partner Role
First twelve months	Hire and equipment of additional experts to reinforce PIU; completion of feasibility studies and deferred safeguard documents; design of procurement documents; implementation of ESIA and RAP as required;	Engineering; procurement; FM; environmental; and social and legal.	US\$1,000,000	No co-financing
12-48 months	Review of progress in construction and capacity building; review of sector technical and financial performance; procurement; M&E; safeguards; and FM.	Engineering; sector regulatory and planning; M&E specialist; financial analyst; economist; environmental and social.	US\$600,000	No co-financing

Skills Mix Required

Skills Needed	Number of Staff Weeks (Annual)	Number of Trips (Annual)	Comments
Team Leader – Water	8	4	Based in region
Team Leader – Energy	8	4	Washington, DC
Power Engineer	4	3	Washington, DC
Procurement Specialist	8	1	Based in region



Safeguards Specialist	8	2	Based in region
Operations Officer	4	1	Washington, DC
Economist	3	1	Washington, DC
Program Assistant	8	0	Based in country
TOTAL	51		



ANNEX 4: ECONOMIC AND FINANCIAL ANALYSIS

COUNTRY: Central African Republic

Water and Electricity Upgrading Project

1. The economic analysis for this project follows a cost-benefit framework, comparing the present value of expected incurred costs to the stream of attributable benefits. The NPV and EIRR are used to assess the project's viability over its economic life time, which is assumed to be 20 years. The financial analysis of the project focuses more strictly on financial benefits and costs accruing or being incurred by the implementing agencies, ENERCA and SODECA. The financial NPV is evaluated on the basis of expected changes in free cash flows. The analysis also provides an in-depth discussion of the financial status of SODECA and ENERCA and the likely impact of the project.

A. Assumption: Costs, Benefits, Timeline and Discount Rates

2. **Description of Expected Project Related Costs:** The economic and financial model took into account all project related costs stemming from capital investments or costs for project elements directly impacting revenue flows (e.g. loss reduction programs, PIU etc.), as well as changes in operational costs due to the project.

a. For Component 1 (Water Supply Infrastructure) the project plans to carry out capital investments of US\$6.7 million for infrastructure in the cities of Bangui, Bambari and Berberati. Operational costs are expected to be stable in Bangui, but will rise significantly due to the project in Berberati and Bambari. In Bangui, the system is already producing at near maximum capacity with all the associated energy-, staff- and maintenance costs this entails. The project focus will be on maintaining existing capacity while reducing NRW through less technical losses and improved billing and collection. The targeted efficiency improvements are not expected to lead to a change in operational costs. By contrast, in Bambari and Berberati the project will restore destroyed facilities and start-up production, thus leading to significant new ongoing operational costs (e.g. staff, energy, chemicals etc.) which have to be taken into account in the cost-benefit analysis. The most important operational cost in both secondary cities is expected to be energy, even though the project-facilitated connection to the restored ENERCA solar-diesel hybrid plants will lead to considerable cost savings in comparison to earlier reliance on diesel-only. Energy related costs are expected to be relatively lower in Bambari due to the particular structure of the system to be rehabilitated, which has a large water storage tank that can be filled by pumping within a few hours, and then supply the city for the rest of the day, thus reducing energy needs. Beyond the financial impact of capital investments and new operational expenses, no significant economic costs are expected as all needed sites are already owned by SODECA and ENERCA, and no significant displacements or disruptions are expected from the works (pending the completion of safeguard documents).

b. For Component 2 (Energy Infrastructure) the project plans to make US\$8.4 million in capital investments to improve the resilience of the Boali 1 hydropower plant, reduce losses in Bangui, and restore power production in the cities of Bambari and Berberati. As in the water sector, increases in operational costs due to the project are expected to be minimal in Bangui as capital investments are primarily aimed at maintenance of existing production and the reduction of the high transmission and distribution losses. By contrast, in Bambari and Berberati, the rehabilitation of production capacity will cause significant additional operational costs from the planned diesel-solar hybrid production plants. No other significant economic costs are expected due to the installation or operation of the new plants.

3. **Expected Project Related Financial Benefits:** Under both Component 1 and Component 2, expected financial benefits accruing to SODECA and ENERCA, respectively, primarily stem from two sources – an expansion of customers leading to new billings and collections, and the reduction of technical and commercial losses due to project financed activities. As outlined in the project description, the project targets the expansion of both private and public water connections to reach more than 40,000 more beneficiaries of piped potable water, and increase electricity connections



to extend access to at least 16,000 new beneficiaries, generating new sales in the process. In the capital Bangui, the project will not invest in an expansion of production capacity, thus new sales will critically rely on the successful reduction of losses. Ameliorating the operation performance of SODECA and ENERCA is thus rightly a key aspect of the PDO and captured in the results framework. The expected measures include modernization of parts of the distribution network, better leak and loss control, measures against water and electricity theft and improved billing and collection operations e.g. through pre-paid metering.

4. **Expected Project Related Economic Benefits:** The economic benefits resulting from the project go beyond increases in financial revenue accruing to the implementing agencies.

a. Under Component 1 supporting water supply infrastructure, likely positive economic benefits of higher and more reliable access to safe potable water include direct savings in healthcare costs and lost work-time due to averted cases of diarrhea- and malnutrition related disease, savings to households due to the cheaper tariff of SODECA relative to private drinking water supplies, and productivity and education gains due to time savings realized by households gaining access closer to their home.¹³ Unfortunately, the prevailing paucity of recent and reliable survey data in the CAR, as well as the still pending feasibility and safeguards studies specifying the precise location of targeted beneficiaries, make it extremely difficult to compile credible monetized estimates of these indirect economic benefits and positive externalities. For the water sector investments, the project has thus adopted a conservative approach to value the expected additional water sales by estimating willingness to pay using the present value added tax (VAT) inclusive water tariffs paid by consumers. As Component 1 is viable even when indirect benefits and positive externalities are not included, it can be assumed that the true economic cost-benefit profile is even more advantageous.

b. Under Component 2 on energy infrastructure, economic benefits include direct cost savings for consumers relative to private energy generation from small diesel generators. In particular in Berberati and Bambari, where there is presently no grid electricity supply, positive externalities of its restoration are expected to be significant and include an improved business environment (also for SODECA), better security and longer productive hours due to more cost-effective and continuous

Table A4.1 - Tariffs and Estimated Self-generation Costs

Current ENERCA average residential tariffs (incl. VAT)		
Bangui	US\$/kwh	0.14
Secondary Cities	US\$/kwh	0.31
Cost of private self-generation		
Average Generator Load	%	70%
Liters of Diesel per kwh	l/kwh	0.27
Cost of Diesel in Bangui	XFA/liter	885
Cost of Diesel in Secondary Cities	XFA/liter	1000
Set-up and Operations and Maintenance (O&M) cost	% of kwh cost	5%
Cost of self-generation in Bangui	XFA/kwh	250
	US\$/kwh	0.45
Cost of self-generation in Secondary Cities	XFA/kwh	283
	US\$/kwh	0.51

availability of electricity e.g. for lighting in the evening. As in the water sector, such more complex positive effects are difficult to model in the CAR due to an absence of recent and reliable data and still pending feasibility and safeguard studies. Even a willingness to pay survey to estimate direct consumer benefits of the incremental energy supply is not available. To compensate for this lack of data, willingness to pay was estimated as a weighted

¹³ Hutton, Guy; *Global Costs and benefits of drinking-water supply and sanitation interventions to reach the MDG target and universal coverage*; WHO/HSE/WSH/12.01; World Health Organization; Geneva; 2012.



average of electricity tariffs and estimated self-generation costs.

- c. The cost of self-generation for one kwh is estimated at US\$0.45 in Bangui and US\$0.51 in secondary cities (where fuel costs are higher), both significantly above the prevailing ENERCA tariffs (see Table A4.1). Assuming pent-up demand for electricity and relatively low elasticity of demand, as

Table A4.2 - Willingness to Pay (WTP) Estimates

	Weight	Unit	US\$/kwh
Current Tariff Bangui	75%	US\$/kwh	0.14
Avoided self-generation cost	25%	US\$/kwh	0.45
Estimated WTP Bangui		US\$/kwh	0.22
Current Tariff Secondary City	75%	US\$/kwh	0.51
Avoided self-generation cost	25%	US\$/kwh	0.31
Estimated WTP Secondary City		US\$/kwh	0.36

consistent with the experience of recent access expansion in Bangui, average willingness to pay was then estimated as a weighted average of actual realized residential tariffs and the costs of self-generation (see Table A4.2) In other words, it is assumed that actual willingness lies between current tariffs and self-generation costs, though closer to the former. The resulting willingness to pay estimates were then used to value the incremental energy supplied to customers in Bangui, Bambari and Berberati.

5. **Timeline:** Capital investment costs are assumed to occur over four years at an increasing pace with 12.5 percent in the first year, 25 percent in the second and third, and 37.5 percent in the last project year. Taking into account the limited capacity for maintenance and fragile political and governance situation, the total economic lifetime of new or rehabilitated assets over which project related benefits and costs will accrue, was conservatively assumed to be 20 years.

6. **Discount rates for economic and financial analysis:** In line with the latest World Bank guidance note, a standard discount rate of 6 percent has been assumed for the economic analysis.¹⁴ Higher or lower economic discount rates may be justifiable depending on the expected development of annual per capita growth. However, in the case of the CAR, projections of the expected annual per capita growth rate are highly uncertain and both long-term economic stagnation as well as rapid catch-up growth seem distinct possibilities depending on political and macro-economic developments. The standard rate was thus used as a base case.

7. For the financial analysis, the discount rate used to evaluate the net present value and internal rate of return for net cash flows generated by the project is equal to the cost of capital, which is 0 percent in this case due to the entire financing being a grant.

B. Results of the Economic Cost-Benefit Analysis

8. The results of the economic analysis show that the project is economically viable and robust to variations in key underlying assumptions. In the baseline scenario, which assumes achievement of project targets, a four-year capital investment timeline and standard economic discount rate of 6 percent, the model yields a positive economic NPV of US\$3,420,000 and a positive EIRR of 10 percent.

Table A4.3 - Results of Economic Model

Robustness analysis (<i>ceteris paribus</i>)	Discount	Net Present Value			EIRR		
		Water	Energy	Total	Water	Energy	Total
Baseline Scenario	6%	US\$1,670,000	US\$1,750,000	US\$3,420,000	10%	10%	10%

¹⁴ OPSPO; Discounting Costs and Benefits in Economic Analysis of World Bank Projects; 2016.

10% capital cost overrun	6%	US\$950,000	US\$930,000	US\$1,880,000	8%	8%	8%
20% capital cost overrun	6%	US\$240,000	US\$115,000	US\$355,000	6%	6%	6%

9. The positive economic and financial cost-benefit balance of the water sector component is directly reliant on the energy investments without which SODECA would have to rely on less efficient diesel generators that would greatly increase the cost of producing potable water in Berberati and Bambari. In this sense the project yields real economic and financial synergies reflected in the NPV and IRR values, which thus need to be viewed in conjunction.

10. The main economic benefits from the project result from the incremental supply of energy and potable water in the three cities which were valued at estimated willingness to pay (see above). As the project does not directly invest in additional production in Bangui for either sector, realizing the incremental supply in the capital will depend critically on the successful reduction in technical NRW and energy transmission and distribution losses, which remain very large. From a financial perspective, the reduction in technical and commercial losses at both utilities, in particular the improvement of collection efficiency, is also a critical contributing factor to the expected improvements in free cash flows and thus the expected positive financial viability. Ameliorating the operational performance of ENERCA and SODECA is thus a key aspect of the PDO.

C. Results of the Financial Cost-Benefit Analysis

11. The financial model evaluates changes in free cash flows due to the project, and with a financial discount rate equal to a Weighted Average Cost of Capital of 0 percent due to full IDA grant financing, the NPV of Component 1 (Water) is US\$9.5 million with a FIRR of 12 percent while the NPV of Component 2 (Energy) is US\$3 million with an FIRR of 3.8 percent. Both the economic and financial NPV are robust to a modelled 20 percent capital cost overrun.¹⁵

12. The investments in the secondary cities of Bambaria and Berberati alone, that is, without the interventions in the capital Bangui, would not yield a positive financial NPV. For SODECA, Berberati, in particular, is the key financial challenge, because unlike Bambari, where a water storage tank can be filled in a few hours and then supply the city by gravity for the rest of the day, Berberati requires consistent energy-intensive pumping causing energy related costs unlikely to be fully earned back through local sales at prevailing tariffs. Similarly, while the innovative solar-diesel hybrid plants will greatly improve the cost- and climate profile of the provincial production sites relative to diesel-only generation, peak morning and evening demand will still require substantial fuel use. From a financial perspective, cost recovery for ENERCA in the provincial centers is expected to be around 65-85 percent depending on the extent of household demand and collection efficiency assumed, that is, most likely, the expected loss reduction and efficiency gains in Bangui will effectively have to cross-subsidize secondary city operations.

13. The positive financial viability is also robust to up to a 20 percent overrun in capital cost, however, it is sensitive to the targeted operational efficiency improvements. For example, if SODECA's technical losses and billing efficiency remained at current values in Bangui, the financial NPV of the water component would be strongly negative. Similarly, if transmission and distribution losses remained at their current level at ENERCA, or if collection efficiency did not improve, the financial NPV of the energy component would be highly negative. These robustness tests emphasize that the targeted operational improvements under the project are absolutely critical to achieve the expected positive

¹⁵ The FIRR result is co-determined by the expected increases in free cash flows of the utilities caused by improved collection efficiency. This increase in cash collections constitutes a financial benefit to utilities that enters into the FIRR, but in the case of the EIRR is offset by a matching reduction in consumer benefits (as consumers now have to pay for services which in effect they previously received for free). In combination with the conservative valuation of the economic benefits of additional water supply, this effect explains why the FIRR exceeds the EIRR in the case of the water sector.



financial viability of the project.

D. Financial analysis of SODECA

14. SODECA realized a turnover of US\$3.98 million including taxes (XAF 2.25 billion)¹⁶ in 2016. Over 95 percent of sales were realized in Bangui as compared to secondary centers where SODECA retains an active presence. SODECA only bills approximately 40 percent of the water it produces¹⁷, and actual collections are significantly below billings. In 2016 net sales excluding tax amounted to US\$3.3m (XAF 1.87 billion), of which US\$3.1 million water sales¹⁸, but collections were only US\$2.2 million (XAF 1.24 billion), or approximately 70 percent of water sales¹⁹. This figure includes an exceptional one-off government payment received in January 2016 without which *regular* collections would have only been 60 percent of net water sales.

15. SODECA's production costs have been in excess of net sales and collections for years with an estimated total operational cost of US\$3.8 million (XAF 2.16 bn) in 2016 of which staff costs (36 percent) and energy use (28 percent) were by far the most important items.²⁰ High staff costs reflect an inefficient operation with over 17 staff per 1000 active connections while the Sub-Saharan African average for large water utilities is below 6 per 1000 connections.²¹ SODECA's net sales thus cover about 88 percent of total operational costs and *regular* collections only 50 percent of costs.

16. SODECA has managed to continue operating despite this significant gap in cost recovery due to non-payment of suppliers and goods donations by donors (in particular treatment chemicals). In particular, electricity bills owed to the state company ENERCA have gone largely unpaid based on an apparent informal agreement that ENERCA would continue supplying energy despite non-payment. Since 2013, the debt of SODECA owed to ENERCA has risen by US\$850,000 annually on average and reached a total US\$9.2 million in 2016.²² At the same time, outright state operating subsidies have declined from over US\$650,000 in 2014 to US\$56,000 in 2016.²³

17. SODECA's total debts stand at US\$25.9 million (XFA 14.6bn) of which 95 percent are short term liabilities which have tripled since 2005. The key short term liabilities include the ENERCA debt (see above) alongside taxes payable to the state (US\$4.5 million) and employee related debts (US\$2.6 million). By comparison, long-term financial debts are relatively low at US\$1.5 million.²⁴

18. Tariff levels have not been raised since 1998 and have thus not been adjusted in line with inflation of costs. However, at least in Bangui, where electricity is relatively cheap, the average tariff realized remains *below* production

¹⁶ At exchange rate of XAF / US\$563. As there is no validated financial statements for 2016, the available sources differ slightly. The cited figure is based on "Ventes Eau" Excel sheet shared by SODECA (XAF 2.25bn), and approximately confirmed by the sheet "Facturation: Annee 2016" of SODECA's commercial department (XAF 2.06 billion), as well as the 2016 activity report of SODECA (XAF 1.718 billion excluding all taxes and remittances, which is approximately equivalent to XAF 2.15 adjusted for taxes).

Source is line 7 of 2016 general ledger, augmented by data on secondary centers from technical department, and cross-confirmed by Excel Sheet "Ventes Eau" with raw data shared by SODECA.

¹⁷ SODECA Activity Report 2016, p.4; confirmed by figures provided directly by technical and commercial department.

¹⁸ This net sales figure is taken from the "Ventes Eau" sheet shared by SODECA, and augmented with information about secondary centers from the SODECA technical department; the figure is nearly identical with line 7 ("Produits des activites ordinaires", XAF 1.84 billion) in the general ledger 2016; note that this figure includes not only water sales, but also other income e.g. fees for new connections; water sales alone were XAF 1.7 billion in 2016 according to the SODECA 2016 Activity Report (p.4), which is confirmed by similar figures (XAF 1.69 billion) in the "Ventes Eau" sheet and "Facturation: Annee 2016" figures (XAF 1.73, tax adjusted) of SODECA's commercial department.

¹⁹ Primary source is "Facturation: Annee 2016" sheet of SODECA commercial department (XAF 1.448 billion *incl.* taxes) adjusted for 19 percent VAT and secondary center data provided by the technical department. The figure is similar to the one provided in the 2016 Activity Report of SODECA (XAF 1.424 bn *incl.* taxes).

²⁰ Updated General Ledger 2016, line 66, complemented by information on energy and chemical costs from the technical department, as these items are only incompletely captured in the general ledger.

²¹ SODECA Staff figures from "Feuille: 5/ Mouvement du Personnel 2016"; comparison figure from: Water Operators' Partnership, "The State of African utilities: Performance Assessment and Benchmarking Report", 2009, p.89.

²² General Ledgers 2013-16, Line 401203.

²³ General Ledgers, Line 71.

²⁴ General Ledgers 2013-16, Lines 16,19,401,402,44,43,46,47; informal Excel file "Etats financiers SODECA 2004-2015" shared by SODECA; similar figures in last audited financial statements 2015.



costs despite the lack of tariff adjustments and inefficiencies outlined above. In 2016, costs averaged approximately US\$0.30 per cubic meter *produced* while the average tariff across categories was approximately US\$0.60 excluding taxes. Unfortunately, the high-water losses mean that average cost per cubic meter *billed* was US\$0.78. While reducing inefficiencies in production, improving tariff levels and expanding the number of clients could thus contribute to better cost-recovery, at present the primary financial weak-point of SODECA is NRW due to inefficient distribution, metering and bill collection. Approximately 72 percent of SODECA’s water production in 2016 did not result in revenue collection primarily due to technical losses through leaks (32 percent of production), non-billing (28 percent of production), or billings that were not actually collected (11 percent).²⁵

19. The financial status of SODECA is expected to continue to remain fragile over the next years, however, the expected increase of billings and collections under this project would significantly improve its financial situation and constitute a major step towards operational cost recovery. If projected increases in collections can be realized, cost recovery in terms of actual collections would increase from barely 50 percent to nearly 77 percent. This would still imply the necessity of direct or indirect (e.g. via ENERCA) operational subsidies, but at least these could now begin to decline and set the utility on a path towards financial stability. Importantly, increased ability to pay electricity bills would also benefit ENERCA which has effectively become its main creditor.

Table A4.4: SODECA - Key Financial Parameters for 2016

Parameter	Value in 2016
Production, Sales and Collections	
Total Production SODECA Perimeter	12,978,000 m ³
Volume Billed, m ³ (percentage of production billed)	5,017,000 m ³ (39%)
Turnover incl. taxes	US\$3.98 million
Net Sales excl. taxes	US\$3.3 million
Net Water Sales excl. taxes	US\$3.1 million
Collections excl. taxes (as % of water sales)	US\$2.2 million (70%)
excluding one-off government arrears payment (as % of water sales)	US\$1.9 million (60%)
NRW (production not resulting in collections)	72%
Average tariff realized (excl. taxes)	U\$0.6 per m ³
Expenses and Cost Recovery	
Total Ordinary Expenses incl. VAT	US\$3.8 million
of which staff costs	36%
of which energy costs (largely unpaid in practice)	28%
Average cost of production	US\$0.3 per m ³
Cost Recovery (Sales/Production Costs)	88%
Cost Recovery (Regular Collections / Production Costs)	50%
Financial Debts	
Short-term Liabilities	US\$24.5 million
Long-term Financial Debt	US\$1.4 million
Total Liabilities	US\$25.9 million

E. Financial analysis of ENERCA

²⁵ SODECA, Technical Department, SODECA, Tableau de Bord 2016 + Tableau de Bord des Centres Secondaires; The remainder is primarily use of water at production plants that is not distributed.



20. As a result of weak governance and years of political instability, no independently audited financial statements of ENERCA are available for recent years. This financial analysis has thus been based on provisional financial statements for 2012-15, commercial data and summary documents provided by ENERCA's commercial department, Annual Activity Reports and discussions with ENERCA staff. A key task under this project will to finance an independent audit in line with international standards to improve the available financial data.

21. Based on the available information, ENERCA realized a turnover of US\$13 million including taxes of which energy sales excluding other works, services and charges were approximately 80 percent.²⁶ Collections were significantly lower at US\$7.5 million including tax, or 60 percent of billed sales.²⁷ Once taxes and other dedicated charges, e.g. for public lighting and to support the regulatory agency, are subtracted, ENERCA generated US\$5.8 million in retainable income in 2016.

22. By contrast, operational costs have been estimated at US\$10.4 million in 2016, that is, the effective cost-recovery ratio is approximately 55 percent.²⁸ While staff costs of nearly US\$4 million are the most important cost factor, a particularly large cost element is also fuel costs for the thermal plants that augment the hydroelectric production. Although barely 5 percent of the electricity produced is from the thermal plants, the fuel costs constitute nearly 20 percent of total operational costs. The small increase in supply and additional flexibility provided by the thermal plants comes at a high cost indeed.

23. On the revenue side, the two key reasons for the unfavorable cost recovery ratio are the inefficient collection of electricity billed coupled with the large amount of production lost during transmission and distribution and thus never billed at all. Bill collection is merely 60 percent because many consumers are simply not paying what they owe. At the end of 2016, over US\$54 million in electricity bills have remained unpaid, of which US\$24 million by private customers and over US\$28 million by state institutions with SODECA owing the single highest debt of US\$9.2 million.

24. The revenue shortfalls due to low bill collection are severely aggravated by the large losses during transmission and distribution. In 2016 transmission losses amounted to 7.3 percent of energy produced, and distribution losses to 41.2 percent of energy distributed due to old infrastructure and electricity theft, a loss worth approximately US\$8 million annually if priced at the average tariff of US\$0.14 per KW hour.

25. The key to the financial viability of ENERCA thus lies in the reduction of its technical and commercial losses in order to monetize the value of the energy which, at least in the main market of Bangui, is relatively cheap to produce thanks to the major hydropower plants at Boali. Improving the operational efficiency, in particular in the sense of loss reduction, is a critical priority both for the financial viability of the project and ENERCA's future more generally, and therefore also a key aspect of the PDO.

26. ENERCA's total liabilities amounted to US\$139.7 million in 2015 of which US\$68 million in long-term financial debts, US\$49.8 million in short term liabilities including VAT payable, employee related- and supplier debts, in addition to US\$21.9 million in cashflow liabilities such as bank and cash loans²⁹. Two major underlying loans amounting to 75 percent of ENERCA's long-term financial debt have been cancelled as part of the Heavily Indebted Poor Countries (HIPC) initiative. Under the terms of the HIPC agreement, however, these loans have remained on ENERCA's books as the

²⁶ This figure is based on sales information shared by ENERCA commercial department. Note that the 2016 Activity Report contains a slightly lower but similar figure of US\$11.8 million in turnover, while the provisional 2016 financial statements gave US\$11.4m. The net sales figure is taken from ENERCA commercial data and excludes charges for works (e.g. connections), services, meter rental, regulatory contributions and so on.

²⁷ Figure based on sales information shared by ENERCA; note that the 2016 activity report cited a figure nearly US\$1 million higher, but it is not clear why which is why the figure on the raw data was preferred, which also aligns better with 2015 data.

²⁸ Figure based on 2016 Activity Report and confirmed by complementary sources.

²⁹ Note that a provisional revised version of the 2015 financial statements corrected the category "other debts" downwards by nearly US\$10 million and the category "Bank and cash loans" down by over US\$20 million. However, until the reasons for this correction are confirmed by an independent audit financed by the project, the initial figures are used.



Government agreed to reallocate the freed-up funds in line with its Poverty Reduction Strategy rather than simply cancelling the liabilities of ENERCA. According to information from the utility, however, ENERCA is not actually making any payments towards these liabilities at present.

27. Looking towards the future, the financial situation of ENERCA is expected to remain precarious over the duration of the project. However, if the project realizes its targets, it will make a significant contribution to stabilizing ENERCA's finances. By 2021, the project related net increase in collections over increase in operational costs is expected to reach nearly US\$650,000 annually which is equivalent to an approximately 6 percent increase in cost recovery. The primary reason the project is not expected to have a larger effect on cost recovery is the high expected operational cost of the new secondary centers which will remain partly reliant on expensive diesel fuel. Beyond the project itself, ENERCA has the opportunity for significant additional improvements in its financial status by focusing on converting sales into cash-flows more effectively. A key part of this effort will be improving the payment compliance of government agencies which consistently accumulate arrears. As noted above, the project related improvement of SODECA's financial situation could become a major benefit in this sense, as the national water company remains ENERCA's single largest creditor.

Table A4.5: ENERCA - Key Financial Parameters

Parameter	2016
Production, Sales and Collections	
Total Production	135,756 MWH
Electricity for Distribution	125,792 MWH
Electricity Billed (percentage of production billed)	73,979 MWH (55%)
Total Ordinary Income incl. tax	US\$13 million
Net Sales incl. tax	US\$12.5 million
Collections incl. tax (as % of sales)	US\$7.5 million (60%)
Retainable collections i.e. excl. tax and charges due to government	US\$5.8 million
Transport losses (Production – Distribution)/Production	7.3%
Distribution losses (Distribution-Sales)/Distribution	41.2%
Average tariff realized (incl. taxes)	US\$0.14 per kwh
Expenses and Cost Recovery	
Total Ordinary Expenses	US\$10.4 million
of which staff costs	US\$ 4 million
of which energy costs	US\$1.95 million
Average cost of production of energy distributed	US\$0.08 per kwh
Cost Recovery (Total Turnover / Ordinary Expenses)	123%
Cost Recovery (Retainable Collections / Production Costs)	55%
Financial Debts	2015 (Provisional)
Short-term Liabilities	US\$71.7 million
Long-term Financial Debt	US\$68 million
Total Liabilities	US\$139.7 million



Table A4.6: Financial Projections for Component 1 (Water)

WATER COMPONENT FINANCIAL PROJECTION (FCFA)	2018	2019	2020	2021	2037
BILLINGS & REVENUE					
Change in Billings (vs. non-invest scenario, excl. taxes)	92,661,570	226,046,430	432,877,081	547,126,827	547,126,827
Bangui	92,661,570	184,663,807	320,409,212	411,298,958	411,298,958
Bambari	0	20,691,311	67,913,934	79,593,934	79,593,934
Berberati	0	20,691,311	44,553,934	56,233,934	56,233,934
Change in Collections (vs non-invest scenario, excl. taxes)	188,894,361	376,939,234	572,143,657	700,219,477	700,219,477
Bangui	188,894,361	343,833,135	482,169,361	591,557,182	591,557,182
Bambari	0	16,553,049	54,331,148	63,675,148	63,675,148
Berberati	0	16,553,049	35,643,148	44,987,148	44,987,148
COSTS					
Change in Operational Costs (vs non-invest scenario)	0	61,984,082	135,661,089	160,384,532	160,384,548
Bangui	0	1	2	3	19
Bambari	0	16,080,202	52,024,181	59,591,335	59,591,335
Berberati	0	45,903,879	83,636,905	100,793,194	100,793,194
Water Component Investment Costs	594,400,000	1,188,800,000	1,188,800,000	1,783,200,000	
Depreciation & Amortization					
Total Depreciation & Amortization	0	31,284,211	97,328,655	167,258,067	278,708,067
Working Capital Estimates					
Change in Working Capital (WC)	-96,232,791	-150,892,803	-139,266,576	-153,092,651	-153,092,651
PROJECT CASH FLOWS					
Revenues					
(+) Bangui	92,661,570	184,663,807	320,409,212	411,298,958	411,298,958
(+) Bambari	0	20,691,311	67,913,934	79,593,934	79,593,934
(+) Berberati	0	20,691,311	44,553,934	56,233,934	56,233,934
(+) Total Revenues	92,661,570	226,046,430	432,877,081	547,126,827	547,126,827
Operating Expenses					
(-) Bangui	0	0	0	0	0
(-) Bambari	0	16,080,202	52,024,181	59,591,335	59,591,335
(-) Berberati	0	45,903,879	83,636,905	100,793,194	100,793,194
(-) Total Operating Expenses	0	61,984,081	135,661,087	160,384,529	160,384,529
(=) EBITDA (Earnings Before Interest, Taxes, Depreciation & Amortization)	92,661,570	164,062,349	297,215,994	386,742,298	386,742,298
(=) EBIT (Earnings Before Interest & Taxes)	92,661,570	132,778,139	199,887,339	219,484,231	108,034,231
(-) EBIT (1- Taxes)	75,055,872	132,778,139	199,887,339	219,484,231	108,034,231
NET STREAMS OF CASH FLOW					
FCF (Free Cash Flows)	(423,111,337)	(873,844,847)	(752,317,430)	(1,243,365,052)	539,834,948
Discount Factor	1.000	1.000	1.000	1.000	1.000
Discount Rate	0%	(IDA Grant with 0% interest rate)			
NPV (XAF)	5,344,720,506	IRR	11.95%		
NPV(USD)	9,493,838				



Table A4.7: Financial Projections for Component 2 (Energy)

ENERGY COMPONENT FINANCIAL PROJECTION (FCFA)	2018	2019	2020	2021	2037
BILLINGS & REVENUE					
Change in Billings (vs. non-invest scenario, excl. taxes)	439,092,137	827,399,622	930,573,822	954,093,943	952,676,343
Bangui	224,512,912	266,465,141	296,598,077	316,922,969	315,505,369
Bambari	159,286,082	326,204,567	345,015,737	349,274,468	349,274,468
Berberati	55,293,142	234,729,915	288,960,007	287,896,507	287,896,507
Change in Collections (vs non-invest scenario, excl. taxes)	397,640,132	836,639,474	1,080,700,661	1,260,335,065	1,259,342,745
Bangui	225,976,752	359,845,164	541,821,278	718,739,737	717,747,417
Bambari	127,428,866	277,273,882	293,263,377	296,883,298	296,883,298
Berberati	44,234,514	199,520,427	245,616,006	244,712,031	244,712,031
COSTS					
Change in Operational Costs (vs non-invest scenario)	578,025,397	789,082,499	846,183,281	863,665,769	1,012,716,037
Bangui	0	0	0	0	0
Bambari	384,850,582	404,422,260	410,808,415	423,937,155	497,099,654
Berberati	193,174,815	384,660,240	435,374,866	439,728,614	515,616,383
Energy Component Investment Costs	594,400,000	1,188,800,000	1,188,800,000	1,783,200,000	
Depreciation & Amortization					
Total Depreciation & Amortization	0	31,284,211	97,328,655	167,258,067	278,708,067
Working Capital Estimates					
Change in Working Capital (WC)	41,452,005	-9,239,852	-150,126,839	-306,241,122	-306,666,402
PROJECT CASH FLOWS					
Revenues					
(+ Bangui (new connections))	224,512,912	266,465,141	296,598,077	316,922,969	315,505,369
(+ Bambari)	159,286,082	326,204,567	345,015,737	349,274,468	349,274,468
(+ Berberati)	55,293,142	234,729,915	288,960,007	287,896,507	287,896,507
(+ Total Revenues)	439,092,137	827,399,622	930,573,822	954,093,943	952,676,343
Operating Expenses					
(-) Bangui	0	0	0	0	0
(-) Bambari	384,850,582	404,422,260	410,808,415	423,937,155	497,099,654
(-) Berberati	193,174,815	384,660,240	435,374,866	439,728,614	515,616,383
(-) Total Operating Expenses	578,025,397	789,082,499	846,183,281	863,665,769	1,012,716,037
(-) EBITDA (Earnings Before Interest, Taxes, Depreciation & Amortization)	(138,933,260)	38,317,123	84,390,541	90,428,175	(60,039,694)
(=) EBIT (Earnings Before Interest & Taxes)	(138,933,260)	7,032,912	(12,938,114)	(76,829,892)	(338,747,760)
(=) EBIT (1- Taxes)	(112,535,941)	5,696,659	(10,479,873)	(62,232,213)	(274,385,686)
NET STREAMS OF CASH FLOW					
FCF (Free Cash Flows)	(748,387,946)	(1,142,579,279)	(951,824,378)	(1,371,933,024)	310,988,783
Discount Factor	1.000	1.000	1.000	1.000	1.000
Discount Rate	0%	(IDA Grant with 0% interest rate)			
NPV (XAF)	1,692,093,303	IRR	3.82%		
NPV(USD)	3,005,669				



Table A4.8: Assumptions Economic-Financial Model for Component 1 (Water)

GENERAL ASSUMPTIONS		
Exchange Rate	USD/XAF	0.00178
VAT Rate	%	19%
Price of Gasoil in Secondary Cities	XAF / liter	1000
Generator Capacity (Bambari)	kw	390
Generator Capacity (Berberati)	kw	390
Assumed Annual Cost Inflation	%	1%

BANGUI - ASSUMPTIONS INVESTMENT SCENARIO (annual)		Baseline	2018	2019	2020	2021	2037
Actual Production	MWH/year	135,756	135,756	135,756	135,756	135,756	135,756
Average tariff level [across categories, incl. tax and	XFA	83	83	83	83	83	83
Total Transmission and distribution losses [produc	%	46%	44%	43%	43%	43%	43%
Percentage of billings collected	%	60%	62%	64%	67%	70%	70%
New clients	#	0	2000	2500	2800	3000	3000
Bangui no investment scenario assumed to be continuance of status quo							

BAMBARI - ASSUMPTIONS INVESTMENT SCENARIO (annual)		Baseline	2018	2019	2020	2021	2037
New connections established (cumulative)		0	200	400	400	400	400
Annual demand per private connection [based on KWH/hh/yea		5,523	5,523	5,523	5,523	5,523	5,523
Annual demand for SODECA plant	KWH/year	0	0	63,316	204,847	234,643	234,643
Total Transmission and distribution losses	%	15%	15%	15%	10%	10%	10%
Percentage of billings collected	%	80%	80%	85%	85%	85%	85%
Tariff for secondary centers (excl. tax)	XAF	142.93	142.93	142.93	142.93	142.93	142.93
No non-investment scenario in Bambari as there is currently no production							

BERBERATI - ASSUMPTIONS INVESTMENT SCENARIO (annual)		Baseline	2018	2019	2020	2021	2037
New connections established (cumulative)		0	150	300	450	450	450
Annual demand per private connection	KWH/hh/yea	2,529	2,529	2,529	2,529	2,529	2,529
Annual demand for SODECA plant	KWH/year	0	0	876,000	876,000	876,000	876,000
Total Transmission and distribution losses	%	15%	15%	15%	10%	10%	10%
Percentage of billings collected	%	80%	80%	85%	85%	85%	85%
Tariff for secondary centers (excl. tax)	XAF	142.93	142.93	142.93	142.93	142.93	142.93
No non-investment scenario in Berberati as there is currently no production							



Table A4.9: Overview of Outcomes - Economic-Financial Model for Component 1 (Water)

BANGUI - KEY OUTPUTS OF INVESTMENT SCENARIO		BASELINE	2018	2019	2020	2021	2037
Key Inputs							
Production (Bangui)	m3	12,603,588	12,603,588	12,603,588	12,603,588	12,603,588	12,603,588
Distribution (Bangui)	m3	12,252,894	12,252,894	12,252,894	12,252,894	12,252,894	12,252,894
Volume Billed (Bangui) - excludes additional volume due to technical losses	m3	4,816,038	4,816,038	4,959,017	5,110,021	5,244,975	5,244,975
Percentage of distribution billed - includes separately modelled additions	%	39%	41%	44%	47%	49%	49%
Volume Collected On (excl one-off gov't payment)	m3	2,911,046	3,455,527	3,903,431	4,307,421	4,620,547	4,620,547
Technical Losses	m3	3,962,050	3,430,810	3,185,752	2,695,637	2,450,579	2,450,579
Unbilled (excl. technical losses)	m3	3,474,806	4,006,046	4,108,125	4,447,236	4,557,340	4,557,340
Active customers (Bangui)	#	15,151	15,151	16,156	17,166	18,166	18,166
Household connections (Particuliers)	#	10342	10342	11342	12342	13342	13342
Kiosks	#	310	310	315	325	325	325
Branchement sociaux	#	1853	1853	1853	1853	1853	1853
Other	#	2,646	2646	2646	2646	2646	2646
Average Tariff across customer categories (incl. tax & redevances)	XFA	429	429	428	427	426	426
Average Tariff across customer categories (excl. tax & redevances)	XFA	349	349	349	348	349	349
Core Results Billings & Collections							
Value of Bills (incl. tax & redevances) in 2016 - Bangui	XFA	2,063,957,406	2,177,791,233	2,287,367,959	2,450,574,494	2,558,261,552	2,558,261,552
Value of Bills (excl. tax and redevances) - Bangui	XFA	1,680,076,463	1,772,738,032	1,864,740,270	2,000,485,675	2,091,375,420	2,091,375,420
Value of collections (incl. tax & redevances) excluding one-off gov't paym	XFA	1,247,555,493	1,480,898,038	1,669,778,610	1,837,930,870	1,969,861,395	1,969,861,395
Value of collections (excl. tax & redevances) excluding one-off gov't paym	XFA	1,009,915,262	1,198,809,623	1,353,748,397	1,492,084,624	1,601,472,444	1,601,472,444
BAMBARI - KEY OUTPUTS OF INVESTMENT SCENARIO							
EXPECTED USE (given assumptions about new connections)							
Annual Use by Active customers	m3/year	0	0	62,050	200,750	229,950	229,950
Household connections (Particuliers)	m3/year	0	0	18,250	54,750	54,750	54,750
Kiosks	m3/year	0	0	43,800	146,000	175,200	175,200
Household connections (Particuliers)	#	0	0	100	300	300	300
Kiosks	#	0	0	15	50	60	60
Users per individual connection	#	5	5	5	5	5	5
Users per Kiosk	#	200	200	200	200	200	200
Demand per user at individual connection	l/day	100	100	100	100	100	100
Demand per user at kiosk	l/day	40	40	40	40	40	40
LOSSES & REQUIRED PRODUCTION TO SATISFY USE (given rehabilitated full capacity)							
Production capacity of rehabilitated plant	m3/h	245	245	245	245	245	245
Technical losses as percentage of distribution	%	0%	20%	20%	20%	20%	20%
Production required to satisfy demand	m3/year	0	0	77,563	250,938	287,438	287,438
Daily hours of plant production required to satisfy demand	h/day	0.0	0.0	0.9	2.8	3.2	3.2
COSTS							
Energy use per m3 of water production	kw /m3	0.82					
Ratio of Grid to Back-up Energy use		0.85					
Cost of Energy per cubic meter (average of grid- and back-up generator cXAF / m3		151	151	151	151	151	151
Total consumable costs per m3 (incl. chlorine, lubricant, slaked lime, eneXAF / m3		195	207	207	207	207	207
Total consumable cost for production per year	XAF/year	0	0	16,080,202	52,024,181	59,591,335	59,591,335
EXPECTED REVENUE							
Percentage of distribution billed	%	0%	80%	80%	80%	80%	80%
Volume of distribution	m3/year	0	0	49640	160600	183960	183960
Percentage of bills collected [simplified assumption: same for kiosks and	%	0%	80%	80%	80%	80%	80%
Volume billed and collected	m3/year	0	0	39,712	128,480	147,168	147,168
Resulting billings (incl. VAT)	XFA/year	0	0	24,486,234	80,408,303	94,307,503	94,307,503
Resulting billings (excl. VAT)	XFA/year	0	0	20,691,311	67,913,934	79,593,934	79,593,934
Resulting collections (incl. VAT)	XFA/year	0	0	19,588,988	64,326,643	75,446,003	75,446,003
Resulting collections (excl. VAT)	XFA/year	0	0	16,553,049	54,331,148	63,675,148	63,675,148



BERBERATI - KEY OUTPUTS OF INVESTMENT SCENARIO			BASELINE	2018	2019	2020	2021	2037
EXPECTED USE (given assumptions about new connections)								
<i>Annual Use by Active customers</i>								
Household connections (Particuliers)	m3/year	0	0	62,050	142,350	171,550	171,550	171,550
Kiosks	m3/year	0	0	18,250	54,750	54,750	54,750	54,750
Household connections (Particuliers)	#	0	0	43,800	87,600	116,800	116,800	116,800
Kiosks	#	0	0	100	300	300	300	300
Users per individual connection	#	5	5	5	5	5	5	5
Users per Kiosk	#	200	200	200	200	200	200	200
Demand per user at individual connection	l/day	100	100	100	100	100	100	100
Demand per user at kiosk	l/day	40	40	40	40	40	40	40
LOSSES & REQUIRED PRODUCTION TO SATISFY USE (given rehabilitated full capacity)								
Production capacity of rehabilitated and newly constructed boreholes	m3/h	75	30	45	75	75	75	75
Technical losses as percentage of distribution	%	0%	20%	20%	20%	20%	20%	20%
Production required to satisfy demand	m3/year	0	0	77,563	177,938	214,438	214,438	214,438
Daily hours of plant production required to satisfy demand	h/day	0.0	0.0	4.7	6.5	7.8	7.8	7.8
COSTS								
Energy use per m3 of water production	kw /m3	1.60						
Ratio of Grid to Back-up Energy use		0.85						
Cost of Energy per cubic meter (average of grid- and back-up generator cXAF / m3		287	287	287	287	287	287	287
Total consumable costs per m3 (incl. chlorine, lubricant, slaked lime, eneXAF / m3		455	744	592	470	470	470	470
Total consumable cost for production per year	XAF/year	0	0	45,903,879	83,636,905	100,793,194	100,793,194	100,793,194
EXPECTED REVENUE								
Percentage of distribution billed	%	0%	80%	80%	80%	80%	80%	80%
Volume of distribution	m3/year	0	0	49,640	113,880	137,240	137,240	137,240
Percentage of bills collected	%	0%	80%	80%	80%	80%	80%	80%
Volume billed and collected	m3/year	0	0	39,712	91,104	109,792	109,792	109,792
Resulting billings (incl. VAT)	XFA/year	0	0	24,486,234	52,609,903	66,509,103	66,509,103	66,509,103
Resulting billings (excl. VAT)	XFA/year	0	0	20,691,311	44,553,934	56,233,934	56,233,934	56,233,934
Resulting collections (incl. VAT)	XFA/year	0	0	19,588,988	42,087,923	53,207,283	53,207,283	53,207,283
Resulting collections (excl. VAT)	XFA/year	0	0	16,553,049	35,643,148	44,987,148	44,987,148	44,987,148

Table A4.10: Assumptions Economic-Financial Model for Component 2 (Energy)

GENERAL ASSUMPTIONS		
Exchange Rate	USD/XAF	0.00178
VAT Rate	%	19%
Price of Gasoil in Secondary Cities	XAF / liter	1000
Generator Capacity (Bambari)	kw	390
Generator Capacity (Berberati)	kw	390
Assumed Annual Cost Inflation	%	1%

BANGUI - ASSUMPTIONS INVESTMENT SCENARIO (annual)		Baseline	2018	2019	2020	2021	2037
Actual Production	MWH/year	135,756	135,756	135,756	135,756	135,756	135,756
Average tariff level [across categories, incl. tax and	XFA	83	83	83	83	83	83
Total Transmission and distribution losses [produc	%	46%	44%	43%	43%	43%	43%
Percentage of billings collected	%	60%	62%	64%	67%	70%	70%
New clients	#	0	2000	2500	2800	3000	3000
Bangui no investment scenario assumed to be continuance of status quo							

BAMBARI - ASSUMPTIONS INVESTMENT SCENARIO (annual)		Baseline	2018	2019	2020	2021	2037
New connections established (cumulative)		0	200	400	400	400	400
Annual demand per private connection [based on KWH/hh/yea		5,523	5,523	5,523	5,523	5,523	5,523
Annual demand for SODECA plant	KWH/year	0	0	63,316	204,847	234,643	234,643
Total Transmission and distribution losses	%	15%	15%	15%	10%	10%	10%
Percentage of billings collected	%	80%	80%	85%	85%	85%	85%
Tariff for secondary centers (excl. tax)	XAF	142.93	142.93	142.93	142.93	142.93	142.93
No non-investment scenario in Bambari as there is currently no production							

BERBERATI - ASSUMPTIONS INVESTMENT SCENARIO (annual)		Baseline	2018	2019	2020	2021	2037
New connections established (cumulative)		0	150	300	450	450	450
Annual demand per private connection	KWH/hh/yea	2,529	2,529	2,529	2,529	2,529	2,529
Annual demand for SODECA plant	KWH/year	0	0	876,000	876,000	876,000	876,000
Total Transmission and distribution losses	%	15%	15%	15%	10%	10%	10%
Percentage of billings collected	%	80%	80%	85%	85%	85%	85%
Tariff for secondary centers (excl. tax)	XAF	142.93	142.93	142.93	142.93	142.93	142.93
No non-investment scenario in Berberati as there is currently no production							



Table A4.11: Overview of Outcomes - Economic-Financial Model for Component 2 (Energy)

BANGUI - KEY OUTPUTS OF INVESTMENT SCENARIO		Baseline	2018	2019	2020	2021	2037
Actual Production	MWH/year	135,756	135,756	135,756	135,756	135,756	135,756
Distribution	MWH/year	124,720	124,720	124,720	124,720	124,720	124,720
Total Energy Sales	MWH/year	73,349	76,358	77,110	77,562	77,863	77,863
Additional MWH sold relative to baseline			3,009	3,762	4,213	4,514	4,514
Sales (incl. tax)		6,100,459,316	6,367,629,682	6,417,552,833	6,453,411,028	6,477,597,649	6,475,910,705
Sales (excl. tax)		5,126,436,400	5,350,949,312	5,392,901,540	5,423,034,477	5,443,359,369	5,441,941,769
Collections (excl. tax)		3,091,611,821	3,317,588,574	3,451,456,986	3,633,433,100	3,810,351,558	3,809,359,238
Production Cost		5,870,500,000	5,929,205,000	5,988,497,050	6,048,382,021	6,108,865,841	7,163,125,630

BAMBARI - KEY OUTPUTS OF INVESTMENT SCENARIO		Baseline	2018	2019	2020	2021	2037
BAMBARI - EXPECTED REVENUE							
<i>Demand of Bambari household and business</i>	KWH/day	0	3,026	6,052	6,052	6,052	6,052
<i>Implied daily demand of SODECA</i>	KWH/day	0	0	173	561	643	643
<i>Implied total daily demand Bambari</i>	kwh/day	0	3,026	6,226	6,613	6,695	6,695
Required production to meet daily demand	kwh/day	0	3,560	7,324	7,348	7,439	7,439
Meter installation fee (excl. tax)	XFA/meter	7088	7088	7089	7090	7091	7107
Expected Revenue Increase [incl. tax]	XFA/year	0	189,550,438	388,183,434	410,568,727	415,636,617	415,636,617
Expected Revenue Increase [excl. tax]	XFA/year	0	159,286,082	326,204,567	345,015,737	349,274,468	349,274,468
Expected Collections increase (excl. tax)	XFA/year	0	127,428,866	277,273,882	293,263,377	296,883,298	296,883,298
Implied revenue per kwh [excl. tax]	XFA/kwh	na	121	121	129	129	129
BAMBARI - EXPECTED COSTS							
Expected daily energy from solar/battery plant	kwh	0	0	3912	3912	3912	3912
Expected daily energy required from diesel genera	kwh	0	3,560	3,412	3,436	3,527	3,527
Implied gasoil use per hour	l / hour	0.0	81.7	78.5	79.0	81.0	81.0
Implied Annual Gasoil requirements	l / year	0	357,959	343,822	346,095	354,764	354,764
Estimated Annual Gasoil Cost	XFA / year	0	357,958,520	343,821,883	346,094,940	354,763,612	354,763,612
Estimated Annual Lubricant Cost	XFA / year	0	2,814,837	2,814,837	2,814,837	2,814,837	2,814,837
Estimated Maintenance cost of solar-diesel hybrid	XFA / Year	0	29,550,000	29,550,000	29,550,000	29,550,000	29,550,000
Estimated costs for staff & security (\$3000/month)	XFA / year	0	20,266,824	20,266,824	20,266,824	20,266,824	20,266,824
Expected Annual Operational Costs	XFA / year	0	384,850,582	404,422,260	410,808,415	423,937,155	497,099,654
Implied cost per KWH	XFA /kwh	na	296	151	153	156	183
Cost recovery [revenue excl. tax]	%	na	41.4%	80.7%	84.0%	82.4%	70.3%

BERBERATI - KEY OUTPUTS OF INVESTMENT SCENARIO		Baseline	2018	2019	2020	2021	2037
BERBERATI - EXPECTED REVENUE							
<i>Daily demand of Berberati household and busines</i>	KWH/day	0	1,039	2,079	3,118	3,118	3,118
<i>Implied daily demand of SODECA</i>	KWH/day	0	0	2,400	2,400	2,400	2,400
<i>Implied total daily demand Berberati</i>	kwh/day	0	1,039	4,479	5,518	5,518	5,518
Required production to meet daily demand	kwh/day	0	1,223	5,269	6,132	6,132	6,132
Meter installation fee (excl. tax)	XFA/meter	7088	7088	7089	7090	7091	7107
Expected Revenue Increase [incl. tax]	XFA/year	0	65,798,839	279,328,598	343,862,408	342,596,843	342,596,843
Expected Revenue Increase [excl. tax]	XFA/year	0	55,293,142	234,729,915	288,960,007	287,896,507	287,896,507
Expected Collections increase (excl. tax)	XFA/year	0	44,234,514	199,520,427	245,616,006	244,712,031	244,712,031
Implied revenue per kwh [excl. tax]	XFA/kwh	na	121	121	129	129	129
BERBERATI - EXPECTED COSTS							
Expected daily energy from solar/battery plant	kwh	0	0	2108	2453	2453	2453
Expected daily energy required from diesel genera	kwh	0	1,223	3,162	3,679	3,679	3,679
Implied gasoil use per hour	l / hour	0.0	28.8	57.0	64.8	64.8	64.8
Implied Annual Gasoil requirements	l / year	0	168,181	332,999	378,489	378,489	378,489
Estimated Annual Gasoil Cost	XFA / year	0	168,180,532	332,999,253	378,488,895	378,488,895	378,488,895
Estimated Annual Lubricant Cost	XFA / year	0	2,814,837	2,814,837	2,814,837	2,814,837	2,814,837
Estimated Maintenance cost of solar-diesel hybrid	XFA / Year	0	21,000,000	21,000,000	21,000,000	21,000,000	21,000,000
Estimated costs for staff & security (\$3000/month)	XFA / year	0	20,266,824	20,266,824	20,266,824	20,266,824	20,266,824
Expected Annual Operational Costs	XFA / year	0	193,174,815	384,660,240	435,374,866	439,728,614	515,616,383
Implied cost per KWH	XFA /kwh	na	433	200	195	196	230

**ANNEX 5: ENVIRONMENTAL AND SOCIAL ACTION PLAN**

COUNTRY: Central African Republic
Water and Electricity Upgrading Project

I. Objectives of the document

1. From an environmental and social preliminary screening point of view, the project is a Category B. Four safeguard policies are triggered: OP/BP 4.01 (Environmental Assessment); OP 4.11 (Physical Cultural Resources); OP/BP 4.37 (Safety of Dams); and OP/BP 4.12 (Involuntary Resettlement). Given the fragility and emergency situation in the CAR, mainly due to the political crisis, it was agreed to defer the preparation of safeguards instruments. However, an ESAP, consistent with World Bank operational policies and procedures, investment operations subject to Paragraph 12, Projects in Situations of Urgent Need of Assistance or Capacity Constraints of the World Bank IPF Policy, is prepared.

2. The ESAP provides a time-bound planning framework for the development of environmental and social safeguards instruments, the production of which has been deferred into the project implementation period under Paragraph 12 of the World Bank IPF Policy, allowing for condensed procedures and deferral of the safeguards instruments in situations of urgent need for assistance. The ESAP is supplemented by information on policies, guidelines, codes of practice and procedures to be adhered to and mainstreamed into the project. The objective of the ESAP is to ensure that the planned project activities and related Environmental and Social assessment and management instruments and processes will be in compliance with the national legislation of the CAR and the World Bank's operational safeguards policies, and are duly and diligently implemented in a logical sequence with the environmentally and socially relevant project activities.

Planning framework for the development of environmental and social safeguards instruments

Detail of activities	Level of preparation	Expected completion date
Bangui – ESIA		
Cleared terms of references	Done	
Recruitment of a consultant (firm) to produce an ESIA	On-going	01/31/2018
<i>Preliminary detailed technical studies available</i>	<i>To do</i>	<i>02/28/2018</i>
Draft version of ESIA available	To do	04/30/2018
Final version cleared by the WB	To do	05/31/2018
Disclosed at local level and on the World Bank external web site	To do	06/30/2018
Bangui – RAP		
Cleared ToRs	Done	
Recruitment of a consultant (firm) to carry out the activity (same consultant than ESIA)	On going	01/31/2018
Draft version of RAP(s) available	To do	05/31/2018
Final version cleared by the WB	To do	06/30/2018
Disclosed at local level and on the World Bank external web site	To do	07/15/2018
Bambari – ESIA		
Cleared ToRs	Done	
Recruitment of a consultant (firm) to produce an ESIA	On going	01/31/2018
<i>Preliminary detailed technical studies available</i>	<i>To do</i>	<i>02/28/2018</i>



Detail of activities	Level of preparation	Expected completion date
Draft version of ESIA available	To do	04/30/2018
Final version cleared by the WB	To do	05/31/2018
Disclosed at local level and on the World Bank external web site	To do	06/30/2018
Bambari- RAP		
Cleared ToRs	Done	
Recruitment of a consultant (firm) to carry out the activity (same consultant than ESIA)	On going	01/31/2018
Draft version of RAP(s) available	To do	05/31/2018
Final version cleared by the WB	To do	06/30/2018
Disclosed at local level and on the World Bank external web site	To do	07/15/2018
Berberati – ESIA		
Cleared ToRs	Done	
Recruitment of a consultant (firm) to produce an ESIA	On going	01/31/2018
<i>Preliminary detailed technical studies available</i>	To do	02/28/2018
Draft version of ESIA available	To do	04/30/2018
Final version cleared by the WB	To do	05/31/2018
Disclosed at local level and on the World Bank external web site	To do	06/30/2018
Berberati – RAP		
Cleared ToRs	Done	
Recruitment of a consultant (firm) to carry out the activity (same consultant than ESIA)	On going	01/31/2018
Draft version of RAP(s) available	To do	05/31/2018
Final version cleared by the WB	To do	06/30/2018
Disclosed at local level and on the World Bank external web site	To do	07/15/2018
Boali (Bangui) - Dam safety assessment		
Cleared ToRs	Done	
Recruitment of a dam expert	On going	12/31/2017
Draft version of the dam safety assessment report available	To do	02/28/2018
Dam safety assessment report cleared by the WB	To do	03/30/2018
Disclosed at local level and on the World Bank external web site	To do	04/15/2018

II. General Principles

3. Recognizing the emergency nature of the proposed emergency operation and the related need for providing immediate assistance, while at the same time ensuring due diligence in managing potential environmental and social risks, the ESAP is based on the following principles:

- a. The proposed operation will increase the access to improved water and electricity in Bangui and selected towns and to ameliorate ENERCA’s and SODECA’s operational performance. To ensure effective application of the World Bank’s safeguard policies, the ESAP provides guidance on the approach to be taken during project implementation for the selection of subprojects and the planning of mitigation measures;
- b. It is not anticipated that important resettlement issues emerge from the proposed subprojects under the emergency Project. If any do occur, RAPs will be prepared;



- c. The proposed emergency operation will finance feasibility and detailed design studies for water and energy rehabilitation works, which will include environmental assessments and social studies as required by the World Bank safeguard policies;
- d. Employment opportunities within the subproject areas will be targeted and extended, as much as possible, to the host communities. In all subprojects areas, which require consultations with local communities or beneficiaries, consultations will be conducted to elicit the views of the male and female population; and
- e. Disclosure and consultation requirements will be simplified to meet the special needs of these operations. This ESAP has been disclosed in-country in the concerned sector ministries, in other public places and on the World Bank External Web site.

III. Environmental and Social Action Plan (ESAP)

4. The ESAP has been specifically developed for these planned activities to ensure due diligence, to avoid causing harm, and to ensure consistent treatment of social and environmental issues by the Government of the CAR and the World Bank. The purpose of this Plan is to also assist the government project implementation team in screening all the subprojects for their likely social and environmental impacts, to identify documentation and preparation requirements and prioritize the investments.
- a. *OP 4.01-Environmental Assessment:* Project activities that will increase the access to improved water and electricity in Bangui and selected towns can have environmental and social impacts. The nature and extent of these potential impacts are ambiguous during the project preparation phase. ESIA/ESMP will be developed for the rehabilitation of water and energy facilities no later than six months after the project effective date. The following operational policies; OP 4.04, OP 4.09, OP 4.36, OP 7.50 and OP 7.60, have not been triggered for this project.
 - b. *OP 4.12-Involuntary Resettlement:* This policy is triggered in case it is necessary to make slight modifications of the route or demolition of buildings located along the existing right of way for the realization of planned works along pavements. Therefore, project's activities will be screened for applicability of the resettlement policy involving involuntary resettlement or land acquisition will only be approved after preparation of a resettlement plan acceptable to the World Bank. Several issues will increase the complexity of land acquisition - the lack of reliable land record systems, and the inability of people losing land to either document ownership or be physically present to make their claims for eligibility. The RAPs will therefore include procedures for identifying eligible project-affected people (PAPs), calculating and delivering compensation, and mechanisms for land dispute grievance redress. For absentees PAPs claiming later compensation, specific legal remedies must be defined to adjust or settle disputes.
 - c. *OP 4.11-Physical Cultural Resources:* The proposed operation should not pose a risk of harm to cultural property. Due to the potential for artefacts discovery during the excavations to be done by the project, safeguard documents will contain a "chance find" procedure to ensure that these aspects are taken into account and are then reflected in the specifications of the contractors.
 - d. *OP 4.37-Safety of Dams:* This Safeguard Policy is triggered because of activities in the Component 2 relative to energy infrastructure under which the project will install electrical and mechanical back up equipment for the Boali 1 hydropower station. Thus, the project will launch a study to assess dam safety which was planned under the EPRP, but was never completed due to shortage of funding.



IV. Sequencing and, if practical, tentative implementation schedule for safeguards processing

5. *Sequencing of safeguards instruments during project implementation.* The sequenced implementation of safeguards instruments described below targets to manage and mitigate potential adverse impacts.

- a. *Before effectiveness:* Finalization of the ToRs and signature of the contract for the preparation of the ESIA/ESMP and RAPs with resources from the PPA.
- b. *Before effectiveness:* Publication of the ESAP.
- c. *Immediately after the effectiveness:* Draft of the works contracts including requirements to comply with the ESIA/ESMP and RAPs once they become available, as well as measures provided in this ESAP in the interim period prior to the publication of the afore-mentioned instruments.
- d. *During the implementation of the project:*
 - i. Timeframe for the development of safeguard instruments, including review, revision, validation and approval by the World Bank. It is estimated that the development of specific ESIA and RAPs for some activities in Bangui, Bambari and Berberati will require a maximum of six months per ESIA or RAP, including review and approval, publication, consultation and finalization by the World Bank.
 - ii. Implementation of the temporary measures provided this ESAP for works to be carried out under Component 1 and 2 until the ESIA/RAP are published, at which time it will replace the temporary measures. The supervision of safeguard measures will be ensured by the PIU.
 - iii. Capacity building of the PIU in environmental and social management, supervision of ESIA/RAP for certain project activities, including explanation of the negative list, inclusion of social and environmental clauses in the works contracts.

6. *Implementation of safeguard instruments.* The PIU will be responsible for the implementation of the prescribed environmental and social measures, including the temporary measures provided for in this ESAP, as well as in the ESIA/ESMP and the RAP when these are published. All safeguarding documents will be reviewed by the World Bank.

V. Safeguard Screening and Mitigation

7. The selection, design, contracting, M&E of the project will be consistent with the following guidelines, codes of practice and requirements. The safeguard screening and mitigation process will include:

- a. A list of negative characteristics rendering a proposed subproject ineligible for support, Attachment 1.
- b. A proposed checklist of likely environment and social impacts to be filled prior to each intervention, Attachment 2.
- c. Guidelines for land and asset acquisition, entitlements and compensation, Attachment 3.
- d. Procedures for the protection of cultural property, including the chance discovery of archaeological artifacts, unrecorded graveyards and burial sites, Attachment 4.
- e. Relevant elements of the codes of practice for the prevention and mitigation of potential environmental impacts, Attachment 5.
- f. A sample of environmental safeguards procedures for inclusion in the technical specifications of contracts, Attachment 6.



VI. Responsibilities for Safeguard Screening and Mitigation

8. The CEMAC TTFP PIU will be responsible for monitoring the treatment of all problems related to safeguarding measures and will also ensure compliance with all screening requirements for safeguard and mitigation measures identified for each project activity. This PIU, which works closely with the Ministry of the Environment, will have the overall responsibility for ensuring environmental and social regulations and safeguards compliance.

VII. Capacity-Building and Monitoring of Safeguard Implementation

9. To assist in this capacity-building, and to provide subsequent guidance and review of the ESAP's application, the World Bank environmental and social safeguard specialists in the project task team will provide guidance to the PIU. During supervision of these operations, the World Bank will assess the implementation of the ESAP, and recommend additional strengthening, if required.

VIII. Consultation and Disclosure

10. To ease safeguards understanding and undertaking by the Client, this final version of ESAP has been duly translated into French for broader public dissemination in the CAR, consulted upon with the Government and project stakeholders particularly in project areas. The implementing agency will consult project-affected groups and local NGOs on the project's environmental and social aspects, and will take their views into account. The implementing agency will initiate these consultations as early as possible, and for meaningful consultations, will provide relevant material in a timely manner prior to consultation, in a form and language(s) that are understandable and accessible to the groups being consulted. Safeguard instruments will be disclosed after World Bank review, for a period of at least 30 days, during which the Borrower will organize consultations for the affected stakeholders.



Attachment 1: List of Negative Project Attributes

Sub-projects with any of the attributes listed below will **be ineligible for support**.

Attributes of Ineligible Sub-projects
<p>Natural Habitats Concerning Activities that involve significant conversion or degradation of critical natural habitats, regardless of their formal legal protection status. Such habitats may e.g. include:</p> <ul style="list-style-type: none">• Wildlife Reserves• Ecologically-sensitive marine and terrestrial ecosystems• Parks or Sanctuaries• Protected areas, natural habitat areas• Forests and forest reserves• Wetlands• National parks or game reserves• Any other environmentally sensitive areas
<p>Physical Cultural Resources Damage physical cultural resources, notwithstanding the type of PCR and the scale of the damage. Such PCR may e.g. include, but would not be limited to:</p> <ul style="list-style-type: none">• Archaeological sites, structures or objects• Religious monuments or structures• Works of art, artifacts• Natural sites or objects, e.g. trees, rocks, rock formations, hills, forests, rivers (or their sources) or lakes with cultural or religious values• Cemeteries, graveyards, and graves• Sites of any other cultural or religious significance
<p>Irrigation New large scale irrigation and drainage schemes, as well as the significant expansion of irrigated agricultural areas.</p>



Attachment 2: Environmental and Social Assessment Screening Form

This section outlines the selection criteria and associated Environmental and Social Assessment procedures to be applied when screening subprojects. This form is to be used by the PIU Safeguards specialist of the relevant sector ministry to screen all proposed subprojects.

Environmental and Social Assessment Screening Form

I Basic Data

Sector:

Line Ministry:

Name of Project:

Name of Subproject:

Subproject Objective:

Subproject Location:

Scope of Civil Works:

Estimated Subproject Costs:

Proposed Date for Commencement of Work:

Technical Specifications Reviewed: Yes ___ No ___

II Site Description

Site Features	Description
Physical description of the site	
Site drainage	
Proximity of existing wells	
Types of soil	
Presence and type of vegetation What is the current land use?	
Who identified the site?	
Who is the owner of the land? Who occupies the land?	



III Project and/or Subproject Site Related Considerations

Issues	Yes	No	Comments
Is the subproject located in an area with endangered or conservation worthy ecosystems, fauna or flora?			
Is the subproject located in an area within 500 meters of national forests, protected areas, wilderness areas, wetlands, biodiversity, critical habitats, or sites of historical or cultural importance?			
Is the subproject located in an area which would create a barrier for the movement of conservation-worthy wildlife?			
Is the subproject located close to groundwater sources, surface water bodies, water courses or wetlands?			
Is the subproject in an area that would require land acquisition or restriction of access to natural resources in a protected area?			
Is the subproject located in an area with designated cultural properties such as archaeological, historical and/or religious sites?			
Is the subproject in an area with religious monuments, structures and/or cemeteries?			
Is the subproject in a polluted or contaminated area?			
Is the subproject located in an area of high visual and landscape quality?			
Is the subproject located in an area susceptible to landslides or erosion?			
Is the subproject located in an area of seismic faults?			
Is the subproject located in a densely populated area?			
Is the subproject located on prime agricultural land?			
Is the subproject located in an area of tourist importance?			
Is the subproject located near a waste dump?			
Does the subproject have access to potable water?			
Is the subproject located far (1-2 km) from accessible roads?			
Is the subproject located in an area with a wastewater network?			
Is the subproject located in the urban plan of the city?			
Is the subproject located outside the land use plan?			

**IV Project and/or Sub-project Environmental and Social Considerations
Zoning and Land Use Planning**

Issues	Yes	No	Comments
Will the subproject affect land use zoning and planning or conflict with prevalent land use patterns?			



Will the subproject involve significant land disturbance or site clearance?			
Will the subproject land be subject to potential encroachment by urban or industrial use or located in an area intended for urban or industrial development?			

Utilities and Facilities

Issues	Yes	No	Comments
Will the subproject require the setting up of ancillary production facilities?			
Will the subproject make significant demands on utilities and services?			
Will the subproject require significant levels of accommodation or service amenities to support the work force during construction (e.g., contractor will need more than 20 workers)?			

Water and Soil Contamination

Issues	Yes	No	Comments
Will the subproject require large amounts of raw materials or construction materials?			
Will the subproject generate large amounts of residual wastes, construction material waste or cause soil erosion?			
Will the subproject result in potential soil or water contamination (e.g., from oil, grease and fuel from equipment yards)?			
Will the subproject lead to contamination of ground and surface waters by herbicides for vegetation control and chemicals (e.g., calcium chloride) for dust control?			
Will the subproject lead to an increase in suspended sediments in streams affected by road cut erosion, decline in water quality and increased sedimentation downstream?			
Will the subproject involve the use of chemicals or solvents?			
Will the subproject lead to the destruction of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards?			
Will the subproject lead to the creation of stagnant water bodies in borrow pits, quarries,			



encouraging for mosquito breeding and other disease vectors?			
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Noise and Air Pollution Hazardous Substances

Issues	Yes	No	Comments
Will the subproject increase the levels of harmful air emissions?			
Will the subproject increase ambient noise levels?			
Will the subproject involve the storage, handling or transport of hazardous substances?			

Fauna and Flora

Issues	Yes	No	Comments
Will the subproject involve the disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes)?			
Will the subproject lead to the destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development?			
Will the subproject lead to the disruption/destruction of wildlife through interruption of migratory routes, disturbance of wildlife habitats, and noise-related problems?			

Destruction or Disturbance of Land and Vegetation

Issues	Yes	No	Comments
Will the subproject lead to unplanned use of the infrastructure being developed?			
Will the subproject lead to long-term or semi-permanent destruction of soils in cleared areas not suited for agriculture?			
Will the subproject lead to the interruption of subsoil and overland drainage patterns (in areas of cuts and fills)?			
Will the subproject lead to landslides, slumps, slips and other mass movements in road cuts?			
Will the subproject lead to erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains?			
Will the subproject lead to long-term or semi-permanent destruction of soils in cleared areas not suited for agriculture?			



Will the subproject lead to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles?			
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Physical Cultural Resources

Issues	Yes	No	Comments
Will the subproject have an impact on archaeological or historical sites, including historic urban areas?			
Will the subproject have an impact on religious monuments, structures and/or cemeteries?			
Have Chance Finds procedures been prepared for use in the subproject?			

Expropriation and Social Disturbance

Issues	Yes	No	Comments
Will the subproject involve land expropriation or demolition of existing structures?			
Will the subproject lead to induced settlements by workers and others causing social and economic disruption?			
Will the subproject lead to environmental and social disturbance by construction camps?			

Other Social Impacts

Issues	Observations
Number of project affected people (PAPs)	
How will PAPs be affected by the proposed interventions and what is the magnitude of the impact?	
Will there be any new permanent or temporary job opportunities created for local residents?	
What are the potential impacts on human health?	
What are the potential impacts on vulnerable or marginalized groups?	

Planning Phase

Will the project involve acquisition of a new plot(s) of land?

If yes, explain arrangements for replacing assets with the same or better in terms of quantity and quality.

If no, find alternate site or prepare a RAP or ARAP according to OP 4.12.



Construction Phase

1. Will construction or operation of the Project use large amounts of local natural resources such as water, timber, gravel from river beds, stones or any resources which are non-renewable or in short supply?

Yes No

2. Will the Project involve use, store, transport or hand substances harmful to human health or the environment?

Yes No

3. Will the Project produce solid waste during construction or decommissioning?

Yes No

4. Will construction require the use of heavy machinery or equipment?

Yes No

Operation Phase

5. Will the Project result in the production of solid waste during the operational phase?

Yes No

6. Will the Project result in the production of hazardous waste during the operational phase?

Yes No

7. Will the Project produce waste water that requires drainage?

Yes No

8. Will the Project accumulate rain water that requires drainage?

Yes No

9. Will the Project require more than basic community management of the services?

Yes No

Recommended Action

Are all of the answers 'NO'



Are any of the answers 'YES'

If all the above answers are 'NO', then there is no need for further action and the proposed action is to proceed with the proposed project intervention or subproject activity following ESAP guidelines.

If there is at least one 'YES' answer, are there appropriate mitigation measures that can be adopted so as to minimize the adverse impacts of the activity? If so, please describe the mitigation measures to be adopted as part of the implementation procedures of the proposed project intervention or subproject activity is to be financed:

The completed form should be sent for review and approval to the Project Manager of the relevant PIU. If any of the aforementioned answers are "Yes", then the Project Manager will take the final decision as to whether to clear the proposed project intervention or subproject activity for implementation, based on the safeguards specialists screening and set of recommended mitigation measures.

Recommendation

Signatures

Signed by Safeguards Specialist

Signed by Project Manager

Note: One copy of the completed and signed form and accompanying documentation will be filed and kept in the PIU office.



Attachment 3: Guidelines and Social Assessment Screening Form

A. Objectives

1. The overall objective of the ESAP is to ensure that resettlement and land acquisition will be kept to a minimum, and will be carried out in accordance with these guidelines. Subproject proposals that would require demolishing structures or acquiring land should be carefully reviewed to minimize or avoid their impacts through alternative alignments. Proposals that require more than minor expansion along rights of way should be carefully reviewed. No land or asset acquisition may take place outside of these guidelines. A format for a Land Acquisition Assessment Data Sheet is attached.

2. These guidelines provide principles and instructions to compensate negatively affected persons to ensure that they will be assisted to improve, or at least to restore, their living standards, income earning or production capacity to pre-project levels regardless of their land tenure status.

I. Categorization

3. Based on the number of persons that may be affected by the project, PAPs and the magnitude of impacts, projects may fall under one of the following:

(a) Projects that will affect project affected persons (PAPs), due to land acquisition and/or physical relocation, a full RAP must be produced.

(b) Projects that are not expected to have any land acquisition or any other significant adverse social impacts; on the contrary, significant positive social impact and improved livelihoods are expected from such interventions – these do not require a RAP or related document.

II. Eligibility

4. PAPs are identified as persons whose livelihood is directly affected by the project due to acquisition of the land owned or used by them. PAPs deemed eligible for compensation are:

(a) those who have formal legal rights to land, water resources or structures/buildings, including recognized customary and traditional rights;

(b) those who do not have such formal legal rights but have a claim to usufruct rights or occupancy rights, some of which may be rooted in customary law; and

(c) those whose claim to land and water resources or building/structures do not fall within (a) and (b) above, are eligible to resettlement assistance to restore their livelihood.

IV. Acquisition of Productive Assets and Compensation

5. PAPs are eligible for replacement costs for lost assets as described below:

(a) *Voluntary contributions*. Individuals may elect to voluntarily contribute land or assets provided the persons making such contributions do so willingly and are informed that they have the right to refuse such contributions;



and (b) *Contributions against compensation*. A contributor/asset loser considered "affected" will be eligible for compensation and other necessary assistance.

6. Voluntary contribution should be clearly documented to confirm the voluntary nature of the transition. The documentation should specify that the land is free of any squatters, encroachers or other claims. A format is shown in Attachment 3(i), which includes a Schedule for assessing any compensation claimed and the agreement reached.

III. Compensation Principles

7. The project implementation agencies will ensure timely provision of the following means of compensation to affected peoples:

(a) PAPs losing access to a portion of their land or other productive assets with the remaining assets being economically viable are entitled to compensation at a replacement cost for that portion of land or assets lost to them. Compensation for the lost assets will be made according to the following principles:

- (i) replacement land with an equally productive plot, cash or other equivalent productive assets;
- (ii) materials and assistance to fully replace solid structures that will be demolished;
- (iii) replacement of damaged or lost crops and trees, at market value;
- (iv) other acceptable in-kind compensation;
- (v) in case of cash compensation, the delivery of compensation should be made in public, i.e., at the Community Meeting; and
- (vi) in case of physical relocation, provision of civic infrastructure at the resettlement sites.

(b) PAPs losing access to a portion of their land or other economic assets rendering the remainder economically non-viable will have the options of compensation for the entire asset by provision of alternative land, cash or equivalent productive asset, according to the principles in (a) i-iv above.

IV. Consultation Process

8. The implementing agencies will ensure that all occupants of land and owners of assets located in a proposed subproject area are consulted. Community meetings will be held in each affected district and village to inform the local population of their rights to compensation and options available in accordance with these Guidelines. The Minutes of the community meetings shall reflect the discussions held, agreements reached, and include details of the agreement, based on the format provided in Attachment 3(ii).

9. The implementing agency shall provide a copy of the Minutes to affected people and confirm in discussions with each of them, their requests and preferences for compensation, agreements reached, and any eventual complaint. Copies will be recorded in the posted project documentation and be available for inspection during supervision.

Project and/or Sub-project Approval

10. In the event that a subproject involves acquisition against compensation, the implementing agency shall:

(a) not approve the subproject unless satisfactory compensation has been agreed between the affected person



and the local community; and

(b) not allow works to start until the compensation has been delivered in a satisfactory manner to the affected persons.

V. Complaints and Grievances

11. Initially, all complaints should be negotiated to reach an agreement at the local community/village/district level. If this fails, complaints and grievances on these Guidelines, implementation of the agreements recorded in the Community Meeting Minutes or any alleged irregularity in carrying out the project can also be addressed by the affected peoples or their representative at the municipal or district level. If this also fails, the complaint may be submitted to the relevant implementing agency for consideration.

VI. Verification

12. The Community Meeting Minutes, including agreements of compensation and evidence of compensation made shall be provided to the Municipality/district, to the supervising engineers, who will maintain a record hereof, and to auditors and socio-economic monitors when they undertake reviews and post-project assessment. This process shall be specified in all relevant project documents, including details of the relevant authority for complaints at the municipal/district or implementing agency level.



Land Acquisition Assessment Data Sheet

(To be used to record information on all land to be acquired)

1. Quantities of land/structures/other assets required:
2. Date to be acquired:
3. Locations:
4. Owners:
5. Current uses:
6. Users:
 - Number of Customary Claimants:
 - Number of Squatters:
 - Number of Encroachers:
 - Number of Owners:
 - Number of Tenants:
 - Others (specify): _____ Number: _____
7. How land/structures/other assets will be acquired (identify one):
 - Donation
 - Purchase
8. Transfer of Title:
 - Ensure these lands/structures/other assets are free of claims or encumbrances.
 - Written proof must be obtained (notarized or witnessed statements) for the voluntary donation, or acceptance of the prices paid from those affected, together with proof of title being vested in the community, or guarantee of public access, by the title-holder.
9. Describe grievance mechanisms available:



Format to Document Contribution of Assets

The following agreement has been made on..... day of..... between.....resident of (the Owner) and(the Recipient).

1. That the Owner holds the transferable right ofdonum of land/structure/asset in.....
2. That the Owner testifies that the land/structure is free of squatters or encroachers and not subject to other claims.
3. That the Owner hereby grants to the Recipient this asset for the construction and development of.....for the benefit of the villagers and the public at large.
(Either, in case of donation:)
4. That the Owner will not claim any compensation against the grant of this asset.
(Or, in case of compensation:)
5. That the Owner will receive compensation against the grant of this asset as per the attached Schedule.
6. That the Recipient agrees to accept this grant of asset for the purposes mentioned.
7. That the Recipient shall construct and develop the.....and take all possible precautions to avoid damage to adjacent land/structure/other assets.
8. That both the parties agree that the.....so constructed/developed shall be public premises.
9. That the provisions of this agreement will come into force from the date of signing of this deed.

Signature of the Owner Signature of the Recipient

Witnesses:

1. _____
2. _____



Schedule of Compensation of Asset Requisition

Summary of Affected Unit/Item	Units to be Compensated	Agreed Compensation
a. Urban/agricultural land (m2):	_____	_____
b. Houses/structures to be demolished (units/m2):	_____	_____
c. Type of structure to be demolished (e.g. mud, brick, cement block, etc.,)	_____	Not Applicable.
d. Trees or crops affected:	_____	_____
e. Water sources affected:	_____	_____

Signatures of local community representatives:
 Include record of any complaints raised by affected persons:
 Map attached (showing affected areas and replacement areas):



Attachment 4: Procedures for the Protection of Cultural Property including the Chance Discovery of Archaeological Artifacts, unrecorded Graveyards and Burial Sites

Chance finds procedures should be incorporated into the ESMP and civil works contracts. The following wording is proposed:

If the Contractor discovers archeological sites, historical sites, remains and objects, including graveyards and/or individual graves during excavation or construction, the Contractor shall:

- Stop the construction activities in the area of the chance find;
- Delineate the discovered site or area;
- Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities or the [Relevant Ministry] take over;
- Notify the supervisory Project Environmental Officer and Project Engineer who in turn will notify the responsible local authorities and the [Relevant Ministry] immediately (within 24 hours or less);

Responsible local authorities and the [Relevant Ministry] would then be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed by the archaeologists of the [Relevant Ministry]. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage, namely the aesthetic, historic, scientific or research, social and economic values.

Decisions on how to handle the finding shall be taken by the responsible authorities and the [Relevant Ministry]. This could include changes in the layout (such as when finding irremovable remains of cultural or archeological importance) conservation, preservation, restoration and salvage.

Implementation for the authority decision concerning the management of the finding shall be communicated in writing by relevant local authorities.

Construction work may resume only after permission is given from the responsible local authorities or the relevant Ministry concerning safeguard of the heritage.



Attachment 5: Codes of Practice for Prevention and Mitigation of Adverse Environmental and Social Impacts

The World Bank Group’s General Environmental Health and Safety (EHS) Guidelines include comprehensive treatment in the following areas: Environment, Air Emissions and Ambient Air Quality, Energy Conservation, Wastewater and Ambient Water Quality, Water Conservation, Hazardous Materials Management, Waste Management, Noise, Contaminated Land, Occupational Health and Safety, General Facility Design and Operation, Communication and Training, Physical Hazards, Chemical Hazards, Biological Hazards, Radiological Hazards, Personal Protective Equipment, Special Hazard Environments, Monitoring, Community Health and Safety, Water Quality and Availability, Structural Safety of Project Infrastructure, Life and Fire Safety, Traffic Safety, Transport of Hazardous Materials, Disease Prevention, Emergency Preparedness and Response, Construction and Decommissioning, Environment, Occupational Health & Safety, Community Health & Safety. These guidelines should be applied in order to ensure compliance with World Bank policies.

Table with 3 columns: Sector, Adverse Environmental and Social Impacts, and Mitigation Measures. It details impacts and mitigation for housing/public buildings and health care/waste.



<p>total waste stream from a healthcare establishment.</p>	<p>of transmitting infectious agents to humans (e.g., cultures and stocks; tissues; dressings, swabs or other items soaked with blood; syringe needles; scalpels; diapers; blood bags).</p> <ul style="list-style-type: none"> ·<i>Anatomic waste</i> consists of recognizable body parts. ·<i>Pharmaceutical:</i> Consisting of or containing pharmaceuticals, ·<i>Chemical waste</i> Consisting of or containing chemical substances. ·<i>Heavy Metals:</i> Consisting of materials and equipment with heavy metals and derivatives (e.g., batteries, thermometers). ·<i>Radioactive materials:</i> Include unused liquids from radiotherapy or laboratory research. 	<p>appropriate handling and disposal guidelines for all types of medical waste according to the WB/IFC Environmental Health Guidelines. Segregation of materials which are able to be reused or recycled to reduce the impact burden of this waste stream.</p>
<p>Sanitation Latrines</p>	<p>Water supply contaminations, including: Groundwater contamination due to seepage and contamination of surface waters due to flooding or over-flowing. Disease caused by poor handling practices of waste, including inadequate excreta disposal or inappropriate use of latrines.</p>	<p>Where pit latrines are used they should be located more than 10 meter from any water source. The base should be sealed and separated vertically by not less than 2m of sand or loamy soil from the ground water table.</p> <p>Where latrines or septic tanks are built they should be sealed. Outflows should drain either to an appropriate channel located at least 10 meter from any water source or be connected to a working drain.</p> <p>Septic tanks should not be constructed nor septic waste collected unless primary and secondary treatment and safe disposal is available.</p> <p>Due diligence to siting requirements for construction of Ventilated Improved Pit latrines to avoid contamination of wells and the water table.</p> <p>Waste should be handled using protective clothing to prevent any contamination of workers skin or clothes. Protective clothing and appropriate containers for waste</p>



		<p>transportation to be provided.</p> <p>Where waste is collected for agricultural use it should be stored for a sufficient period to destroy pathogens through composting. At the minimum it should be stored in direct sunlight and turned regularly for a period of at least 6 weeks.</p> <p>Health and hygiene capacity building program to be provided for all latrine users. Maintenance training to be delivered along with new latrines.</p>
Solid Waste generation across sectors	<p>Disease caused by inadequate collection and disposal, including health risks from: pests, burning of solid waste and industrial waste.</p> <p>Contamination of water supply.</p> <p>Lateral seepage into surface waters.</p> <p>Seepage of contaminants into aquifers.</p> <p>Contamination from clandestine dumping.</p>	<p>Solid waste management plan to include the following elements:</p> <p>Safe waste disposal awareness program.</p> <p>Sufficient frequency of collection from transfer stations.</p> <p>Containment of waste during collection and transfer.</p> <p>Promote separation at source to reduce spreading by waste-pickers during recycling.</p> <p>Minimize burning of plastics.</p> <p>Separate collection and disposal system for medical or hazardous waste.</p> <p>Assess requirement for additional investment in final disposal site.</p> <p>Site transfer stations should have sealed base and be located at least 15m away from water sources with the base separated vertically by not less than 2m of sand or loamy soil from the ground water table.</p> <p>Monitoring of disposal site to prevent illegal dumping.</p>
Construction works Repair,	<p>Displacement of communities.</p> <p>Loss of shelter, income and assets.</p> <p>Potential conflict over land use.</p>	<p>Preparation of an EA, EMP and RAP or ARAP, with the following elements considered:</p>



<p>rehabilitation and maintenance of priority roads and basic transport infrastructure, laying water pipes,...</p>	<p>Child labor. Health and HIV AIDs concerns with the influx of labor. Degradation and erosion of lands. Accumulation of sediments in streams, increase in runoff and flooding, disturbance of vegetation. Disruption of drainage.</p>	<p>Design to prevent soil erosion and maintain slope stability. Physical stabilization of erodible surfaces through turf establishment, planting a wide range of vegetation, and creating slope breaks.</p> <p>Construction in the dry season.</p> <p>Protection of soil surfaces during construction.</p> <p>Rehabilitation and re-grading of borrow pits and material collection sites.</p> <p>Minimize loss of natural vegetation during construction.</p> <p>Design to include accessibility to road sides in case roadbed is raised.</p> <p>Alternative alignments to avoid bisecting villages by road widening.</p> <p>Provision of fuel at work camps to prevent cutting of firewood.</p> <p>Provision of sanitation at work camps.</p> <p>Removal of work camp waste, proper disposal of oil, bitumen and other hazardous wastes.</p> <p>Management of construction period worker health and safety.</p>
<p>Water Supply Drilling new boreholes, construction of water ponds and repairing of boreholes Repair and rehabilitation of existing</p>	<p>Contamination by seepage from latrines, municipal waste or agricultural areas. Poor absorption, frequent runoff and contamination of water sources are among the major negative impacts that might arise from inappropriate siting and engineering design. Discharge of raw sewage to water bodies can adversely affect water</p>	<p>Preparation of an EA, EMP, RAP or ARAP, with the following measures considered:</p> <p>Test water supply on a regular basis to detect contamination and ensure the adequacy of water quality.</p> <p>Siting of boreholes and open water reservoirs decided through a screening and consultative process.</p> <p>Removal of debris by screening at the discharge</p>



<p>water schemes.</p>	<p>quality and aquatic life.</p> <p>Displacement of people from their homes and land, a reduction or loss of livelihood activities and incomes; interruption or inconvenience of services rendered</p> <p>High mineral concentrations.</p> <p>Creation of stagnant pools of water.</p> <p>Accident to human and livestock.</p> <p>Increase incidence of water borne disease.</p> <p>Impact on cultural and religious sensitive areas.</p> <p>Erosion</p>	<p>point or use of settlement ponds prior to discharge.</p> <p>Connection to an existing sewage facility should not be conducted without ensuring that the capacity of the existing system is adequate to accommodate the additional collected sewage.</p>
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Attachment 6: Sample Environmental Safeguards Procedures for inclusion in the technical specifications of contracts

I. General

1. The Contractor and his employees shall adhere to the mitigation measures set down and take all other measures required by the Engineer to prevent harm, and to minimize the impact of his operations on the environment.
2. The Contractor shall not be permitted to unnecessarily strip clear the right of way. The Contractor shall only clear the minimum width for construction and diversion roads should not be constructed alongside the existing road.
3. Remedial actions which cannot be effectively carried out during construction should be carried out on completion of each Section of the road (earthworks, pavement and drainage) and before issuance of the Taking Over Certificate:
 - these sections should be landscaped and any necessary remedial works should be undertaken without delay, including grassing and reforestation;
 - water courses should be cleared of debris and drains and culverts checked for clear flow paths; and
 - borrow pits should be dressed as fish ponds, or drained and made safe, as agreed with the land owner.
4. The Contractor shall limit construction works to between 6 am and 7 pm if it is to be carried out in or near residential areas.
5. The Contractor shall avoid the use of heavy or noisy equipment in specified areas at night, or in sensitive areas such as near a hospital.
6. To prevent dust pollution during dry periods, the Contractor shall carry out regular watering of earth and gravel haul roads and shall cover material haulage trucks with tarpaulins to prevent spillage.

II. Transport

7. The Contractor shall use selected routes to the project site, as agreed with the Engineer, and appropriately sized vehicles suitable to the class of road, and shall restrict loads to prevent damage to roads and bridges used for transportation purposes. The Contractor shall be held responsible for any damage caused to the roads and bridges due to the transportation of excessive loads, and shall be required to repair such damage to the approval of the Engineer.
8. The Contractor shall not use any vehicles, either on or off road with grossly excessive, exhaust or noise emissions. In any built up areas, noise mufflers shall be installed and maintained in good condition on all motorized equipment under the control of the Contractor.
9. Adequate traffic control measures shall be maintained by the Contractor throughout the duration of the Contract and such measures shall be subject to prior approval of the Engineer.



III. Workforce

10. The Contractor should whenever possible locally recruit the majority of the workforce, works contracts will include measures for managing the potential impacts of outside workforce on the local community, with GBV related causes, and shall provide appropriate training as necessary.
11. The Contractor should avoid the recruitment of children as employee.
12. The Contractor shall install and maintain a temporary septic tank system for any residential labour camp and without causing pollution of nearby watercourses.
13. The Contractor shall establish a method and system for storing and disposing of all solid wastes generated by the labour camp and/or base camp.
14. The Contractor shall not allow the use of fuel wood for cooking or heating in any labour camp or base camp and provide alternate facilities using other fuels.
15. The Contractor shall ensure that site offices, depots, asphalt plants and workshops are located in appropriate areas as approved by the Engineer and not within 500 meters of existing residential settlements and not within 1,000 meters for asphalt plants.
16. The Contractor shall ensure that site offices, depots and particularly storage areas for diesel fuel and bitumen and asphalt plants are not located within 500 meters of watercourses, and are operated so that no pollutants enter watercourses, either overland or through groundwater seepage, especially during periods of rain. This will require lubricants to be recycled and a ditch to be constructed around the area with an approved settling pond/oil trap at the outlet.
17. The contractor shall not use fuel wood as a means of heating during the processing or preparation of any materials forming part of the Works.
18. The Contractor and their employees shall ensure that no gender based violence occurred during the execution of their contract.

IV. Quarries and Borrow Pits

19. Operation of a new borrow area, on land, in a river, or in an existing area, shall be subject to prior approval of the Engineer, and the operation shall cease if so instructed by the Engineer. Borrow pits shall be prohibited where they might interfere with the natural or designed drainage patterns. River locations shall be prohibited if they might undermine or damage the river banks, or carry too much fine material downstream.
20. The Contractor shall ensure that all borrow pits used are left in a trim and tidy condition with stable side slopes, and are drained ensuring that no stagnant water bodies are created which could breed mosquitoes.
21. Rock or gravel taken from a river shall be far enough removed to limit the depth of material removed to one-tenth of the width of the river at any one location, and not to disrupt the river flow, or damage or undermine the river banks.



22. The location of crushing plants shall be subject to the approval of the Engineer, and not be close to environmentally sensitive areas or to existing residential settlements, and shall be operated with approved fitted dust control devices.

V. Earthworks

23. Earthworks shall be properly controlled, especially during the rainy season.

24. The Contractor shall maintain stable cut and fill slopes at all times and cause the least possible disturbance to areas outside the prescribed limits of the work.

25. The Contractor shall complete cut and fill operations to final cross-sections at any one location as soon as possible and preferably in one continuous operation to avoid partially completed earthworks, especially during the rainy season.

26. In order to protect any cut or fill slopes from erosion, in accordance with the drawings, cut off drains and toe-drains shall be provided at the top and bottom of slopes and be planted with grass or other plant cover. Cut off drains should be provided above high cuts to minimize water runoff and slope erosion.

27. Any excavated cut or unsuitable material shall be disposed of in designated tipping areas as agreed to by the Engineer.

28. Tips should not be located where they can cause future slides, interfere with agricultural land or any other properties, or cause soil from the dump to be washed into any watercourse. Drains may need to be dug within and around the tips, as directed by the Engineer.

VI. Historical and Archaeological Sites

29. If the Contractor discovers archaeological sites, historical sites, remains and objects, including graveyards and/or individual graves during excavation or construction, the Contractor shall:

- (a) Stop the construction activities in the area of the chance find.
- (b) Delineate the discovered site or area.
- (c) Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be present until the responsible local authorities and the Ministry of Culture take over.
- (d) Notify the supervisory Engineer who in turn will notify the responsible local authorities and the Ministry of Culture immediately (less than 24 hours).
- (e) Contact the responsible local authorities and the Ministry of Culture who would be in charge of protecting and preserving the site before deciding on the proper procedures to be carried out.
- (f) This would require a preliminary evaluation of the findings to be performed by the archaeologists of the Ministry of Culture (within 72 hours). The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage, including the aesthetic, historic, scientific or research, social and economic values.



- (g) Ensure that decisions on how to handle the finding be taken by the responsible authorities and the Ministry of Culture. This could include changes in the layout (such as when the finding is an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage.
- (h) Implementation for the authority decision concerning the management of the finding shall be communicated in writing by the Ministry of Culture; and
- (i) Construction work will resume only after authorization is given by the responsible local authorities and the Ministry of Culture concerning the safeguard of the heritage.

VII. Disposal of Construction and Vehicle Waste

30. Debris generated due to the dismantling of the existing structures shall be suitably reused, to the extent feasible, in the proposed construction (e.g. as fill materials for embankments). The disposal of remaining debris shall be carried out only at sites identified and approved by the project engineer. The contractor should ensure that these sites (a) are not located within designated forest areas; (b) do not impact natural drainage courses; and (c) do not impact endangered/rare flora. Under no circumstances shall the contractor dispose of any material in environmentally sensitive areas.

31. In the event any debris or silt from the sites is deposited on adjacent land, the Contractor shall immediately remove such, debris or silt and restore the affected area to its original state to the satisfaction of the Supervisor/Engineer.

32. Bentonite slurry or similar debris generated from pile driving or other construction activities shall be disposed of to avoid overflow into the surface water bodies or form mud puddles in the area.

33. All arrangements for transportation during construction including provision, maintenance, dismantling and clearing debris, where necessary, will be considered incidental to the work and should be planned and implemented by the contractor as approved and directed by the Engineer.

34. Vehicle/machinery and equipment operations, maintenance and refuelling shall be carried out to avoid spillage of fuels and lubricants and ground contamination. An oil interceptor will be provided for wash down and refuelling areas. Fuel storage shall be located in proper bounded areas.

35. All spills and collected petroleum products shall be disposed of in accordance with standard environmental procedures/guidelines. Fuel storage and refilling areas shall be located at least 300m from all cross drainage structures and important water bodies or as directed by the Engineer.