See Annex 5 | Economic and Financial Analyses

Document of
The World Bank

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Report No: 67174-CM

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 85.2 MILLION
(US$132 MILLION EQUIVALENT)

TO THE

REPUBLIC OF CAMEROON

FOR A

LOM PANGAR HYDROPOWER PROJECT

March 1, 2012

CURRENCY EQUIVALENTS

(Exchange Rate Effective February 20, 2012)

Currency Unit	=	CFA Franc
FCFA 495	=	US$1
SDR1	=	US$1.544430
Euro1	=	US$1.33

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AER	*Agence d'Electrification Rurale* (Rural Electrification Agency)
AES-SONEL	*AES - Société Nationale d'Electricité* (National Electricity Company)
AFD	French Development Agency
AfDB	African Development Bank
Alucam	*Compagnie camerounaise de l'aluminium* (Cameroon Aluminium Company)
AMSL	Above Mean Sea Level
ARMP	*Agence de Régulation des Marchés Publics* (Public Procurement Regulatory Agency)
ARSEL	*Agence de Régulation du Secteur d'Electricité* (Electricity Sector Regulatory Agency)
B/C	Benefit-Cost Ratio
BDEAC	*Banque de Développement des Etats d'Afrique Centrale* (Central African States Development Bank)
BEAC	*Banque des Etats de l'Afrique Centrale* (Bank of Central African States Central)
BP	Bank Procedures
CAA	*Caisse Autonome d'Amortissement* (Autonomous Sinking Fund)
CAS	Country Assistance Strategy
CCP	Chad-Cameroon Pipeline
CdP	*Comité de pilotage* (Steering Committee)
COPIL	*Comité de pilotage et de suivi du projet de renforcement et d'extension des réseaux électriques de transport et de distribution* (Steering Committee for the Project to Reinforce and Extend Electricity Transmission and Distribution Networks)
COTCO	Cameroon Oil Transportion Company
CPIA	Country Performance Indicators Assessment
CQS	Selection Based on Consultants' Qualifications
CSO	Civil Society Organizations
CWE	China International Water & Electric Corporation
DDNP	Deng Deng National Park
EA	Environmental Assessment
EDC	Electricity Development Corporation
EIA	Environmental Impact Assessment

EIB	European Investment Bank
EIRR	Economic Internal Rate of Return
EOI	Expressions of Interest
EPC	Engineer, Procure and Construct
EPCM	Engineering, Procurement, Construction, and Construction Management
EPP	Emergency Preparedness Plan
ESA	Environmental and Social Assessment
ESDP	Energy Sector Development Project
ESMAP	Energy Sector Management Program
ESMP	Environmental and Social Management Plan
FCFA	Central African Franc
FEICOM	*Fond Spécial d'Equipement et d'Intervention Intercommunale* (Special Fund for Equipment and Mutual Assistance)
FM	Financial Management
FSC	Forest Stewardship Council
FSL	Full Supply Level
GDP	Gross Domestic Product
GIS	Geographic Information System
GOC	Government of Cameroon
GW	Giga watt
GWh	Giga watt hour
HDI	Human Development Index
HFO	Heavy Fuel Oil
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome
HT/MT	High-tension/Medium-tension
HV	High-voltage
IBRD	International Bank for Reconstruction and Development
ICB	International competitive bidding
IDA	International Development Association
IFC	International Finance Corporation
IFR	Interim Financial Reports
IMF	International Monetary Fund
IPP	Independent Power Producer
IRR	Internal economic rate of return
ISA	International Standards on Auditing
ISP	Implementation Support Plan
IUCN	International Union for the Conservation of Nature
km	Kilometer(s)
KPDC	Kribi Power Development Company
kV	Kilovolt
kW	Kilowatt
LCS	Least-Cost Selection
LDP	Local Development Program
LIB	Limited International Bidding
LPHP	Lom Pangar Hydropower Project
LV/MV	Low-voltage/medium-voltage

M&E	Monitoring and Evaluation
MINAC	Ministry of Art and Culture
MINADER	Ministry of Agriculture and Rural Development
MINATD	Ministry of Territorial Administration and Decentralization
MINCAF	Ministry of Property Survey and Land Tenure
MINDEF	Ministry of Defence
MINEE	Ministry of Water Resources and Energy
MINEPAT	Ministry of Economy, Planning and Regional Development
MINEPDED	Ministry of Environment, Nature Protection, and Sustainable Development
MINEPIA	Ministry of Livestock, Fisheries and Animal Industries
MINFI	Ministry of Finance
MINFOF	Ministry of Forestry and Wildlife
MINIMIDT	Ministry of Industry, Mines and Technological Development
MINSANTE	Ministry of Health
MINTP	Ministry of Public Works
MoU	Memorandum of Understanding
MTEF	Medium Term Expenditure Framework
MV	Megavolt
MW	Megawatt
NCB	National-Competitive Bidding
NGO	Non-Governmental Organization
NPV	Net Present Value
NT2	Nam Theun 2
O&M	Operation and Maintenance
OECD	Organisation for Economic Cooperation and Development
OHADA	*Organisation pour l'Harmonisation en Afrique du Droit des Affaires* (Organization for the Harmonisation of Business Law in Africa)
OLB	*Origine Légale Bois*
OP	Operational Policy
OPEX	Operational Expenditure
ORAF	Overall Risk Assessment Framework
PANERP	National Energy Plan for Poverty Reduction
PAPs	Project-Affected People
PDO	Project Development Objective
PDSE	*Plan du Développement du Secteur d'Electricité* (Energy Sector Development Plan)
PIM	Project Implementation Manual
PIU	Project Implementation Unit
PMP	Pest Management Plan
PNDP	Community Development Program Support Project
PPA	Power Purchase Agreement
PPIAF	Public Private Infrastructure Advisory Facility
PRECESSE	Environmental and Social Capacity Building Project for the Energy Sector
PREETDN	Project to Reinforce and Extend Electricity Transmission and Distribution Networks
PRG	Partial Risk Guarantee

PRSP	Poverty Reduction Strategy Paper
QBS	Quality-Based Selection
QCBS	Quality-and Cost-Based Selection
RAF	Resettlement Action Framework
RAP	Resettlement Action Plan
REA	Regional Environmental Assessment
REF	Rural Energy Fund
RFA	*Redevance Forestière Annuelle* (Annual Forestry Fee)
ROW	Right of Way
RTA	Rio Tinto Alcan
SA	Special Account
SBD	Standard Bidding Documents
SDR	Special Drawing Rights
SFB	Selection under a Fixed Budget
SIL	Specific Investment Loan
SNH	National Hydrocarbons Company
SONARA	*Société Nationale de Raffinerie* (National Refinery Company)
SPV	Special Purpose Vehicle
SSA	Sub-Saharan Africa
STI	Sexually Transmissible Infections
TA	Technical Assistance
ToRs	Terms of Reference
TPDS	Technical Panel on Dam Safety
TTL	Task Team Leader
UFA	*Unité Forestière Administrative* (Forestry Management Unit)
UNDB	United Nations Development Business Online
UTO	*Unité Technique Opérationnelle* (Operational Technical Unit)
WBG	World Bank Group
WCS	Wildlife Conservation Society

Vice President:	Obiageli K. Ezekwesili
Country Director:	Gregor Binkert
Sector Director:	Jamal Saghir
Sector Manager:	Lucio Monari
Task Team Leader:	Meike van Ginneken

CAMEROON
Lom Pangar Hydropower Project

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Cameroon
Lom Pangar Hydropower Project

PROJECT APPRAISAL DOCUMENT

Africa Region
Sustainable Development Department
Africa Energy Unit (AFTEG)

Basic Information			
Date:	March 1, 2012	Sectors:	Power (100%)
Country Director:	Gregor Binkert	Themes:	Infrastructure services for private sector development (67%); Rural services and infrastructure (33%)
Sector Manager/Director:	Lucio Monari / Jamal Saghir		
Project ID:	P114077	EA Category:	A - Full Assessment
Lending Instrument:	Specific Investment Loan		
Team Leader(s):	Meike van Ginneken		

Borrower: Republic of Cameroon

Responsible Agency: Electricity Development Corporation (EDC)

Contact: Dr. Théodore NSANGOU, Director General
Telephone No.: +(237) 22 23 19 30 / 22 23 10 89
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Email: info@edc-cameroon.org

Project Implementation Period	Start Date: March 27, 2012	End Date: June 30, 2018
Expected Effectiveness Date:	June 2012	
Expected Closing Date:	December 31, 2018	

Project Financing Data(US$M)		
[ ] Loan	[ ] Grant	[ ] Other
[X] Credit	[ ] Guarantee	Credit term: Standard IDA terms with 40 years maturity

For Loans/Credits/Others			
Total Project Cost :	494.00	Total Bank Financing :	132.00
Total Cofinancing :	362.00	Financing Gap :	0

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Financing Source	Amount(US$M)
BORROWER/RECIPIENT	98.00
BORROWER/RECIPIENT Pre-financing (associated infrastructure)	101.00
IDA: New	115.75
IDA: Recommitted	16.25
Others	
- African Development Bank	29.00
- European Investment Bank	40.00
- French Agency for Development	79.00
- Central African States Development Bank	15.00
Financing Gap	0
Total	494.00

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Expected Disbursements (in USD Million)

Fiscal Year	2012	2013	2014	2015	2016	2017	2018	2019
Annual	1	6	25	25	25	25	20	5
Cumulative	1	7	32	57	82	107	127	132

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Project Development Objective(s)

The project development objective of the proposed Lom Pangar Hydropower Project is to increase hydropower generation capacity and reduce seasonal variability of water flow in the Sanaga River and to increase access to electricity.

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Components

Component Name	Cost (USD Millions)
Component 1: Lom Pangar Regulating Dam	US$216 million
Component 2: Lom Pangar Power Plant and Transmission Line	US$62 million
Component 3: Environmental and Social Measures	US$73 million
Component 4: Technical Assistance and Project Management	US$42million

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Compliance		
Policy		
Does the project depart from the CAS in content or in other significant respects?	Yes [ ]	No [X]
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Does the project require any waivers of Bank policies?	Yes [ ]	No [X]
Have these been approved by Bank management?	Yes [ ]	No [ ]
Is approval for any policy waiver sought from the Board?	Yes [ ]	No [X]
Does the project meet the Regional criteria for readiness for implementation?	Yes [ ]	No [X]
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Safeguard Policies Triggered by the Project	**Yes**	**No**
Environmental Assessment OP/BP 4.01	X	
Natural Habitats OP/BP 4.04	X	
Forests OP/BP 4.36	X	
Pest Management OP 4.09	X	
Physical Cultural Resources OP/BP 4.11	X	
Indigenous Peoples OP/BP 4.10		X
Involuntary Resettlement OP/BP 4.12	X	
Safety of Dams OP/BP 4.37	X	
Projects on International Waterways OP/BP 7.50		X
Projects in Disputed Areas OP/BP 7.60		X
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Legal Covenants

Name	**Recurrent**	**Due Date**	**Frequency**
The Subsidiary Agreement has been executed on behalf of the Recipient and the Project Implementing Entity.	no	By effectiveness	NA
Each of the CCP EPC Contract and CCP Project Management Agreement has been executed and delivered by the parties thereto, as certified by MINFI.	no	By effectiveness	NA
The Project Implementing Entity shall have adopted the Project Implementation Manual (other than the LDP Operations Manual), in form and substance satisfactory to the Association.	no	By effectiveness	NA
The Project Implementing Entity shall have revised the terms of reference of its (i) financial management specialist; and (ii) procurement specialist; each for the purposes of the Project, all in form and substance	no	By effectiveness	NA

satisfactory to the Association.			
The Recipient shall have adopted the Water Tariffs Legislation, in form and substance acceptable to the Association, which establishes a water tariffs regime applicable to hydropower operators in the Recipient's Sanaga River basin and ensures the sustainable financing of, *inter alia*, recurrent costs of the Deng Deng National Park (provided that this condition shall be deemed met if the Recipient establishes to the satisfaction of the Association that such sustainable financing has been secured (and will be available) from other sources on terms and conditions acceptable to the Association).	no	By effectiveness	NA
The Association is satisfied that the Recipient is in material compliance with the applicable Safeguard Documents.	no	By effectiveness	NA
Co-financing Deadline for the effectiveness of the Co-financing Agreements.	no	September 30, 2012	NA
The Recipient shall cause the Project Implementing Entity to maintain the Dam Safety Panel comprised of experts having qualifications and experience acceptable to the Association, to advise on associated dam safety risks.	no	Until the Association is satisfied that the construction of the Dam has been completed and duly commissioned	NA
The Recipient shall cause the Project Implementing Entity to maintain, throughout the implementation of the Project, an independent environmental and social experts panel comprised of experts having qualifications and experience acceptable to the Association to provide advice and recommendations on all environmental and social aspects of the Project.	no	Throughout the implementation of the Project	NA
The Recipient shall cause the Project Implementing Entity to appoint in accordance with Section III of this Schedule 2 to the Agreement, and thereafter maintain throughout the implementation of the Project, the Independent Technical Auditor to carry out independent environmental and social safeguards audits under terms of reference acceptable to the Association and in accordance with the Project Implementation Manual.	no	No later than four (4) months after the Effective Date	NA
Adopt the LDP Operations Manual (which shall then form part of the Project Implementation Manual) and thereafter carry out the Project in accordance therewith.	no	No later than one (1) year after the date of the LDP Management	NA

		Contract & Disbursement Condition for Category (3)	
To facilitate the carrying out of Part C.3 (ii) of the Project, the Recipient shall cause the Project Implementing Entity to enter into the LDP Management Contract in accordance with the provisions of Section III of this Schedule with the LDP Management Contractor having terms of reference, qualifications and experience satisfactory to the Association.	no	No later than thirty (30) months after the Effective Date & Disbursement Condition for Category (3)	NA
The Recipient shall (i) maintain the Counterpart Account throughout the implementation of the Project, and (ii) deposit from time to time its counterpart contribution to the cost of the Project therein.	no	Throughout the implementation of the Project	NA
The Recipient shall cause the Project Implementing Entity to appoint an external auditor in accordance with the provisions of Section III of this Schedule 2 to this Agreement.	no	No later than four (4) months after the Effective Date	NA
The Recipient shall (or shall cause the Project Implementing Entity to) furnish the final draft of the Emergency Preparedness Plan to the Association and the Dam Safety Panel for review.	no	By June 30, 2013 (or such other date mutually agreed in writing between the Association and the Recipient), and in any event, at least one (1) year before the projected date of initial filling of the Dam's reservoir	NA
The Recipient shall (or shall cause the Project Implementing Entity to) adopt the Dam O&M Plan, in form and substance acceptable to the Association and the Dam Safety Panel.	no	By December 31, 2013 (or such other date mutually agreed in writing between the Association and the Recipient), and in any event, at least six (6) months before the projected date of initial filling of the Dam's reservoir	NA
The Recipient shall (or shall cause the Project Implementing Entity to) maintain the Dam Owner's Engineer, with terms of reference acceptable to the Association.	no	Until the Association is satisfied that the construction of the Dam has been completed and duly	NA

		commissioned	
The Recipient shall (or shall cause the Project Implementing Entity to) ensure that (a) the Association is satisfied that the Project is substantially compliant with safeguard measures set out in the Dam Safety Plans, the Dam RAP and the ESMP (insofar as such relates to the Dam's reservoir), including with respect to resettlement, mining, salvage logging, protection of physical cultural resources, CCP Adaptation Activities, and the construction of the Dam; and (b) it provides the Association with a reasonable opportunity to assess and exchange views with the Recipient (or the Project Implementing Entity, as the case may be) on the Project's compliance with such measures.	no	Before the initial filling of the Dam's reservoir	NA
The Recipient shall (or shall cause the Project Implementing Entity to) establish an operational regime of hydrological infrastructures on the Recipient's Sanaga River, in a consultative manner with relevant water users and taking into account equitable sharing of resources between such users and environmental flows, all in form and substance acceptable to the Association.	no	Before the initial filling of the Dam's reservoir	NA
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CAMEROON
Lom Pangar Hydropower Project

PROJECT APPRAISAL DOCUMENT

I. STRATEGIC CONTEXT

1. Sub-Saharan Africa (SSA) faces a desperate lack of electric power supply. Only one in three Africans has access to power, and most African nations will fail to reach the recently announced United Nations 2030 universal electricity access goal. The combined generation capacity of SSA - with a population of 800 million - is only 68 GW, no more than that of Spain with only 40 million people. Excluding South Africa, SSA's power consumption is about one percent of the Organisation for Economic Cooperation and Development (OECD) levels, which is enough to power one light bulb per person for three hours each day. Average power costs, at US$0.18/kWh, are approximately double those found in the rest of the developing world. Turning this situation around will require SSA to expand generation capacity by about 7,000 MW per year, in stark contrast to the 1,000 MW that has been developed annually over the last decade.

2. Hydropower is a clean, large-scale, and affordable source of renewable energy that has the potential to play a major role in addressing the African continent's power supply crisis. At present, 24 percent of SSA's power needs are met by hydropower, with the potential to increase this share to 40 percent over the coming years. SSA has identified some 50GW of hydropower for immediate development, where costs vary between US$0.01-0.08/kWh depending on the site. This makes hydropower the lowest cost, largest scale renewable energy resource currently available to the region - with potential for transformative, growth-inducing developmental impacts. Hydropower is a valuable complement to other forms of renewable energy as it provides a base load and can store surplus generation during off-peak periods. Simultaneously, hydropower contributes to climate change mitigation (by reducing carbon emissions compared to thermal generation) and adaptation (by providing storage capacity).

3. Cameroon has the third largest hydropower development potential in Sub-Saharan Africa, estimated at over 12,000 MW, with the Sanaga River basin providing nearly half of the untapped potential. However, the total installed electricity generation capacity from all sources in Cameroon is currently only 933 MW, 77 percent of which is hydro capacity and the remainder relatively costly and polluting thermal capacity (e.g. diesel and heavy fuel oil).

4. Cameroon is a classic example of an African country whose economy has been held back by an infrastructure deficit. Governance challenges have also impeded economic growth necessary to reduce poverty in a sustainable manner. An unfriendly business climate has further undermined Cameroon's competitiveness, and corruption is prevalent at all levels of society. Significant underinvestment in infrastructure has further eroded Cameroon's competitiveness and growth prospects. Indeed, in a recent survey, two-thirds of manufacturing firms have cited electricity deficiencies as a constraint on business. Estimates suggest that addressing Cameroon's power deficiencies could boost annual per capita economic growth by as much as 1.3 percentage points.

5. An important step in developing Cameroon's largely unexploited hydropower potential is the construction of a regulating dam at the Lom Pangar site in the Sanaga river basin. The regulating dam will increase the guaranteed all-season hydropower capacity on the Sanaga River by approximately 40 percent. This will immediately translate into the addition of 120MW at existing downstream hydropower plants as they will also generate electricity in the dry season. In the medium-term, the Lom Pangar dam will allow for further downstream development of large-scale hydropower plants by ensuring firm all-season water flows. In this respect, the project is a typical public good. In addition, the Lom Pangar Hydropower Project (LPHP) powerhouse will generate 30MW of electricity and will provide first time electricity services to over 2,400 rural households and improve reliability of supply to about 22,000 households in the Eastern Grid.

6. Experience shows that when industry serves as an anchor power customer, the development of hydropower plants can take place relatively quickly. With Cameroon's domestic electricity demand growing at about five percent per year, it would take years for the country to absorb additional capacity generated by the development of just one of the hydropower sites on the Sanaga River without offtake by a reliable, industrial anchor customer. The Government of Cameroon (GOC) has therefore designated some hydroelectric sites in the Sanaga basin for development by Rio Tinto Alcan (RTA)[1] due to its capacity to mobilize capital. At the same time, measures have been taken to balance and respond to competing demands for energy from all consumer groups as Cameroon's electricity demand grows. For this reason, the 2011 Electricity Law stipulates that downstream hydropower sites must be optimized and includes provisions for auto-producers to supply electricity to the national grid. RTA has committed that it will make available approximately 600 MW of firm power capacity to the public grid by 2030.

7. The LPHP is economically viable under various downstream development scenarios. The economic returns associated with these downstream investments will depend on the allocation of electricity to industry and the grid for the public utility. In the long-term, availability of power for export will depend on the development of future domestic demand, especially that of large industrial users. Regional power trade would also be contingent on the eventual development of a Central Africa Power Pool, as well as a major expansion in transmission networks and interconnections.

8. The project's economic and financial analysis shows that the highest development impact of further hydropower generation in the Sanaga basin is obtained by industrial users making lumpy investments in hydropower and selling part of the electricity they produce into the public grid for other users at a cost-reflective price. The obligations of auto-producers to provide part of the electricity produced into the public grid, combined with the requirement for these auto-producers to competitively tender works, provides a solid basis to ensure that hydropower generation by auto-producers will ensure additional firm low-cost electricity for consumers. At the same time, a water tariff will ensure that all hydropower producers pay for the investment and operation costs of the LPHP.

9. The potential hydropower sites downstream of Lom Pangar are among the most attractive power assets in Cameroon, with production costs estimated in the US$0.04-0.05/kWh range (compared to the alternative of US$0.08-0.09/kWh for natural gas and US$0.28/kWh for fuel oil

[1] For relationship between Rio Tinto Alcan and Alucam see Box 1.

plants). Lower electricity generation costs - and resulting lower electricity tariffs - will spur economic growth in a number of ways. First, it will facilitate affordable household electrification in Cameroon, consistent with the United Nation's target of universal electrification by 2030. Taking into account the water tariffs, average generation cost in Cameroon would decrease by 11.4% due to the Lom Pangar regulating dam over the next ten years and consumer tariffs would decrease by 4.1%. Second, it will stimulate development of value-added activities in Cameroon's broader economy. Some of the most promising economic activities include the processing of timber into wood products, development of agribusinesses, and the service industry especially in urban areas. Third, hydropower development will make possible a tripling of the scale of Cameroon's aluminum industry with an estimated Gross Domestic Product (GDP) impact of 4 percent over the period 2015-2020 and 7-8 percent over the period 2020-2030 as well as the creation of 20,000-35,000 jobs over the next decade.

10. The LPHP is a unique opportunity to unlock Cameroon's hydropower potential, decrease power costs, and attract new investors. Given the governance and capacity context of Cameroon, however, developing the Sanaga River's hydropower potential in a sustainable and equitable manner will likely pose challenges. Cameroon's track record with public finance reforms has been disappointing. Nevertheless, the relatively advanced and stable state of the electricity sector and the cost-reflective tariffs found in the renegotiated Power Purchase Agreement (PPA) with the aluminum industry provide a strong basis for IDA support to the LPHP. This Project Appraisal Document presents a comprehensive risk mitigation approach to this transformative, high-risk, high-return project. The analysis includes managing environmental and social risks through a tightly-supervised implementation framework. At the same time, a broad partnership of donors supports the GOC with a shared commitment to ensuring that the Sanaga River's hydropower resources benefit all Cameroonians. This partnership is anchored in the GOC's commitment to maintaining sound electricity sector management and an agreement to ensure an economically and socially acceptable mechanism of power allocation between large-scale consumers - industry - and the public.

A. Country Context

11. Cameroon is a resource rich country in Central Africa with a population of nearly 19.5 million and a land area of 475,650 square kilometers. With an average density of 41 inhabitants per square kilometer, Cameroon is sparsely populated and has important differences among its regions. Cameroon is urbanizing, with half of the population living in cities. Cameroon's per capita income in 2010 was US$678 (at 2000 prices) - slightly below the Sub-Saharan African average. About 40 percent of the country's population lives below the poverty threshold of about US$1.25 per day. Cameroon lags behind other countries in Africa on many social indicators. After a period of solid progress from the 1960s until 1992, life expectancy dropped from 55 years in 1992 to 46 years in 2004, rising to 51 years in 2009. Ranked 150 out of 187 countries tracked in the Human Development Index (HDI) in 2011, Cameroon is one of a group of countries whose HDI scores have deteriorated in the past two decades. The country is not on track for meeting the Millennium Development Goals.

12. Cameroon has vast natural wealth including oil, natural gas, minerals and forest resources. The country produces about 24.5 million barrels of crude oil per year, although production is declining. Extractive industries account for about 7 percent of Cameroon's GDP.

The contribution of the sector to GDP growth has been negative in recent years due to depleted oil reserves, aging equipment, and postponed development and investment projects. As oil production has declined, Cameroon has accelerated the development of its gas reserves, which are estimated at 157 billion cubic meters, with a potential of up to 570 billion cubic meters. The country also has significant undeveloped mineral reserves, including bauxite, cobalt, gold, iron, nickel, platinum, and uranium. Further, Cameroon has major forestry reserves. The total area classified as permanent forest is 8.72 million hectares or 19 percent of the country's land area.

13. Cameroon's economic growth was 2.7 percent on average over 2005-2009, reaching 3.2 percent in 2010. The economic outlook for 2011 is stable with non-oil growth projected at 4.4 percent and overall GDP growth estimated at 4.1 percent (due to a negative oil growth of 0.5 percent).

14. Cameroon has shown relatively strong macroeconomic performance in the past few years compared to neighboring countries. Under a Poverty Reduction and Growth Facility with the International Monetary Fund (IMF) which was completed in 2009, Cameroon used windfall oil revenues to accelerate domestic debt payments, strengthen tax and customs revenue administration, raise investment, and normalize relations with creditors. Debt relief under the Heavily Indebted Poor Countries Initiative and the Multilateral Debt Relief Initiative helped firm up debt sustainability and together with the rise in international oil prices allowed the authorities to accumulate some deposits at the regional central bank (Banque des Etats de l'Afrique Centrale - BEAC). Average annual inflation was contained at 1.3 percent in 2010, compared with 3 percent in 2009. The Government of Cameroon (GOC) issued its first sovereign bonds at the end of 2010, raising a total amount of FCFA 200 billion (US$420 million equivalent or 1.8 percent of GDP). Against this background, the overall fiscal deficit on a cash basis, even after the clearance of outstanding government obligations, increased to 2.3 percent of GDP in 2010 due to lower oil revenue and higher capital expenditures. The GOC has accumulated unsettled payment obligations reaching 2.4 percent of GDP, as well as obligations to the National Refinery Company (SONARA) amounting to 1.2 percent of GDP. The 2011 budget targets an overall fiscal deficit of 2.6 percent of GDP and elaborates a national debt management strategy capping borrowing for 2011 and ensuring sustainability of public debt.

15. Fuel subsidies pose a large and increasing budgetary burden. However, given the political sensitivity of increasing fuel prices (with municipal/legislative elections scheduled for summer 2012 and widespread protests in neighboring Nigeria after fuel price increases), the Government has only just begun discussions with the unions on possible gradual price adjustments or differentiated price adjustments leaving kerosene subsidized because the fuel is mainly used by the poor. Meanwhile, modernization of the national refinery is ongoing and should lead to lower refining costs and, in turn, lower fuel subsidies.

16. Despite strong macroeconomic performance and considerable natural resources, Cameroon's economic growth has remained disappointing for the past decade. The country's governance deficit constitutes a major obstacle in achieving this, as evidenced in weak public expenditure management and a highly centralized state machinery that has few downward linkages to those most in need. A poor business climate undermines Cameroon's competitiveness and growth prospects, as does significant underinvestment in critical infrastructure that could improve service delivery and broaden economic growth both at national and regional levels.

17. Evidence shows Cameroon's weak track record with respect to stimulating growth. Despite the country's tremendous natural, human, and financial resources, economic performance remains decidedly modest. Statistics also show that what little growth is generated is not being distributed in an equitable, pro-poor manner. At least one explanation for this is governance, which continues to pose a major challenge to Cameroon's development potential. Kaufmann-Kraay Governance indicators show that Cameroon ranks under the 25th percentile for all criteria, with control of corruption at the 19th percentile, government effectiveness at the 20th percentile, and voice and accountability at the 19th percentile. Cameroon's CPIA index for 2010 is at 3.2 which is the borderline of ratings for fragile states. Its sub-ratings on "transparency, accountability, and corruption in the public sector" and "property rights and rule-based governance" both stand at 2.5. Starting a business in Cameroon is a daunting task (Cameroon ranks 171st out of 183 countries in the Doing Business Index), and enforcing a contract requires 43 steps and 800 days.

18. Cameroon's reputation for governance is grounded in a severe breakdown of public accountability. Checks against fraud and corruption are weak, and a lack of information makes it difficult for citizens and civil society to hold elected officials and the executive branch of government accountable. Accountability of service providers to elected officials or to their customers is also flawed. Little information is made public on development performance indicators. The public is not consulted before enactment of legislation or given a role in the oversight of public expenditures. Though Cameroon has a relatively sound legal system, there is a disconnect between laws and their implementation and enforcement.

19. Deficiencies in public financial management contribute to the inefficient use of resources available to finance public investment and service delivery. Recent analysis suggests that progress has been made in budget preparation, but problems remain with regards to budget execution and controls. With respect to the capital budget, for instance, a new procurement code has brought some improvement and a regulatory agency for procurement is now fully operational. However, limited internal controls, weak accounting and reporting, and an absence of adequate external audit, hinders transparency and accountability. Funds are also often released late in the fiscal year, resulting in excessive use of ad hoc regulations and exceptional procedures. Intergovernmental transfers lack transparency and local governments often have inadequate financial resources to meet their spending responsibilities. The IDA-financed Transparency and Accountability Capacity Development Project support the GOC to enhance transparency and efficiency in public financial management and to strengthen accountability in the use of public resource. In parallel, Bank-executed technical assistance financed by the Governance Partnership facility supports diagnosis and analysis on governance as it directly relates to IDA-financed projects to foster discussion and foster behavior change.

20. Lack of comprehensiveness and transparency of the budget (with significant expenditures off budget), large gaps between anticipated and actual revenue collections, and weak control over payrolls play a role in reducing the funds available for service delivery and public investment. External scrutiny is weak with the Chamber of Accounts and the National Assembly having limited access to relevant financial and budget information and no capacity to undertake their constitutional audit and oversight roles. Audit reports are not publicly available and little information is made public on development performance indicators.

21. Cameroon ranks 161st out of 183 countries in the World Bank Group Doing Business Index (2011) and governance challenges are an important deterrent for increased investment. Despite this challenging environment, Cameroon has attracted private sector participation across a broad range of infrastructure sectors, including energy, water, and railways.

22. Deficient power supply and reliability have long been an important impediment to economic growth. According to the World Bank's 2007 Investment Climate Assessment, two thirds of manufacturing firms cite power deficiencies as a constraint to doing business, leading to losses as high as five percent of production value on average. Many private companies maintain their own back-up power generation capacity. In fact, a remarkable one third of the country's installed generation capacity met by is high-cost, high-polluting private back-up generation. The cost of running this back-up generation stands at US$0.46/kWh – or more than twice the cost of grid electricity. Estimates suggest that addressing Cameroon's power deficiencies could boost annual per capita economic growth by as much as 1.3 percentage points.

23. In its development strategy, *Vision 2035,* the GOC aims to transform the country into an industrial economy. In implementing *Vision 2035,* the GOC intends to (i) achieve non-oil growth of 8 percent per year, (ii) reduce poverty to less than 10 percent, (iii) become a middle-income country, (iv) become an industrialized nation, and (v) improve governance. The associated *Strategy for Growth and Employment 2010-2019* aims to increase non-oil growth by investing in key infrastructure, improving productivity and the business climate, and strengthening human development and regional integration.

B. Sectoral and Institutional Context

24. The proposed LPHP is multi-sectoral in nature. Accordingly, this section provides the contextual background for both the power and natural resources management sectors.

B1. Power Sector

Supply-Demand Balance

25. Cameroon's current electricity demand exceeds supply, thereby putting a brake on the economy and deterring growth. AES-SONEL, the private electricity concessionaire, has installed generation capacity of 933 MW. This is insufficient to meet current demand and leaves an estimated shortfall of 50-100 MW. In 2010, electricity sold by AES-SONEL amounted to 3,580 GWh. Approximately 70 percent of produced power was supplied to the general public and the remaining 30 percent to industrial high-voltage (HV) customers, mainly Alucam. Domestic customer demand is growing at 5-6 percent annually. Industrial demand will also increase due to future mining development projects as well as plans to significantly expand Alucam's aluminum smelter capacity. Cameroon's power system consists of three isolated grids, which negatively impacts system robustness.

26. The rural electrification rate in Cameroon is a mere 14 percent, and the high electricity costs make power unaffordable for many households. At existing tariff rates, a monthly lifeline electricity bill represents 8 percent of average household income, and as much as 12-18 percent of household income for the poorest 40 percent of the population. Measures to reduce the cost of power – such as the LPHP – are thus a critical prerequisite for accelerating progress on

affordable electrification and the access agenda. The IDA-financed Energy Sector Development Project (ESDP) supports the GOC in its work to increase rural electrification rates. Other donors, including the African Development Bank, also finance rural electrification projects/activities. These rural electrification projects are complementary to donor financing for increasing production capacity, such as the LPHP.

27. Against this background, the GOC's *Strategy for Growth and Employment 2010-2019* targets a total installed generation capacity of 3,000 MW by 2020, which requires a tripling of existing capacity over the next decade.

28. Hydro capacity represents 77 percent of the total installed electricity generation and the remainder is relatively costly and polluting thermal capacity (e.g., diesel and heavy fuel oil). Three large hydropower sites – Song Loulou (384 MW), Edéa (265 MW), and Lagdo (72 MW) – together account for close to 90 percent of hydropower generation. Due to lower water flows during the dry season, however, thermal back-up capacity is needed. The 88 MW Dibamba Heavy Fuel Oil (HFO) project came online in 2009. In addition, in the 2011 election year, the GOC has added emergency generation capacity of 40 MW through three diesel-fired thermal power plants in Bamenda, Ebolowa, and Mbalmayo operated by EDC, and has rented 60 MW of generation capacity in the Yaoundé area for one year. Going forward, the 216 MW Kribi Gas Power Project is expected to start producing power in the first half of 2013. The 200 MW Memve'ele hydropower project on the Ntem River in southeast Cameroon is currently under construction. The US$260 million project is partially funded by China Export-Import Bank and completion is expected in 2015.

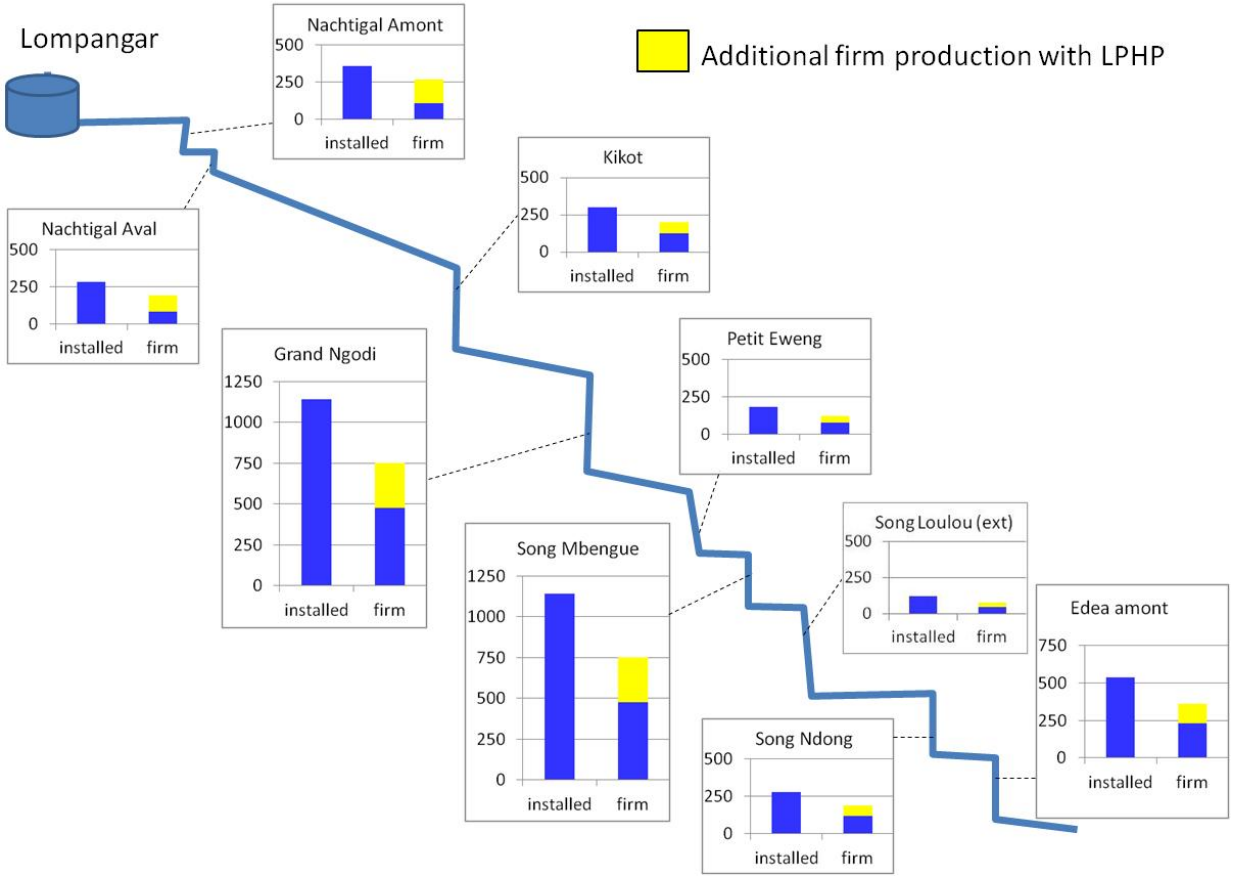
29. Hydropower has a vast unexploited potential and represents Cameroon's cleanest and most cost-effective source of energy in the medium term. The marginal costs for hydropower development are US$0.04-0.05/ kWh. While Cameroon's significant natural gas reserves would allow for additional gas-fired capacity to be developed, the associated costs of US$0.08-0.09 per kWh is high compared to hydropower. fuel oil plants, currently in use as part of back-up capacity, produce electricity at the much higher cost of US$0.280 per kWh, and have the added disadvantage of producing greenhouse gases/carbon emissions.

30. The total hydropower potential of the Sanaga River is estimated at up to 6,000 MW. The total capacity of large hydropower sites is estimated at 4,200 MW, with the remaining 1,800 MW being smaller (mainly upstream) sites which are not suitable for industrial-scale hydropower development. The Sanaga River is currently regulated by three regulating dams - at Mapé, Bamendjin, and Mbakaou. However, regulation capacity is limited, and the firm (all-season) capacity of the potential hydropower sites suitable for industrial-scale generation is therefore still considerably lower than installed capacity.

31. Based on preliminary assessments, the Lom Pangar regulating dam increases the potential to generate reliable all-season, industrial-scale hydropower generation from approximately 1750 MW to just over 3,000 MW (see Figure 1), a 40 percent increase in all-season firm generation capacity. No feasibility studies have been done regarding potential downstream sites, which adds significant uncertainty about the timing and scale of these investments. The construction of other regulating dams in the basin could further increase the all-season hydropower production at these sites. As most of the hydropower sites presented in Figure 1 cannot operate year round without

Lom Pangar, the cost of electricity generation would simply be too high to attract interest from developers. In the medium term, the LPHP therefore unlocks the hydropower potential of the Sanaga River basin.

Figure 1: Potential Future Hydropower Sites along the Middle Sanaga



32. The LPHP is a classic public good in the sense that while it generates relatively little direct energy, it will increase the level of firm (or all season) energy of existing downstream hydropower projects and allow for the development of a number of downstream hydropower projects. The public good nature of the LPHP has posed challenges for attracting financing. It is estimated that the LPHP could catalyze over a billion U.S. dollars of private investment in hydropower development along the Sanaga River through independent power producers and industrial autoproduction interested in future downstream projects.

33. To date, less than 10 percent of Cameroon's estimated hydropower potential has been developed. This low level of development is due to the economic and financial challenges involved. Without an anchor customer, it will take several years for the country to fully absorb the additional electricity generated by the smaller hydropower sites on the Sanaga River and over a decade for the larger sites. Therefore, Cameroon – like other developing countries – has turned to large industrial customers to underwrite the development cost of such projects.

34. The GOC has designated certain hydroelectric sites for future development by the aluminum industry, notably Rio Tinto Alcan (RTA), while a number of other sites are available for development by independent hydropower producers. Historically, Alucam has been the anchor customer in Cameroon supporting the development of hydropower sites (see Box 1 on Alucam). This historical role appears to be reinforced as the GOC has indicated that it intends to develop four hydropower plants on the Sanaga River for auto-production with RTA/Alucam. The plants are Nachtigal Amont, which will provide electricity for the expansion of Alucam's current Edea smelter, and three more plants (Song Mbengue, Grand Ngodi, and a third site to be determined[2]) that will supply electricity to a greenfield smelter in Kribi. The optimal capacity of these plants – as well as the share to be supplied to the grid - can only be determined after technical studies have been undertaken. The economic viability of the development of all of these sites is contingent on prior completion of the Lom Pangar regulating dam.

35. RTA has confirmed to the GOC that it will make available approximately 600 MW of firm electricity to the public grid by 2030 from the three sites allocated to RTA in the Sanaga Basin (Nachtigal Amont, Song Mbenge, and Grand Ngodi) provided that the planned regulating dams will be constructed. 600 MW will represent 20 percent of the installed capacity of three sites allocated to RTA / Alucam. The amount corresponds to 64 percent of current installed electricity generation capacity in Cameroon.

36. The economic analysis of the LPHP shows that the development of Sanaga's hydropower potential will depend on the presence of industrial anchor customers: developing hydropower sites for public supply only would lead to much higher unit costs (see below and Annex 5). However, the benefits of auto-production—and the presence of an anchor customer—should be balanced with the risk that industrial anchor customers receive preferential treatment compared with domestic/household users. For this reason, the 2011 Electricity Law stipulates that downstream hydropower sites must be optimized and includes provisions for auto-producers to supply electricity to the national grid (see paragraphs 36 to 39 below).

Box 1: Alucam's Contribution to the Cameroon Economy

The Alucam smelter in Edea has played an important role in the Cameroonian economy since independence. The plant began operations in 1957. Currently, ownership of Alucam is shared between of the GOC (46.67 %), Rio Tinto Alcan (46.67 %), AFD (5.6 %), and plant employees (1.1 %). The production capacity of Alucam's Edea plant is 90,000 thousand tonnes per year. The turnover of Alucam in 2010 was 81 billion CFA Francs (US$162m).

A 2008 study commissioned by the Ministry of Industry, Mines and Technological Development (MINMIDT) carried out by Prescriptor consultants estimated that Alucam contributes 0.74 percent of GDP and 2.57 percent of secondary sector GDP. A 2009 World Bank study[3] estimated that, in 2005, aluminum ingots were the fifth most important export product, accounting for 3.8 percent of total exports. The MINMIDT study estimated that aluminum accounted for 4.5 percent of total exports over the period 2001-2006.

Although dwarfed by oil revenues, the tax contribution of the aluminum industry is important, amounting to 2.8 percent of fiscal revenues from 2001-2006. This figure does not include indirect revenues from income taxes on employees, sales taxes on their purchases, or taxes generated in the course of the multiplier effect of their

[2] According to RTA public presentations, the Song Mbengue plant would be on-line in 2019 and Grand Ngodi would be on-line in 2022.

[3] Husband C., G. McMahon, and P. van der Veen (2009), The Aluminum Industry in West and Central Africa: Prospects for the future.

expenditures; accordingly, it underestimates the impact of the industry on the fiscal accounts. It also does not include the implicit power subsidy that Alucam received over that period (which was phased out in 2009).

In 2010, Alucam had 860 employees and estimated its total employment generation at 2,300 jobs. This is comparable with a 2009 World Bank study that estimated (total) direct and indirect employment at 2,359 for the period 2001 to 2006, representing 4.5 percent of total industrial employment.

Direct benefits of Alucam's operations include value-added from the construction of its facilities, its production operations, and direct employment. Indirect benefits include value-added and employment created with suppliers and other sectors of the economy. Using standard industry multipliers and experience from other aluminum smelters such as Mozal in Mozambique, total direct and indirect benefits of Alucam's existing smelter in Edea are estimated at 0.6 percent of GDP.

37. Over the long-term, the hydropower potential in Cameroon is sufficient to meet domestic electricity demand, support large industrial development, and also provide power for export. Cameroon's hydropower resources are among the most cost-effective sources of power available in Central Africa. As regional power trading arrangements develop in the future, Cameroon would be well-positioned as a power exporter. Nevertheless, this possibility is at least a decade away: it would require Cameroon and neighboring countries to make large investments in their respective power grids, to establish complex regulatory agreements, and to interconnect their grids.

Power Sector Institutional Context

38. Since 1998, the GOC has implemented a first phase of policy and structural reforms to improve efficiency and governance in the power sector. The GOC adopted an Electricity Law in 1998, and a complementary Electricity Decree in 2000. A sector regulator (ARSEL) and a rural electrification agency (AER) were established in 1999. In 2001, the GOC entered into a 20-year concession with AES Corporation to operate and invest in the state-owned, vertically integrated, power utility Sonel. However, the concession does not oblige AES-SONEL to invest in the development of Cameroon's hydropower resources. In November 2006, the GOC created the Electricity Development Corporation (EDC) through a Presidential Decree, with the mandate to develop, own, and operate hydropower assets, including the LPHP. Finally, a Presidential Decree of December 10, 2009, established the Rural Energy Fund (REF).

39. Since 2001, AES-SONEL[4] has connected more than 180,000 new customers and currently has 712,000 customers, although it has not always met its performance targets. By late 2010, the company had invested over US$460 million in generation capacity and rehabilitation of the network and committed an additional US$205 million for ongoing generation and network rehabilitation[5]. Unserved energy decreased from 2 percent of total energy produced in 2003 to the contractual target level of 0.5 percent in 2008/9. The company is recovering 94 percent of revenues billed. However, at 31 percent, the level of system losses is about three times higher compared to good practice levels.

[4] AES-SONEL is owned by the AES Corporation (56%) and by the Government of Cameroon (44%).

[5] This includes an IFC co-financed EUR 260 million loan financing for its five-year investment program mainly focused on rehabilitation of existing hydroelectric power stations and transmission and distribution networks.

40. The GOC recently initiated the second phase of reform of the electricity sector. A new Electricity Law was promulgated on December 14, 2011. It intends to attract additional private investment by opening up for the development of hydropower projects by auto-producers and further unbundle the sector by creating a transmission company. At the same time, the GOC is updating the master plan for the electricity sector (the Energy Sector Development Plan or ESDP 2030). The plan will be the point of reference for the optimization of future hydropower projects for household and industrial use.

41. The 2011 Electricity Law (No. 2011/022) makes provisions to allocate hydropower sites for development by industrial producers. The law foresees a model where the development of such hydropower sites is allocated to large industrial customers with significant consumption needs. The law obliges concessionaires utilizing hydro resources for electricity production to optimize the size of their developments. In addition, the law provides for industrial auto-producers to provide a portion of electricity produced to the national grid. The quantity will be agreed under the terms of the concession agreement with the auto-producer. The tariff for the electricity supplied to the public grid will be determined by the regulator, ARSEL, on a "cost of service" basis. These provisions are designed to ensure that the Cameroonian population – not just large industrial users - will benefit from low-cost hydropower generation. The law stipulates sites must be competitively bid but allows, on an exceptional basis for strategic importance for the national economy, for the awarding of hydroelectric concessions for integrated industrial projects on a contractual (i.e., sole-source) basis.

42. The 2011 Electricity Law also paves the way for the GOC to create a new publicly-owned transmission company, thereby unbundling the vertically integrated power sector and enabling greater competition as new and multiple producers of electricity enter the market. The stated intention is to: (i) enable the Government to extend the transmission network itself, and (ii) enable open access to future IPPs and thereby pave the way for a more open electricity market. The new law will require the GOC to negotiate with AES-SONEL to make changes in the current concession, which gives the company exclusive transmission rights.

43. The GOC has started to update and develop the secondary legislation in the form of application decrees to clarify implementation of the principles stated in the 2011 Electricity Law. This is a complex undertaking that will necessitate time and resources. Secondary regulation in place before the adoption of the new law will remain valid to allow for new secondary legislation to be drafted and adopted in accordance with the 2011 Electricity Law[6]. This law provides a transition period of twelve months for the existing concessions, licenses, and authorization to be harmonized with it.

44. In a Policy Letter signed by the Prime Minister, dated February 17, 2012, the GOC commits to specific actions regarding the development of the hydropower sector framework for the Sanaga basin (see Box 2 and Annex 7). Through the Policy Letter, the GOC has committed itself to develop all secondary legislation under the 2011 Electricity Law in consultation with stakeholders. Priority will be accorded to regulations pertaining to the introduction of water rights and all aspects pertaining to hydropower, which are related to the Lom Pangar project. The

[6] Decree 2011-5140 (signed by the Prime Minister on December 21, 2011) stipulates that all current secondary legislation that does not contradict the new electricity law remains valid.

Government of Cameroon will, where necessary, work with specialized legal advisors to draft the secondary legislation, and funds from the Energy Sector Development Project (ESDP) have been made available for that purpose. The failure to act in a manner consistent with the terms of, or the achievement of, the objectives expressed in the Policy Letter will be cause for suspension under the financing agreement of the project.

Box 2: GOC Policy Letter

The GOC Policy Letter sets out principles and indicators regarding the modalities for the future selection of operators for hydropower plants in the Sanaga River basin, a process to optimize the development of hydropower plants (including run-of-the-river plants), and criteria to determine the proportion of electricity that auto-producers have to make available to the public grid. The principles used for determining the quantity of electricity allocated to the public grid will include i) domestic supply and demand projections, ii) preference for supply to domestic consumers ahead of industrial consumers or export of electricity, iii) existing arrangements between auto-producers and the public grid concessionaire, v) the physical characteristics of the site and vi) electricity demand of the auto-producer.

The Policy Letter aims to facilitate the maximization of the development impact of further hydropower generation in the Sanaga basin through industrial users making lumpy investments in hydropower and selling part of the electricity they produce into the public grid for other users at a cost-reflective price. The obligations of auto-producers to provide a part of produced electricity into the public grid, combined with the requirement for these auto-producers to competitively tender works, further aims to provide a solid basis to ensure that hydropower generation by auto-producers will ensure additional firm low cost electricity for consumers.

45. IDA has been a strong partner of the GOC in sector reforms and the GOC has expressed demand for continued policy advice from IDA. The Association – through the ESDP - is providing comprehensive technical assistance to the GOC for the development of secondary legislation and for least-cost sector planning.

Water Tariffs

46. The GOC is in the final stages of introducing a water tariff for hydropower producers on the Sanaga River. The 2011 Electricity Law stipulates that the water tariff is defined through secondary legislation. The GOC has adopted a decree[7] that sets the rules at the national level and has developed a final draft of an "arrêté" (order) that defines the formula to recover the investment and operating costs of the Lom Pangar regulating dam as well as the three existing regulating dams on the Sanaga[8]. It is estimated that EDC will collect about US$29 million per year from water tariffs from the two existing downstream hydropower plants (265MW generation at Edea and 384MW generation at Song Loulou) and the 30MW Lom Pangar power plant. Annual revenues will increase as more hydropower plants are developed on the Sanaga River. Such revenues will fully cover the investment and O&M costs of the Lom Pangar regulating dam (including the recurrent costs of the Deng Deng National Park) as well as the management of the river basin. The final drafts of the water tariff decree and arrêté were

[7] Decree 2012/0506/PM dated 22 February 2012 on the water fees for stored water for electricity production.
[8] The three existing regulating dams at Mapé, Bamendjin, and Mbakaou are currently operated by AES-SONEL, but the concession contract foresees them being transferred back to the GOC (to be operated by EDC) before the Lom Pangar regulating dam is fully commissioned.

transmitted to the World Bank by the Prime Minister's office on February 20, 2012 (see Box 3). Signature of the decree and the arrêté is an effectiveness condition.

Box 3: The Draft Water Tariff, Decree and Arrêté for the Sanaga River

Article 15(2) of the 2011 Electricity Law specifies that the level, modalities, and distribution of water tariff will be established through a decree. In addition, the 1998 Water Law stipulates that the use of water for industrial and commercial purposes requires prior authorization and payment of a fee to finance sustainable water development projects. A working group, chaired by MINEE and including EDC, ARSEL, and MINFI, prepared a decree with general principles applicable at the national level and an arrêté with specific rate and conditions applicable for the Sanaga River. After consultations with current and future hydropower producers in the Sanaga basin, draft decree and the PM has signed the decree and thePM's office finalized the draft arrêté.

The decree establishes the nation-wide principles of the water tariff:

- The tariff recovers investment and operation and maintenance (O&M) costs of regulating dams as well as costs related to basin management.
- The water tariff is non-discriminatory, so all hydropower producers are treated equal.
- The tariff is calculated based on the installed capacity of each hydropower plant (in MW).
- Tariffs are administered by the GOC's asset holding company for the energy sector (EDC).
- Tariffs are to be paid semi-annually. In case of late payment, users pay a penalty.

The arrêté defines the specific water tariff in the Sanaga basin:

- The tariff recovers investment and O&M costs of the Lom Pangar regulating dam (including the recurrent costs of the Deng Deng National Park) as well as the management of the river basin.
- The tariff also recovers O&M costs of the regulating dams at Mapé, Bamendjin, and Mbakaou after the transfer of operation of the dams from the current operator (AES-SONEL) to EDC, as well as the costs associated with this transfer.
- The tariff will be applied to existing plants whose firm generation capacity will be boosted as a result of the LPHP (Edea and Song Loulou) and to new downstream generation capacity that will be developed, including the power plant at Lom Pangar itself.
- Tariffs are paid to EDC. Tariffs are due from the first year the Lom Pangar regulating dam is in operation.
- The tariff is calculated to ensure EDC can cover debt service and operational expenditure in any given year. The part of the tariff representing O&M is indexed to inflation.
- The tariff is 20 million FCFA/MW (or 0.0052 US$/kWh) in case the total installed capacity in the Sanaga basin is below 1,100 MW. The tariff decreases gradually when capacity exceeds 1,100MW.

Power Tariffs

47. Historic cross-subsidies from LV and MV customers to the aluminum smelter Alucam have been phased out. Alucam historically received power at a subsidized rate of US$0.015/kWh under a 30 year PPA that expired in 2009. Under a new long-term PPA with AES-SONEL that has been in effect since January 2010, Alucam's average electricity tariff for up to a maximum of 250 MW is CFA 12.94/kWh (US$0.028/kWh equivalent) before indexation for inflation. This is an increase of over 80 percent from historic levels and slightly above the average global electricity tariff to aluminum companies (US$0.025/kWh).[9] The new PPA includes additional indexation mechanisms. Under the new arrangements, Alucam does not receive any cross-subsidies from household and other industrial users. An independent review commissioned by ARSEL concluded that the new indexed tariff for Alucam covers AES-SONEL's average

[9] 2008 / CRU data 2006.

historic cost of production for Alucam. The tariff indexation of the PPA between AES-SONEL and Alucam has been consistently applied since it came into effect in 2010.

48. The consumer tariff regime for AES-SONEL changed to a revenue cap regime in January 2010 (see Box 4). Since 2010, the average tariff for public power supply from AES-SONEL has been US$0.16/kWh. In the past two years (2010 and 2011), tariff increases were calculated by ARSEL on this basis but not implemented by the Government. In mid-2010, ARSEL rejected the tariff increase proposed by AES-SONEL. Instead, the GOC paid equivalent compensation to AES-SONEL by means of a (transparent) budget transfer for 2010 and 2011. The tariff for 2012 is currently with MINEE for implementation approval.

Box 4: Revenue Cap Regulation

Revenue-cap regulation is a system for setting the prices charged by regulated monopolies by limiting the total revenue in a given period. Revenue cap regulation is a form of incentive regulation, which is the use of rewards and penalties to induce the utility company to achieve desired goals and in which the operator is afforded some discretion in achieving goals.

A revenue cap is similar to a price cap, except the constraint is placed on total revenue rather than a particular price or basket of prices. The formula can include an inflation adjustment and an efficiency factor. Revenue cap regulation may be appropriate in cases, such as electricity distribution, where the quantity demanded is largely outside the control of the regulated firm, and where costs may be insensitive to short-term variations in quantity demanded. The choice of a revenue-cap rather than a price cap means that the regulated enterprise does not face any quantity risk. The distribution or transmission company is not harmed financially when consumers engage in energy conservation. Revenue caps provide a disincentive for increasing quantity sold since such developments do not benefit firms under a Revenue Cap. Revenue cap regulation is more appropriate than price cap regulation when costs do not vary appreciably with units of sales.

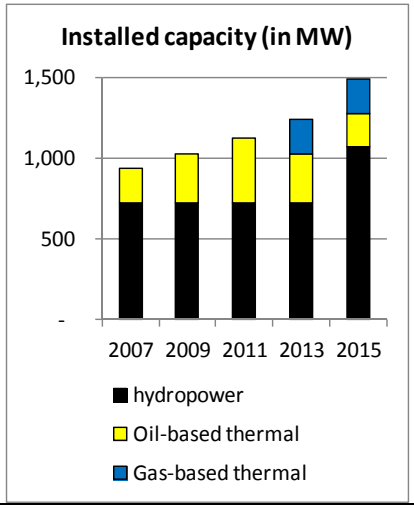
49. Cameroon's public electricity tariffs are comparatively high due to expensive thermal back-up generation and higher than average distribution losses (31 percent in 2010). Cameroon's LV and MV power tariffs - at US$0.16/kWh - are slightly above the regional average of US$0.14/kWh, but significantly above the regional average of US$0.10/kWh for countries with hydro-based power systems. The tariffs defined in the PPAs with industrial users (such as Alucam) will continue to be valid and respected going forward.

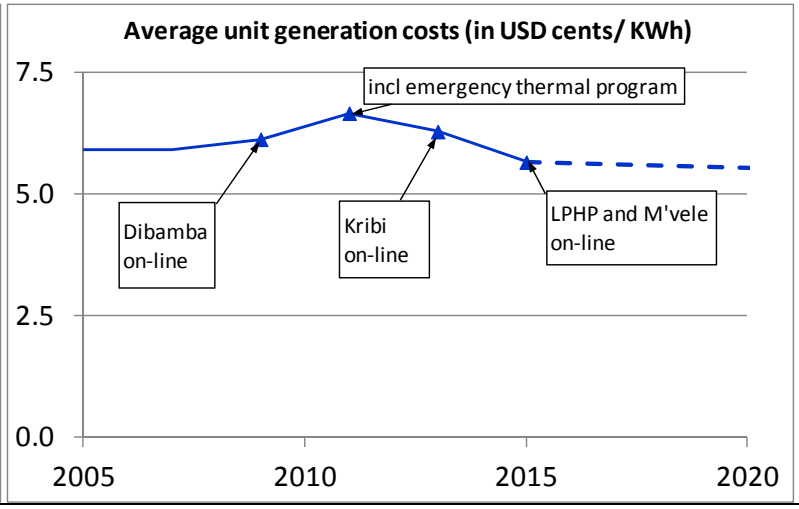
50. The addition of electricity generated from hydropower will, over time, reduce the average cost of electricity in Cameroon (see Box 5). The equitable distribution of LPHP benefits ultimately depends on the pass-through of the reduction in generation costs to all electricity consumers. This process has been facilitated by the change in the tariff system to a revenue cap system which came into effect in January 2010 (see paragraph 48 and Box 4 above). Household tariffs will decrease due to the LPHP even when taking into account the pass-through to end-users of the water tariffs, which is allowed by the regulator. Estimates show that generation costs would decrease by over 10% due to the Lom Pangar regulating dam over the next ten years and that the cost of service for households would decrease by 4.1% (taking into account the water tariff). In the long term, and to the extent that system losses can be brought under control, the positive impact on electricity costs will likely be greater as additional hydropower developments unlocked by the LPHP on the Sanaga River will further decrease tariffs. To the extent that system losses can be brought under control, the impact of this reduction on end-user tariffs would be further amplified.

Box 5: Changing Technology Mix, Changing Generation Cost

In the early 2000s, Cameroon had a total installed generation capacity of 933 MW, including the Edéa (265 MW), Song Loulou (384 MW), and Lagdo (72 MW) hydropower plants, 188 MW grid-connected thermal capacity, and 24 MW isolated thermal capacity. In 2009, the 88 MW Dibamba heavy fuel oil (HFO) plant came on-line, followed by the installation of 40 MW of emergency generation capacity (construction of three diesel-fired thermal power plants plus rental of another one in 2011, an election year). Dibamba and the emergency thermal power program have pushed up average unit generation costs.

The 216 MW Kribi gas-fired power plant is expected to come on-line in 2013. The 200 MW Memve'ele hydropower project is expected to come on-line in 2015, the same year as the additional 150 MW of the proposed LPHP would come on-line. These lower cost developments will decrease the average unit generation costs to a level below what was the case prior to the installation of the emergency thermal power program. Going forward, average unit generation costs will further decrease as new hydropower plants come on-line in the Sanaga basin.





B2. Natural Resources Management

51. Over the past two decades, Cameroon's protected area network has been expanded to over 3.7 million hectares - accounting for 8 percent of the country's land area in 2011. By 2011, the total area classified as permanent forest reached 8.72 million hectares (including the above-mentioned protected areas). A further 4.6 million hectares have been declared as permanent forest, but are pending classification or are planned to become permanent forest. Once completed, this will bring the total permanent forest estate to 13.4 million hectares. In terms of biological diversity, the country is second only to the Democratic Republic of Congo in Africa. Some 409 species of mammals (including half of Africa's 52 species of higher primates) are found in Cameroon, as well as 848 species of birds, nine thousand species of vascular plants (of which at least 156 are endemic), 171 species of amphibians, 210 species of reptiles, and 138 species of fish.

52. The general responsibility for forest management and policy implementation in Cameroon resides with the Ministry of Forestry and Wildlife (MINFOF). Cameroon is entering a period of major investment in large energy and transport infrastructure, as well as mineral mining which threaten the considerable advances made in establishing and valorizing a permanent forest estate. There are considerable trade-offs between these investments and other land use objectives, such as biodiversity conservation, indigenous peoples' livelihoods,

agriculture, timber production, and carbon storage and sequestration. The country's ability to address such trade-offs is still limited. The reasons for this are complex and probably include the high anticipated returns from mining and agricultural development, a weak policy and institutional framework for working across sectors, and a lack of information on comparative economic benefits of different land use options. To respond to these challenges, a new law establishing guidelines for territorial planning and sustainable development in Cameroon was published in May 2011, but still lacks implementing regulations. The Government of Cameroon is also preparing a Master Plan to aid spatial development at the country level, a new legal framework for land management, and a national strategy for sustainable land management.

53. The Sanaga River flows for 918 kilometers from its source on the Adamawa Plateau to the mouth at the Atlantic Ocean near Douala. The river drains a basin of approximately 130,000 square kilometers, which accounts for almost one quarter of Cameroon's land mass[10]. Although only a small part of the population of Cameroon lives in the basin, the river serves to produce some 95 percent of all electricity consumed in Cameroon and is the source of drinking water for some of the big cities, including the capital, Yaoundé. Several agro-industries exist in the basin, such as sugar cane, tobacco, rice cultivation, vegetables and cattle rearing. Local communities also depend on the river for irrigation, livestock, and fishing. Industrial water use is still limited and includes breweries, sugar refineries, and an aluminum smelter.

54. While the pressures on water quantity and quality in the basin are still moderate, tensions between consumptive and non-consumptive water uses are expected to rise in the future. Demographic trends are pointing towards higher population densities in the basin. Hydrological patterns might be influenced by climate change as well as human activities that change land use patterns, such as logging and conversion of natural vegetation for agricultural expansion. Not only will new hydropower developments change water availability in time. Expansion of agro-industrial plantations will require increase in land clearance, irrigation capacity and industrial installations. Some companies have been awarded licenses to mine in the basin. The national water utility is looking for new water sources to extend their piped network in Yaoundé and other cities. Without adequate planning, these developments will lead to changes in natural flows into the river, deteriorating water quality, and adversely impact on ecosystems and the natural services provided by them.

55. The 1988 water law defines tasks and responsibilities for water resources management in Cameroon, which are highly centralized. Responsibilities are shared by the Ministry of Water Resources and Energy (MINEE) and the Ministry of Environment Protection of Nature and Sustainable Development (MINEPDED). At the local level, some Water Management Committees exist, although their functioning varies. No river basin agency exists for the Sanaga River basin. The Bank is currently providing technical assistance for a scoping phase to develop an integrated basin management approach for the Sanaga River basin. This work aims to help solve or avoid conflicts of interest between upstream and downstream users and foster integration and collaboration among sectors by establishing clear decision-making processes.

[10] Most of the remaining land in Cameroon is part of various international basins, including the Lake Chad basin in the Far North, the Niger basin in the North [the Benoue river is a tributary of the Niger river], and the West and the Congo-Oubangui-Shari basin in the South-East. A few smaller national basins exist, notably the Mungo basin in the South West.

C. Higher Level Objectives to which the Project Contributes

56. The proposed project supports the strategic objectives of the GOC's *Vision 2035* to achieve shared growth, reduce poverty, and create jobs through increased industrialization, improved productivity, and better governance. The GOC's Growth and Employment Strategy Paper 2010-2019 aims to increase non-oil growth by investing in key infrastructure, improving productivity and the business climate, and strengthening human development and regional integration. Developing Cameroon's vast hydropower resources, starting with the LPHP, as enabling infrastructure for growth and poverty reduction is a strategic pillar of *Vision 2035*.

57. The LPHP is included in the Cameroon 2010 - 2013 Country Assistance Strategy (CAS). The strategy is centered on inclusive growth through (i) increasing Cameroon's competitiveness, and (ii) improving service delivery. IDA support to improve competitiveness will focus on increased infrastructure investments in the energy, transport, and telecommunications sectors, including the LPHP, among other issues. Governance is a cross-cutting theme in the CAS.

58. The proposed project will deepen IDA support to Cameroon in the power sector. The existing IDA energy portfolio with Cameroon includes the Energy Sector Development Project (ESDP), the Environmental and Social Capacity Building Project for the Energy Sector (PRECESSE), and the IDA Partial Risk Guarantee for the Kribi Gas to Power Project (see also Annex 11). The US$65 million ESDP has three components: rural electrification, capacity building, and project preparation for the LPHP. IDA and International Finance Corporation (IFC) support for the Kribi Gas Power Project will help expand Cameroon's energy generation capacity through the construction of a 216 MW gas-fired power plant.

59. The IFC acted as an advisor to the GOC in the privatization of AES-SONEL, led arrangements for a EUR250 million syndicated loan for AES-SONEL's five-year investment program, and provided a EUR70 million loan. IFC is providing a syndicated foreign currency loan for the Kribi Gas to Power Project. Benefits of the Bank Group's engagement in Cameroon's energy sector to date include the mobilization of significant private investment of the order of US$1 billion for the realization of least-cost sector investments, capacity building for all sector stakeholders to better execute their mandates, the facilitation of the first local currency finance by domestic banks for the Kribi Gas to Power Project, and the preparation of the proposed LPHP according to international standards. This will help the GOC establish a credible track record in the sustainable development of Cameroon's energy resources.

60. The proposed LPHP is aligned with the World Bank Africa Region Strategy, supporting competitiveness and employment, and working in partnership with other stakeholders. By reducing power generation costs, the operation will boost competitiveness and employment in Cameroon. The proposed operation builds upon the Bank's convening power and leverages IDA resources through co-financing resources made available by a gamut of development partners, including French Development Agency (AFD), European Investment Bank (EIB), African Development Bank (AfDB), and the Central African States Development Bank (BDEAC).

61. The project is aligned with the World Bank Group's (WBG) Sustainable Infrastructure Action Plan, which encourages increased cooperative approaches among different institutions of the WBG, the donor community, and the private sector on large and complex energy

infrastructure projects in Africa. In their Kinshasa Declaration of August 2011, the African Governors of the Bretton Woods Institutions called for support from the WBG for four specific projects including the Lom Pangar Hydropower Project in Cameroon.

II. PROJECT DEVELOPMENT OBJECTIVES (PDO)

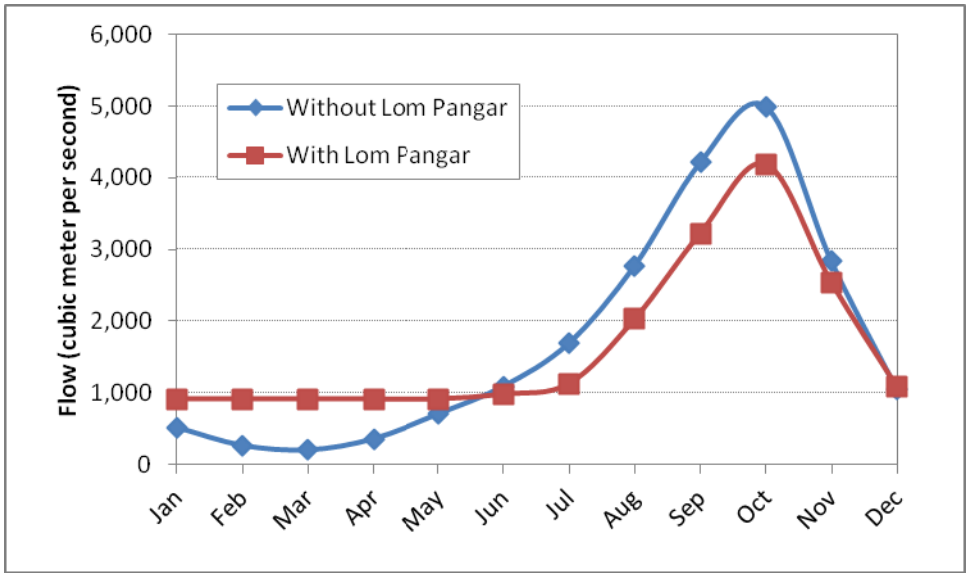
A. PDO

62. The project development objective of the proposed LPHP is to increase hydropower generation capacity and reduce seasonal variability of water flow in the Sanaga River and to increase access to electricity.

B. Project Beneficiaries

63. Lom Pangar is a regulating dam and will, as such, regulate downstream water levels in the Sanaga River by storing water during the wet periods and releasing it during dry periods. The reservoir will increase the guaranteed average water flow on the Sanaga from 720 m3/s to 1,040 m3/s year-round (see Figure 2).

Figure 2: Estimated Average Monthly Sanaga River Water Flow Before and After LPHP



64. The Sanaga River's reduced seasonal variability of water flows will immediately increase electricity generation at two existing hydropower plants - Edea and Song Loulou. In the dry season, the increase in generation capacity at these two sites will be a minimum of 120 MW. This means AES-SONEL's 625,000 existing customers in the Southern Integrated Grid will receive more reliable power during the dry season.

65. A regulating dam will make it possible to construct a cascade of downstream hydropower plants on the Sanaga River. While not directly attributable to the project, such potential follow

up investments in downstream hydropower will improve electricity services for households and industries in Cameroon and beyond.

66. The generation capacity of the Lom Pangar dam itself, with a powerhouse at the foot of the dam, will be 30 MW. This will not only provide access to electricity for 2,400 new households in the Eastern Province, but also contribute to improve electricity services to the existing 22,000 consumers in the Eastern Grid. Furthermore, it will replace 12 MW of expensive thermal capacity with low-cost hydropower and increase generation capacity in the Eastern Grid by 18 MW.

C. PDO Level Results Indicators

67. Achievement of the PDO will be measured by (i) the quantity of additional hydroelectricity generated under the project, (ii) the guaranteed all-season water flow of the Sanaga River, (iii) the number of new household connected to electricity, and (iv) direct project beneficiaries (number), of which female (percentage).

III. PROJECT DESCRIPTION

68. The proposed LPHP consists of a regulating dam, a hydroelectric power plant at the foot of the dam, a transmission line between the power plant and the Eastern Grid, a rural electrification scheme along the corridor of such transmission, environmental and social measures and technical assistance, and project management. Associated investments include the adaptation of the Chad-Cameroon Pipeline, which is outside the scope of this project per se, but required for this project to come to fruition. The Lom Pangar regulating dam will be located on the River Lom in Cameroon's Eastern Region, about 4 kilometers downstream of the confluence with the Pangar River and 13 kilometers upstream of the confluence with the Sanaga River.

A. Project Components

69. The LPHP will finance four components: (i) Lom Pangar Regulating Dam; (ii) Lom Pangar Power Plant and Transmission Line, (iii) Environmental and Social Measures, and (iv) Technical Assistance and Project Management. The components are outlined below. A more detailed description is available in Annex 2.

70. **Component 1: Lom Pangar Regulating Dam (total cost US$216 million; of which IDA US$115 million, EIB US$40 million, AFD US$12 million, and counterpart financing US$49 million)** This component will co-finance the construction of the Lom Pangar regulating dam on the Lom River. Based on the engineering design, the dam will be 46 meters high and 7 meters wide at the crest and be composed of a central overflow section with embankment wings and a saddle dam. The dam will create a reservoir with a useful capacity of about 6 billion m^3. The contractor and also the owner's engineer for the dam construction have already been

selected according to Bank procurement rules[11] and the contracts have been signed. An 82 kilometer access road has been constructed from the site of the dam via the village of Deng Deng to Belabo. Other preparatory works include two bridges as well as the staff residences for EDC and the owner's engineer. Price contingencies for construction contracts have been included in the cost of this component.

71. **Component 2: Lom Pangar Power Plant and Transmission Line (total cost US$62 million; of which AfDB US$29 million, BDEAC US$15 million, and counterpart financing US$18 million):** A 30 MW hydropower plant consisting of four Francis turbines will be constructed at the foot of the dam. The power plant will be connected through a 105 kilometer 90 kV transmission line to the existing Eastern Network at Bertoua. A HV/MV substation will be constructed in Bertoua. This component will also include a rural electrification sub-component to connect 13 localities between the hydropower plant and Bertoua and the electrification of approximately 2,400 households[12]. It will also include social mitigation measures related to the power plant and transmission line.

72. **Component 3: Environmental and Social Measures (total cost US$73 million; of which IDA US$6 million, AFD US$58 million, and counterpart financing US$9 million).** This component is comprised of eight sub-components: six sub-components linked to the Environmental and Social Management Plan (ESMP), a sub-component on the Resettlement Action Plans (RAPs) and a local development sub-component.

73. The ESMP sub-components comprehensively finances the following environmental and social mangement measures: (i) management of construction sites, including preventive archeological inventories and digs; (ii) management of reservoir and cumulative downstream mitigation measures, including monitoring of water quality, monitoring of greenhouse gases, and the monitoring of induced impacts downstream; (iii) social mitigation, including public health activities, livelihood restoration, rural electrification and the construction of Touraké bridge; (iv) management of the Deng Deng forest, including salvage logging for the reservoir area, the adaptation of forest zoning of Deng Deng forest, management of the Deng Deng National Park; game management and control of illegal activities; (v) technical audits of environmental and social measures; and (vi) ESMP management including capacity building, monitoring and evaluation. EDC – through its owner's engineer –will involve civil society organizations and community representatives in monitoring of the construction of infrastructure under this component.

74. The ESMP sub-component will finance certain positions to support the EDC Project Implementation Unit (PIU) including a full-time international environmental advisor and a senior environmental specialist. This sub-component will also finance the two independent expert panels: the environmental and social panel and the dam safety panel.

[11] "Guidelines: Procurement under IBRD Loans and IDA Credits" published by the Bank in May 2004 and revised in October, 2006 for the works contract and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" published in May 2004 and revised in October 2006" for the consultancy contract.

[12] Other activities to increase rural electrification in the Eastern Region are outside the scope of the project.

75. The RAP sub-component finances resettlement and compensation for the persons affected by the dam and associated reservoir.

76. The local development component will support the design and implementation of a Local Development Program that will address immediate social and development needs of affected local communities. The Local Development Program will in invest in priority micro-projects to rehabilitate social infrastructure. The component will finance (a) design and management of a Local Development Program including a series of outreach and training activities to build local capacity, and (b) the implementation of micro-projects. The LDP will be managed by a competitively selected Management Contractor.

77. **Component 4: Technical Assistance and Project Management (total cost US$42million; of which IDA US$11 million. AFD US$9 million, and counterpart financing US$22 million).** This component is composed of three sub-components: i) technical assistance, ii) communications, and iii) project management.

78. The techncial assistance sub-component will finance studies on filling of the reservoir and the operation of the dam. Studies will also be undertaken on integrated water management in the Sanaga River basin. In addition, optimization studies for the selected hydropower sites will provide the GOC with the means to enforce the obligation of concessionaires utilizing hydro resources for electricity production to optimize the development of these resources and to provide electricity into the public grid.

79. The strategic communication and outreach subcomponent will finance a comprehensive communication and consultation program that will include support for major interventions such as consultations with stakeholders and project-affected people; improved stakeholder engagement; awareness and public education communication campaigns; building ownership and promoting transparency and accountability to help achieve the development objectives of LPHP. The communication and consultation program will center on facilitating an informed discussion and open dialogue on the LPHP core objectives of tapping and securing Cameroon's clean hydropower potential in order to accelerate economic growth, create jobs and reduce poverty. The sub-component also supports the reinforcement and implementation of a grievance redress and conflict resolution mechanism.

80. The project management sub-component will finance certain positions to support the EDC PIU including an international techncial advisor, a senior engineer, a procurement specialist, a financial management specialist, an accountant, a monitoring and evaluation specialist, a communications specialist and other technical staff. It also includes financing for a LPHP focal person to be based in MINFOF. In addition, this sub-component finances equipment, trainings and monitoring and evaluation activites of the project.

81. **Associated Infrastructure: Adaptation of the Chad-Cameroon Pipeline (total cost US$101 million; pre-financed by the GOC).** The reservoir created by the LPHP will require adaptation of two 12.5 kilometer stretches of the Chad-Cameroon pipeline (CCP) at two crossings of the Pangar River that will be submerged once the reservoir is filled. The chosen adaptation method is a double connection: new stretches will by-pass existing stretches to

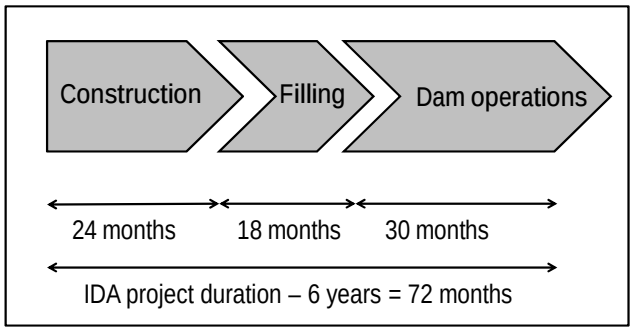
minimize supply interruptions. Once the adaptation works are finalized, the old stretches of the pipeline will no longer be in use.

B. Project Financing

a. Lending Instrument

82. The proposed lending instrument is a Specific Investment Loan (SIL) under IDA Credit terms. Project activities are well-defined and will be implemented over a specific time period.

83. The project duration will be six years. This will include a construction period (24 months), the filling of the reservoir (18 months), and a two and a half year period of dam and reservoir operations (see graphic below). The project period will allow for support to two yearly cycles of dam operations, including monitoring and mitigation of downstream impacts.



b. Project Costs and Financing

84. Project costs are US$393 million, including contingencies (and excluding the adaptation of the pipeline). This includes US$216 million for the dam, US$62 million for the powerhouse, transmission line, and rural electrification, US$73 million for environmental and social measures, US$42 million for technical assistance for project management(see Table 1).

85. The costs for the adaptation of the Chad-Cameroon pipeline (associated infrastructure) are US$101 million.

Table 1: Project Baseline Cost by Component and Source of Financing

Component	Cost estimate	Financing plan					
		IDA	EIB	AfDB	AFD	BDEAC	GOC
1 Regulating dam	216	115	40		12		49
2 Power plant and transmission line	62			29		15	18
3 Environmental and social measures	73	6			58		9
4 Technical assistance & project management	42	11			9		22
Total project cost (without pipeline adaptation)	**393**	**132**	**40**	**29**	**79**	**15**	**98**
Chad Cameroon pipeline adaptation	101	-	-	-	-	-	101*
Total project cost (including pipeline adaptation)	**494**	**132**	**40**	**29**	**79**	**15**	**199**

* GOC prefinances the Chad Cameroon pipeline adaptation. Prefinancing will be reimbursed over time to the GOC by COTCO.

86. The IDA US$132 million financing represents 27 percent of total project costs, with the remaining costs financed through a combination of co-financing and counterpart financing (see Table 2 below). The project will be financed by IDA, the French Development Agency (AFD), the European Investment Bank (EIB), the African Development Bank (AfDB), the Central African States Development Bank (BDEAC), and the GOC. The proposed IDA project will co-finance the construction of the dam with joint co-financing[13] of EIB and GOC counterpart financing. AFD and IDA will co-finance Component 3 (environmental and social measures) and Component 4 (TA and project management) through parallel co-financing[14]. Component 2 (power plant, transmission line, and rural electrification) will be jointly co-financed by AfDB and BDEAC[15]. The adaptation works for the Chad-Cameroon Pipeline will be financed through pre-financing by the GOC[16]. The GOC will provide a total of US$98 million of counterpart financing for all components. In addition, the GOC will provide in-kind support to the project through various ministries equivalent to an estimated value of US$11 million (not reflected in tables 1 and 2).

Table 2: Total Project Costs

Project Cost	Total US$million
BORROWER/RECIPIENT	98.00
BORROWER/RECIPIENT Pre-financing for associated infrastructure	101.00
International Development Association (IDA)	132.00
African Development Bank	29.00
Central African States Development Bank	15.00
EC: European Investment Bank	40.00
FRANCE: French Agency for Development	79.00
Total Financing Required	**494.00**

87. BDEAC financing was approved in September 2011 and AfDB financing was approved in November 2011. Both the financing agreements were signed in January 2012. AFD and EIB's Board dates are set for May and June 2012, respectively. Effectiveness conditions will be harmonized to ensure effectiveness in the summer of 2012.

c. On-lending Terms

88. All donors will lend to the GOC. AfDB and BDEAC financing will not be on-lent (lending terms from AfDB to the GOC are 50 years with 10 year grace period and 0.75% and 15

[13] For joint co-financing, donors contribute towards financing the same individual contract/expenditure/invoice. There is complete harmonization among donors with regard to procurement and attendant anti-corruption policies.
[14] For parallel co-financing, donors contribute toward the financing of separate contracts/expenditures/invoices under the same project, so that one donor is solely responsible for one such item exclusively. World Bank safeguards policies apply to the entire project, including parallel co-financing.
[15] The project only includes certain activities financed by the AfDB and BDEAC project including the power plant, the transmission line to Bertoua and the electrification of households along this transmission line. Other activities to increase rural electrification in the Eastern Region are outside the scope of the project.
[16] The GOC has agreed to pre-finance the technical works which will be carried out by COTCO until agreement is reached between the GOC and COTCO on the split of the cost of the construction works.

years with 5 year grace period and 6.5% for BDEAC). The GOC will on-lend IDA, AFD, and EIB financing to EDC (a 100 percent government owned entity) on the same terms as the loans to the GOC (40 years with 10 year grace period and 0.75 % interest rate for IDA, 25 years with 8 year grace period and 2.5 % interest rate for AFD and 20 years with 5 year grace period and interest rate of 4.5 % (indicative) for EIB).

C. Lessons Learned and Reflected in the Project Design

89. The design and development of this project has benefited from a rich menu of lessons learned from similar large infrastructure operations in Africa and beyond, as well as other completed and ongoing IDA-financed projects in Cameroon. Lessons from analytical work on hydropower development carried out by the Bank, other donors, NGOs, and the private sector are also relevant and have been taken into account. The following is a summary of the key lessons, and the design features of the project that addresses them.

90. Lessons learned around the world show that the World Bank's role in hydropower extends well beyond lending, to include technical assistance, knowledge sharing, policy dialogue, economic and sector work, and the range of support provided during project preparation[17]. Mirroring this global experience, LPHP preparation followed a two track approach, in which investment lending and strengthening sectoral foundations support and reinforce each other. The LPHP is part of a broader suite of support that combines IDA-financed projects and technical assistance. The ESDP provides technical assistance and capacity building support to sector reforms and energy sector entities, while PRECESSE provides complementary TA on environmental and social aspects of energy projects to the ministries of environment, forestry, social affairs, and culture. The IDA guarantee to the Kribi Gas Power Project and the proposed LPHP support the GOC's envisaged increase in electricity generation. At the end of the supply chain, the ESDP project, together with Component 2 of the proposed LPHP, support the extension of electricity services to the rural poor. The World Bank's long term strategic engagment in Cameroon's energy sector has contributed to the introduction of private sector participation, a renegotiated Power Purchase Agreement (PPA) with the aluminum industry that introduced cost-reflective tariffs, and the drafting of a new electricity law. Because of its critical but constructive engagement and strategic support, the Bank is recognized as a strong partner of the GOC in the design and implementation of sector reforms. The long term engagement in the sector has also helped establish relationships with other key actors in sector. The GOC has expressed strong demand for continued policy advice and sector support from IDA. IDA will continue to provide TA to the GOC on expanding the pipeline of investments in the Sanaga basin taking into account choices among storage, run-of-river and rehabilitation projects, as well as finding the right balance of public and private allocation of risks, responsibilities, and benefits.

91. The project design draws on lessons from the similar on-going and past Bank-financed hydropower projects, such as the Bumbuna, Bujagali, and Nam Theun 2 projects. In line with prior experience, the project development has considered alternatives and design options and environmental and social mitigation/enhancement measures in an integrated way with economic, technical and financial dimensions of the project. The LPHP was identified as the least-cost

[17] World Bank Group (2009), Directions in Hydropower.

generation option in feasibility studies in the early 1980's and this was re-validated during project preparation. Project preparation was financed through an IDA-credit (the ESDP project) to avoid long delays due to lack of proper financing for various studies and other preparatory activities. The ESDP project has also helped to build capacity in EDC.

92. The structure of the February 2012 Policy Letter (see annex 7), including an implementation policy framework takes into account experiences for the the Nam Theun 2 (NT2) Hydroelectric Project in Laos. In Laos, the definition of a set of clear agreements and indicators provided an opportunity to be more detailed than the financing agreements necessitates and set clear benchmark to the Government of Laos in terms of what IDA expected during implementation. While a Policy Letter inevitably has a lesser legal standing than a financing agreement, lessons learned from NT2 and other projects show that it is paramount in this context to have the policy letter signed at a high level of government. In the case of LPHP, the Policy Letter has been signed by the Prime Minister. His office has also been involved – with the line ministry and the implementation agency – in the drafting of the letter.

93. Limited management capacity has hindered implementation of complex infrastructure projects in Cameroon in the past, especially for projects involving complex environmental and social instruments. To address this, an extensive capacity building program on sustainable development of large-scale infrastructure projects was started during project preparation and will continue into the future. This initiative was driven in part by the experience of the Chad-Cameroon pipeline, which underlined the importance of ownership and commitment to sensitive reforms, recognition of institutional and administrative capacity realities and limitations, adequate project supervision, and reliable communication between all project stakeholders. These lessons have been incorporated in the LPHP preparations through: (i) comprehensive technical assistance provided for project preparation supported by IDA and other donors; (ii) a result-based rather than an input-based approach to safeguards; (iii) an emphasis on field-based project preparation and supervision with support from a team of leading experts at headquarters; (iv) a comprehensive communication strategy that has been implemented during preparation and will continue during project implementation, and (v) the inclusion of a technical audit on environmental and social measures (which played a critical role in the Chad-Cameroon pipeline project).

94. Adequate coordination among stakeholders is a central building block of multisectoral projects involving many state and non-state actors. The LPHP is a complex project, requiring attention of multiple departments of the GOC to ensure sustainable and timely implementation. Given the complexity of the project, regular meetings between EDC, GOC, the two panels of dam safety and environmental and social experts, project donors, and consultants have taken place during project preparation. A Steering Committee chaired by the Prime Minister's office has been established to provide general guidance and monitor implementation of project activities and to facilitate relations with ministerial departments and public agencies.

95. Environmental and social mitigation strategies are derived from other IDA-financed large infrastructure projects in Africa. This includes: (i) careful identification and assessment of downstream ecology and habitat impacts; (ii) extensive formal and informal consultation with

and participation by stakeholder and project-affected persons; (iii) provision of external independent monitoring through a third party audit; (iv) mechanisms for sharing project benefits with project-affected persons; and (v) adequate funding for ESMP implementation. Since 2005, the GOC has committed to following Bank standards in the preparation of the LPHP. Drawing on lessons from environmental and social challenges related to the Chad-Cameroon pipeline, the Association and the GOC have identified key measures to ensure the sustainable preparation and implementation of the LPHP which have been agreed in an implementation framework. EDC and the GOC have made substantial progress in preparing the project in line with agreed measures and have proactively corrected situations of temporary non-compliance.

96. The LPHP design reflects the lesson learned that hydropower projects can offer multiple opportunities for local development when potential synergies and efficiencies available are considered within the broader landscape of development and poverty alleviation. The local development program included in the LPHP includes investments in social infrastructure to support local or regional economic development. The existing Cameroonian mechanism for sharing of logging revenue with local councils and populations will apply to the wood salvage in the reservoir, which means that 30 percent of revenues go to the municipalities where the logging takes place and to adjacent villages.

97. The importance of appropriate communication and consultation activities, highlighted by other hydropower projects, has been taken into consideration. Hydropower projects often attract considerable attention from international and local NGOs. Several meetings with NGOs have taken place in Yaounde and in the field to consult civil society to engage on their concerns. The LPHP includes a specific sub-component on strategic communication and consultation to support the dialogue and information sharing with local, national and international stakeholders.

98. For high risk projects such as the proposed LPHP, experience recommends that donor preparation and supervision teams be adequately resourced and staffed, and include field-presence. Project preparation has involved strong cooperation between the five project donors, leveraging strengths and presence on the ground. This has not only helped mobilize adequate financial resources but has also assured the presence of a multi-disciplinary team with a dual perspective of integrated water resources management and energy development that takes into account the broad range of social, economic, and environmental issues. The same approach will continue during project implementation. All donors are committed to making available adequate resources and staffing to ensure adequate supervision and implementation support. On the IDA side, project supervision will continue to involve a large inter-discipliniary team of field- and headquarter-based experts. (see Annex 11).

D. Institutional and Implementation Arrangements

99. A Steering Committee (*Comité de pilotage*, CdP) provides a platform for exchange which will monitor project progress and ensure project implementation. The CdP is placed under the authority of the Prime Minister and chaired by the Secretary General of the Prime Minister's

office. The CdP includes representatives from the presidency, ministries involved in the project, and EDC[18].

100. The Steering Committee will be regularly informed of project progress including through (i) quarterly financial and narrative reports by EDC with help from the owner's engineers, and (ii) periodic technical audits of the environmental and social measures of the project by the independent technical auditor. Two additional committees have been established with specific mandates, reporting to the Steering Committee: (a) the existing committee supervising AfDB-financed energy projects will supervise Component 2 of the project and (b) the existing regional monitoring committee will link different ministries at the regional level.

101. Project activities will be coordinated by the EDC, the GOC's asset holding company in the electricity sector and the sole implementing entity for donor-financed activities under the project. The project is managed under the supervision of EDC's General Manager with the LPHP's Project Director being responsible for the day-to-day management of project activities. The choice of the implementing agency is guided by the fact that the decree establishing EDC mandates it to prepare and manage the LPHP.

102. Given the relatively weak in-country technical and managerial capacity relating to hydropower, the use of a small Project Implementation Unit (PIU) in EDC is deemed appropriate. The existing PIU in EDC for the ESDP project has consistently been rated satisfactory and is being reinforced to also manage the LPHP. The PIU will: (i) coordinate project activities; (ii) carry out financial management and procurement; (iii) prepare annual work plans and budgets for submission to the CdP and IDA; (iv) liaise with various government departments and donors; (v) ensure monitoring and evaluation (M&E) and reporting; and (vi) monitor and ensure safeguards compliance.

103. The PIU will be headed by the LPHP Project Director and will be staffed by EDC staff supplemented by a small number of specialists financed by donors. This will include two senior international advisors (a technical specialist on an intermittent basis and an environmental specialist on a full-time basis), a senior engineer serving as a deputy director, a senior environmental specialist, an M&E specialist, a communications specialist as well as procurement and financial management staff. The PIU staff will be located in various departments across EDC to ensure good working relationships with other EDC staff and ensure long-term capacity building. The technical PIU staff will be in the Construction and Hydropower Development Department which is dedicated to the Lom Pangar Project. This department includes two sub-departments: Engineering and Construction and Environment and Communication. EDC has established a PIU sub-office in Bertoua for regional outreach as well as a team based at the dam construction site in Lom Pangar.

104. Multiple ministries play a regulatory, supervisory, or supporting role for the project. These include the Ministry of Water Resources and Energy (MINEE), the Ministry of State Property Survey and Land Tenure (MINDCAF), the Ministry of Finance (MINFI), the Ministry of Economy, Planning and Regional Development (MINEPAT), the Ministry of Territorial

[18] Decree 233 CAB/PM establishing the CdP was signed by the Prime Minister on December 29, 2011.

Administration and Decentralization (MINATD), and the Ministry of Environment Protection of Nature and Sustainable Developement(MINEPDED).

105. Several ministries play important roles in the implementation of the LPHP project, though they will not have fiduciary responsibilities. Ministries invloved the implementation of the LPHP project, include the Ministry of Forestry and Wildlife (MINFOF), the Ministry of Public Works (MINTP), the Ministry of Livestock, Fisheries and Animal Industries (MINEPIA), the Ministry of Arts and Culture (MINAC); the Ministry of Health (MINSANTE) and the Ministry of Agriculture and Rural Development (MINADER). Relevant ministries will be involved in the selection and supervision of consultants for activities related to their mandate, and in some cases will co-sign consultant contracts. See Annex 3 for more detail.

106. EDC has recruited and mobilized an owner's engineer to supervise preparatory works and and construction of the regulating dam. An engineering supervision firm for Component 2 (powerhouse and transmission line) will be selected competitively. Also, an engineering consultancy firm will be recruited through competitive selection to supervise all other engineering works, such as clinics, roads, and a bridge in the ESMP.

107. Two independent panels (environmental and social panel and dam safety panel) are in place and have provided guidance to EDC during project preparation. The panels will continue to do so during the implementation phase[19].

108. The existing ESDP Project Implementation Manual (PIM) is being updated and extended into an LPHP Project Implementation Manual. The PIM will provide guidance on roles and responsibilities as well as on the technical, administrative, financial and accounting procedures, procurement arrangements, and the safeguard procedures. EDC will establish MoU/agreements with key ministries that formalize cooperation arrangement described in the PIM. Finalization of the PIM is an effectiveness condition.

109. It is expected that EDC will be responsible for the operation and maintenance of the regulating dam and its reservoir. The project includes TA activities to establish the operational regime of the dam. A concessionaire for the newly constructed power plant at the foot of the dam will be selected through a competitive bidding process. The transmission operator – once established – will be responsible for the O&M of the transmission line, while the rural electrification infrastructure will be operated and maintained by AES-SONEL.

110. The regulator ARSEL will remain responsible for setting electricity tariffs. As such, it was closely involved in the studies for and drafting of the water rights secondary legislation and will monitor the impact of the LPHP on electricity tariffs as part of its ongoing regulatory activity. In addition, ARSEL will set the tariff to be paid to auto-producer for the power supplied to the public grid on a "cost of service" basis.

[19] The Dam Safety Panel until the end of construction of the regulating dam, and the environmental and social panel till the end of the project period.

E. Results Monitoring and Evaluation

111. The project-level M&E framework will track progress in implementation, measure intermediate outcomes, and evaluate project impacts. The results framework in Annex 1 outlines key performance indicators, data collection methods, a timetable for collection, and responsible agencies. This framework will be used to supervise and monitor project implementation.

112. The PIU in EDC will be responsible for the overall management and implementation of the project M&E framework. To ensure efficient data for monitoring and evaluation of outcomes, EDC will closely coordinate with government agencies, donors, and other stakeholders. EDC is familiar with IDA project reports under the ongoing ESDP.

113. A comprehensive monitoring and evaluation approach has been developed, including agreement with the implementing agency and the GOC on results indicators. The data collecting and reporting responsibilities will be described in the Project Implementation Manual. The tools to be used for project M&E include progress reports compiled by the PIU in EDC based on implementing agencies' input. These reports will also be used by the Steering Committee and the donors for monitoring purposes as well as for periodic technical audits of environmental and social measures. The main sources of information for this monitoring and evaluation will be reports from contractors and supervisory engineering firms, the reports of the independent auditor for environmental and social measures, and NGOs contracted by the project. A technical partner will support MINFOF to develop the detailed protocol for monitoring Deng Deng National Park.

F. Sustainability

114. Financial sustainability of the proposed LPHP will ultimately be determined by the sustainability of the power sector and the definition and correct application of the water tariff regime. Cameroon's power sector is currently financially sustainable, as the private concessionaire AES-SONEL is able to recover its costs and make a profit under the existing tariff regulation. The GOC has paid compensation to AES-SONEL for the lack of tariff increases in 2010 and 2011 and is committed to applying tariff revisions going forward. At the beginning of the LPHP and until a new hydropower operator enters the sector, AES-SONEL will be the sole user of the water stored by the LPHP. AES-SONEL's financial situation is sound and financial projections show that AES-SONEL would be able to pay cost recovery level water tariffs. Over time, other users of water will enter the sector and pay water tariffs, including Alucam, other industrial consumers and independent power producers interested in future downstream projects. Water tariffs will create a net positive cashflow for EDC for the LPHP. The level of water tariffs assures that most of the benefits of the concessional conditions of donor financing are retained by the GOC/EDC and incorporates an IRR on equity provided through GOC counterpart financing. The water tariff is automatically indexed to take into account inflation on OPEX costs.

115. Technical, environmental, and social sustainability of the LPHP will depend on GOC capacity for management and implementation of large-scale infrastructure projects, continued operations and maintenance of infrastructure, and implementation of ongoing environmental and

social measures beyond the project's six year duration. The project contributes to a longer term sustainable development of hydropower potential in the Sanaga River basin, where impact is determined by the allocation, financing, and benefit sharing of future investment.

116. The GOC capacity for managing and implementing large-scale infrastructure projects according to international standards is increasing, albeit from a low baseline. The last hydropower dam in Cameroon was built in 1982, and was of a smaller scale and lesser complexity than the LPHP. Since then, the Chad-Cameroon pipeline was the largest infrastructure project which the GOC carried out in accordance with international standards. Through the ongoing ESDP, IDA has provided comprehensive technical assistance to EDC to support project preparation according to Bank standards. While EDC's capacity has improved as a result, further technical assistance is required to ensure satisfactory project implementation. To this end, the proposed project includes ongoing technical assistance to EDC for project management, supervision, and evaluation, as well as to MINFOF under the ESMP to implement a core element of the ESMP, the sustainable management of the Deng Deng forest, in line with international standards (see Annex 6).

117. Infrastructure operations and maintenance and continued implementation of environmental and social measures beyond project completion will be facilitated by new sources of revenues and financing mechanisms. Revenues generated from the water tariff will help ensure that EDC's O&M budget is adequate and thus the sustainability of investment projects beyond LPHP's completion. In parallel, a the water tariff will finance the operating costs of the Deng Deng National Park.

118. Created in 2006, and operational since 2008, EDC has no experience in building and operating reservoir dams or powerhouses. The decree by which EDC was created foresees the transfer of the operation of all reservoir dams from AES-SONEL to EDC. The transfer of dam operations from the AES-SONEL's unit managing the water flow in the Sanaga River basin to EDC is expected to take place before the Lom Pangar dam is operational, which will allow for the integrated management of all reservoir dams in the basin.

119. The LPHP provides technical assistance on integrated water management in the Sanaga River basin. This includes optimization of dam operations to benefit all downstream users (e.g. hydropower producers, agriculture, urban water supply, while maintaining environmental flows) and the establishment of relevant institutional frameworks to resolve or avoid conflicts between upstream and downstream users and to foster integration and collaboration among sectors by proposing clear decision-making processes.

IV. KEY RISKS AND MITIGATION MEASURES

120. LPHP represents a high risk, high return project. These risks are directly attributable to the complexity of the project, the technical and policy issues that are critical to its success, and the challenging governance environment in the country. At an institutional level, the Bank has carefully weighed the risks alongside the project's considerable benefits. A candid and robust institutional dialogue has enabled the Bank to lend its support to this important project. Nevertheless, continued monitoring and mitigation of risks will be critical to the success of the

project. This section discusses the risks associated with project implementation. Annex 4 provides the full risk framework for the project, risk ratings are summarized in the table 3.

Table 3: Risk Ratings Summary

Risk	**Rating**
Implementing Agency Risk	
- Capacity	substantial
- Governance	substantial
Project Risk	
- Design	substantial
- Social and Environmental	high
- Program and Donor	moderate
- Delivery Monitoring and Sustainability	substantial
Overall Implementation Risk	high

121. The project risk is considered high. This risk rating is determined by risks at country, sector, and implementation levels. At the country level, governance concerns pose the greatest risk; at the sector level, risks relate mainly to benefit capture of downstream hydropower resources and sector governance; and regarding implementation, risks relate to safeguards, hydrological risks, capacity, and coordination weaknesses of implem**enting entities.**

122. **Successful implementation and realizat**ion of the PDO will require intensive supervision. As such, the team has developed a robust implementation support plan that responds to the complexity of the project, the significant technical and policy issues that are critical to its success, and the challenging governance environment in which the project will be implemented. Adequate World Bank resources and staffing to assure this level of supervision will be made available throughout the project implementation cycle. The World Bank supervision team will continue to work together with the teams of the other four donor agencies that are cofinancing LPHP. As during project preparation, project supervision will be undertaken by an inter-disciplinary team of field- and headquarter-based World Bank experts, with continued strong support from senior management in the Africa Sustainable Development department (see Annex 11).

123. **Country Risks: Governance and Performance** - Cameroon poses a challenging operating environment, as evidenced by poor governance ratings and weak execution of the investment budget. The IDA portfolio has suffered from low disbursement rates and weak project ratings. Lack of government ownership has been identified as a contributing factor to the low performance of the portfolio. Three factors significantly reduce the risk associated with the LPHP from these more global governance and performance risks. First, the project is of national priority and therefore has considerable human and financial resources at its disposal, along with a clear authorizing environment from the highest levels of Government. Second, corruption risks and the risk of slow disbursement are reduced given that the two major contracts for the project (dam construction and the independent supervisory engineer) have already been procured according to Bank procurement guidelines. The project also has built-in mechanisms to

strengthen civil society oversight of project activities: providing access to substantive information about project implementation, establishing a complaints handling mechanism, and maintaining a regular dialogue with civil society. Third, overall project design has taken a risk-based approach, identifying areas of concern at technical, fiduciary, and policy levels, and developed robust mitigation measures to reduce the possibility that they do materialize, including ensuring that key PIU staff are in place and trained on fiduciary controls and responsibilities, including those associated with integrity risks. In addition, the project has gone through a comprehensive internal quality review process, with increased senior sector management attention and involvement at every processing step, including chairing quality enhancement review meetings and mission participation.

124. **Sector Risk: Benefit Capture of Downstream Hydropower Resources** - Unequal benefit allocation from developing the Sanaga's downstream hydropower potential constitutes a risk to the project. The introduction of water tariffs will ensure the GOC recovers the investment and recurrent costs of the LPHP from all hydropower producers in the basin. The economic analysis of LPHP shows the development of the Sanaga's hydropower potential depends on the existence of industrial anchor customers that can mobilize capital and provide firm demand for electricity. The weak investment climate in Cameroon creates the risk of slow investments in future HPP and inadequate demand to justify downstream hydropower development. However, there is a risk that industrial anchor customers will receive preferential treatment compared with domestic users. The 2011 Electricity Law stipulates that downstream hydropower sites will be optimized and introduces an obligation for auto-producers to sell part of their electricity into the public grid - to ensure that also the needs of domestic consumers are met. RTA has committed itself in writing to the GOC that it will make available approximately 600 MW of firm electricity to the public grid by 2030 from the three sites allocated to RTA in the Sanaga Basin provided that the planned regulating dams will be constructed. The policy letter further elaborates specific measures and indicators to maximize the development impact of further hydropower generation in the Sanaga basin through industrial users making lumpy investments in hydropower and selling part of the electricity they produce into the public grid for other users at a cost-reflective price. In the case the GOC slides back on the hydropower sector framework, and, in the opinion of the Association, acts in a manner inconsistent with the Policy Letter, IDA would have the right to suspend disbursement[20]. The LPHP will finance optimization studies for various hydropower sites necessary to enforce optimization requirements. IDA will continue to provide advice and guidance on the ToRs and findings of the technical studies and their input to the concession process.

125. **Sector Risk: Weak Sector Governance** - Poor governance could undermine the development of Cameroon's energy sector. The GOC has taken significant steps towards outlining and implementing a comprehensive power sector reform program and the electricity sector is advanced and stable relative to other countries in Africa. However, risks of slippage remain, as have been witnessed in other sectors in Cameroon. Beyond the question of the development of the Sanaga River, there are risks that the sector framework will evolve in a way that will limit regulation, competition, and equitable access. The December 2011 Electricity Law represents a material change in the legal framework governing the sector, by allowing auto-

[20] It is worth noting that, if any noncompliance would only materialize after the project has closed, the only available remedy at that time would be to accelerate the repayment of the Credit.

producers to develop hydropower projects and further unbundling the sector through the establishment of a national transmission company. To effect these changes, the GOC has started to develop secondary legislation - in the form of a number of application decrees supporting the newly adopted law. This is a complex undertaking that will require time and resources to assure required quality and comprehensiveness. Through its policy letter, the Government of Cameroon has committed itself to developing all secondary legislation in consultation with the sector's stakeholders. Associated legal covenants form part of the LPHP financing agreement to ensure that the sector framework remains in support of the law and the policy letter.

126. The Association has been a strong partner of the GOC in sector reforms. IDA technical assistance has contributed to the introduction of private sector participation, a renegotiated Power Purchase Agreement (PPA) with the aluminum industry that introduced cost-reflective tariffs, and the drafting of a new electricity law. The GOC has expressed strong demand for continued policy advice from IDA. Specifically, the Bank team is working with the GOC on a set of comprehensive measures to mitigate the risk that the secondary legislation could adversely and directly affect the LPHP. First, a final draft decree and a corresponding order for the introduction of a water tariff - to ensure the long term financial sustainability of the LPHP including recurrent financing of the Deng Deng National Park has been prepared in final draft. Second, the team will continue to participate in discussions with the government on other secondary legislation that will define the process for optimizing future hydropower developments along the Sanaga River in a way that the benefit from the downstream concessions are shared and the associated lower cost hydroelectric power costs benefit the population. In parallel and continuing over the coming year, technical assistance financed by the ongoing Energy Sector Development Project supports the development of the broader set of application decrees and associated studies.

127. **Implementation Risk: Capacity and Coordination Weaknesses of Implementing Entities** - Capacity and coordination between implementing entities pose risks to project implementation. LPHP is a complex undertaking, involving a number of government agencies and contracted technical partners. Coordination is a constant challenge in Cameroon, even within government agencies. To mitigate this risk, the project is being implemented under the oversight of the Office of the Prime Minister, which chairs the Steering Committee. Since its establishment in December 2011, the Steering Committee, and its technical secretariat in the Prime Minister's office have played a critical role in uniting various ministries and agencies and in accelerating the pace of project preparation. Ongoing and planned technical assistance to EDC and various ministries on technical, environmental, social and communication aspects will also help develop capacity and improve coordination.

128. **Implementation Risk: Poor Execution of Safeguards Instruments -** The reservoir associated with the Lom Pangar regulating dam will cover an area of approximately 540 square kilometers which represents a significant environmental footprint in a tropical forest environment. Though relatively sparsely populated, the project's social impacts are also considerable. Due diligence has been performed by the Government during project preparation. This has resulted in the development of a sophisticated set of environmental and social safeguards instruments as well as in heightened stakeholder awareness for the need to be proactive in ensuring compliance with these instruments.

129. Nevertheless, the GOC has a limited track record and capacity to implement sophisticated safeguards instruments, even though experience has been acquired from the Chad-Cameroon Pipeline project and capacity for designing and implementing environmental and social safeguards measures have been strengthened through the IDA-financed PRECESSE project. Project design recognizes these capacity limitations and the project therefore includes significant support (technical assistance) to ensure safeguard measures are implemented satisfactorily. The Project Implementation Unit will include an internationally recruited environmental advisor, while a reputable international firm has already been recruited as an independent supervisory engineer responsible for safeguards supervision of works. A regular third party technical audit of safeguards measures will also ensure compliance with safeguard policies. These audits will enable oversight of the Project Steering Committee in addition to donor supervision. Other safeguards risks are associated to the adaptation works for the Chad-Cameroon Pipeline, which are outside of project controls but are mitigated through legal covenants.

130. **Implementation Risk: Induced Impact Risks** – Despite thorough analysis on induced and cumulative impacts, the adverse or beneficial effects caused by a chain reaction of human activities facilitated by the project can only be fully known once the LPHP is implemented. The LPHP safeguards documents contain extensive measures aimed to mitigate potential downstream cumulative effects at the periphery of the reservoir and in the downstream basin. The project includes an extensive monitoring program on induced and cumulative impacts and a budget to address issues if and when they are identified. The six year project duration will allow for monitoring and identification and implementation of corrective action if necessary.

131. **Implementation Risk: Hydrological and Technical Risks** – The integrated use and management of a cascade system including a mix of private and governmental interests, private operators and different sectoral use of water, is a complex undertaking. Competing interests of different stakeholders may present themselves (e.g. between saving water in the dam for later use versus production of the 30 MW at the Lom Pangar powerhouse), especially during dry years. Climate change and increases in consumptive water use for agriculture, industry, and potable water production can potentially put more pressure on the river basin and dam operation. Dams need to be operated independently and transparently based on clearly established operational rules. In addition to providing technical assistance to develop the operational roles associated with the management of the cascade system, IDA will ensure that supervision teams include expertise in system analysis and cascade operations. Technical problems at the downstream Edea and Song Loulou power plants could also have an adverse effect on reaching the project development objective.

V. APPRAISAL SUMMARY

A. Economic and Financial Analyses

Economic Analysis

132. The economic analysis included in Annex 5 considers the following four scenarios:

- Scenario 1: LPHP as a standalone project
- Scenario 2: LPHP plus Nachtigal Amont

- Scenario 3: LPHP plus further hydropower plants (with power export)
- Scenario 4: LPHP plus further hydropower plants (with RTA greenfield plant)

133. LPHP is economically attractive as a standalone project as well as under the scenarios that include other downstream hydro developments. The economic rate of return of the stand alone LPHP project (Scenario 1) is estimated at an attractive 17.8 percent. The rate of return stands at 16.3 percent for Scenario 2 (LPHP plus Nachtigal Amont). The rate of return for Lom Pangar and further hydropower schemes is 20.8 percent for Scenario 3 with power export, and 16.3 percent for Scenario 4 with the RTA greenfield plant. The returns generated in all the scenarios are well above the Bank's threshold rate of 10 percent. The benefit-cost ratio is above 1 for all scenarios. The Net Present Value is positive for all four scenarios.

134. Sensitivity analysis was conducted around a wide range of parameter uncertainties including capital costs, construction delays, demand growth, load factor of the Lom Pangar 30MW power plant, and industrial expansion plans. Economic returns for Scenarios 1, 2, and 3 prove to be robust around a wide range of parameter assumptions. Under Scenario 4, the probability of economic returns falling below 10 percent, is approximately 17 percent.

135. The benefits of the LPHP and subsequent hydropower schemes depend on how the resulting power is allocated between public supply and industrial users, because of the wide variation in willingness to pay for power across different user groups. A separate simulation was undertaken to illustrate how the economic rate of return is affected by different allocations of power. The results illustrate that the optimum allocation between public supply and industrial use depends on the size of the development. Development of hydropower sites for public supply only would cause escalating unit costs. For a mid-sized scheme like Nachtigal Amont, the optimal share to go into public supply is about one quarter. For larger schemes, the optimal share to go into public supply drops to just under 20 percent. This implies that obligations of auto-producers to provide a part of produced electricity into the public grid, combined with the requirement for these auto-producers to competitively tender works, helps to maximize economic benefits from downstream hydropower generation.

136. Given that a share of the increased power produced from the Lom Pangar and other hydropower projects will be consumed by the energy-intensive aluminum industry, an economic analysis of the direct and indirect benefits of the aluminum industry for Cameroon's economy was conducted. Direct benefits of Alucam's operations include value-added from its production operations and employment. Indirect benefits include value-added and employment created with suppliers and other sectors of the economy as well as the construction and operation of the hydro projects themselves. The contribution of aluminum to Cameroon's economy is projected to grow. Incremental direct and indirect benefits from the construction and production of Alucam's expansion and Kribi plant are estimated at 0.50 percent of GDP on average between 2012-2015; 3.95 percent of GDP on average between 2016-2020; 7.01 percent of GDP between 2021-2025; 7.91 percent of GDP between 2026-2030; 6.93 percent between 2031-2035; and 5.86 percent between 2036-2040.

Financial Analysis

137. The LPHP would generate two services: (i) more reliable flow of water for downstream hydropower plants; and (ii) additional power supply in the Eastern grid. Financial viability depends on the level of water tariffs and electricity tariffs for the services the project provides.

138. The Lom Pangar regulating dam is a financially viable investment. Hydropower producers (AES-SONEL and RTA) that benefit from the reduced seasonal variability of the water flow of the Sanaga river will be charged a cost reflective water tariff. According to the final draft "arrêté", the tariff, once the LPHP dam is operational, will be 20 million FCFA/MW (about US$0.0052/kWh) as long as the capacity is under 1,100MW[21]. Annual revenues for EDC would acrue to approximately US$42.8 million once Nachtigal Amont is operational. When the next plant after Nachtigal Amont comes on line, the tariff per MW will decrease, but total revenues for EDC will increase.

139. The establishment of the water tariff will allow EDC to service the debt that will be on-lent by the GOC for financing of the Lom Pangar regulating dam, its ESMP and RAP as well as the technical assistance and project management related to the project. The level of water tariffs assures that most of the benefits of the concessionality of donor financing are retained by the GOC/EDC and incorporates an IRR on equity provided through GOC counterpart financing. The water tariff is automatically indexed to take into account inflation on O&M costs.

140. The powerhouse and transmission line are financially viable investments. The new power generated directly by the LPHP will be sold to existing and newly connected customers of the Eastern Grid. Generation costs of the powerhouse and associated transmission line are approximately US$0.062/kWh. In comparison, local communities are currently generating power from isolated small scale diesel plants at a cost in excess of US$0.28/kWh.

B. Technical

141. The analytical studies of thermal power from natural gas as an alternative to Lom Pangar support the choice of the hydropower option to increase power supply on the interconnected Southern network. The project site and design were selected based on conclusions from several studies of alternative locations for reservoirs, considering costs and benefits as well as several options for technical suitability. Overall, the project's location on the Lom River is determined by the strong hydropower potential of the Sanaga basin (half of Cameroon's hydropower potential) and the location close to the watershed of the main demand centers, including both economic and political capital cities.

142. The reservoir capacity optimization has been analyzed on the basis of the three reference scenarios for power use from the ESDP 2030 report ("low" 1,430 MW, "median" 1,680 MW, and "large" 3,839 MW demand forecast at horizon 2020). Two hydropower options were considered: storage enhancement and new dams. As far as storage enhancement, Lom Pangar was considered superior compared to alternatives sites at Bankim, Mbakaou and Litala because of its lower cost per stored m3 and its large storage capacity.

[21] Song Loulou, Edéa, Lom Pangar, and Nachtigal Amont plants have a cumulative capacity of 1,007MW

143. The dam design is technically appropriate and complies with the Bank's policy on dam safety. The Technical Panel on Dam Safety (TPDS) has reviewed and confirmed the tender dam design as appropriate to construct a structurally safe dam. Pending aspects (geotechnical tests, hydraulic model, cement transport, etc.) will be addressed during construction, thereby accepting some risk - which is reflected in the risk management contingency plan. The TPDS stated their acceptance of the Plan for Construction Supervision and Quality Assurance, which is part of the TORs of the owner's engineer for dam construction, and confirmed suitability of the instrumentation and monitoring system for bidding purposes.

144. The analysis of alternatives went beyond the simple comparison among macro power generation or dam site location options. The analysis reviewed alternative options for the concrete implementation of the LPHP, including dam design (spillway design and optimization of reservoir's capacity); comparative analysis of various site access possibilities (railway and roads); analysis of alternatives for the construction of the camp area, quarries and material extraction sites; alternative solutions for the reservoir's partial clearing before flooding; and, alternative routing options for the transmission line.

145. The designs retained for the construction of the powerhouse and the transmission line are technically sound. The designs were carried out after a detailed option assessment.

146. The technical studies on alternative pipeline adaptation measures have been completed and technical specifications for the retained option have been defined through detailed studies. The chosen adaptation method (double connection: new stretches by-passing existing stretches during construction) does not normally require supply interruptions and thus minimizes the potential liabilities to COTCO for interruption of oil delivery. A detailed technical options study, taking into account technical, economic and environmental considerations, recommended reinforcing the pipeline over two 12.5 kilometer stretches. COTCO has finalized negotiations with the selected bidder. Technical risks related to the partial flooding of the Chad-Cameroon pipeline have been studied and found to be manageable.

147. The capacity of the GOC to manage large-scale infrastructure projects is increasing, albeit from a low baseline. For instance, implementation issues during the construction of the Chad-Cameroon pipeline illustrated GOC's limited capacity in the sustainable development of large-scale infrastructure projects. Since then, the capacity of the GOC, and of EDC specifically, has been built through a comprehensive technical assistance program on project and sector issues more broadly through several IDA and donor instruments, with an emphasis on field-based supervision of works and contract management. Technical design studies and bidding documents for the large works included in the project have all been developed according to international standards. Intensive IDA supervision and hands-on support will ensure that supervision of works is executed in a satisfactory manner.

C. Financial Management

148. A financial management (FM) assessment of EDC was conducted in accordance with the March 2010 Financial Management Manual and revisited thereafter. Its objective was to

determine whether: (i) the implementing entity has acceptable and adequate financial management arrangements to ensure that LPHP funds will be used for intended purposes in an efficient and economical way; (ii) LPHP financial reports will be prepared in an accurate, reliable, and timely manner; and (iii) the project's assets will be safeguarded.

149. The proposed FM arrangements were reviewed with the following conclusions. The project's overall FM residual risk rating is deemed Moderate after taking into account the implemented mitigation measures. The project will make use of the existing financial management framework in place for the on-going IDA-financed ESDP at EDC, and will utilize the existing fiduciary staff of the ESDP within EDC, comprised of a Financial Manager and an Accountant. Terms of Reference of the FM staff will be amended to reflect their roles and responsibilities in the LPHP. Monitoring of the workload and pressure on the FM staff will be assessed after one year of implementation to determine the need for a recruitment of additional FM staff. Since EDC has acceptable external audit arrangements in place, the contract of the existing external auditor will be amended within four months of effectiveness to ensure that annual audit reports are timely carried out and transmitted. The proposed FM arrangements, as summarized in Annex 3, meet the minimum requirements for financial management under OP/BP 10.02. The December 2011 assessment of the ESDP project rates the FM arrangements for the component managed by EDC as Moderately Satisfactory[22] with no outstanding reports.

D. Procurement

150. A capacity assessment of EDC rated overall project procurement risk as High. Reasons for this include (i) the risk of corruption in procurement, especially on big contracts, and (ii) the absence of a formal decision, text, or manual on the procurement arrangements[23]. Large contract packages have already been procured under old guidelines ("Guidelines: Procurement under IBRD Loans and IDA Credits" published by the Bank in May 2004, and revised in October, 2006'', and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" published in May 2004, and revised in October 2006"). Other contracts to be procured during the life of the project will be carried out in accordance with the World Bank "Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" dated January 2011; and "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credit & Grants by World Bank Borrowers", dated January 2011. The EDC tender board and the procurement staff have acceptable qualifications and were fully involved in the international competitive bidding (ICB) process of the Lom Pangar dam contract. Capacity of the implementation unit for contract management is crucial for the successful implementation of this project. The action plan in Annex 3 needs to be implemented with appropriate monitoring in order to bring the procurement risk to Moderate. Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants", dated October 15, 2006 and updated January 2011, shall apply to the project.

[22] Main recommendations relate to the need to reinforce the accounts reconciliation process. An action plan was agreed with EDC Finance Department as part of the December 2011 supervision and under implementation.
[23] EDC is currently using the procurement implementation arrangement of the existing ESDP for the LPHP, including its tender board and its procurement staff.

151. The draft procurement plan for the first 18 months of the project was carefully reviewed at appraisal. The final version of this procurement plan was discussed during negotiations. During implementation the procurement plan will be updated in agreement with the project team as required - at least annually - to reflect actual project implementation needs and improvements in institutional capacity. It will be available in the project's database and a summary will be disclosed on the Bank's external website once the project is approved by the IDA's Board of Directors.

E. Environment and Social

152. Given its complexity, the construction of the LPHP will have significant environmental and social impacts. The Lom Pangar regulating dam will create a 540 square kilometers reservoir which represents a significant environmental footprint in a tropical forest environment. Though the area is relatively sparsely populated, the project will also have social impacts.

153. Extensive due diligence has been performed by the Government during project preparation. This has resulted in a sophisticated set of environmental and social safeguards instruments as well as heightened stakeholder awareness for the need to be proactive in ensuring compliance with these instruments. Further details are provided in Annex 6.

154. The project is designated Category A per the Bank's policy on Environmental Assessment (OP/BP 4.01). A comprehensive Environmental and Social Assessment including an Environmental and Social Management Plan (ESMP), four Resettlement Action Plans (RAPs), a Pest Management Plan (PMP), a Process Framework, and a number of technical annexes have been prepared, consulted upon, and disclosed in the InfoShop and in country (see Annex 6 for full list). All safeguards instruments are also accessible on the EDC's website (www.edc-cameroon.org) and on the Bank's project website (www.worldbank.org/lompangar).

155. The following safeguard policies are triggered[24]:

- Environmental Assessment (OP/BP 4.01) - The project will have significant and irreversible environmental impacts, including: (i) the partial flooding of the Chad-Cameroon pipeline; (ii) the loss of natural habitat due to flooding and infrastructure footprint; (iii) the risk of reducing the viability of a distinct population of gorillas and other red-listed species; (iv) the risk that construction activities will induce significant loss of natural habitat; and (v) the predictable environmental, human and health risks associated with the construction and operation of any large infrastructure in a previously low density area. An Environmental and Social Assessment (ESA) and ESMP have been prepared to address and mitigate the environmental and social impacts of the construction sites, reservoir and downstream areas, and wood salvage. The ESA and ESMP also

[24] No Pygmies and other Indigenous Peoples as described in OP 4.10 have been found in the project area. The Mbororos, who do not fulfill all the criteria for OP 4.10, are present in the project area, and live mostly through herding activities. Their situation is analyzed in the ESA and targeted measures aimed at assisting the Mbororos are included in the RAPs.

address the sustainable management of the Deng Deng National Park (DDNP) and the Deng Deng forest.

- Natural Habitats (OP/BP 4.04) - The project will have significant impacts on natural habitats, both during construction and operation of the dam. The main impact will be the flooding of a considerable area of natural forest. The ESA indicates that none of the flooded terrestrial habitat is critical. However, the dam site is located next to portions of the Deng Deng forest that includes critical habitats, with the presence of a viable population of gorillas, and a significant population of chimpanzees.

- Pest Management (OP/BP 4.09) - Only limited, but potentially harmful, quantities of pesticides and other biocide products will be utilized for the major works related to the LPHP, and for the control of disease vectors in the reservoir and immediate downstream area. A PMP has been prepared.

- Physical Cultural Resources (OP/BP 4.11) - Agreement has been reached with the Ministry of Culture regarding the management of chance finds and longer-term activities to preserve cultural assets.

- Involuntary Resettlement (OP/BP 4.12) - The LPHP is expected to have direct and indirect social impacts in its area of influence and beyond. Social mitigation plans by broad categories of works (dam and reservoir, power plant and transmission line, access roads) were prepared as well as a process framework for the DDNP to mitigate, offset, reduce negative impacts, and strengthen positive impacts on the communities in the project area. RAPs have been prepared for communities in the area of the dam site, along the associated transmission line, near the powerhouse, and in DDNP. The GOC has committed itself through the RAPs to compensate project-affected persons according to the standards of OP 4.12, which are more stringent than the applicable domestic legal framework.

- Forests (OP/BP 4.36) - Forest issues include wood salvage from the future reservoir, as well as control of induced impacts at the periphery of the reservoir.

- Safety of Dams (OP/BP 4.37) - The project includes the construction of a new, large 46 m high dam and an associated reservoir. EDC has appointed an independent dam safety panel during project preparation to advice on associated dam safety risks. Dam safety studies have been prepared.

156. The DDNP serves as an environmental offset for the footprint of Lom Pangar dam and reservoir and, together with accompanying measures, will ensure the viability of the Deng Deng forest's population of endangered large primates. From 2007, AFD financed technical assistance by the Wildlife Conservation Society (WCS) to study the gorillas' population numbers and distribution and to help the Ministry of Forests and Wildlife control poaching and illegal logging that threaten the gorillas' habitat. Based on initial work by WCS and subsequent public consultations, the 58,000 hectare DDNP was created in March 2010. Measures to ensure the sustainable management of DDNP are included in the ESMP, including but not limited to a planned enlargement of the park perimeter, protected corridors to allow for the movement of

gorillas, a secured financing mechanism, adequate provision of ecoguards, and access controls, most particularly during the dam's construction phase. A Process Framework for DDNP was developed in line with Bank guidelines.

157. The adaptation of Chad-Cameroon pipeline is being managed according to Bank Group standards. COTCO has carried out a Specific Environmental and Social Impact Assessment (SEIA) for the adaptation works. In addition, the provisions of the Chad-Cameroon pipeline's Environmental Management Plan apply. To manage the risk of an oil spill into the reservoir, COTCO has also updated the Area Specific Oil Spill Response Plan which will apply together with the National Oil Spill Response Plan managed by the National Hydrocarbons Society (SNH).

F. Communication

158. The LPHP is at the core of the GOC's infrastructure investment program in support of higher productivity, faster job creation and accelerated poverty reduction. Discussion and debate on the project is therefore part of a larger national conversation on power, economic growth, and poverty reduction. The LPHP represents a high risk, high return project, and will include a comprehensive communication program and effective systems for stakeholder consultation. Stakeholder consultations to date have shown a general positive engagement with the project. Some international NGOs voiced opposition to the project in 2005 to 2007. Local environmental groups have mainly focused on influencing the environmental and social mitigation measures included in the project.

159. EDC has developed a comprehensive communication strategy which aims to: make stakeholders aware of the rationale, risks, and complexity of the project; support extensive stakeholder consultations; capture and incorporate feedback; harness the capacity of civil society to monitor and hold project actors accountable; and manage the reputational risks. The LPHP communications and consultation program will facilitate an informed dialogue to share different viewpoints among stakeholders within and outside the country, including donors, national and international CSOs, advocacy groups, and lay audiences. The dialogue will continue to focus on the role of the LPHP in the generation of clean hydropower for development and poverty reduction. Consultations will also address sensitive issues linked to the project - such as equity to affected populations and protections of primate habitats. The strategy will ensure information is made available to the public in a format and language that can easily be understood.

160. The LPHP communication and consultation program will be dynamic and will be fine tuned periodically as it will incorporate feedback and report on the progress regularly. A two-way flow of information will engage different channels including interpersonal, face-to-face, electronic, and other forms of media as appropriate. These include several communication centers near the Lom Pangar site, stakeholder meetings, annual stakeholder forum on the progress of the ESMP, and a dynamic website (www.edc-cameroon.org). A grievance redress mechanism has been established and affordable and accessible procedures for third-party settlement of disputes will be maintained. Activities will also include an outreach program involving local NGOs and local decision makers (such as traditional rulers, village elders, etc.) and conflict prevention and mediation measures.

161. The February 2012 Policy Letter, signed by the Prime Minister affirms the GOC's commitment to assuring transparency and citizen participation, including holding quarterly, regional and annual national consultations with civil society (See Annex 7). The GOC also commits to reinforcing the current complaint handling system linked to the project, including assuring timely responses to complaints. EDC will disclose key documents during implementation, including, *inter alia*, findings of quarterly independent technical audits of environmental and social measures, reports of the independent panel of experts, and quarterly project reports.

162. The IDA supervision team will include a communications specialist with experience in hydropower operations. IDA shall continue to proactively make available related to the project through a dedicated project website (www.worlbank.org/lompangar) and dissemination to targeted stakeholders in line with the Bank's Access to Information Policy and the Africa Strategy.

Annex 1: Results Framework and Monitoring

Project Development Objective (PDO):

to increase hydropower generation capacity and reduce seasonal variability of water flow in the Sanaga River and to increase access to electricity.

PDO Level Results Indicators*	Core	Unit of Measure	Base-line	Cumulative Target Values**						Frequen-cy	Data Source/ Methodology	Responsibility for Data Collection	Description
				YR 1	YR 2	YR3	YR 4	YR5	YR6				
Quantity of hydroelectricity additionally generated under the project		GWh/year								Annually	AES-SONEL Annual Report, EDC progress reports	EDC	Indicator is based on average annual rainfall.
at the two existing plants on the Sanaga River	X		0	0	0	0	0	601	601				
new capacity at Lom Pangar			0	0	0	0	0	223	223				
Guaranteed all-season water flow of the Sanaga River.		m3/s	720	720	720	720	720	1040	1040	Annually	AES-SONEL Annual Report, EDC progress reports	EDC	Measured at Song Loulou. Indicator is based on average annual rainfall. Flow measurements will need to be adjusted using rainfall data. Methodology to be determined in the PIM.
Number of households newly connected to the electricity grid		Number	0	0	0	0	1200	1200	2400	Annually	AES-SONEL Annual Report, EDC progress reports	EDC	The connections will be established gradually with 60% complete at the end of the 4rd year of works and 100% complete at the end of the 4th year of works.

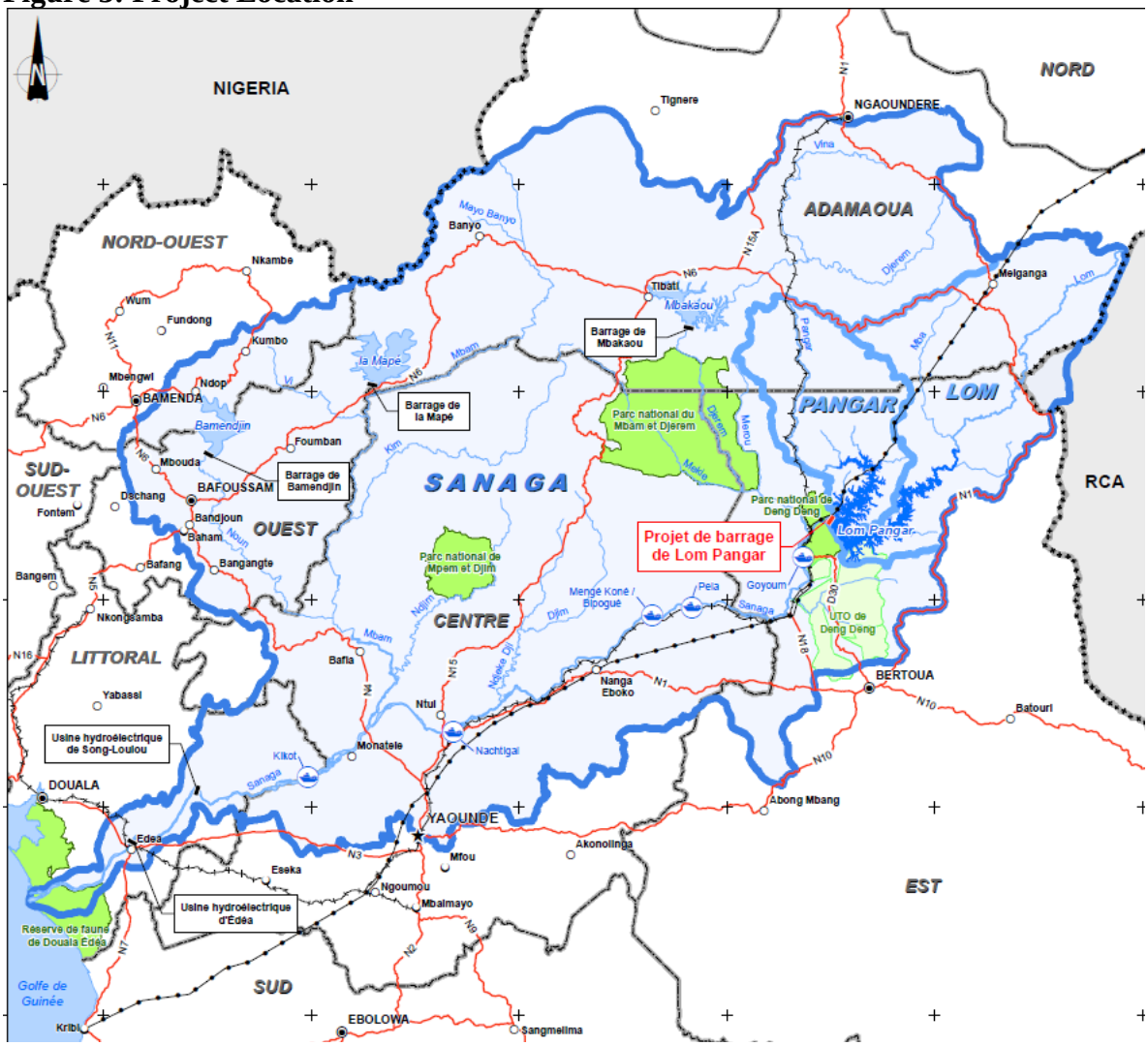
Direct Project Beneficiaries (number), of which female (percentage)	 X	Number %	0 -	0 50.6%	0 50.6%	0 50.6%	0 50.6%	4,950,000 50.6%	5,143,000 50.6%	Annually	AES-SONEL Annual Report, EDC progress reports	EDC	Includes 2.4K new connections in Eastern Grid + AES-SONEL's existing 22K Eastern Grid consumers and existing 625K consumers of the Southern Integrated Grid receiving better services. Estimates are based on census data of average household size of 7.92 people/hh.
INTERMEDIATE RESULTS													
Intermediate result (Component 1) : To construct the Lom Pangar regulating dam													
Commissioning of Lom Pangar regulating dam completed		Yes/No	No	No	No	No	No	Yes	Yes	Quarterly	EDC progress reports	EDC	
Intermediate result (Component 2): To construct the Lom Pangar power plant and transmission line													
Commissioning of Lom Pangar power plant completed		Yes/No	No	No	No	No	No	Yes	Yes	Quarterly	EDC progress reports	EDC	
Transmission line constructed under the project		km	0	0	0	0	0	105	105	Annually	EDC progress reports	EDC	
Intermediate result (Component 3): To ensure that the environmental and social impacts of the LPHP are mitigated													
Dam Safety Panel recommendations are implemented in a timely and quality manner		Yes/No	No	Yes	Yes	Yes	Yes	Yes	Yes	Quarterly	Dam safety panel reports	EDC	The Dam safety panel reports will contain a section reporting on the implementation of past recommendations.
Average annual household income of project directly affected persons		FCFA/annum	910,000			910,000		910,000	same or above baseline	twice	Survey instrument at baseline and before close of project	EDC	
Gorilla population in Deng Deng Forest		# of gorillas	300	300	300	300	300	300	300	Annually	Population survey (using	EDC / MINFO	Baseline based on known range of gorilla population

											gorilla nest count)	F	in DDNP, south of the Lom River plus the northern zone of UFA 10-065. Methodology from Wildlife Conservation Society "*Wildlife and human impact surveys of the Deng Deng National Park and UFA 10065, 2010*"
Annual Expert Panel environmental and social monitoring report disseminated and made publically available		Yes/No	No	Yes	Yes	Yes	Yes	Yes	Yes	Annually	Expert panel reports, EDC progress reports	EDC	The report is published by EDC and made available on the internet.
Intermediate result (Component 4): To ensure that project components are effectively monitored and coordinated													
Operation manual for the dam and reservoir is completed and staff are trained on its use		Yes/No	No	No	No	No	Yes	Yes	Yes	Annually	EDC progress reports	EDC	

Annex 2: Detailed Project Description

1. The Lom Pangar regulating dam will be located on the River Lom in Cameroon's Eastern Region - about 4 kilometers dowstream of the confluence with the Pangar River and 13 kilometers upstream of the confluence with the Sanaga River (see Figure 3 below). The Lom Pangar Hydropower Project (LPHP) consists of a regulating dam, a hydroelectric power plant at the foot of the dam and a transmission line between the power plant and the Eastern Network, a rural electrification scheme, environmental and social measures and technical assistance, and project management. Associated investments include the adaptation of the Chad-Cameroon Pipeline.

Figure 3: Project Location



2. The LPHP will finance four components: (i) Lom Pangar Regulating Dam; (ii) Lom Pangar Power Plant and Transmission Line, (iii) Environmental and Social Measures, and (iv) Technical Assistance and Project Management.

Component 1: Lom Pangar Regulating Dam (total cost US$216 million; of which IDA US$115 million, EIB US$40 million, AFD US$12 million and counterpart financing US$49 million)

3. This component will finance the construction of the Lom Pangar regulating dam on the Lom River. The component will include the following subcomponents:

1.1: Dam Engineering, Procurement, Construction, and Construction Management (EPCM)
1.2: Contingency
1.3 Preparatory works
1.4: Owner's engineer

Subcomponent 1.1: Dam Engineering, Procurement, and Construction Management) (total costs US$153 million)

4. The Lom Pangar dam will increase the guaranteed average water flow on the Sanaga from 720 m^3/s to 1,040 m^3/s, by storing water of the river Lom during wet periods and releasing it during dry periods. The regulating dam will be 46 meters high and 7 meters wide at the crest and be composed of: (i) a 182 meter long central concrete overflow section located in the river, (ii) two compacted earth embankment wings with a total length of 1170 meters, and (iii) an auxiliary 425 meter long saddle dam on the right bank. Due to a rock section that splits the embankment dam on the right bank, an auxiliary saddle dam is required to close the reservoir. The regulating dam will be operational between the minimum operating level of 649 meters Above Mean Sea Level (AMSL) and the normal top water level of 673 meters AMSL. The dam will include a gated spillway with four radial gates for the rapid discharge of flood water with a total capacity of 1600 m^3/s and three regulating bottom gates with a maximum capacity of 860 m^3/s. The crest of the dam will accessible by a bridge connecting the left and right bank of the Lom river.

5. Based on the analysis of hydrological data over the last 30 years, the associated reservoir will have a maximum storage capacity of about 7 billion m^3. At full supply level (FSL) the active storage is estimated at 6 billion m^3, resulting in an impounded surface area of 540 km^2 in the Lom valley. The medium annual inflow of the river Lom is estimated at 8.2 billion m^3, corresponding to 260 m^3/s. It is estimated that 54 percent (32,000 hectares) of the future reservoir is currently covered by forest. The reservoir will be filled in a staged manner to allow for a residual flow of the river Lom. The short term changes in flow are expected to be within the normal daily variability in flows as a result of the operations at Song Loulou and Edéa. Table 4 provides a summary of the characteristics of the proposed hydropower facility.

6. The Technical Panel on Dam Safety (TPDS) has reviewed and confirmed the tender dam design as appropriate to construct a structurally safe dam. Pending aspects (geotechnical tests, hydraulic model, cement transport, etc.) will be addressed during construction, accepting some risks which must be reflected in the risk management contingency plan. The TPDS stated their

acceptance of the Plan for Construction Supervision and Quality Assurance which is part of the TOR of the owner's engineer and confirmed suitability of the instrumentation and monitoring system for bidding purposes. The Instrumentation Plan has also be made available to the TPDS and IDA.

Table 4: Summary of Main Characteristics of the Lom Pangar Hydropower Facility as Specified in the Bidding Documents

Description		Specification at the site	
Hydrology	Catchment area	19,700	km²
	Medium annual inflow of the river Lom	8,150	million m^3
	Average water flow of the river Lom	258	m^3/s
	Max flow rate (50 yr data)	1,460	m^3/s
	Max flow rate during dry season (50 yr data)	450	m^3/s
	Max flow rate (100 yr data)	1,580	m^3/s
	Max flow rate (10 000 yr data)	3,475	m^3/s
Reservoir	Full Supply Level (FSL)	672.7	m Above Mean Sea Level (AMSL)
	Maximum Water Level (MWL)	673.8	m AMSL
	Maximum Reservoir Level	674.3	m AMSL
	Minimum Operating Level (MOL)	649.0	m AMSL
	Surface area at FSL	540	km²
	Storage at FSL	6,200	million m^3
	Dead storage at MOL	200	million m^3
	Active storage (*Capacité utile*)	6,000	million m^3
Regulating dam	Type	Main concrete dam and two (2) embankment dams	
	Transition zones (left bank and right bank)	reinforced by a supporting wall over a length of 75m	
	Crest Level	677.55	m AMSL
	Total crest length	1,350	M
	Crest width	7	M
	Maximum height	46	M
	Total RCC volume	280,000	m^3
	Total earth volume	2,295,000	m^3
Auxiliary right bank saddle dam	Type	Compacted earth embankment dam	
	Crest level	677.55	m AMSL
	Crest length	425	M
	Maximum height	16.5	M
	Total earth volume required	175,000	m^3
Spillway	Type	4 radial gates and one fusegate in main concrete dam	
	Level	665.75	m AMSL
	Size of each gate	8.75 x 8.75	M
	Spillway discharge capacity at FSL	1,280	m^3/s
	Discharge capacity by gate at FSL	320	m^3/s
	Spillway discharge capacity at MWL	1,600	m^3/s
	Discharge capacity by gate at MWL	400	m^3/s
Regulating gates	*Main structure*	2 principal outlets	
	Level	640	m AMSL
	Dimensions	7 x 4.2	M
	Maximum outflow by each at FSL	380	m^3/s
	Auxilliary structure	1 auxilliary outlet	
	Level	643.5	m AMSL
	Dimensions	3.5 x 3	M

	Maximum outflow by each at FSL	95	m^3/s
Powerhouse	Number of units, capacity, type	4 vertical axis Francis turbines, each 7.5 MW	
	Total installed capacity	30	MW
	Discharge by turbine	25	m^3/s
	Turbine diameter	2.5	M
	Level of turbine axis	647.25	m AMSL

Subcomponent 1.2: Contingency (total costs: US$23 million)

7. This subcomponent will finance the contingencies (if any) for dam construction. Contingencies have been estimated at 15 percent of the value of the EPCM contract.

Subcomponent 1.3: Preparatory Works (total costs US$ 29 million)

8. This subcomponent finances preparatory works including the Sessé bridge, the Lom bridge, the residential area for the implementation agency and the owner's engineers staff. The sub-component also finances access roads that will enable access to the dam site and access to the railway station in Belabo for transport of goods by train. An 82 kilometer access road has been constructed from the site of the dam via the village of Deng Deng to Belabo. This subcomponent is being fully financed by the GOC.

Subcomponent 1.4: Owner's Engineer Contract (total costs US$12 million)

9. An owner's engineer willl facilitate and oversee the preparation and construction of Lom Pangar regulating dam, in particular for detailed engineering design and construction supervision of the Lom Pangar dam on behalf of the Owner (EDC). The owner's engineer is a reputable international firm, is already in the field to supervise preparatory works, and will assist EDC in coordinating the activities included in the dam and in the power plant contracts. This subcomponent will finance the cost of the owner's engineer. The owner's engineer will provide technical assistance to EDC concerning the following aspects of dam construction:

- Preparation of the technical owner's requirements;
- Supervision of the finalization of technical, environmental and social studies;
- Consultation, launch and supervision of preparatory works;
- Preparation, launch and finalization of the choice of contractor for the project works;
- Establishment of a project management system;
- Supervision and analysis of project costs, risks, performance;
- Regular project reporting vis-à-vis all stakeholders;
- Assist in the preparation of technical and procurement documents regarding the key procurement lots of the project as well as the selection of contractors;
- Validate consultant and contractor payments based on the supervision of progress in consultancies and works; and
- Support EDC in project communications.

Component 2 : Lom Pangar Power Plant and Transmission Line (total cost US$62 million; of which AfDB US$29 million, BDEAC US$15 million, and counterpart financing US$18 million)

10. This objective of this component is to construct the Lom Pangar power plant and a tranmission line in order to provide rural electrification in the Eastern region along the transmission line corridor. The component will include the following activities:

2.1: Hydropower plant
2.2: 90 KV transmission line and HT/MT substation
2.3: Rural electrification in the eastern region
2.4: Social management

Subcomponent 2.1: Hydropower Plant (total project costs US$ 30 million)

11. A 30 MW hydro power plant consisting of 4 Francis turbines with a unit capacity of 7.5MW at a water flow of 23 m3/s will be constructed at the foot of the dam. The power plant will comprise two main blocks; the upstream block is designed to have 5 levels and will house the administration offices, control rooms and workshops; the downstream block consisting of 2 buildings will house the turbines, lifting equipment, and other station auxilirary equipment including cooling water systems, hydraulic pumping sets, oil purification systems, small power, lighting and ventilation equipment, drainage and dewatering equipment, compressed air systems and control and ancillary electrical equipment. The 90kV step up substation to allow transmission of the power to the eastern electricity network will also be located at this level. Other activities to increase rural electrification in the Eastern Region are outside the scope of the project.

Subcomponent 2.2: 90 KV Transmission Line and HT/MT Substation (total project costs US$28 million)

12. In order to transmit the power generated at Lom Pangar, a 90 kV transmission line extending from the Lom Pangar substation will be constructed to Bertoua (105 km).. A 90/30 HV substation will be constructed at Bertoua to provide supply to an MV and LV network.

Subcomponent 2.3: Rural Electrification in the Eastern Region (total project costs US$3 million)

13. This subcomponent will include the provision of service connections and pre-payment meters to provide electricity supply to approximately 2,400 households currently without access to electricity. The rural electrification includes the construction of 108 kilometers of MV line and 21 kilometers of LV line and 21 25 kV substations along the Lom Pangar to Bertoua transmission line corridor. It will also be possible to phase out certain thermal generation on the eastern electricity network once the power from Lom Pangar becomes available, significantly reducing the cost of generation and improving the reliability of supply.

Subcomponent 2.4 Social Management (total project costs US$ 1 million;)

14. This subcomponent will include the social measures associated with the activities carried out under Component 2[25]. These measures include implementation of the Resettlement Action

[25] The environmental measures associated with component 2 are included in component 3.

Plan for the power plant and transmision line, including the costs of individual compensation and resettlement for people affected by the powerplant and transmission line, and collective compensation for villages and camps and specific agricultural activities.

Component 3: Environmental and Social Measures (total cost US$73 million; of which IDA US$6 million, AFD US$58 million, and counterpart financing US$9 million)

15. The objective of this component is to ensure that the environmental and social impacts of the LPHP are mitigated as described in the Environmental and Social Management Plan and the Resettlement Action Plan for the dam. The component also includes a subcomponent on local development activities, which are beyond the minimum requirements for safeguards compliance, to ensure that impacted local populations secure long-term enhancements to their economic prospects. The component will include the following sub-components:

3.1 to 3.6 Subcomponents related to the Environmental and Social Management Plan
- 3.1 Environmental and social mangement of construction sites
- 3.2 Management of the reservoir and cumulative downsteam mitigation
- 3.3 Social mitigation
- 3.4 Management of the Deng Deng forest
- 3.5 Technical audits of environmental and social measures
- 3.6 ESMP management

3.7: Resettlement Action Plans
3.8 Local development

16. More details on the ESMP and RAP activities can be found in Annex 6. It should be noted that some of the activities of the ESMP and the RAPs are included in other components. Notably, social safeguards measures for the Lom Pangar power plant and transmission line are included in Component 2.4.

17. The ESMP has been developed to comprehensively address the project's direct and indirect environmental and social impacts with the overall objectives to ensure the sustainable management of construction works, the reservoir and the river basin, the sustainable management of the Deng Deng forest, and implementation of environmental and social management measures. For six main subcomponents are related to the ESMP:

Subcomponent 3.1 Environmental and Social Management of Construction Sites (total costs US$ 3 million)

18. Construction activities at all construction sites will be carried out in accordance with international standards as described in the Contractor ESMP. Most of the costs of the environmental and social management of construction sites are included in the various contracts of the supervising engineers (see subcomponent 1.4, and 3.5). This activity will include complementary financing to ensure the EDC team can adequately follow up on the activities undertaken on the construction sites. The component also finances preventive archeological inventories and digs in order to preserve the physical cultural resources.

Subcomponent 3.2 Management of the Reservoir and Cumulative Downsteam Mitigation (total costs US$ 11 million)

19. Activities related to the management of the reservoir will include monitoring of water quality in the reservoir, monitoring of greenhouse gases caused by decomposing vegetatation, dam safety actions, and support to fisheries management. Mitigation measures of cumulative downstream impacts will include new hydrometerological stations and hydrometerological monitoring to assist in the management of the dam, and monitoring of induced impacts downstream.

Subcomponent 3.3 Social Mitigation (total costs US$ 25 million)
20. This activity will include public health activities such as rehabilitation of two hosptials, creation of a health center in Lom Pangar village, and potable water supply activities. This activity will also include the construction of Touraké bridge before the reservoir is filled in order to enable the populations in this area continued access to the roads needed for their commercial activities, including herding. Other social measures include agricultural extension services, assistance to artisanal gold miners, and health services for cattle at Touraké Bridge.

Subcomponent 3.4 Management of the Deng Deng Forest (total costs US$ 8 million)
21. This activity will include the management and control of wood salvage in the reservoir, management of the Deng Deng National Park including the financing of personnel and equipment. The ESMP acknowledges longer-term efforts by the GOC for the adaptation of forest zoning around the DDNP, and monitoring and control of illegal activities (e.g. poaching and logging).

Subcomponent 3.5 Technical Audits of Environmental and Social Measures (total costs US$ 2 million)
22. An independent quarterly audit of environmental and social safeguards will be financed under this activity. The technical auditor's reports will be submitted to the steering committee, the donors, and the EDC. A summary of the audit will be published on the Lom Pangar website at the same time.

Subcomponent 3.6 ESMP Management (total costs US$ 13 million)
This activity will include assistance in the institutional set up for implementing the ESMP including financing for the senior international envirronmental expert and a senior environmental specialist. The activity will include training and capacity building. Monitoring and evaluation activities including devlopment of a GIS system are covered under this activity. This sub-component will also finance the two independent expert panels: the environmental and social panel and the dam safety panel.

Subcomponent 3.7 Resettlement Action Plans (total project costs US$8 million)
23. The objectives of the Resettlement Action Plan are to minimize the effects of the project on the local population by providing adequate compensation and relocation for people in the project area that will be affected by the dam and the reservoir. Some 1600 households are affected by the project, with 756 to be relocated in the dam and reservoir area. The principal economic activity of most of the affected households is goldwashing, followed by agriculture.

24. This subcomponent covers the following activities: i) compensation for individuals and individual resettlement costs; ii) community compensation for villages and encampments; iii)

compensation for host zones; iv) specific activities for the people displacecd and host locations including health services, agriculture, and gold washing.

Subcomponent 3.8 Local Development (total project costs US$3.4 million)

25. This component will design and implement a Local Development Program that will address social and development needs of affected local communities. The LDP will invest in micro-projects that to rehabilitate social infrastructure. Such micro-projects may include: a) provision of basic social infrastructure such as wells, latrines, and class rooms b) basic maintenance and rehabilitation of critical sectors of access roads, b) construction of agricultural storage and drying facilities and livestock enclosures.

26. The component will finance (a) design and management of a Local Development Program including a series of outreach and training activities to build local capacity (sub-component 3.8.1), and (b) the implementation of micro-projects (sub-component 3.8.2[26]).

27. The LDP will be managed by a competitively selected Management Contractor[27].The Management Contractor will report to the Project Director and work closely with the PIU in EDC, local councils, and will coordinate with other sources of funding available to the Eastern region to maximize harmonization of efforts.

28. The Management Contractor will finalize the design of the LDP based on a review of existing methodologies for similar successful mechanisms, as well as draft Operational Procedures. These Operational Procedures will be adopted after a validation workshop with representatives of the local community and will be subject to IDA non-objection. Once approved, the Operational Procedures will form an integral part of the Contract of the Management Contractor. The Operational Procedures will define a list of eligible activities, taking into account the LPHP environmental and social safeguards instruments.

29. Local Committees will submit micro-projects to the Management Contractor that meet the criteria defined in the Operational Procedures. When available, existing municipal or local development plans will form the basis for selection of micro-projects (e.g. local development plans financed by the PNDP project). The Management Contractor will review these local development plans with the beneficiaries as a starting point for selecting micro-projects for financing. Where no community committees exist, the Management Contractor will support initial group formation and basic organizational development as well as the preparation of local development plans. The resulting local development plan will guide the selection of micro-projects to be financed by the project.

[26] The legal agreements include the following disbursement condition for investments in micro-projects under component 3.82 of the project: (a) the LDP Management Contract has been entered into by the parties thereto (expected no later than 30 months after effectiveness), and (b) the Project Implementing Entity has adopted the LDP Operations Manual (expected no later than 12 months after the recruitment of the LDP management contractor).

[27] As the Management Contractor will have fiduciary responsibility for delivery of micro-projects it will need to have fiduciary management capacities. The Management Contractor is likely to be an NGO or consultancy firm specialized in rural development with a proven track record of managing and accounting for donor funds to international standards.

30. The Management Contractor will draft and sign a memorandum of understanding (MoU) with beneficiary groups for the approved micro-projects. This MoU will be copied to the Project Director and the Mayor of the relevant Council, to ensure that there is full transparency, recording of all funded projects against the Council's local development plans and avoidance of double funding. Once the MoU is signed, the Management Contractor will then publicly tender out works to deliver agreed micro-projects. Fiduciary control and responsibility for delivery of these micro-projects will be the responsibility of the Management Contractor. The Management Contractor will submit quarterly unaudited financial reports and will be subject to annual financial audits.

Component 4: Technical Assistance and Project Management (total cost US$42 million; of which IDA US$11 million, AFD US$9 million, and counterpart financing US$22 million)

31. The purpose of this component is to assist EDC in improving project management and operation and to improve the management of water resources in the Sanaga River basin. The component will include the following activities:

4.1: Technical assistance
4.2: Strategic communication and consultation
4.2: Project management

Subcomponent 4.1: Technical Assistance (total costs US$ 10 million)

32. Studies will focus on the future operation of the Lom Pangar dam and the other three regulating dam in the Sanaga basin in order to establish a operational regime of hydrological infrastructures on the Sanaga river in a consultative manner with water users in the basin and taking into account equitable sharing of resources between users and environmental flows. This includes the preparation of a dam operational and maintenance plan before filling the reservoir that addresses technical issues as well as includes relevant environmental and social mitigation measures. The subcomponent also includes TA for emergency preparedness planning and training.

33. The sub-component will finance optimization studies for the selected hydropower sites in the Sanaga Basin. These studies provide the GOC with the means to enforce the obligation of concessionaires utilizing hydro resources for electricity production to optimize the development of these resources and to provide electricity into the public grid.

34. The sub-component includes technical assistance on integrated water management in the Sanaga River basin, including the establishnet of relevant institutional frameworks to resolve or avoid conflicts between upstream and downstream users and to foster integration and collaboration among sectors by proposing clear decision-making processes. The detailed scope and focus of these studies will be determined through the ongoing Bank executed TA activity to develop a integrated Basin Management approach for Sanaga River basin in Cameroon (scoping phase).

Subcomponent 4.2: Strategic Communication and Consultation (total costs US$ 4.0 million)

35. The subcomponent supports the LPHP communication strategy which has been developed by EDC based on stakeholder mapping and consultations during project preparation. The strategy is focused on ensuring that timely information is made available in a format and language stakeholders can easily understand. The specific objectives of this communication strategy are to:

- Ensure that opinion leaders and stakeholders understand the rationale of the project and can influence its directions;
- Support extensive consultations throughout the life of the project, with systems for capturing and incorporating feedback, especially from affected communities and their representatives;
- Harness the capacity of civil society to monitor implementation progress on the ground and hold project actors accountable for their actions;
- Ensure that stakeholders understand the complexity and risks associated with the project as well as the risk mitigation measures;
- Manage the reputational risks of the project.

36. This component finances a comprehensive set of outreach activities with local, national, and international stakeholders. Communication and consultation activities will center on facilitating an informed discussion on the LPHP core objectives of unleashing more of Cameroon's clean hydropower potential in order to accelerate economic growth, job creation, and poverty reduction. Through all phases of the project cycle, the Government of Cameroon will maintain a strong dialogue with stakeholders to ensure transparency and to facilitate expression of a variety of viewpoints within Cameroon, among donors, and international civil society groups. A two-way communication process will be the basis for effectively engaging stakeholders at different levels. Through its Policy letter, the GOC has committed to disclosing environmental and social safeguards documents of the Lom Pangar project, including the technical specifications for social infrastructure in villages, regularly updated maps of social infrastructure in villages, and the technical reports from the independent auditor on the environmental and social measures. EDC will also make a copy of the project's quarterly report public. The sub-component will support various channels including several communication centers near the Lom Pangar site, stakeholder meetings, an annual stakeholder forum on the progress of the ESMP, and a dynamic website (www.edc-cameroon.org). The website will be updated regularly with the project's progress and results.

37. The primary groups of stakeholders who will be engaged in various consultations throughout the life of the project are the Cameroonian public in general and the project-affected communities and CSOs. Outside Cameroon, several NGOs closely following the Lom Pangar project for years. Other stakeholders include parliamentarians, private sector entities whose businesses will benefit from more reliable and less costly electricity, local and international news media, international decision makers, and academics.

38. Direct consultations will be held with communities and citizens in the project area during all phases of the project. These consultations and the dissemination of related information will be used to make modifications to the project and improve mitigation and monitoring programs. The

GOC intends to organize a regional consultation with civil society each quarter and a national consultation every six months. Invitations and meeting documents will be distributed at least one week before the meeting. The report of each meeting will be published on the EDC project website and distributed to meeting participants.

39. Consultation and outreach activities described in the ESMP form part of this sub-component. A grievance redress mechanism has already been established while an affordable and accessible procedure for third-party settlement of disputes will be maintained. This includes mediation committees and a support teams (cellules de base) at the village level and several EDC communication centers in the project area. The Government of Cameroon will ensure that EDC responds to each complaint within two weeks. EDC will establish a complaints tracking system and publish its operations and complaints management statistics on the website. Activities will also include an outreach program involving local NGOs and local decision makers (traditional rulers, village elders, etc) and conflict prevention and mediation measures. In addition, EDC – through its project manager – shall involve civil society organizations and representatives from the villages in monitoring the construction of social infrastructure in the villages.

Subcomponent 4.2: Project Management (total costs US$28 million)

40. The project management subcomponent will finance certain positions to support the EDC PIU including an an international technical advisor/hydropower expert, a senior engineer as a deputy project director, a procurement specialist, financial management staff, an accountant, a monitoring and evaluation specialist, a communications specialist and other technical staff. This subcomponent will also finance equipment, trainings, audits, and monitoring and evaluation activities of the project.

Associated Infrastructure Investments

Adaptation of the Chad-Cameroon Pipline (total cost: US$101 million)

41. Two stretches of the Chad-Cameroon pipeline (CCP) - at two crossings of the Pangar River - will be reinforced before the reservoir is filled. The chosen adaptation method is a double connection, in which new stretches are constructed to by-pass existing stretches. This does not require supply interruptions and thus minimizes the potential liabilities to COTCO for interruption of oil delivery. Technical studies on alternative pipeline adaptation measures have been completed and a technical option for the adaptation has been adopted. COTCO has negotiated a contract with the selected bidder. Required temporary access roads will based on the existing deforested road corridors and would not require new compensation.

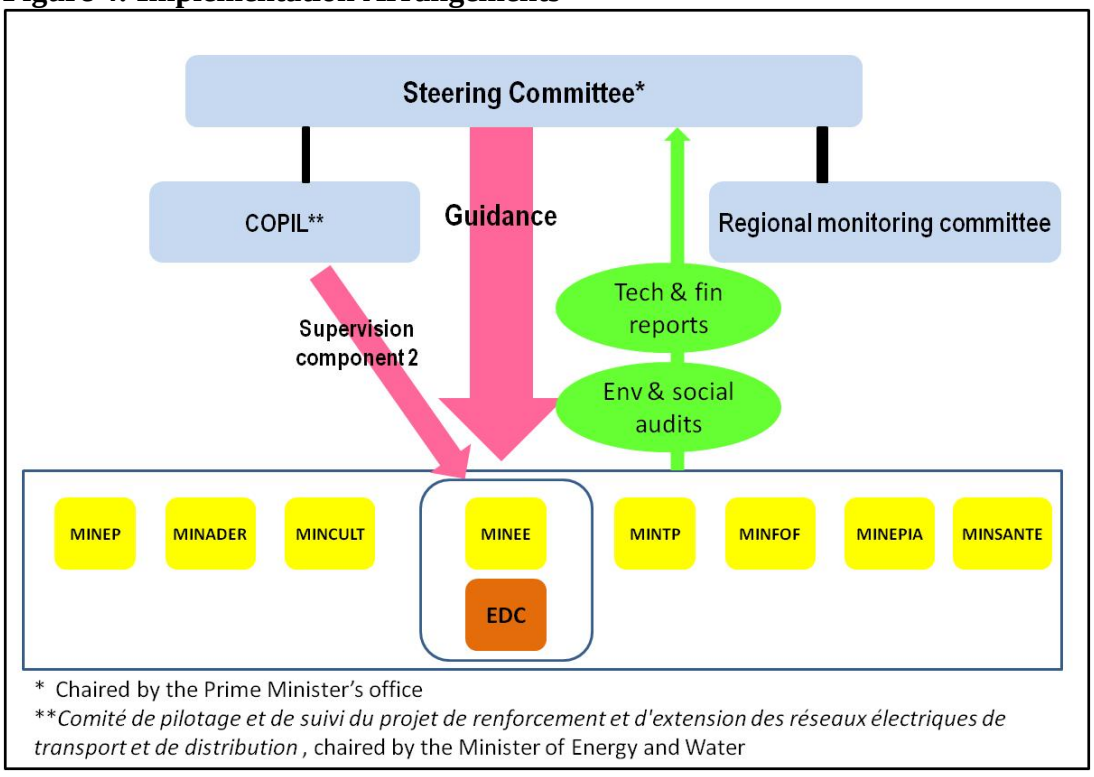
Annex 3: Implementation Arrangements

A. Institutional Arrangements

1. A Project Steering Committee (*Comité de pilotage*, CdP) provides a platform for exchange which will monitor project progress and ensure proper prjoect implementation. The CdP is established under the authority of the Prime Minister. It is chaired by the Secretary General of the Prime Minister's office, with the Minister of Water and Energy as a the vice-chair. Members include the Ministers of Finance (MINFI), Economy and Regional Planning (MINEPAT), Agriculture (MINADER), Land Tenure (MINDCAF), Environment Protection of Nature (MINEPDED), Forestry (MINFOF), Art and Culture (MINAC), Livestock and Fisheries (MINEPIA), Health (MINSANTE), Public Works (MINTP),the Director General of the Electricity Development Coorporation (EDC), and representatives from the Presidency and the Prime Minister's office[28].

2. The CdP will meet at least twice per year, in addition to convening in extraordinary sessions at the discretion of the Chair. It will be regularly informed on project progress. The two main tools for reporting to the CdP include (i) quarterly financial and narrative reports by EDC with help from the owner's engineers, and (ii) periodic technical audits of the environmental and social measures of the project by the independent technical auditor.

Figure 4: Implementation Arrangements



3. Two additional committees have been set up with specific mandates, reporting to the CdP (see Figure 4):

[28] Order (arrêté) 233CAB/PM dated December 29, 2011 on the creation of the Steering Committee for LPHP.

- The existing committee supervising AfDB-financed Project to Reinforce and Extend Electricity Transmission and Distribution Networks (PREETDN), chaired by the Minister of Water and Energy (*Comité de pilotage et de suivi du projet de renforcement et d'extension des réseaux électriques de transport et de distribution* or COPIL) will supervise Component 2 of the project, including the transmission and rural electrification subcomponent[29].

- A regional monitoring committee (*Comité de suivi, facilitation et accompagnement*) already exists and will continue to coordinate the activities of various ministries on the ground. Rather than a structure, the Committee is a coordination body that is regularly convened by the Governor of the Eastern Region to address implementation issues, particularly interface and linkages among different ministries.

4. Day-to-day project activities will be coordinated by EDC, which is the sole implementing entity for donor-financed activities. The project is managed under the supervision of the managing director of EDC and the project director for LPHP. The choice of the implementing agency is guided by the fact that the decree establishing EDC mandates it to prepare and manage the LPHP.

5. Given the lack of technical and managerial capacity on hydropower, the use of a small Project Implementation Unit (PIU) in EDC is deemed appropriate. The existing PIU in EDC for the ESDP project is being reinforced to also manage the LPHP. The PIU will: (i) coordinate project activities; (ii) carry out financial management and procurement; (iii) prepare annual work plans and budgets for submission to the CdPC and IDA; (iv) liaise with various government departments, (v) liasion with donors (see Box 6); (vi) ensure monitoring and evaluation (M&E) and reporting, and (vii) monitor and ensure safeguards compliance.

Box 6: Donor Partnership for LPHP

Project preparation has been supported by a broad partnership of donors with a shared commitment to ensuring that the Sanaga hydropower resources benefit all Cameroonians. The French Development Agency (AFD) and IDA have provided technical assistance to environmental and social studies, and conducted joint missions. All donors have agreed to use World Bank safeguards procedures, and one set of safeguards documents have been prepared for all donors.

BDEAC financing was approved in September 2011 and AfDB financing was approved in November 2011. Both financings were signed in January 2012. Effectiveness is cross-conditioned to approval of other donor financing. AFD and EIB board dates are set in May and June 2012, respectively. Effectiveness conditions will be harmonized to ensure effectiveness in the summer of 2012.

Going forward, donors are committed to continue the partnership approach started during project preparation. Narrative donor reporting will be harmonized as much as possible to decrease transaction costs for the GOC. Partners have agreed to a coordinated approach on critical policy and governance matters. It is envisaged that partners will have joint missions at least twice per year. In between mission, in-country staff of various donor agencies will cooperate on follow up and dialogue with the GOC.

[29] This committee will form the interface with AES-SONEL for the rural electrification sub-component.

6. Project Implementation Unit (PIU) performance for the ESDP project has been consistently rated satisfactory[30]. Current performance ratings are satisfactory for procurement and safeguards performance and moderately satisfactory for financial management. At present, the PIU includes an experienced hydropower advisor who has supported engineering designs, pre-qualification, bidding and evaluations for the dam construction contract and provided training to EDC staff over the past two years. An international environmental advisor has played a similar role in advising, coaching, and training EDC staff on the development of all safeguard documentation and safeguards compliance in the field. EDC has already hired procurement, accounting, and financial management staff satisfactory to IDA in 2009, who have supported the preparation of LPHP and will continue to support the project during implementation. The fiduciary staff are experienced in handling IDA-financed operations and have received extensive training on all fiduciary and control systems and responsibilities, including the identification and mitigation of integrity risks.

7. The PIU located in EDC will be headed by the LPHP Project Director. The Project Director of EDC is responsible for overseeing and coordinating day-to-day project implementation, including monitoring and reporting. The PIU will be staffed by a small number of specialists, some of whom will be recruited using donor financing. Donors will finance two senior international advisors to support the EDC team. First, an experienced hydropower expert who will spend considerable time in-country will provide support and training to EDC staff on dam construction, contract management, and the preparation of dam operations. Second, an international environmental expert with a track record on hydropower projects will be based in Cameroon to support and train EDC in the implementation and monitoring of the ESMP, the RAP, and other safeguards measures. Donors will also finance procurement and financial management staff as well as the following full time national consultants in the PIU:

- an experienced engineer, functioning as a deputy project director, who will be tasked ensure adquate coordination, on-the-job training and quality control.

- a senior environmental specialist who will enhance the capacity of EDC for the drafting of ToRs and supervision of consultants under component 3 of the project as well as for on the ground safeguards supervision.

- an M&E specialist, who will be responsible for the collection and analysis of project indicators and support the drafting of narrative donor reports.

- a communications specialist who will enhance the capacity of EDC to develop and supervise the communications activities under component 4.3 of the project.

8. The PIU staff will be located in various departments across EDC to ensure good working relationships with other EDC staff and ensure long-term capacity building[31]. The PIU engineering and fiducairy staff will be located in EDC's Lom Pangar Directorate while staff responsible for environment and social mitigation measures will be located in EDC's Sub-

[30] The latest ESDP ratings for PDO achievement and implementation progress are MS/MU. However, these ratings are influenced by components that are not implemented by EDC (notably delays in the rural electrification component implemented by AER).

[31] To this end, a revised organization structure of EDC was approved by its Board on December 22, 2011.

Directorate for Security, Environment and Regional Development. EDC is restructuring and enlarging this department with the help of the advisor to build adequate in-house capacity for implementing the ESMP.

9. A PIU sub-office will be established in Bertoua to liaise with the regional representatives of various ministries and the regional authorities. The Bertoua sub-office will include one or more foresters to monitor the salvage logging and interface with MINFOF. EDC will have a full time team on-site at the construction sites at Lom Pangar to work with the owner's engineers and help resolve issues as they arise.

10. EDC has contracted an owner's engineer[32] to facilitate and oversee the preparation and construction of the Lom Pangar dam, including detailed engineering design and construction supervision. The owner's engineer is a reputable international firm and is already in the field to supervise preparatory works. The owner's engineer will provide technical assistance to EDC concerning the following aspects of dam construction:

- Preparation of the technical owner's requirements;
- Supervision of the finalization of technical, environmental and social studies;
- Consultation, launch and supervision of preparatory works;
- Preparation, launch and finalization of the choice of contractor for the project works;
- Establishment of a project management system;
- Supervision and analysis of project costs, risks, performance;
- Regular project reporting vis-à-vis all stakeholders;
- Assist in the preparation of technical and procurement documents regarding the key procurement lots of the project as well as the selection of contractors;
- Validate consultant and contractor payments based on the supervision of progress in consultancies and works;
- Support EDC in project communications.

11. A separate engineering supervision firm will be recruited competitively to supervise works of Component 2 (powerhouse and transmission line). Another engineering consultancy firm will be recruited through competitive selection to supervise all other engineering works, such as clinics, roads, and a bridge in the ESMP. The exact role and responsbilities of these engineering firms will be described in the Project Implementation Manual.

12. The construction contract for the Lom Pangar regulating dam is of the EPCM type (Engineering, Procurement, Construction and Construction Management). Engineering services include i) preparation of final design, construction details, and as built drawings, and ii) supervision of construction works. Procurement includes provision of all goods (e.g. hydro mechanical equipment) required for construction. Construction will include dam, ancillary structures, and foundation excavation for the powerhouse. Electromechanical equipment and civil works pertaining to the powerhouse will be the object of a separate contract. Construction management services for the dam will be included on the owner's behalf. The EPCM contractor will be responsible for final project design, construction management, and supervision.

[32] Maintaining the owner's engineer to supervise the construction of the regulating dam until the end of construction is a legal covenant.

Following an international pre-qualification, the contractor for the dam has been selected and the contract has been signed.

13. EDC has prepared a draft procurement plan for other works, goods, and services to be financed under the project. Activities will be undertaken by contractors under supply and installation contracts. As far as possible, works and goods will be combined in larger lots and contractors will be selected through international competitive bidding. The same packaging principle will be used for consultants' services.

14. The design and management of sub-component on local development (sub-component 3.8) will be tendered to a qualified Management Contractor. This Management Contractor will be responsible for the detailed design of the local development fund and for its implementation, and will prepare Operational Procedures for implementation of the local development fund satisfactory to the Association. The Management Contractor will have fiduciary responsibility for procurement and financial management of the funds allocated for the local development program.

15. Two independent panels (environmental and social panel and dam safety panel) are in place and have provided guidance to EDC during project preparation. The panels will continue to do so during the implementation phase.

16. Several ministries play a regulatory, supervisory, or supporting role for the project. These include:

- The Ministry of Water Resources and Energy (MINEE) as the line ministry to which EDC reports.

- The Ministry of State Property Survey and Land Tenure (MINDCAF) will ensure that land acquisition under the project is carried out in accordance with Cameroonian law. This includes land acquisition for the dam construction site and the new site of the Lom Pangar village, in addition to land gazetting changes that are planned in and around the Deng Deng National Park.

- The Ministry of Financing (MINFI) will ensure the timely and adequate provision for counterpart financing. MINFI is also interested in ensuring the long-term financial viability of the LPHP project through a water tariff.

- The Ministry of Economy and Regional Planning (MINEPAT) plays an important role in regional planning and also is the main interface between the GOC and various international development banks (including IDA) and other donor agencies.

- The Ministry of Territorial Administration and Decentralization (MINATD) ensures the effective functioning of local governments, including the interface with deconcentrated sector ministry staff at the regional and prefecture levels. MINATD will play an important role vis-à-vis project activities at the local level as Chair of the project's regional monitoring committee.

- The Ministry of Environment Protection of Nature and Sustainable Development (MINEPDED) is responsible for the clearance of safeguards documents and supervision of compliance during implementation. This includes monitoring and control measures during construction to ensure that construction activities proceed in compliance with the Construction ESMP and the environmental clauses in the contracts.

17. Several additional ministries play important roles in the implementation of the LPHP project, though they will not have fiduciary responsibilities given capacity constraints. Relevant ministries will be involved in EDC's selection of consultants for activities that are related to their mandate, and in some cases will co-sign consultant contracts.

- The Ministry of Forestry and Wildlife (MINFOF) is responsible for forest, wildlife, and biodiversity issues, including the management of Deng Deng National Park and the control of illegal forestry and hunting throughout the Deng Deng forest massif. The increase in economic activity in the Lom Pangar area during construction will require intensified MINFOF control and policing missions of the construction sites and access roads, in addition to areas adjacent to them. MINFOF is responsible for the salvage operation of the wood from the future reservoir. Given the weak fiduciary and technical capacity of MINFOF, it is envisaged that most forestry activities under the LPHP will be outsourced (within the limits of Cameroonian legislation) or undertaken in collaboration with technical partners.

- The Ministry of Public Works (MINTP) is responsible for road planning and maintenance. During the preparatory construction phase, MINTP served as the executing agency for the construction of some of the access roads (100 percent financed by counterpart financing). Given the quality, timing, and compliance issues that surfaced during the preparatory works phase, alternative models have been developed for road construction and the construction of the Touraké bridge. EDC will be the executing agency for all civil works going forward. MINTP will stay involved in the technical design of the public works and will remain responsible for maintenance of roads and bridges after construction is completed.

- A number of other ministries play a more limited role in the sub-components of the ESMP. Notably:

    a. The Ministry of Livestock, Fisheries and Animal Industries (MINEPIA) will be responsible for the monitoring fisheries in the reservoir and cumulative impacts in the Douala-Edea estuary.

    b. Ministry of Culture will be involved in the technical supervision of archeological activities.

    c. The Ministry of Health (MINSANTE) will provide technical supervision of the rehabilitation of clinics and other health activities. It will also be responsible for the long-term operation of the rehabilitated health facilities.

d. The Ministry of Agriculture and Rural Development (MINADER) will provide technical supervision of agriculture and livestock activities.

e. The Gendarmerie (national policy force) is responsible for public security on the construction sites and access roads.

18. The existing ESDP Project Implementation Manual (PIM) is being updated and extended into an LPHP Project Implementation Manual. The PIM will provide guidance on roles and responsibilities as well as on the technical, administrative, financial and accounting procedures, procurement arrangements, and the safeguard procedures. Finalization of the PIM is a condition of effectiveness. EDC will establish MoUs/agreements with key ministries that formalize cooperation arrangements. To date, MoUs have been signed with MINFOF (on the sustainable financing and management of the DDNP), MINTP (on road works), and the Gendarmerie (to police the work sites and camps). Other MoUs will be established between EDC and MINSANTE, MINEPIA, MINADER and MINAC[33].

19. EDC will be responsible for the operation and maintenance of the regulating dam and its reservoir. The project includes TA activities to establish the operational regime of the dam. A concessionaire for the newly constructed power plant at the foot of the dam will be selected through a competitive bidding process. The tranmission operator – once established – will be responsible for the O&M of the transmission line, while the Eastern electricity network will continue to be operated and maintained by AES-SONEL.

20. The regulator ARSEL will remain responsible for setting electricity tariffs. As such, it was closely involved in the studies for and drafting of the water rights secondary legislation and will monitor the impact of the LPHP on electricity tariffs as part of its ongoing regulatory activity. In addition, ARSEL will set the tariff to be paid to auto-producer for the power supplied to the public grid on a "cost of service" basis.

B. Financial Management and Disbursement

21. EDC will have the overall fiduciary responsibility for the project. Specific financial management (FM) arrangements are presented below.

22. **Staffing Arrangements:** The project will make use of the existing fiduciary staff within EDC to take advantage of the knowhow already created and continue to leverage lessons learned.. The fiduciary staff is experienced in handling IDA-financed operations, as it is currently responsible for a component of the IDA-financed project ESDP. Existing FM staff include a financial manager, an accountant, and a treasurer currently financed by and responsible for the IDA-financed ESDP and the two fiduciary staff in charge of the AfDB financed "Reinforcement and extension of the electricity transmission and distribution networks" project managed by EDC. Terms of Reference of the FM staff will be amended to reflect their roles and responsibilities in the LPHP. The FM team will have the responsibility to collect and control the

[33] The PIM will require final draft MoU between EDC and each of the relevant ministries (e.g., ministries in charge of health, culture, agriculture, forest and environment) to facilitate and ensure Project coordination and implementation, and the terms and conditions of such MoU shall be outlined in the PIM.

invoices, maintain the books, enter the data in the accounting software, manage the project's bank accounts under EDC's responsibility, keep the books of accounts, monitor the budget, prepare the financial reports and process payment to suppliers and services providers. A training program will be drawn up every year. Training is mainly conducted through the Bank's sub-regional training institutions. As part of the implementation support missions, IDA will evaluate the performance of staff after one year of implementation and determine whether recruitment of an additional accountant or assistant accountant dedicated to the LPHP is warranted.

23. **Budgeting Arrangements:** The project is to be financed by the GOC and five donors (IDA, AFD, EIB, AfDB, BDEAC). The project budget, which includes identification and costing per donor of major activities to be carried out, has been drawn up and is included in Annex 8. EDC will be required to submit to the donors an annual work plan and budget. Once the budgets are approved, copies will be provided to EDC Financial Department for monitoring and reviewing adequate budgetary control on expenditure.

24. **Internal Control and Internal Audit Procedures**: EDC, through the Project Implementation Unit (PIU) for the ESDP project, is currently successfully implementing an IDA-financed operation. The project will take advantage of the current existing structure and arrangements. The internal control procedures are captured in EDC's revised manual of procedures, and will be followed. EDC will be responsible for implementing all other necessary controls to ensure: (i) that the project funds are used only for the intended purposes in an efficient and economical way, (ii) the preparation of accurate, reliable, and timely periodic financial reports, and (iii) that the project's assets are adequately safeguarded. EDC has an internal audit unit which comprises two sections – one in charge of management accounts and another in charge of ex post audit. This unit, which is staffed with three internal auditors will have its capacity strengthened receiving training in risk based audit in order to include in its annual audit plan, and in the audit of the project proceeds.

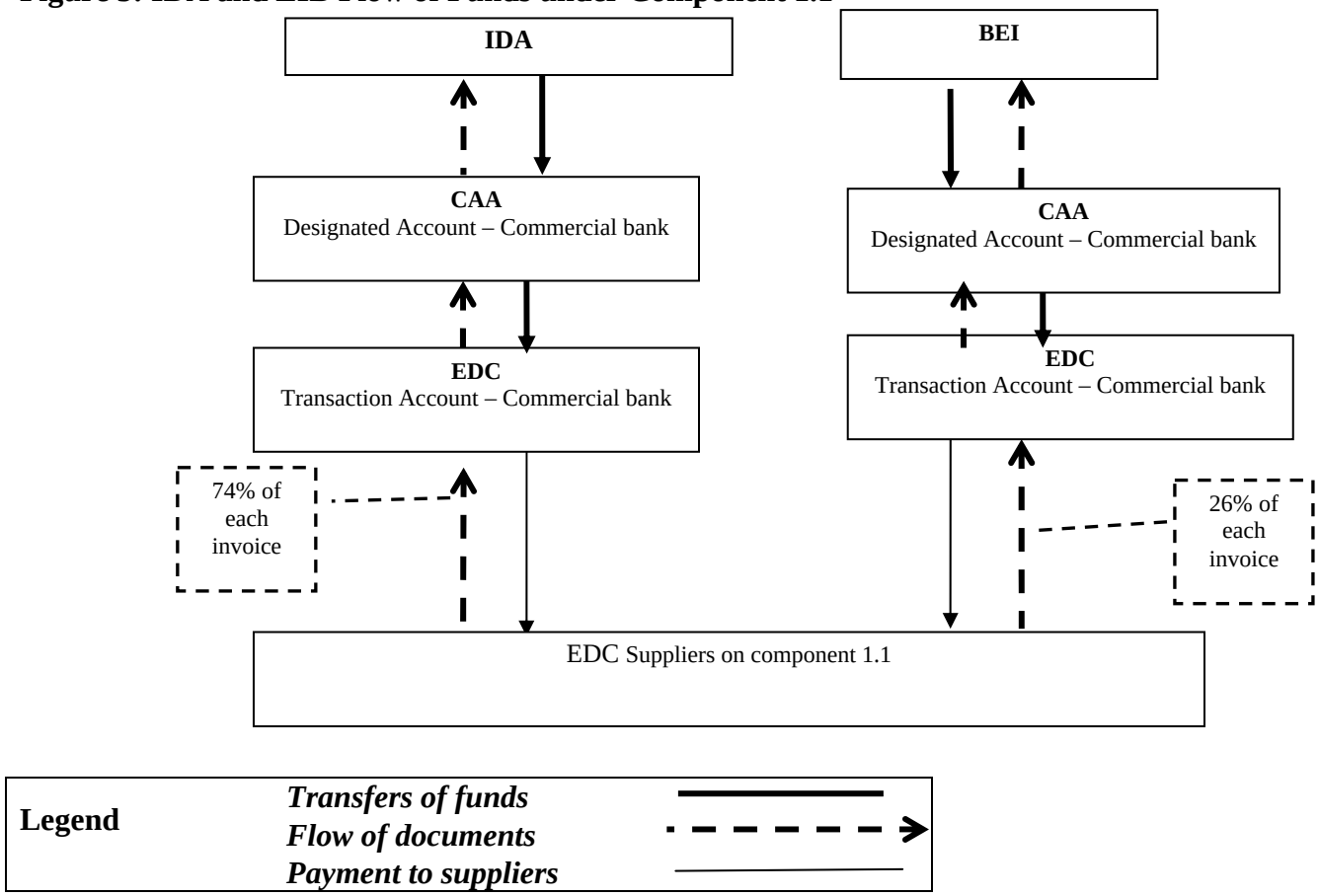
25. **Accounting Procedures and Policies:** The LPHP will use the accounting software recently procured by EDC to manage donor-financed projects. The system has multi-project and multi-donor functionalities and will allow EDC to maintain accounting books per donor and generate separate financial information. The system also has the flexibility to provide a consolidated finanancial statements. The applicable accounting procedures already described in the EDC revised manual of procedures adhere to OHADA (*Organisation pour l'Harmonisation en Afrique du Droit des Affaires*) accounting principles.

26. **Funds Flow:** CAA will open four Designated Accounts in an acceptable commercial bank that will receive initial advances: one for AfDB/BDEAC pooled financing and one each for AFD, EIB and IDA financing[34]. In line with the existing approval mechanism applicable in Cameroun, the Managing Director of CAA will have authority on these accounts. The ceiling of

[34] At the time of project negotiations, advances to designated accounts are not permitted in line with section 5.2 of the Disbursement Guidelines as there is an outstanding balance in a closed IDA-financed project in Cameroon. As the foregoing measure is deemed temporary, disbursement arrangements have been designed to include the use of a Designated Account to the extent such use is permitted at a later date during project implementation; provided that this disbursement letter will first need to be amended to reflect such arrangements.

the IDA Designated Account will be 500 million FCFA and will cover about four months of forecasted project expenditures. For IDA, a joint signature Transactions Account will be opened and managed by EDC with a jointly signatory as per the revised manual of procedures. The Transaction Account will be replenished on a monthly basis from the Designated Account and based on the cash needed upon submission of the supporting documents at the end of each month. IDA and EIB will co finance some selected activities under component 1. There will not be a pool account but payment will be made pari passu from segregated transactions accounts (see figure 5).

Figure 5: IDA and EIB Flow of Funds under Component 1.1

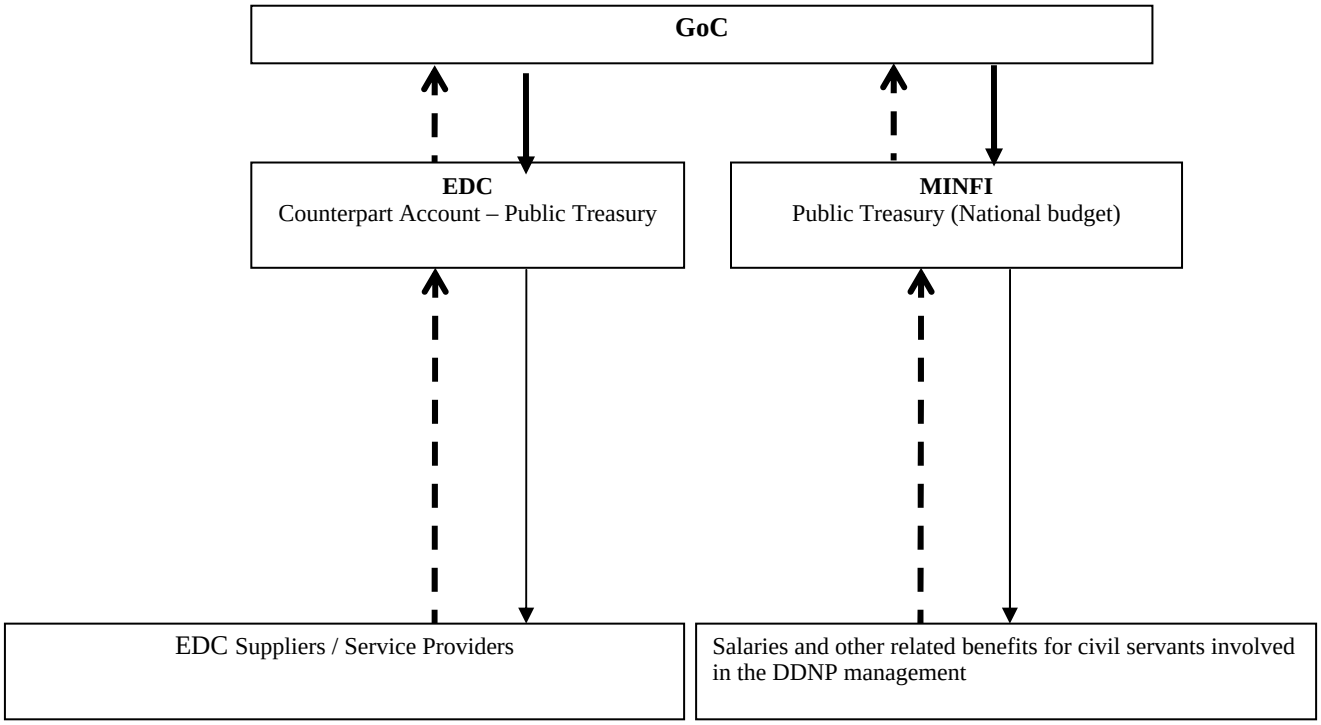


27. **Counterpart Funds**: As reflected in Table 1 – Project Baseline Cost by Component and Source of Financing, the GoC will finance activities that are not already financed by IDA or other donors. To this end a counterpart funds account ("Project Account") has been operated and replenished annually since 2010[35]. Total replenishments total US$80 million in line with the annual replenishment plan. The account was opened at the Public Treasury and operates as a Segregated Account. It is part of the annual budget law. Joint signatories from EDC's Managing Director and Finance Director (with prior clearance from the LPHP's Project Director) are

[35] The initial deposit in 2010 was US$36 million. The 2011 replenishment was US$44 million. A further US$20 million is under processing at the Public Treasury for disbursement.

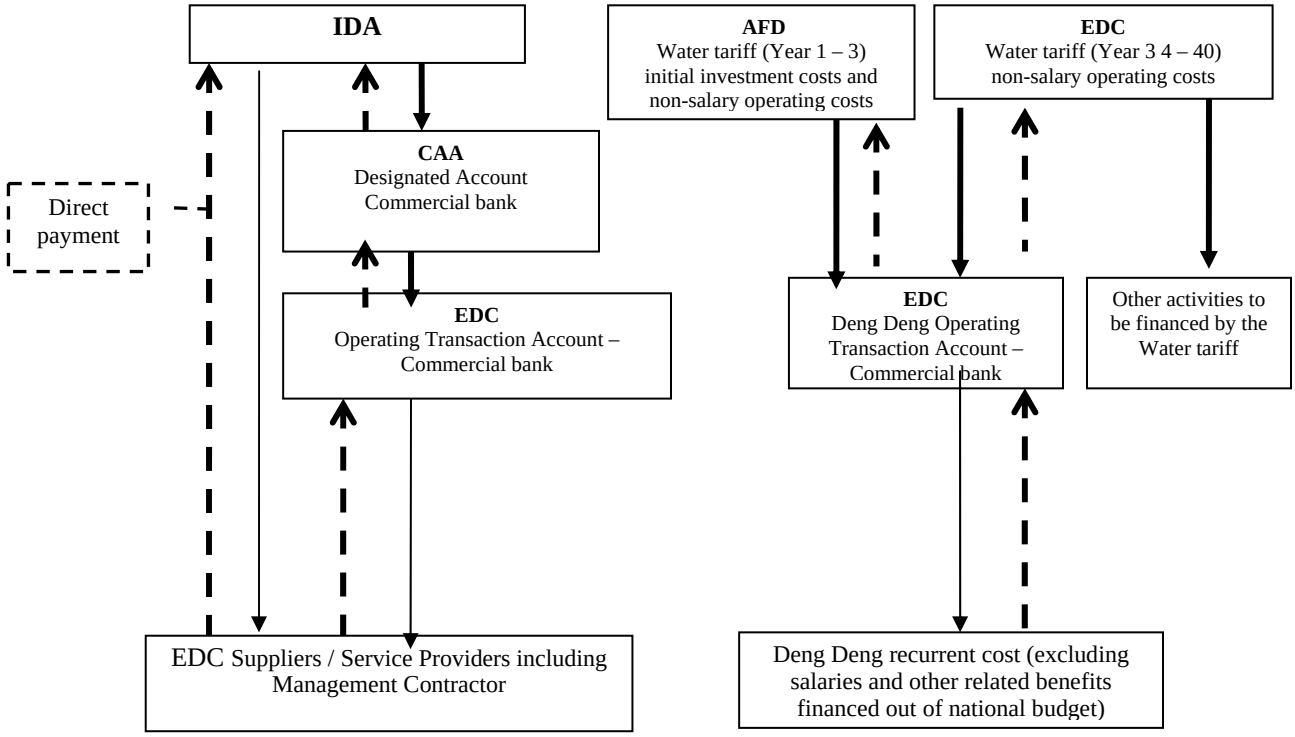
required for each disbursement. As of January 2012, the outstanding balance on this account was US$54 million. Figure 6 illustrates the counterpart flow of funds.

Figure 6: Counterpart Flow of Funds



28. An MoU between EDC, MINFOF and MINFI has been signed with regards to the sustainable financing and management of the Deng Deng National Park. This MoU includes provisions by which the MINFI will pay salaries and other related benefits for civil servants involved in the management of DDNP using the national public financial management system. AFD will finance the initial investment costs and non-salary operating costs for year 1 to 3 of the project. The water tariff will finance the non-salary operating costs from year 4 onwards. Figure 7 illustrates the specific flow of funds for DDNP.

Figure7: IDA and DDNP Flow of Funds



29. **Local Development Activities:** A Management Contractor will be hired to have fiduciary responsibility for delivery of micro-projects. The Management Contractor is likely to be an NGO or consultancy firm specialized in rural development with a proven track record of managing and accounting for donor funds to international standards. Operational procedures will be developed to ensure appropriate management of the activities. Fiduciary control and responsibility for delivery of these micro-projects will be the responsibility of the Management Contractor. The Management Contractor will submit quarterly unaudited financial reports and will be subject to annual financial audits. Recruitment of the Management Contractor will be disbursement conditions for the local development component.

30. **Disbursements by Category:** Table 5 sets out the expenditure categories to be financed out of the IDA proceeds. This table takes into recognition the prevailing Country Financing Parameter for Cameroun in setting out the financing levels.

Table 5: Disbursement Categories

Category	Amount of the Financing Allocated (in SDR)	Amount of the Financing Allocated (in US$ equivalent)	Percentage of Expenditures to be Financed (exclusive of Taxes)
1. Civil Works under subcomponent 1.1 of the project (Dam EPCM contract)	72.6 million	112.5 million	74%
2. Goods, Civil Works, Non-Consultant Services, Consultant Services, Training, and Operating Cost under subcomponent 1.1, 3.5, 3.81, 4.3 and 4.4 of the project.	10.85 million	16.8 million	100%
3. Goods, Civil Works, Non-Consultant Services, under subcomponent 3.82 of the project (local development fund)	1.75 million	2.7 million	100%
Total	**85.2 million**	**132 million**	

31. **Disbursement Arrangements**: For the first 18 months, the project will use the transactions based disbursement. Afterwards and based on the project's FM performance, including EDC's track record on timely submission of quality Interim Financial Reports (IFR),the project will use the report-based disbursement procedures for transferring funds to the Designated Account. Each funding request prepared by EDC will be accompanied by the quarterly unaudited IFRs (source of funds and use of funds per category), the Designated Account activity statement, up-to-date bank statements, bank reconciliations, and the list of payments against contracts that are subject to IDA prior review and the list of contracts not subject to prior review. The project FM staff will be trained on the requirements of report-based disbursements. The authority to sign the withdrawal applications is vested in the CAA Director. Disbursements arrangements between CAA and EDC are described in the flow of funds arrangements. The project may also make use of other disbursement methods such as (i) Direct Payment disbursement method, (ii) Reimbursement method, and (iii) the Special Commitment method, whereby IDA will issue a special commitment to commercial banks for payment of eligible expenditures. IDA will issue the "Disbursement Letter" which will specify the additional instructions for withdrawal of the proceeds of the Credit.

32. **Retroactive Financing***:* Approval is being sought for retroactive financing of payments made by the Recipient on or before July 1, 2011, but prior to the legal agreement date. The Government of Cameroon will pre-finance eligible expenditures under Components 1, 3 and 4 to be procured in line with Bank procurement guidelines [36]. The Recipient will seek reimbursement payments up to US$20 million made in this context upon project effectiveness.

[36] "Guidelines: Procurement under IBRD Loans and IDA Credits" published by the Bank in May 2004, and revised in October, 2006 for the works contract and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" published in May 2004, and revised in October 2006" for the consultancy contract.

33. **Reporting Arrangements**: Unaudited Quarterly Financial Monitoring Reports on all donors funds and per donor[37] generated from the financial management system will use the format that was agreed upon during appraisal. These reports will be submitted to the Association within 45 days of the end of each calendar quarter. Details of other reporting requirements, including content, are already captured in the revised EDC procedures manual. These include financial reports, including a statement of sources and uses of funds by funding source, and a statement of uses of funds by component/activity, designated account activity, and summary financial reports of physical progress. The Annual Financial Statements for the project will incorporate all activities, and include: (i) a Statement of Sources and Uses of Funds showing funds from IDA and other donors and their application; (ii) a Summary of Expenditures analyzed by both Component and Category with a breakdown per donor; (iii) the supporting Notes with respect to significant accounting policies and accounting standards adopted by management; (iv) the Designated Account Activity for the year showing deposits and replenishments received, payments substantiated by withdrawal applications, interest that may be earned on the account, and the balance at the end of the fiscal year; (v) the summary listing of withdrawal applications by reference number, date, and amount; and (vi) the management assertion that IDA funds have been expensed in accordance with the intended purposes as specified in the relevant financing agreement.

34. **External Auditing Arrangements**: The audited financial statements, along with the auditor's report and management letter (incorporating management's comments) covering identified internal control and accounting system weaknesses, will be submitted to IDA within six months of the end of each financial year. An audit opinion will be issued and will cover all project receipts and payments, and designated and project accounts. The audits will be conducted in accordance with International Standards on Auditing (ISA). EDC has acceptable external audit arrangements in place, by which a statutory auditor (*Commissaire aux Comptes*) is recruited through a competitive process for a period of 3 years to audit the company financial statements including LPHP. The current auditor, recruited in 2011, is acceptable to the Association, and the contract will therefore be amended within four months of effectiveness so that a separate audit report on the LPHP will be prepared together with the company statuory audit reports. The scope of the audit will include activities managed by the Management Contractor under local development component. At the end of the mandate of the current auditor, any firm of auditors contracted to carry out the audit will have to meet IDA's requirements in terms of independence, qualifications and experience, which are designed to provide assurance that the annual financial statements present accurately the financial transactions and balances associated with the project. In line with the new access to information policy, the project will comply with the Bank's disclosure policy of audit reports (e.g. made publicly available, promptly after receipt of all final financial audit reports (including qualified audit reports) and place the information provided on its the official website within one month of the report being accepted as final by the Association.

35. **As of January 2012,** there is no overdue Interim Financial Reports or audit report at the existing ESDP PIU in EDC.

36. **Implementation Support Plan:** FM implementation support missions will use a risk-based approach and lessons learned from the ongoing ESDP. Supervision will involve a

[37] The accounting system has flexibility to provide financial reports per donor.

collaborative approach with the entire Task Team and other donors. A first implementation support mission including refresher training on eDisbursement will be provided within 3 months of effectiveness. Afterwards, the missions will be scheduled by using the risk based approach model and will include the following diligences: (i) monitoring of the financial management arrangements during the supervision process at intervals determined by the risk rating assigned to the overall FM assessment at entry and subsequently during Implementation; (ii) integrated fiduciary review on key contracts, (iii) review of the IFRs; (iv) review the audit reports and management letters from the external auditors and follow-up on material accountability issues by engaging with the task team leader, Client, and/or Auditors; the quality of the audit (internal and external) also is to be monitored closely to ensure that it covers all relevant aspects and provide enough confidence on the appropriate use of funds by recipients; and, (v) physical supervision on the ground; and (vi) assistance to build or maintain appropriate financial management capacity. Table 6 below provides the financial management action plan.

Table 6: Financial Management Action Plan

Action	Indicative Date	By whom
Terms of reference of the FM specialist to be updated to incorporate duties for LPHP as well as contract term defined / aligned between ESDP and LPHP projects to avoid gap in coverage.	Before effectiveness	EDC
Amend the contract of the existing external auditor	Within 4 months of effectiveness	EDC
Assess the need for the additional FM staff	One year after implementation	IDA
Recruit the Management Contractor	Before disbursement of the local development component (LDC) and no more than 30 months after effectiveness	EDC

C. Procurement

37. **Procurement Environment**: The adoption of a new procurement law on September 24, 2004, improved the legal and institutional frameworks in this area. No special exceptions, permits or licenses need to be specified in the Financing Agreement since the procurement law allows IDA procedures to take precedence over any contrary provisions in local regulations. However, the audits of public contracts by independent experts have revealed persistent weaknesses in procurement operations and practices across the public sector.

38. **The Country Procurement Assessment Review** conducted in 2005, indicates significant achievements in the procurement reform undertaken over the past five years. Given that the four pillars of the systems are in place (with a Baseline Indicators System rating of 69 percent), the Government should now focus on capacity building as well as on monitoring and evaluation of system performance in the public and private sectors. The Government action plan, adopted at the end of 2005, includes: (i) preparation and adoption of a procurement capacity building program; (ii) implementation of a computerized system to better manage planning, execution, and monitoring and evaluation of procurement operations; (iii) building capacity to supervise and follow-up contract execution; and (iv) implementation of specific actions to ensure compliance with procurement rules and regulations, and sanctions of their infraction.

39. An IDA procurement mission carried out during December 7-12, 2009, identified potential bottlenecks for project implementation and budget execution, which are laid out below:

(i) Lack of provisions in the Code for "delegation of authority" by the Presidents of Tender Boards and by Ministers/procuring entities. In their absence, meetings of the Tender Board cannot be held and no one is authorized to sign off on procurement documents and contracts;

(ii) Incentives for Tender Board members to maximize the number of meetings as, according to the Code, they are paid by meeting rather than by contract;

(iii) Delays in contract awards by the Minister/Head of the procuring agency after the Tender Board recommendation, as there is no define time limit in the Code for the Minister's sign off on the contract award;

(iv) Abuse of direct contracting and slicing of contracts that increases the transaction costs and the lead time for procurement;

(v) Weak and intermittent in-house technical support and the need for outsourcing;

(vi) Poor procurement planning and record management system and the need to address it in the project design.

40. Based on discussions with the Government Public Procurement Regulatory Agency (*Agence de Régulation des Marchés Publics*, ARMP), it has been agreed that while waiting for the Code revisions, the above risks (see bullets i – iii, above) can be mitigated through the LPHP legal and project documents with establishment of the specialized Tender Board, defining procurement arrangements and approval authorities, and providing adequate project technical support. Enforcement of the procurement plan can address the risk of dividing contracts to avoid more competitive methods and abuse of direct contracting.

41. It was further agreed to work in partnership with the Government to address systemic issues, to engage government institutions (Ministry of Finance, Secretariat of the Prime Minister, ARMP) as they are equally interested in reducing their borrowing costs and achieving good results. It should be noted that a new vice-ministerial post for public procurement was created in the Office of the Presidency in December 2011. The exact role of this vice-minister is being determined.

42. **Guidelines**. A procurement code, currently under revision, has been elaborated and approved by the President of the Republic in September 2004. However, this procurement code does not fully comply with International Standards regarding the domestic preferences, eligibility for National-Competitive Bidding (NCB), and the selection and recruitment of Consultants, as it appears among others that (i) there is an absence of precision on the recruitment of NGOs and individual consultants, (ii) the short list of consultants is unlimited, and (iii) there is a requirement for consultants to submit a bid security and performance guarantee. These issues are being discussed as part of the procurement reform dialogue with the Government and are under review by authorities, as reported in the action plan of the ARMP workshop on the procurement system assessment held in Yaoundé from November 27 to 28, 2007. A draft revised procurement code, based on the November workshop's action plan, has been discussed at a national workshop with stakeholders involved in public procurement during the period June 2-4, 2009. In the mean

time, these shortcomings will be addressed within the framework of this project by the Project Implementation Manual (PIM) (including the procurement, administrative, accounting and financial procedures).

43. **Procurement for this project** will be carried out in accordance with the World Bank "Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" dated January 2011; and "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credit & Grants by World Bank Borrowers", dated January 2011, and the provisions stipulated in the Legal Agreement. The exception include the two following contracts that have been selected or procured through advanced contracting under the previous Guidelines, namely: (i) the contract related to recruitment of the consultant in charge of the supervision of Lom Pangar Dam selected under the ''Guidelines: Selection and Employment of Consultants by World Bank Borrowers" published by the Bank in May 2004, and revised in October 2006'', and (ii) the Lom Pangar Dam works contract procured under the previous "Guidelines: Procurement under IBRD Loans and IDA Credits" published by the Bank in May 2004, and revised in October, 2006''. Procurement (works, goods, and non-consulting services) or consultant selection methods, prequalification, estimated costs, prior review requirements, and time-frame will be agreed in the Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation. The Bank's Standard Bidding Documents (SBD) or Cameroon's National Standard Bidding Documents satisfactory to the Association will be used. To the extent practicable the Bank's Standard Bidding Documents for goods and Standard Requests for Proposals for proposals, as well as all standard evaluation forms, will be used throughout project implementation.

44. **Advance Contracting and Retroactive Financing.** To accelerate program implementation, the Borrower has proceeded with the initial steps of procurement before signing the related Financial Agreement. The procurement procedures, including advertising, have been and will continue to be done in accordance with the Bank's Guidelines in order for the contracts to be eligible for IDA financing, and the normal review process by the Association will be followed in accordance with the Procurement and Consultant Guidelines.

45. **Advertising:** A comprehensive General Procurement Notice will be prepared by the Borrower and published in the United Nations Development Business online (UNDB online) following Board Approval, to announce major consulting assignments and any international competitive bidding (ICB). The General Procurement Notice shall include all ICB for works, goods, and non-consulting services contracts and all large consulting contracts (i.e., those estimated to cost US$200,000 or more). In addition, a specific procurement notice is required for all works and goods to be procured under ICB in UNDB online. Requests for Expressions of Interest (EOI) for consulting services expected to cost more than US$200,000 shall be advertised in UNDB online. An EOI is required in the national gazette, a national newspaper, or an electronic portal of free access for all consulting firm services regardless of the contract amount. In the case of NCB, a specific procurement notice will be published in the national gazette, a national newspaper, or an electronic portal of free access. Contract awards will also be published in UNDB, in accordance with the Bank's Procurement Guidelines (para. 2.60) and Consultants Guidelines (para. 2.28).

46. **Requirements for National Competitive Bidding.** Works, goods and non-consulting services contracts will use NCB procurement methods in accordance with national procedures using Standard Bidding Document acceptable to IDA and subject to the additional requirements:

- In accordance with paragraph 1.16 (e) of the Procurement Guidelines, each bidding document and contract financed out of the proceeds of the Financing shall provide that (a) the bidders, suppliers, contractors and their subcontractors, agents, personnel, consultants, service providers, or suppliers shall permit the Association, at its request, to inspect all accounts, records and other documents relating to the submission of bids and contract performance, and to have said accounts and records audited by auditors appointed by the Association; and (b) the deliberate and material violation of such provision may amount to an obstructive practice as defined in paragraph 1.16 (a)(v) of the Procurement Guidelines:

- Invitations to bid shall be advertised in national newspapers with wide circulation.

- The bid evaluation, qualification of bidders and contract award criteria shall be clearly indicated in the bidding documents.

- Bidders shall be given adequate response time (at least four weeks) to submit bids from the date of the invitation to bid or the date of availability of bidding documents, whichever is later.

- Eligible bidders, including foreign bidders, shall be allowed to participate.

- No domestic preference shall be given to domestic contractors and to domestically manufactured goods.

- Bids are awarded to the lowest evaluated bidder proven this bidder is qualified.

- Fees charged for the bidding documents shall be reasonable and reflect only the cost of their printing and delivery to prospective bidders, and shall not be so high as to discourage qualified bidders.

47. **Procurement under the Energy Sector Development Project (ESDP):** The IDA credit under the Energy Sector Development Project (ESDP) provided support to EDC in the preparation of the LPHP and strengthening of its institutional capacity. In particular, the ESDP financed the first part of the contract of the owner's engineer hired to oversee the preparation and construction of the regulating dam. In addition, ESDP ensured the ongoing financing of the independent dam safety and environmental and social panel of experts. The credit equally finances outstanding technical, environmental and social studies, and the preparation of bidding documents. EDC also benefits from technical assistance under the ESDP for (i) developing tools of water basin management and regulation, (ii) pre-feasibility and feasibility studies for future hydroelectric projects, (iii) communication, and (iv) associated training and equipment.

48. **EDC Launched an EOI** in May 2009 for a owner's engineer contract and received 18 expressions of interest in June 2009. Six reputable consulting firms were selected for the short-

list. A long process of donor coordination and technical consultations followed. IDA issued its no objection to the firm Coyne &Bellier/ISL on December 27, 2010.

49. **Procurement of Works:** Works procured under this project consist mainly of civil works for the construction of the Lom Pangar dam. Civil works costing more than US$5,000,000 equivalent will be procured through ICB. Other works contracts costing less than US$5,000,000 equivalent will use NCB procurement methods in accordance with national procedures using Standard Bidding Document acceptable to IDA and subject to the additional requirements set forth or referred to above in the paragraph named ‘’Requirements for National Competitive Bidding’’ of this Section C of annex 3.

50. **Advanced Contracting** for the Lom Pangar dam works contract: ICB process with prequalification was conducted. After the prequalication and the bidding processes the contract was awarded to China International Water & Electric Corporation (CWE) from China. EDC subsequently signed the contract with CWE on August 12, 2011. The final agreed contract amount is FCFA74,644,472,970 excluding applicable taxes for a period of 38 months (about US$161,988,874).

51. **Procurement of Goods and Non Consulting Services:** No major Good or Non-Consulting Services through ICB is foreseen to be acquired under this project. Taking into account the level of value added, and manufacturing/production capacity in the country, procurement of goods will be bulked where feasible (of similar nature and need at same time period) into bid packages of at least US$500,000 equivalent, so that they can be procured through suitable methods to secure competitive prices. The procurement will be done using the Bank’s Standard Bidding Documents for all ICBs. Goods estimated to cost US$500,000 equivalent and above per contract will be procured through ICB. For others goods contracts costing less than US$500,000 equivalent, NCB procurement methods will be used in accordance with national procedures using Standard Bidding Document acceptable to IDA and subject to the additional requirements set forth or referred to above in paragraph on Requirements for National Competitive Bidding.

52. Procurement of goods and non-consulting services, including those of readily available off-the-shelf maintenance of the office electronic equipment and other services such as printing, and editing, that cannot be grouped into bid packages of US$50,000 or more, may be procured through prudent shopping in conformity with Clause 3.5 of the procurement guidelines.

53. **Selection of Consultants:** Consulting services will used be for the following activities: (i) technical assistance; (ii) panel of independent experts; (iii) financial audits; and (iv) environmental and social impact studies etc. These consulting services will be procured with the most appropriate method among the following which are allowed by Bank guidelines and included in the approved procurement plan: Quality-and Cost-Based Selection (QCBS), Quality-Based Selection (QBS), Selection under a Fixed Budget (SFB), Least-Cost Selection (LCS). Selection Based on Consultants’ Qualifications (CQS) will be used for assignments that shall not exceed US$200,000. Single Source selection shall also be used in accordance with the provisions of paragraphs 3.9 to 3.13 of the Consultant Guidelines, with IDA’s prior agreement. All terms of reference will be subject to IDA Prior Review.

54. **Short Lists of Consultants for Services** estimated to cost less than US$200,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

55. **Assignments in Excess of US$200,000,** and specialized TA assignments, must be procured on the basis of international short-lists after appropriate advertisement in UNDB on line, dgMarket, and in the national gazette, a national newspaper, or in an electronic portal of free access.

56. **Consultants for Services Meeting the Requirements of Section V** of the consultant guidelines will be selected under the provisions for the Selection of Individual Consultants, through comparison of qualifications among candidates expressing interest in the assignment or approached directly.

57. **Operational Costs** financed by the project will be procured using the project's financial and administrative procedures included in the PIM and based on the annual workplan and budget. For purposes of efficiency, operational furniture packages will be procured competitively on the basis of 6 or 12 months need. For services (car maintenance, computers maintenance, etc.) to be financed through operational costs, the project will proceed by service contracting for a defined period.

58. **Trainings, Workshops, Seminars, Conference Attendance, and Study Tours** will be carried out on the basis of approved annual workplan and budget that will identify the general framework of training and similar activities for the year, including the nature of training, study tours, workshops, the number of participants, and cost estimates.

59. **Assessment of the Borrower's Capacity to Implement Procurement:** An assessment of EDC's capacity to implement procurement for the purpose of the project was carried out, and the overall procurement risk for the project is rated as **High**. This is due to, among other factors, the country environment risk of corruption in procurement, especially on big contracts, and the absence of a formal decision, text or manual to confirm the use of the procurement implementation arrangement of the existing IDA-financed project Energy Sector Development Project (ESDP) to implement the Lom Pangar Dam project. EDC is currently using ESDP's existing procurement implementation arrangement, including its tender board and its procurement staff. The tender board and procurement staff have acceptable qualifications and were fully involved in the ongoing ICB bidding process of the Lom Pangar dam. The project implementation manual is not yet finalized. The large contract packages have been already procured and the contracts to be procured are mostly for technical assistance. However, component 3 and 4 of the project will still require contracts to be procured. In addition to the existing procurement specialists currently working on ESMP and the AfDB financed PREETDN, the procurement staff of EDC will be strengthened by another procurement specialist financed by the donors, as well as EDC staff including a procurement assistant and an admin assistant. At the same time, capacity for contract management is crucial for the successful implementation of this project. Over the past few years, an experienced international hydropower expert has provided support and training to EDC staff on dam construction, contract management, and the preparation of dam operations. Such an international technical specialist will continue to be contracted for the construction period of the dam, the power house, and other infrastructures. The

Board of Directors of EDC in December 2012, approved a revised organigram as well as authorized the recruitment of a number of technical staff. Since then, six engineers have been recruited to work exclusively on LPHP. Donors will finance a full time senior engineer to serve as a deputy project director to ensure adquate coordination, on-the-job training and quality control of the newly recruited engineers. The action plan in Table 7 below needs to be implemented and appropriately monitored in order to bring the risk to **Moderate.**

Table 7: Procurement Action Plan

Action to be undertaken	Time-frame	Responsible body
Finalize and submit to IDA a satisfactorily version of the implementation manual	Prior to effectiveness	EDC
Terms of reference of the ESDP procurement specialist to be updated to incorporate LPHP duties	Prior to effectiveness	EDC

60. **Procurement Activities**, which are costing FCFA 5 million (US$11,000 equivalent) or more, will be conducted with the technical support of the existing tender board placed under EDC's authority by the Prime Minister through a decree, and later by a specialized tender board.

61. **For Contract Amounts of Less than** FCFA 5 million (US$11,000 equivalent) EDC will rely on an internal procurement committee. Details of the institutional arrangement and the responsibility of this internal procurement committee will be provided in the PIM.

62. **Regarding the Evaluation of Technical Proposals for Consulting Services** assignment, all procurement sub-commissions shall evaluate proposals using a minimum of three specialists in the sector.

63. **Procurement Institutional Responsibility and Implementation Arrangements:** EDC will be responsible for compliance with relevant procurement procedures. All awards of contracts will be realized in line with the Government Public Contract Code regarding the composition and mandates of the procurement commissions such as (i) the tender board (Procurement Commission) and (ii) the specialized public tender board. Procuring entities are responsible for ensuring that the necessary national clearances and approvals have been received before the no-objection requests are transmitted to the Association. Procurement steps at the national level that need approval from particular public tender boards, with respect to specific price thresholds, will be defined in the PIM. The response time for the Specialized Contracts Control Boards varies between one to two weeks. For large contracts, contracting authorities shall refer matters to the following Specialized Contracts Control Boards according to the type of contract to be executed, and whose prices exceed, respectively, the following thresholds:

- 1 billion FCFA (US$2 million equivalent) for the Specialized Contracts Control Board for Roads and other Infrastructure;

- 500 million FCFA (US$1 million equivalent) for the Specialized Contracts Control Board for Buildings and Public Amenities;

- 150 million FCFA (US$300,000 equivalent) for the Specialized Contracts Control Board for General Procurement;

- 100 million FCFA (US$200,000 equivalent) for the Specialized Contracts Control Board for Intellectual and other Services.

64. **Procurement Plan:** A first draft Procurement Plan for project implementation has been elaborated, providing the basis for the procurement methods, and will be available for discussions. This plan, covering the first 18 months of project implementation, was reviewed at appraisal. The final version of this procurement plan was discussed and agreed upon by the Borrower and the project team at negotiations. It will be available in the project's database and a summary will be disclosed on the Bank's external website once the project is approved by the IDA Board of Executive Directors. The Procurement Plan will be updated in agreement with the Project Team annually or as required to reflect the actual project implementation needs and improvement in institutional capacity.

65. **Publication of Results and Debriefing:** Publication of results of the bidding process is required for all ICBs, Limited International Biddings (LIBs), and Direct Contracting. Publication should take place as soon as the no-objection is received, except for Direct Contracting which may be done quarterly and in a simplified format. Publication of results for NCB and Shopping should follow the requirements of the procurement code of Cameroon. The disclosure of results is also required for selection of consultants. All consultants competing for the assignment should be informed of the result of the technical evaluation (number of points that each firm received) before the opening of the financial proposals, and at the end of the selection process the results should be published. The publication of results in selection of consultants applies to all methods. For CQS and SSS, however, the publication may be done quarterly and in a simplified format. The publication of results may be done through Client Connection. Losing bidders/consultants shall be debriefed on the reasons why they were not awarded the contract if they request explanation.

66. **Fraud and Corruption:** The procuring entity as well as Bidders /Suppliers/Contractors /Services Providers shall observe the highest standard of ethics during the procurement and execution of contracts financed under the program in accordance with paragraphs 1.14 and 1.15 of the Procurement Guidelines and paragraphs 1.22 and 1.23 of the Consultants Guidelines. The Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants", dated October 15, 2006, and revised in January 2011, will apply to this project.

67. **Frequency of Procurement Supervision:** The capacity assessment of the implementing agency has recommended supervision missions to visit the field at least once a year to carry out post review of procurement actions.

68. **Details of Procurement Arrangements:**

Table 8: List of Works, Goods, and Non-Consulting Services Contract Packages to be Procured

1	2	3	4	5	6	7
Ref. No.	**Description**	**Estimated Cost (US$)**	**Procure-ment Method**	**Domestic Preference (yes/no)**	**Review by IDA (Prior / Post)**	**Comments**
1	Lom Pangar Dam	153,000,000	ICB	No	Prior	IDA will finance 74% of the total amount; the rest will be financed by EIB. The contract was signed on August 12, 2011.
2	Various infrastructures for local development	2,700,000	TBC	No	TBC	Procurement plan for this demand driven component TBC
3	Printing for communication campaign	100,000	NCB	No	Post	
4	Computers and IT equipment	100,000	NCB	No	Post	
5	Furniture	50,000	Shopping	No	Post	
6	Vehicles	400,000	NCB	No	Prior	First NCB contract
7	M&E system	50,000	Shopping	No	Post	

69. **Contracts stimated to cost above** US$5,000,000 for works and US$500,000 for goods per contract, the first NCB contracts for works and goods, eventually others as identified in the procurement plan and all Direct Contracting will be subject to prior review by IDA.

Table 9: List of Consulting Assignments with Selection Methods and Time Schedule

1	2	3	4	5	6
Ref. No.	**Description of Assignment**	**Estimated Cost (US$)**	**Selection Method**	**Review by IDA (Prior / Post)**	**Comments**
1	Lom Pangar Dam Supervision (Phases I and II)	19,000,500	QCBS	Prior	Awarded to Coyne & Bellier/ISL. The ESDP is financing this contract, with remainder of the contract to be financed by AFD under component 1 of LPHP.
2	Technical audit on environmental and social measures	2,400,000	QCBS	Prior	
3	Management contractor for local development program	700,000	QCBS	Prior	Management contract
4	Technical assistance for communication and consultations, including complaint systems and conflict prevention	3,000,000	QCBS	Prior	

5	M&E system technical assistance	700,000	QCBS	Prior	
6	Deputy project director for the first 2 years	144,000	IC	Prior	
7	M&E Specialist for the first 2 years	120,000	IC	Prior	
8	International technical advisor for the first two years	320,000	IC	Prior	
9	Communication specialist for the first two years	120,000	IC	Prior	
10	Procurement specialist for the first two years	100,000	IC	Prior	
11	Financial audit for the first two years	60,000	SSS	Prior	
12	Mid Term Review	120,000	IC	Prior	
13	Final evaluation	120,000	IC	Prior	

70. Consultancy services estimated to cost above US$200,000 for firms and US$100,000 for individuals per contract, and Single Source selection of consultants (firms and individuals) will be subject to prior review by IDA. Similarly, all audit contracts will be subject to prior review, as will be the first contracts to be awarded in accordance with each selection method of consulting firms and individual consultants, regardless of contract amount.

71. Short lists of consultants for services estimated to cost less than US$200,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines

D. Monitoring and Evaluation

72. The project-level monitoring and evaluation (M&E) framework will track progress in implementation, measure intermediate outcomes, and evaluate project impacts. The results framework in Annex 1 outlines key performance indicators, data collection methods, a timetable for collection, and responsible agencies. This framework will be used to supervise and monitor the implementation of the project. Detailed processes, responsibilities, and templates for the M&E framework will be included in the Project Implementation Manual.

73. The PIU in EDC will be responsible for the overall management and implementation of the project's M&E framework. This will include maintaining a project database, managing the flow of information, and producing periodic monitoring reports. The PIU will include an M&E specialist to ensure it has the capacity to coordinate data gathering.

74. As described in the results framework in Annex 1, data will be collected at regular intervals to monitor the project development objective indicators and the intermediate outcome indicators. Data on the additional quantity of hydro-electricity generated under the project, the annual average flow in the Sanaga River, the length of transmission line constructed, and the population of gorillas in the Deng Deng area are a few examples of the types of data that will be collected for monitoring and evaluation purposes.

75. EDC will be responsible for the data collection, analysis and dissemination of monitoring results. EDC will obtain the data from many sources including reports from contractors, consultants, supervisory engineering firms, electricity producers, technical partners, the dam safety panel, the environmental and social panel and from EDC staff based on site at Lom Pangar. EDC will maintain a project database of all the data collected.

76. The monitoring results will be complied by EDC into a quarterly progress report which will describe the main achievements of the project. The progress report will include complete information on contracts, procurements, disbursements, information on the project's financial status, inputs, and the PDO level results indicators and intermediate results indicators to track project status. The progress reports will be reviewed by the Project Steering Committee and used by donors for project monitoring and evaluation. A summary of the narrative quaterly reports will be made public.

77. An independent technical auditor will be contracted under the project to carry out periodic missions to Lom Pangar to review compliance undertakings outlined in the ESMP. Reports of the technical auditor will be reviewed by the Project Steering Committee and will be used by donors to monitor adherence to the environmental and social management measures outlined in the ESMP. The PIU in EDC will use the independent auditor reports as a tool to monitor compliance with the ESMP and to take remedial action if any non-compliance issues are revealed. A summary of the independent auditor reports will be made public.

78. The total additional cost to support M&E is estimated at US$1.4 million and includes the implementation of an M&E system and training on its use, as well as the M&E specialist in the PIU[38]. This cost will be covered through Component 4 of the project.

[38] Specific M&E costs of the ESMP are budgeted separately in component 3.

Annex 4: Operational Risk Assessment Framework (ORAF)

1. Project Stakeholder Risks	Rating	High		
Description: a. The distributional benefits derived from the project are sensitive and there are vested interests influencing policy decisions that would determine where these benefits accrue. b. Based on international experience with dams, affected communities or NGOs might take issue with certain environmental, social or distributional project impacts	**Risk Management**: a. Benefit capture. Historic cross-subsidies are no longer an issue as they have been phased out under the new January 2010 PPA between AES-SONEL and Alucam. An independent review has confirmed that Alucam's new tariffs cover the cost of production. The introduction of the hydropower autoproduction models opens the door for an alternative route of hidden subsidies to industry. IDA is actively engaged in the policy dialogue related to the question of project benefits. The electricity law approved by parliament includes a clause requiring autoproducers to (a) optimize hydropower plants and (b) make available a proportion of produced energy to the concessionaire of the electricity grid. The policy letter provides details on how these clauses will be implemented to ensure that industry becomes an anchor consumer investing in electricity production that benefits all. In its policy letter addressed to IDA on the implementation of LPHP, the GOC indicates how it will manage the allocation and development of the Sanaga basin hydropower resources unleashed by the Lom Pangar regulating dam.. The water rights mechanism that is being put in place makes all hydropower producers pay for the investment and recurrent costs of the Lom Pangar regulating dam and other regulating dams in the basin. b. NGO or community concerns. The ESMP, RAPs and COTCO safeguard documents include adequate mitigation measures for affected areas. The project includes a local development sub-component for local communities around Lom Pangar that goes beyond the ESMP and the RAP The GOC and IDA are implementing communication strategies to ensure an informed discussion of the Project, its risks and benefits with stakeholders.			
	Resp: GOC	**Stage: Implementation**	**Due Date : Ongoing**	**Status: Underway**
2. Implementing Agency Risks (including fiduciary)				
2.1 Capacity	**Rating: Substantial**			
Description : a. GOC/EDC have limited experience and capacity in the sustainable development of large scale infrastructure projects. b. MINFOF has a poor track record with respect to managing protected areas and has low capacity to be able to manage the salvage logging from the reservoir.	**Risk Management :** a. The GOC has experience with international standards for large scale infrastructure projects, including the Chad-Cameroon pipeline. EDC has prepared the LPHP in accordance to Bank technical, fiduciary, and safeguard standards. This has been done with substantial donor-financed technical assistance, which has built capacity along the way. EDC is scaling up its staff and expertise for project implementation. The project includes continued strong TA for EDC, including two in-house internationally recruited advisors. b. The ESMP includes specific arrangements to reinforce MINFOF's capacity to fulfill its mandate vis-a-vis the offset and the salvage log. The selection and supervision of concessionaires for the salvage log will be outsourced to a private company, and an independent observer will oversee the process..			
	Resp: EDC, MINFOF, IDA	**Stage: Implementation**	**Due Date : Ongoing**	**Status: Underway**
2.2 Governance	**Rating: Substantial**			

Description : Cameroon's general governance environment is risky. It should be noted EDC has a relatively strong recent track record on governance.	**Risk Management :** Given the sector's strategic importance, sector governance involves high levels of the Government, which is helping improve transparency and accountability; EDC has undertaken preparation activities in accordance with Bank guidelines. To further reduce governance related risks, the project is ensuring that a complaints handling mechanism is in place, and through its Sector Policy letter the authorities have committed to ensuring the effective implementation of this instrument. The project also includes demand side approaches to ensure transparency, through the publication and dissemination of key project reports (including the independent technical audit of the ESMP) so as to better inform local communities and civil society representatives. A technical partner will be recruited to assist with the salvage log from the future reservoir, and an Independent Observer will monitor the process. Given integrity concerns in the forestry sector, firms bidding on the salvage log will be required to be either FSC or OLB certified, a measure which will greatly reduce the risk of illegal logging during the salvage operation.			
	Resp: GOC, EDC, IDA, OPM	**Stage: Implementation**	**Due Date : Ongoing**	**Status: Underway**
3 Project Risks				
3.1 Design	**Rating: Substantial**			
Description: a. Dam: Unexpected technical challenges associated with the site and construction could lead to delays and cost overruns. b. Transmission line: Risk of transmission line being completed with a delay compared to dam construction. c. Chad-Cameroon pipeline adaptation: Risk of an oil spill in the reservoir; Risk of delays if non-objection of CCP lenders is not provided on time. d. Hydrological risk: changes to the hydrologic regime of the Sanaga river downstream of Lom Pangar (especially during dry years) could lead to conflicts for water use downstream of Lom Pangar	**Risk Management:** a. Experienced engineers are part of the construction team and the site has been thoroughly studied in advance of the start of the works. Both the construction firm and the owner's engineer have been contracted and have started working. Appropriate contingency funds are foreseen for cost overruns. b. Transmission line. Co-financing by AfDB and BDEAC has been approved with financing agreements signed in January 2012. The transmission line construction period is inferior to the time it takes to construct the dam and fill the reservoir for power production. c. Chad-Cameroon pipeline adaptation. An updated national oil spill response plan and a specific area oil spill response plan are available; COTCO lenders have provided their consent to the change management package and the pre-financing agreement with the GOC has been signed. Technical assistance will be provided on integrated water management in the Sanaga River basin. This will include optimization of dam operations to benefit all downstream users and assistance on establishing appropriate institutional frameworks including a basin management organization for the Sanaga River. Appropriate management and clear decision-making processes will help to avoid conflicts between upstream and downstream water users and will foster collaboration among different water-using sectors.			
	Resp: EDC (a + b), COTCO (c)	**Stage: Implementation**	**Due Date : Ongoing**	**Status: Under way**
3.2 Social & Environmental	**Rating: High**			
Description: a. Risk of non-compliance in Bank's safeguard policies (7 out of 10 safeguard policies are triggered) including non-compliance of works. b. Cumulative impact on and weak	**Risk Management :** Several safeguards instruments have been prepared, including an ESA, ESMP, RAP, PMP, Process Framework, along with technical annexes as well as safeguards documents for the CCP adaptation works. a. EDC has established a track record of preparing the LPHP according to			

management of the Deng Deng forest may threaten its sustainability; c. While a Cumulative Impact Assessment concluded that Lom Pangar in itself has a limited impact and other run-of the river dams on the Sanaga will not significantly modify this impact, over time (but not before ten years) other production dams on the Sanaga could lead to significant impacts on the estuary. d. Dam and transmission line RAPs are not yet implemented; e. The local population may not adequately benefit from the project.	Bank standards, assisted by comprehensive TA financed by the ESDP. Component 3 of LPHP includes a subcomponent for audits of environmental and social measures. Quarterly independent audits will be undertaken and the results of the audits will be made available to the project steering committee, donors and EDC. In addition a summary of the audit report will be published on the project website.. b. The Deng Deng National Park (DDNP) was created as an environmental offset for the project and to protect the critical natural habitat for large primates.. A MoU has been signed between MIFI, EDC and MINFOF to ensure that the necessary actions are undertaken for the sustainable management of DDNP. The Ministry of Forestry and wildlife has committed to providing 60 park rangers for controlling the park. In addition, from Year 4 of the project the recurrent management costs of the National park will be covered by the revenues from the water tariff. The ESMP includes a comprehensive restructuring of the Deng Deng forestry units to ensure their sustainability. Technical assistance to supervision of the park is included in the project budget. c. The ESMP includes mitigation measures for downstream cumulative impacts, include a robust monitoring program (of the middle reaches of the Sanaga and the estuary) and a budget to address issues if and when they are identified. The project also includes TA to establish a Sanaga basin commission, the mandate of which will include determining the operational regime of hydrological infrastructure on the river in a consultative manner taking into account environmental and social impacts; d. EDC has implemented the RAPs for the Deng Deng National Park and the access road in accordance with Bank rules. Decree 2012/0034 regarding compensation of project affected people was signed by the Prime Minister on January 24th, 2012. Following the signature of the decree, Project Affected Persons (PAPs) will be compensated according to Bank standards and some PAPs will be relocated to the new Lom Pangar Village.; e. Component 2 of the project will include electrification of localities along the transmission line between Lom Pangar and Bertoua. Electricity from the project's power house will allow new connections for approximately 2,400 households. The local development component will provide additional benefits to communities adjacent to the project area.			
	Resp: EDC, MINFOF	**Stage: Implementation**	**Due Date : continual**	**Status: Under way**
3.3 Program & Donor	**Rating: Moderate**			
Description : The expected co-financing from AfDB, BDEAC, AFD and EIB may not materialize.	**Risk Management:** AfDB and BDEAC financing has already been approved and financing agreements will be signed in early 2012. AFD and EIB are committed to the project and preparation has been undertaken in full coordination with other donors. AFD and EIB largely follow the timetable of the WB project, with planned AFD and EIB board dates in May and June 2012 and harmonized board and effectiveness conditions.			
	Resp: AfDB, EIB, AFD	**Stage: Preparation**	**Due Date : March 2011**	**Status: under way**
3.4 Delivery Monitoring & Sustainability	**Rating: Substantial**			
Description : a. EDC's capacity may not suffice to implement and supervise the project according to Bank standards. b. Financial	**Risk Management: (**a) EDC has recruited a supervision engineer with international experience which helps in supervising preparatory and project works according to Bank standards; (b) The GOC is in			

sustainability of the project may be affected if delays in reaching agreement on the water tariffs (repayment mechanism) occur. c. Coordination, reporting, and monitoring of many implementing agencies and technical partners will be a complex undertaking.	the final stages of introducing a water tariff for hydropower producers on the Sanaga River. The GOC has prepared a final draft of the decree that sets the rules at the national level and a final draft of an "arrêté" that defines the formula to recover the investment and operating costs of the Lom Pangar regulating dam as well as the three existing regulating dams on the Sanaga. Signature of the decree and the arrêté is an effectiveness condition. (c)Strong coordination mechanisms, led by the Office of the Prime Minister have been put in place and the results framework of LPHP is developed to facilitate timely monitoring. The project finances TA on M&E as well as a full time M&E specialist in the PIU.			
	Resp: EDC, GOC, AES-SONEL, Alucam, future operators	**Stage: Preparation**	**Due Date : before dam reservoir starts filling**	**Status: under way**
Overall Implementation Risk Rating: High				

Annex 5: Economic and Financial Analyses

Economic Analysis

Demand Forecasts

1. In 2008, a least-cost power generation and transmission plan was developed for Cameroon by AES-SONEL. This was done by the consultant SOGREAH to meet a number of alternative demand scenarios and consider sensitivities to other key parameters[39]. In total, 81 scenarios were discussed to assess Cameroon's least-cost power generation expansion options. Three main demand scenarios were developed corresponding to three options for RTA/Alucam: closure, status quo, and expansion.

2. Power demand from the public network is forecast to grow at 5 percent annually on average up to the year 2040. This is based on studies conducted by AES-SONEL, which has ambitious plans to expand the public electricity network. Demand projections are based on economic and demographic growth, as well as the GOC's ambitious electrification plans. The target between 2006 and 2021, is to more than double the number of people served, as well as extending the network to previously unserved parts of the country.

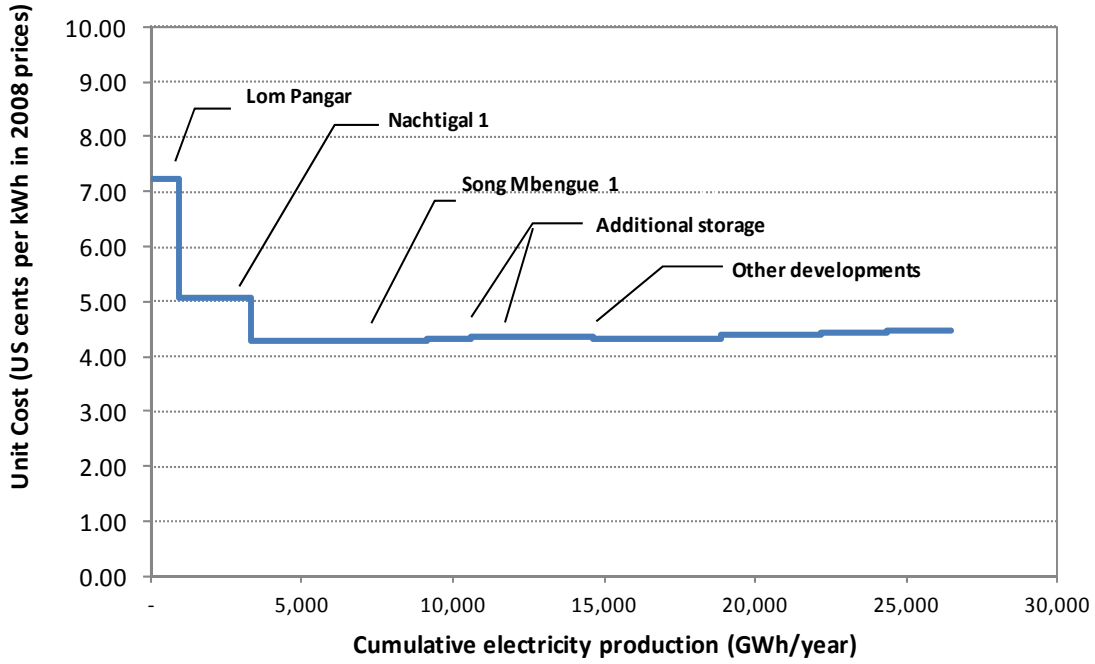
3. Power demand from large industrial customers could grow even faster, particularly over the period up to 2020. Peak demand from the ALUCAM aluminum smelter in Edea, whose capacity is expected to increase from 95,000 tons to 260,000 tons by 2016, is expected to grow from 157 MW in 2010 to 190 MW in 2013, 250 MW in 2014, and 513 MW in 2016. Furthermore, under scenarios of further development of the bauxite-aluminum value chain through a greenfield project and the contemplated development of the industrial zone in Kribi, the demand for additional generation capacity would increase by more than 1,500 MW by 2025.

4. Under a wide range of assumptions, the plan shows that Lom Pangar is on the least-cost path for Cameroon. Under all scenarios, Lom Pangar is part of the least-cost expansion plan: under medium and high demand scenarios, it is needed by 2013; under the low demand scenario, it is needed by 2017. The report identified the next best alternative to Lom Pangar as being three smaller regulation dams, whose cost would be about double that of Lom Pangar per cubic meter of regulated water.

5. The marginal cost of the available hydropower options ranges between US$0.04-0.07/kWh. Figure 8 shows the long-run marginal cost curves of the various hydropower development projects for a base case scenario (5 percent annual increase in public demand).

[39] Etude Economique du Projet de Centrale Thermique au Gaz de Kribi, SOGREAH consultants, June 2007; updated July 2008.

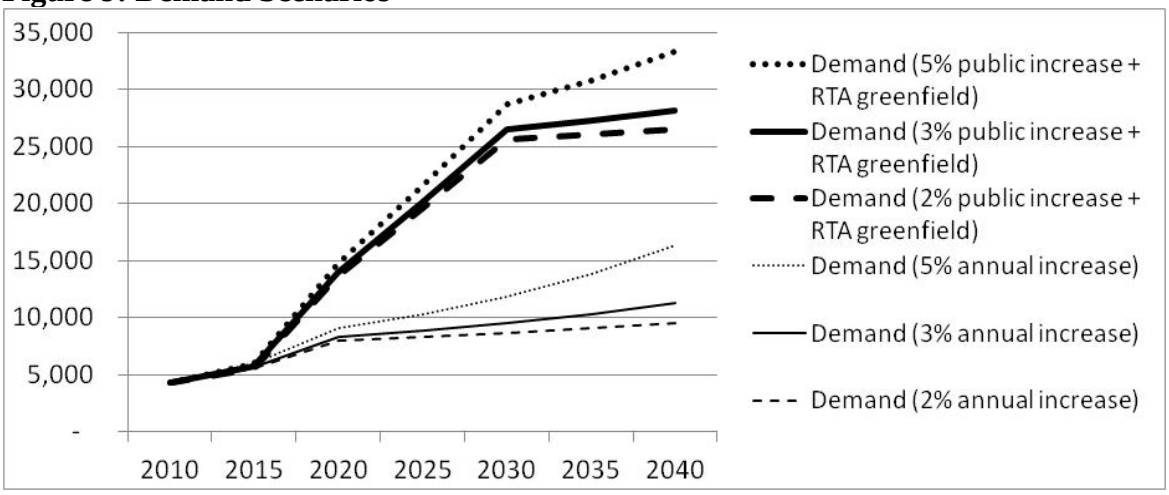
Figure 8: Long-Run Marginal Cost Curve for Hydropower Developments (Base Case)



6. Based on the 2008 SOGREAH study, this economic analysis uses six demand scenarios, combining various industrial and public demand forecasts. The scenarios below combine two options for RTA/Alucam[40] (with or without expansion of new greenfield smelter in Kribi) and three alternative annual power demand growth rates (5 percent for the base case, 3 percent for the medium case, and 2 percent for the low case). The six demand scenarios are presented in Figure 9.

[40] Under the original study of 2007, it was considered that the base case scenario included the continuation of Alucam power demand at historical levels, but in the 2008 update it had become apparent that the expansion of Alucam demand was the most likely (base case) scenario. This is still the case in this analysis, with other options being downside scenarios.

Figure 9: Demand Scenarios



Willingness to Pay

7. There is a wide variation in willingness to pay for power across different users (see Table 10). The SOGREAH study estimates that willingness to pay is approximately US$0.39/kWh for LV consumers and US$1.07/kWh for MV consumers. This results in an average willingness to pay of US$0.674/kWh in urban areas and US$0.39/kWh in rural areas. The average cost of self-generation capacity (US$0.46/kWh) is chosen as a more conservative estimate of willingness to pay for urban consumers. For the current Alucam smelter in Edea, the willingness to pay can be defined as the historic value-added per unit of power of US$0.029/kWh. The willingness to pay for the RTA greenfield smelter is estimated at US$0.045/kWh, equivalent to the estimated unit cost of hydropower development for Nachtigal, Song Mbengue, and Grand Ngodi. Finally, in the longer-term future, some power could potentially go to export. Based on existing trading arrangements in other parts of Africa, the willingness to pay can be estimated at roughly US$0.10/kWh.

Table 10: Willingness to Pay of Different Consumers

Consumer Group	Value US$/kWh	Methodology
Existing consumers	0.192	Average end-user tariff
Urban new consumers	0.460	Average cost of self-generation capacity
Rural new consumers	0.390	Willingness to pay of LV consumers
Alucam (Edea site)	0.029	Break-even price for aluminum smelting at ALUCAM, when price of aluminum was US$1,850
RTA Alucam (greenfield site)	0.045	Average cost of developing new hydropower sites
Export	0.100	Current export contracts in Southern and West Africa Power Pools, and average cost of generation in Nigeria

Assumptions and Scenarios

8. For the purposes of the economic analysis, the following key assumptions are made for all scenarios:

- The base case forecast for power demand from the public network is used; public power demand is estimated to grow at 5 percent annually on average up to the year 2040.
- Electricity production is valued according to the willingness to pay of the associated consumer as indicated in Table 10.
- Additional electricity produced by LPHP will be allocated to existing AES-SONEL LV and MV consumers and to rural households receiving new services. Additional power produced by Nachtigal Amont and subsequent hydro-schemes on the Sanaga River will be shared between industrial users and public supply (see various scenarios for details).
- Operation and maintenance costs are set at 1 percent of investment costs (excluding social and environmental costs).
- Transmission and distribution costs are estimated at US$0.038 and US$0.064 per kilowatt-hour in urban and rural areas respectively.
- The average economic life of the project is 50 years after construction.
- The discount rate is 10 percent, and all costs and benefits are discounted to 2011.
- The investment cost of the Lom Pangar Project is estimated to be US$452[41] million. This cost includes construction costs of the regulating dam, the power plant, the transmission line and rural electrification. The costs for the adaptation works for the Chad-Cameroon pipeline are also included as such works are associated to the project (though outside its scope). Furthermore, the costs include the implementation of the environmental and social management plan. The cost of the technical assistance is not included in the investment cost. The construction period is estimated to be about four years and the corresponding outlays are as follows:

Year	1	2	3	4	5	6
No delay	20%	30%	30%	20%		
1 year delay	20%	20%	20%	20%	20%	
2 years delay	15%	15%	20%	20%	15%	15%

- For other plants, most recent cost estimates are used from various studies. Cost estimates have been increased by 25 percent of investment costs to account for environmental and social costs.

9. The economic analysis considers the following four scenarios:

- **Scenario 1: LPHP as a Standalone Project** - This scenario takes into account the 30 MW power generated by the powerhouse at the foot of the dam and the increased firm power generation from Edea and Song Loulou hydropower plants downstream.

[41] US$439 million in 2010 prices.

- **Scenario 2: LPHP Plus Nachtigal Amont -** This scenario assumes a 330 MW run-of-river hydropower plant at Nachtigal Amont with an average energy production of 2,370 GWh per year. It is assumed that the plant will be developed for auto-production for RTA-Alucam with a public service provision of 70 MW for general public consumption. Based on studies conducted several years ago, the total investment cost is estimated at US$562 million in 2010 prices, plus the costs associated with the implementation of the environmental and social management plan (estimated at 25 percent of investment costs).

- **Scenario 3: LPHP Plus Multiple Other Hydropower Plants (with Export of Excess Power) -** Of the total estimated 6,000 MW hydropower potential in the Sanaga basin, the total large hydropower site suitable for industrial generation is estimated at 4,200 MW, with the remaining 1,800 MW being smaller (mainly upstream of Nachtigal Amont) and unsuitable for industrial hydropower development. Only a subset of these schemes totaling 3,820 MW could be considered in the economic analysis due to data limitations. Besides LPHP, this sub-set of schemes includes Pont Rail and Bankim Mape, as well as the hydropower plants at Nachtigal Amont, Song Mbengue I, Song Ndong I, Ngodi, Nachtigal Aval, Kikot I, Kikot II, Song Mbengue II, Petit Eweng, Song Ndong II, and Grand Eden. For estimates on the capacity, investment costs, and time horizon of these developments, please refer to Table 15.

- **Scenario 4: LPHP Plus Multiple Other Hydropower Plants (with RTA Greenfield Plant) -** The same subset of hydropower schemes totaling 3,830 MW is considered as in Scenario 3. Scenario 4 assumes that RTA will construct a greenfield smelter in Kribi which would create demand for additional generation capacity of over 1,200 MW by 2026.

Results of the Economic Analysis

10. LPHP is economically attractive as a stand-alone project. Under Scenario 1 assumptions, the internal economic rate of return IRR of the stand alone LPHP project is estimated at an attractive 17.8 percent.

11. LPHP continues to be economically attractive when considered as a package with other downstream hydropower developments. The rate of return of Lom Pangar and Nachtigal Amont is 16.3 percent. The rate of return of Scenario 3 (Lom Pangar and further hydropower developments with exports) is 20.8 percent. The IRR of Scenario 4 (Lom Pangar and further hydropower developments with the RTA greenfield plant) is 16.3 percent. All of these returns are well above the Bank's threshold rate of 10 percent. The benefit-cost ratio is above 1 for all scenarios. Table 11 also presents the economic performance for all four scenarios.

Table 11: Economic Performance of LPHP and Other Downstream Hydro-projects

Internal Rate of Return	
Scenario 1: LPHP only	17.8%
Scenario 2: Lom Pangar and Nachtigal Amont	16.3%
Scenario 3: LPHP plus further developments (export)	20.8%
Scenario 4: LPHP plus further developments (with RTA greenfield plant)	16.3%
NPV (US$billion)	
Scenario 1: LPHP only	0.41
Scenario 2: Lom Pangar and Nachtigal Amont	0.83
Scenario 3: LPHP plus further developments (export)	7.54
Scenario 4: LPHP plus further developments (with RTA greenfield plant)	4.70
Benefit-Cost Ratio	
Scenario 1: LPHP only	1.73
Scenario 2: Lom Pangar and Nachtigal Amont	1.65
Scenario 3: LPHP plus further developments (export)	2.61
Scenario 4: LPHP plus further developments (with RTA greenfield plant)	2.04

Impact of Power Allocation between Industry and Public Sector

12. The allocation of power varies considerable between scenarios. Table 12 shows there is no relationship between the share of power allocated to the public sector and the IRR. In other words, a larger allocation to the public sector does not automatically result in a higher rate of return.

Table 12: Potential Use of Power per Scenario (as Percentage of Power Produced)

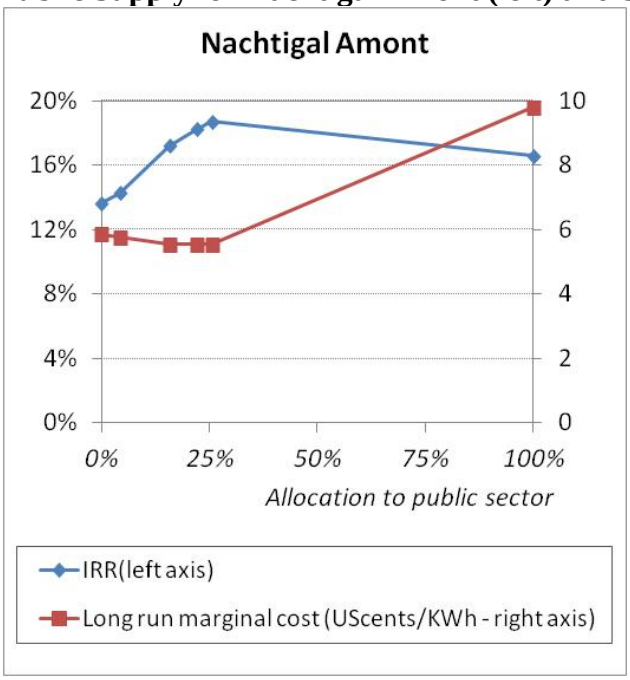
	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Public sector	79.2%	36.7%	20.8%	20.5%
RTA/Alucam	20.8%	61.3%	15.2%	78.5%
Available for export	0.0%	2.0%	64.0%	1.0%
IRR	17.8%	16.3%	20.8%	16.3%

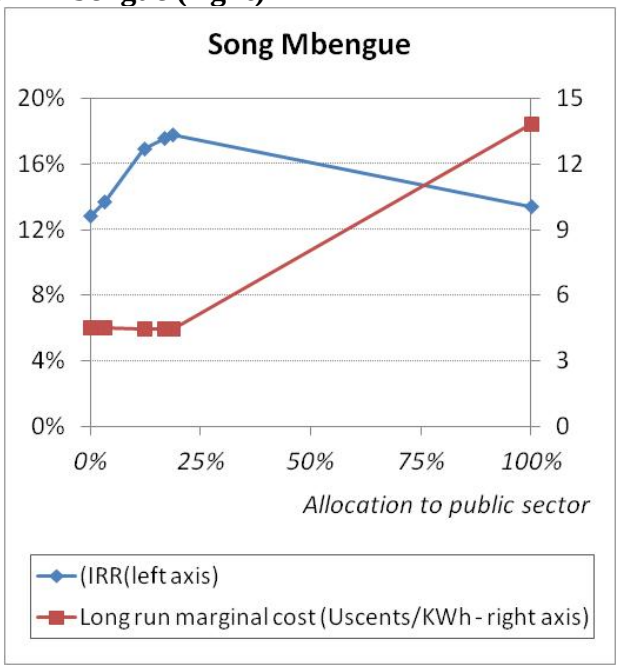
13. A separate simulation was undertaken to illustrate how the economic rate of return is affected by different allocations of power between the public sector and industrial uses[42]. As an example, Figure 10 illustrates how the optimum allocation between public supply and large industrial customers depends on the size of the development. The first example is the mid-sized 330 MW

[42] Power export was not considered for this analysis.

Nachtigal Amont project. For such a mid-sized development, it would take between 5-10 years for LV and MV demand to fully absorb the additional generation capacity. For such a development, the optimal share to go into public supply is approximately 26 percent. If Nachtigal Amont would be developed solely for public supply, the unit cost would increase from around US$0.055 to US$0.098 per kilowatt-hour. The second example is the much larger 880 MW Song Mbengue project. For this development, with LV and MV demand growing at around 5 percent per year, it would take between 10-15 years to fully absorb the additional generation capacity. The optimal share to go into public supply is 19 percent for such a development. If Song Mbengue was solely developed for public supply only, the unit cost would escalate from around US$0.045 to US$0.138 per kilowatt-hour.

Figure 10: Impact of Power Allocation on Project Rates of Return and Cost of Power into Public Supply for Nachtigal Amont (left) and Som Mbengue (right)





Sensitivity Analysis

14. Given the relatively high degree of uncertainty surrounding the parameters used in the economic analysis, a few key parameters were subject to a sensitivity analysis. The risk analysis of project economics was conducted using a specialized software package (@RISK). Based on the data randomly sampled from 20,000 interactions of the key project variables, the cumulative distribution functions for the Economic Internal Rate of Return (EIRR), Net Present Value (NPV) and Benefit-Cost Ratio (B/C) for the LPHP and other downstream hydropower projects were obtained. The variations considered were the following:

- A change in capital costs: between -10% and +20% for this project, and between 0% and +40% for other projects;

- An increase in capital cost for other projects because of environmental and social costs: equivalent to 15-35% of the capital costs;
- A lag in benefits because of construction delays in the LPHP: 0-2 years;
- A change in the additional electricity production in the existing hydropower plants as a result of the LPHP between 80% and 120%;
- A change in the load factor of the Lom Pangar power plant: between -15% and + 15% of the base case load factor of 70%;
- A change of the public sector demand growth to 2%, 3% and 6% per year (baseline 5% per year);
- A 50:50 probability that the ALUCAM expansion will materialize.

15. Economic returns for Scenarios 1, 2 and 3 prove to be robust around a wide range of parameter assumptions (see table 13 and table 17). Under Scenario 4, the probability of economic returns falling below 10 percent is approximately 17 percent. These show that the stand alone LPHP project presents robust economic rate of returns of 16.2 percent on average ranging between 11.9 and 21.9 percent. When combined with Nachtigal Amont, returns continue to be robust at 13.3 percent on average, ranging from 7.2 to 18.5 percent. The probability of economic returns falling below 10 percent is found to be about 4 percent. Under Scenario 3 (LPHP, multiple other developments, with power export), the average returns are 18.3 percent ranging from 13.8 to 23.3 percent. Under Scenario 4 (LPHP, multiple other developments, with RTA greenfield plant), the average returns are 12.2 percent ranging from 6.2 to 18.9 percent.

Table 13: Economic Performance of LPHP and Other Downstream Hydro-projects

	Mean	Min – Max Range	5% - 95% Range
Internal Rate of Return			
Scenario 1: LPHP only	16.2%	11.9% - 21.9%	14.0% - 18.8%
Scenario 2: Lom Pangar and Nachtigal Amont	13.3%	7.2% - 18.5%	10.2% - 16.1%
Scenario 3: LPHP plus further developments (with power export)	18.3%	13.8% - 23.3%	16.2% - 20.5%
Scenario 4: LPHP plus further developments (with RTA greenfield plant)	12.2%	6.2% - 18.9%	8.7% - 15.7%
Net Present Value (US$ billion)			
Scenario 1: LPHP only	0.34	0.11 - 0.59	0.23 - 0.47
Scenario 2: Lom Pangar and Nachtigal Amont	0.59	-0.49 – 1.82	0.04 - 1.32
Scenario 3: LPHP plus further developments (with power export)	5.93	2.62 – 9.82	3.98 - 8.16
Scenario 4: LPHP plus further developments (with RTA greenfield plant)	1.93	-2.04 – 7.77	-0.75 - 5.16
Benefit Cost Ratio			
Scenario 1: LPHP only	1.6	1.2 - 2.1	1.4 - 1.8
Scenario 2: Lom Pangar and Nachtigal Amont	1.4	0.6 - 2.1	1.0 - 1.8
Scenario 3: LPHP plus further developments (with power export)	2.1	1.4 - 3.1	1.7 - 2.5
Scenario 4: LPHP plus further developments (with RTA greenfield plant)	1.4	0.7 - 2.7	0.9 - 2.0

Impact of Aluminum Sector Benefiting from Hydropower Expansion

16. Given that a share of the increased electricity produced from the Sanaga basin hydropower projects will be consumed by the aluminum sector, it is relevant to consider the broader economic benefits of this sector. An economic analysis of the direct and indirect benefits of the aluminum industry for Cameroon's economy was therefore conducted. It assumes that the Lom Pangar and other hydropower projects will be built, thereby facilitating the expansion of the Alucam smelter at Edea and the construction of a greenfield aluminum smelter at Kribi. Direct benefits of RTA/Alucam operations include value-added from its production operations and employment. Indirect benefits include value-added and employment created with suppliers and other sectors of the economy and of the construction and operation of the Lom Pangar, Nachtigal Amont, and other hydropower projects. Key assumptions are summarized in Table 14 below[43].

17. The contribution of aluminum to Cameroon's economy is projected to grow steeply. Using standard industry multipliers and experience from other aluminum smelters such as Mozal in Mozambique, total direct and indirect benefits of Alucam's existing smelter are estimated at 0.2 percent of GDP. Facilitating access to low-cost electricity to Alucam on a non-discriminatory basis creates value-added for Cameroon's economy. Incremental direct and indirect benefits from the construction and production of Alucam's expansion and Kribi plant are estimated at: 0.62 percent of GDP on average between 2012-2015; 4.04 percent of GDP on average between 2016-2020; 6.81 percent of GDP between 2021-2025; 8.45 percent of GDP between 2026-2030; 7.63 percent between 2031-2035; and 6.67 percent between 2036-2040. Results are summarized in Table 16.

[43] The analysis does not take into account that better water regulation will allow ALUCAM to reduce its production costs because of lack of data.

Table 14: Assumptions Value-Added Aluminum Industry After Hydropower Development

	Value	Source
Current ALUCAM		
Total output (in tons)	79,000	Alucam report
Price of aluminum (US$ per ton)	2,173	World Bank commodity data
Price of alumina (US$ per ton)	223	CRU report
Operational costs (US$/ton)	1,560-1,640	CRU report
Aluminum multiplier for total value added	1.76	Similar projects in Mozambique, US, and Cameroon
Aluminum multiplier for employment	1.82-1.88	Similar project in Mozambique
ALUCAM expansion		
Direct inflow into Cameroon from construction of large projects (%)	10	Ex-post value of similar project in Mozambique
Construction multiplier for total value-added	1.71	Cameroon multiplier 1985/6 SAM
Construction multiplier for employment	1.88	Similar project in Mozambique
Construction - ALUCAM Expansion and Modernization - total direct cost (in million US$ - constant 2010 prices)	1,854	Rio Tinto Alcam Reports
Direct inflow into Cameroon from construction of ALUCAM expansion	7%	Ex-post value of similar project in Mozambique
Construction multiplier for total value-added	1.71	Cameroon multiplier 1985/6 SAM
Employment generated by construction	11.40	Employment/million US$
Construction multiplier for employment	1.88	Similar project in Mozambique
Additional Production - ALUCAM at full capacity output (in tons)	95,000	ALUCAM
Expansion and Modernization Production – ALUCAM - Total output (in tons)	300,000	ALUCAM
Production of Electricity		
Direct value-added (%)	30	AES-SONEL
Electricity multiplier for total value added	1.76	Cameroon 1997/98 SAM
Employment generated by electricity sector (employee/GWh)	0.2	AES-SONEL
Electricity multiplier for employment	1.8	Cameroon 1997/98 SAM
RTA greenfield development		
Construction - RTA greenfield – Phasing construction	1 and 2/3 phases	RTA report
Total direct cost (in million US$ - constant 2010 prices)	2,740 and 1,940	RTA report
Additional Production - RTA (in tons)	400,000	RTA report

Note: Current GDP is US$ 22.5 billion (constant US$ 2010), while the GDP annual growth rate is 3 percent.

Table 15: Overview of Hydropower Schemes Downstream of LPHP

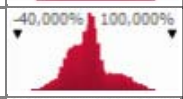
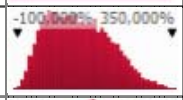
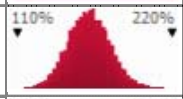
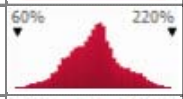
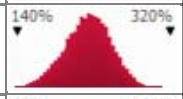
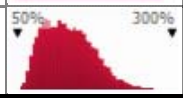
Feature	Units	Future Plants on Sanaga River Basin with LP Dam - 900 m3/sec					Regulation Dams	
		Song-Loulou/Edea	Lom Pangar	Nachtigal Amont	Song Mbengue 1	Song Ndong 1	Pont Rail	Bankim-Mape
Commissioning	Year	2015	2015	2016	2018	2029	2020	2017
Installed power capacity	MW	133	30	330	878	250		
Production capacity	GWh/year	765	223	2,370	5,768	1,796		
Load factor	%	66	85	82	75	82		
Construction cost excl. IDC (2008 prices)	billion FCFA	173		266	613	301	27	38
Environmental and social costs	billion FCFA	40		80	184	90		
Average const cost excl. IDC (2008 prices)	FCFA/kWh	173		266	613	301		

Feature	Units	Plus Regulation Bankim-Mape 1020 m3/sec and Pont Rail 1150 m3/sec							
		Ngodi	Natchtigal Aval	Kikot Downstream 1	Kikot Downstream 2	Song Mbengue 2	Petit Eweng	Song Ndong 2	Grand Edea
Commissioning	Year	2022	2018	2022	2026	2022	2026	2036	2026
Installed power capacity	MW	475	200	540	91	96	300	56	455
Production capacity	GWh/year	3,495	1,437	3,595	605	632	2,129	404	3,308
Load factor	%	84	82	76	76	75	81	82	83
Construction cost excl. IDC (2008 prices)	billion FCFA	426	176	437	73	50	346	51	426
Environmental and social costs	billion FCFA	128	53	131	809	523	1,154	902	936
Average const cost excl. IDC (2008 prices)	FCFA/kWh	426	176	437	1,806	1,168	2,577	2,013	2,091

Table 16: Summary of Direct and Indirect Benefits of RTA/Alucam

	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040
Current Impacts ALUCAM						
Total effect on GDP	0.56%	0.47%	0.40%	0.34%	0.29%	0.25%
GDP effect in million US$	139.0	135.7	133.8	133.8	133.8	133.8
Direct Cameroon employment	590	590	590	590	590	590
Total Cameroon employment	1,074	1,074	1,074	1,074	1,074	1,074
Contribution to budget in million US$	17	17	17	17	17	17
Incremental impacts with investments						
Total effect on GDP	0.50%	3.95%	7.01%	7.91%	6.93%	5.86%
GDP effect in million US$	129.5	1,165.2	2,381.0	3,137.7	3,213.1	3,178.8
Direct Cameroon employment	9,369	18,169	21,746	16,457	18,202	16,451
Total Cameroon employment	17,610	33,870	40,208	29,940	33,195	29,860
Contribution to budget in million US$	-	106	240	345	345	345

Table 17: Risk Analysis of Project Economics

Name	Graph	Min	Mean	Max	5%	95%	Errors
Only Lom Pangar IRR		11.9%	16.2%	21.9%	14.0%	18.8%	0
Lom Pangar and Nachtigal IRR		7.2%	13.3%	18.5%	10.2%	16.1%	0
All developments IRR - Without RTA and export		13.8%	18.3%	23.3%	16.0%	20.5%	0
All developments IRR - With RTA		6.2%	12.2%	18.9%	8.7%	15.7%	0
Lom Pangar NPV		49.1	152.6	262.7	100.9	208.8	0
Lom Pangar and Nachtigal NPV		-219.7	265.1	816.7	15.7	589.4	0
All developments NPV - Without RTA and export		1175.4	2655.9	4398.4	1780.3	3653.8	0
All developments NPV - With RTA		-911.5	863.2	3478.1	-334.5	2311.1	0
Lom Pangar B/C		1.2	1.6	2.1	1.4	1.8	0.0
Lom Pangar and Nachtigal B/C		0.6	1.4	2.1	1.0	1.8	0.0
All developments B/C - Without RTA and export		1.4	2.1	3.1	1.7	2.5	0.0
All developments B/C - With RTA		0.7	1.4	2.7	0.9	2.0	0.0

Financial Analysis

18. This section presents the financial viability of the Lom Pangar dam and of the Lom Pangar power plant. It also analyzes the financial situation of AES-SONEL and of the Electricity Development Corporation (EDC).

Lom Pangar Regulating Dam[44]

19. LPHP generates relatively little power, but creates downstream benefits by ensuring a more reliable flow of water available on a year-round basis. It follows that costs of the Lom Pangar regulating dam are to be recovered from the downstream hydropower producers. This is done through a system of water tariffs. The financial analysis is based on the water tariff principles and tariff formula in the signed decree and final draft arrêté received from GOC.

20. The expected investment costs for the regulating dam plus the associated ESMP and RAPs are estimated at US$297 million[45]. The regulating dam is expected to start operating by October 2015. The project lifetime for the dam is 50 years. About eighty percent of the investment costs for the regulating dam plus the associated ESMP and RAPs will be financed through IDA, AFD and EIB credits that are on-lend to EDC[46]. EDC will provide the remaining 20 percent in equity with a minimum return requirement of 10 percent.[47]

21. The tariff in the arrêté is 20 million FCFA/MW (or US$0.0052 per kWh) once the LPHP dam is operational and till cumulative installed capacity in the basin reaches 1,100MW. As generation capacity on the Sanaga River increases above 1,100MW, the tariff will decrease linearly with increasing installed capacity. In practice, this implies that the initial tariff applies to Song Loulou, Edéa, Lom Pangar, and Nachtigal Amont plants, as they have a cumulative capacity of 1,007MW. If another hydropower plant comes on line, the tariff per MW for all producers will decrease, but the revenues for EDC will increase. The part of the tariff representing the operations and maintenance costs is automatically indexed to inflation. Each producer will pay this tariff multiplied by the number of MW of its installed capacity on the Sanaga River.

22. The financial analysis is based on the following scenario: the two existing downstream hydropower plants (265MW generation at Edea and 384MW generation at Song Loulou) and the 30MW Lom Pangar power plant will be operational at the time the Lom Pangar regulating dam comes on line in 2015, and the assumption that the 330MW Nachtigal Amont plant will be operational and start paying water tariffs in 2019. Figure 11 shows that in this scenario the tariff specified in the arrêté ensures that EDC can repay all debt service and cover recurrent costs, including those of DDNP. EDC will have a positive net cashflow every year. A sensitivity

[44] For both project components (dam and power plant), inflation is assumed to be 2%, 470 FCFA are equivalent to 1 US$, value added tax is 19.25%, and corporate tax is 38.5%.

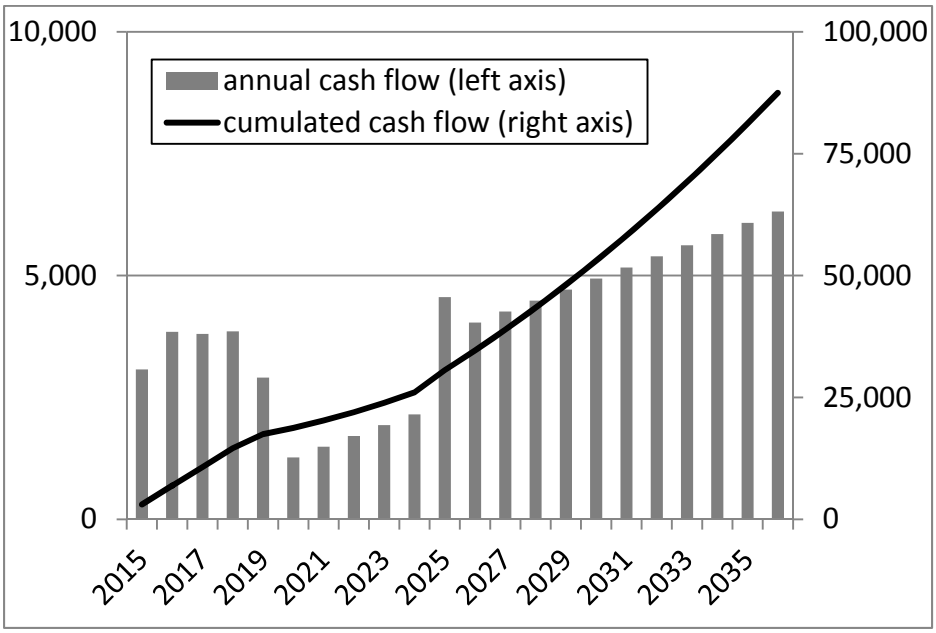
[45] This includes only the costs of the dam, the ESMP and the RAPs. Investment costs do not include the costs of the power house and transmission line (these are subject to a separate financial analysis), technical assistance and associated infrastructure.

[46] IDA terms are 40 years credit with a 10 year grace period with a service charge of 0.75%. AFD terms are a 25 years credit with a8 year grace period, with an interest rate of 2.5%. EIB terms are a 20 years credit with a 5 year grace, with an interest rate of 4.5% (AFD and EIB terms are approximate and will be finalized during project negotiations between the donor and the GOC).

[47] The 10 percent required return on equity is somewhat arbitrary, but reflects commercial bank lending rates in Cameroon and recent experience with finance of public infrastructure projects.

analysis shows that the cumulative cashflow of the project would remain positive over time as long as Nachtigal Amont plant or another new HPP comes on line by 2025.

Figure 11: Annual Net Cashflow and Cumulated Cashflow for the Lom Pangar Regulating Dam (in million FCFA)



Lom Pangar Power Plant

23. The power plant is planned to be operational for 30 years from 2015. The potential generation will be 184 GWh annually (load factor estimated at 70 percent, 180 m3/s flow falling 17 meters through 30 MW capacity turbines). Investment costs for the power plant, the transmission line and rural electrification are estimated at US$62 million. AfDB and BDEAC provide about 70 percent of the financing of the investment cost and the remaining is provided by GOC through equity. A minimum return requirement of 10 percent is assumed for counterpart financing. The weighted average cost of capital for the project will therefore be 3.5 percent. Annual maintenance and outage costs are estimated at 2 per cent of investment costs.

24. In order to recover the cost of capital, the power produced by the Lom Pangar power house and associated network would need to be priced at a minimum level of US$0.062/kWh. This unit cost includes the cost of generation and the transmission, and electrification costs for the 2,400 households to be connected under the project (with estimated 30% losses). Any purchase price above this level would further boost the financial return of the project. This threshold cost is about four times less than the cost associated with the existing small scale diesel generation in the local area. Even if demand is growing less rapidly than expected, the unit cost is likely to remain well below the current generation costs. The power plant is thus financially viable (See Table 18).

Table 18 : Summary of Financial Statements for Lom Pangar Power Plant

Financial Statements (million FCFA)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Income Statement										
Total Revenues	**2,743**	**3,686**	**3,715**	**3,745**	**3,775**	**3,805**	**3,836**	**3,866**	**3,897**	**3,929**
Total Expenses	**445**	**591**	**599**	**607**	**616**	**625**	**634**	**643**	**652**	**661**
EBITDA	**2,297**	**3,095**	**3,116**	**3,138**	**3,159**	**3,181**	**3,202**	**3,224**	**3,246**	**3,268**
Depreciation	(538)	(538)	(538)	(538)	(538)	(538)	(538)	(538)	(538)	(538)
EBIT	**1,760**	**2,558**	**2,579**	**2,600**	**2,622**	**2,643**	**2,665**	**2,686**	**2,708**	**2,730**
Interest Expenses	(697)	(697)	(697)	(646)	(595)	(544)	(494)	(443)	(389)	(336)
Pre-tax Income	**1,062**	**1,860**	**1,882**	**1,954**	**2,026**	**2,099**	**2,171**	**2,244**	**2,319**	**2,394**
Income tax	409	716	724	752	780	808	836	864	893	922
Net Income	**653**	**1,144**	**1,157**	**1,202**	**1,246**	**1,291**	**1,335**	**1,380**	**1,426**	**1,472**
Balance Sheet										
Assets										
Current Assets	1,637	3,638	4,558	5,542	6,571	7,645	8,763	9,606	10,497	11,434
Long-Term Assets	32,468	31,930	31,393	30,855	30,317	29,780	29,242	28,705	28,167	27,630
Total Assets	**34,104**	**35,568**	**35,950**	**36,397**	**36,889**	**37,425**	**38,005**	**38,311**	**38,664**	**39,063**
Liabilities										
Current Liabilities	446	765	1,557	1,586	1,614	1,643	1,671	2,020	2,049	2,079
Long-Term Liabilities	22,251	22,251	20,684	19,901	19,117	18,334	17,551	16,128	15,026	13,923
Total Liabilities	**22,696**	**23,016**	**22,241**	**21,486**	**20,731**	**19,977**	**19,222**	**18,148**	**17,075**	**16,002**
Total Equity	**11,408**	**12,552**	**13,709**	**14,911**	**16,157**	**17,448**	**18,783**	**20,163**	**21,589**	**23,061**
Total Liabilities & Equity	**34,104**	**35,568**	**35,950**	**36,397**	**36,889**	**37,425**	**38,005**	**38,311**	**38,664**	**39,063**
Cash Flow Statement										
Cash Flow from Operations	1,411	1,923	1,701	1,765	1,810	1,854	1,899	1,944	1,991	2,037
Cash Flow from Investing	(3,200)	-	-	-	-	-	-	-	-	-
Cash Flow from Financing	3,200	-	(783)	(783)	(783)	(783)	(783)	(1,103)	(1,103)	(1,103)
Net Cash Flow	**1,411**	**1,923**	**918**	**982**	**1,026**	**1,071**	**1,116**	**841**	**888**	**934**
Cumulated Cash Flow	**1,411**	**3,335**	**4,252**	**5,234**	**6,261**	**7,332**	**8,448**	**9,288**	**10,176**	**11,111**

Financial Statements (million FCFA)	2025	2026	2027	2028	2029	2030	2035	2040
Income Statement								
Total Revenues	**3,960**	**3,992**	**4,024**	**4,056**	**4,088**	**4,121**	**4,288**	**4,463**
Total Expenses	**670**	**680**	**690**	**700**	**710**	**720**	**774**	**833**
EBITDA	**3,290**	**3,312**	**3,334**	**3,356**	**3,378**	**3,401**	**3,514**	**3,630**
Depreciation	(538)	(538)	(538)	(538)	(538)	(538)	(538)	(214)
EBIT	**2,752**	**2,774**	**2,796**	**2,819**	**2,841**	**2,863**	**2,977**	**3,416**
Interest Expenses	(283)	(229)	(176)	(174)	(171)	(169)	(157)	(145)
Pre-tax Income	**2,469**	**2,545**	**2,620**	**2,645**	**2,670**	**2,695**	**2,820**	**3,271**
Income tax	951	980	1,009	1,018	1,028	1,037	1,086	1,260
Net Income	**1,519**	**1,565**	**1,611**	**1,627**	**1,642**	**1,657**	**1,734**	**2,012**
Balance Sheet								
Assets								
Current Assets	12,417	13,446	15,306	17,161	19,031	20,917	30,576	40,626
Long-Term Assets	27,092	26,554	26,017	25,479	24,942	24,404	21,716	19,352
Total Assets	**39,509**	**40,001**	**41,323**	**42,640**	**43,973**	**45,321**	**52,292**	**59,979**
Liabilities								
Current Liabilities	2,109	2,138	1,385	1,395	1,406	1,416	1,469	1,647
Long-Term Liabilities	12,820	11,717	12,181	11,861	11,542	11,222	9,625	8,027
Total Liabilities	**14,929**	**13,856**	**13,566**	**13,257**	**12,947**	**12,638**	**11,094**	**9,675**
Total Equity	**24,580**	**26,145**	**27,757**	**29,383**	**31,025**	**32,682**	**41,199**	**50,304**
Total Liabilities & Equity	**39,509**	**40,001**	**41,323**	**42,640**	**43,973**	**45,321**	**52,292**	**59,979**
Cash Flow Statement								
Cash Flow from Operations	2,083	2,130	2,176	2,172	2,187	2,202	2,280	2,358
Cash Flow from Investing	-	-	-	-	-	-	-	-
Cash Flow from Financing	(1,103)	(1,103)	(320)	(320)	(320)	(320)	(320)	(320)
Net Cash Flow	**981**	**1,027**	**1,857**	**1,852**	**1,868**	**1,883**	**1,960**	**2,039**
Cumulated Cash Flow	**12,091**	**13,118**	**14,975**	**16,827**	**18,695**	**20,578**	**30,224**	**40,260**

Performance of AES-SONEL

25. AES-SONEL's financials show that it generates sufficient revenue and cash flow to honor its payments under its debt service coverage and other covenant obligations with senior lenders under its capital investment program, as well as the PPA with Kribi Power Development Company (KPDC). The International Finance Corporation (IFC) is monitoring AES-SONEL's concession performance as part of the ongoing supervision of their capital expenditure loan to AES-SONEL. Financial projections show that, at all times, AES-SONEL generates sufficient revenue and cash flow to pay for the power purchases from the Dibamba and Kribi plants, execute its investment program, and honor its performance ratios under the existing investment loan. Table 19 shows AES-SONEL's historical financial performance.

Table 19: AES-SONEL's Historical Financial Performance (US$ '000)

	2007	2008	2009	2010
Total Assets	977,973	1,039,981	1,250,640	1,400,670
Fixed Assets	739,883	786,382	862,018	891,899
Total Liabilities	656,504	708,470	877,672	989,911
Total Long-Term Debt	321,064	348,399	462,217	481,997
Shareholders Equity	321,469	331,511	372,968	410,759
Exchange rate (ye)	452	457.6	455.6	490.1
Revenues	321,801	482,247	380,557	407,559
EBITDA	71,515	125,291	117,794	102,656
Net Profit	12,783	14,635	46,528	31,912
Exchange rate (avg)	479.9	445.7	448.8	495.3
Net Cash Flow	54,685	97,186	99,959	80,230
Key Ratios				
EBITDA Margin (%)	22%	26%	31%	25%
Net Profit Margin(%)	4%	3%	12%	8%
LT Debt/EBITDA	4.49	2.78	3.92	4.70
Return on Assets (%)	1.31	1.41	3.72	2.28
Return on Equity (%)	3.98	4.41	12.48	7.77

26. Going forward, AES-SONEL expects to improve its operating and profit margins. This will mostly come from growing demand, improved generation due to increased availability of existing hydropower plants, the addition of new low-cost generation capacity, ongoing investments in the transmission network, and planned investments in distribution. Indeed, (i) public demand growth is projected to increase at 5 percent per year; (ii) capacity of existing generation assets is projected to be restored close to their design capacity, and with the exception of the Edea hydropower scheme, plant availability will range between 90-100 percent after rehabilitation; (iii) transmission efficiency is to improve to 96 percent and distribution efficiency to about 80 percent while unserved energy remains at the contractual level of 0.5 percent; (iv) the Kribi gas power plant will provide an additional 216 MW starting in 2013; and (v) Alucam tariff increased to 2.8 US cents/kWh from 2010 onwards.

27. AES-SONEL expects to resume paying dividends again from 2015 onwards. AES-SONEL's concession has operated profitably over the past years, paid dividends until 2006, and had not

required subsidies from the budget until 2009. Ahead of presidential elections in 2011, the regulator ARSEL rejected the tariff increase requested by AES-SONEL in 2010, resulting in compensation payments to AES-SONEL in 2010 and 2011. From 2012 onwards, the GOC has committed to return to allowing tariff increases in line with the concession contract.

28. AES-SONEL has already incorporated an annual budgetary provision of approximately US$15 million for the future payment of water tariff, which will be indexed to inflation.

Performance of EDC

29. The Electricity Development Corporation's (EDC) historic finances have been precarious, so its ability to repay the loan for the LPHP would depend on the determination of suitable water and power charges. The financial situation of the EDC is an input to understanding its repayment capacity. This is particularly important given that the GOC will on-lend the proposed IDA credit for the LPHP project to EDC.[48] Created in 2006, EDC had almost no revenues from its activities and therefore made significant operating losses in 2008 and 2009.[49] EDC continued its activities thanks to new equity injections and subsidies for investment. Without substantial and reliable new sources of revenues or continued government support, EDC would not be able to repay a loan. The capacity of EDC to repay the loan for the LPHP therefore depends mostly on the financial viability of the LPHP itself, which as noted above is solid as long as water and power charges are appropriately determined and paid. At the end of 2009, EDC had no long-term debt. Table 20 presents EDC's key financial results and ratios for 2008 and 2009 as well as some specific comments.

Table 20: EDC Key Financial Results and Ratios (US$ million, except for the ratios)

Item	2008	2009	Comment
Revenues	0.6	0.2	EDC had almost no revenues from its activities. The amounts shown here are mainly due to accounting rules such as reversal of provisions
Expenses	3.1	4.1	Expenses increased mainly because of higher staff cost (more than doubled from 2008 to 2009 as staff went from 39 to 64) and higher depreciation
Net result	(2.5)	(3.9)	EDC suffered significant losses
New equity	2.2	5.6	New equity injections occurred in both 2008 and 2009
Subsidy for investment	-	6.2	EDC received a large subsidy for investment in 2009
Cash flow variation	0.02	6.8	The cashflow was positive due to new equity injections and the subsidy
Liquidity ratio[50]	0.5	2.6	Liquidity ratio significantly improved thanks to the new equity injections and the subsidy
Debt to equity ratio	0%	0%	EDC had no long term debt

[48] EDC was established by Presidential Decree on Nov. 29, 2006, as the GOC's energy asset holding company..

[49] Based on a review of EDC's financial statements for 2008, and 2009, ("*Déclaration Statistique et Fiscale*" and were prepared by Cameroon Audit Council). There was no evidence that an independent auditor has certified those documents.

[50] Current ratio is current assets divided by current liabilities.

Annex 6: Environmental and Social Safeguards

1. Appropriate environmental and social management of the LPHP is not only critical to long-term sustainability, but makes the dam more attractive to financiers and thus facilitates its funding under the best possible terms for Cameroon. Integrating environmental and social issues upstream also increases the project's profitability by anticipating potential problems and avoiding ex-post mitigating measures, always costlier than prevention. Further, the impact of LPHP on economic and social development in Cameroon is also enhanced by the proper management of social and environmental issues and challenges. Beyond the obvious need for complying with national rules and regulations on environmental assessment, the above explains why Cameroon has decided to exert due social and environmental diligence on LPHP according to international good practices, notably the Bank's safeguard policies.

2. The safeguard annex is structured in the following parts:

- Part I: Regulatory Context, Applicable Safeguard Policies, and Public Consultations
- Part II: Analysis of Alternatives
- Part III: Impact Assessment
- Part IV: The Environmental and Social Management Plan
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PART I: Regulatory Context and Applicable Safeguard Policies, and Public Consultations

3. The LPHP's major risks include: (i) the partial flooding of the Chad-Cameroon pipeline (CCP) by the water reservoir at two intercepts of the Pangar River of about 25 kilometer lengths in total, requiring an adaptation of the pipeline at these two stretches; (ii) the loss of natural habitat due to flooding and infrastructure footprint; (iii) reducing the viability of a distinct population of gorillas and other red-listed species; (iv) the risk that construction activities will not be conducted in an environmentally- or socially-sound manner; (iv) the relocation of Lom Pangar village and the physical and/or economic resettlement of more than 3,200 persons because of the reservoir; and (v) induced environmental, human and health risks associated with the construction and operation of a large dam in a previously low density area. At the same time, the number of people in need of resettlement is limited, given the present low population density in the area. Extensive public consultation for this long-awaited project has also yielded expectations from local populations which will be partly fulfilled by (i) a rural electrification component along the transmission line running from the power plant to the City of Bertoua (funded by the African Development Bank) and (ii) a set of mitigating social measures for this project, including local development activities.

I-A. Regulatory Context

4. Cameroon has an established institutional and regulatory framework for the management of environmental assessments (EAs). All large projects, such as the proposed LPHP, are subjected to EAs that must be reviewed by the Inter-Ministerial Committee on the Environment, subjected to public hearings, and resulting in a certificate of compliance issued by the Minister of Environment and Nature Protection. This EA process has been operational since 2005, although there are some weaknesses in terms of the technical capacity of the inter-ministerial committee to

review complex EAs and to monitor the implementation of their Environmental Management Plans (EMPs), the certificate of compliance for the LPHP project was issued by the Minister of Environment and Nature Protection in 2011.

I-B. Applicable Safeguard Policies

5. Given its complexity, the LPHP will have significant technical, environmental, social, and reputational risks and impacts requiring various mitigation measures and offsets. The project is designated Category A per the Bank's policy on Environmental Assessment (OP/BP 4.01). The other donors (EIB, AFD, AfDB, and BDEAC) have agreed that the Bank's safeguard policies would fulfill their own requirements. Table 21 clarifies the rationale of the safeguard policies triggered by the proposed project.

Table 21: World Bank Safeguards Policies Triggered by the Project

Safeguard Policies Triggered	Yes	No
Environmental Assessment (OP/BP 4.01) The project will have significant and irreversible environmental impacts, including: (i) the partial flooding of the Chad-Cameroon pipeline; (ii) the loss of natural habitat due to flooding and infrastructure footprint; (iii) the risk of reducing the viability of a distinct population of gorillas and other red-listed species; (iv) the risk that construction activities will induce significant loss of natural habitat; and (v) the predictable environmental, human and health risks associated with the construction and operation of any large infrastructure in a previously low density area. An ESA/ESMP for the project site has been prepared, consulted upon, and disclosed.	X	
Natural Habitats (OP/BP 4.04) The project will have significant impacts on natural habitats, both during construction and operation of the dam. The main impact will be the flooding of about 540 km2, including approximately 300 km2 of natural forest. The ESA indicates that none of the flooded terrestrial habitat is critical. However, the dam site is located next to portions of the Deng Deng forest that are critical natural habitats, particularly because of the presence of a viable population of gorillas, and a significant population of chimpanzees. There is no equivalent Cameroonian policy in place to manage impacts on natural habitats. Deng Deng National Park has been established as an offset for the portion of the forest that will be inundated by the dam.	X	
Forests (OP/BP 4.36) Forest issues include measures for the recovery of the wood from the future reservoir, as well as control of induced impacts at the periphery of the reservoir.	X	
Pest Management (OP 4.09) Only limited, but potentially harmful, quantities of pesticides and other biocide products will be utilized for the major works related to the LPHP, and for the control of disease vectors in the reservoir and immediate downstream area. The impacts and mitigation measures for the use of pesticides are addressed in a Pest Management Plan.	X	
Physical Cultural Resources (OP/BP 4.11) Physical Cultural Resources were covered in the draft EA from 2005 and further work was conducted to meet Bank requirements. Agreement was reached with the Ministry of Culture regarding the management of chance finds. There is no equivalent Cameroonian policy in place to manage potential impacts on physical cultural resources.	X	
Indigenous Peoples (OP/BP 4.10) No Pygmies and other Indigenous Peoples as described in OP 4.10 have been found in the project area. The Mbororos, who do not fulfill all the criteria for OP 4.10, are present in the project area, and live mostly through herding activities. Their situation is analyzed in the ESA and targeted measures aimed at assisting the Mbororos and other vulnerable project-affected people (PAPs) are included in the RAPs.		X
Involuntary Resettlement (OP/BP 4.12) The LPHP is expected to have direct and indirect social impacts in its area of influence and beyond. Social mitigation plans by broad categories of works (dam and reservoir, power plant and transmission line, access roads) were prepared as well as a process framework for the Deng Deng National Park to mitigate, offset, reduce negative impacts, and strengthen positive impacts on the communities in the project area. RAPs have been prepared for communities in the area of the dam site, along the associated transmission line, near the powerhouse, and in Deng Deng National Park.	X	
Safety of Dams (OP/BP 4.37) The project includes the construction of a new, large 46 m high dam and an associated reservoir. EDC has appointed an independent dam safety panel during project preparation to advise on associated dam safety risks. Dam safety studies have been prepared.	X	
Projects on International Waterways (OP/BP 7.50) There are no international waterways in the project area.		X
Projects in Disputed Areas (OP/BP 7.60) The project is not situated in a disputed area.		X

6. The borrower has prepared a comprehensive Environmental and Social Assessment (ESA) of the project. Detailed studies to reduce or mitigate identified environmental and social impacts of the proposed project have been prepared since 2003. Given the magnitude of the environmental and social work required, the mitigating measures themselves, in some instances, have required their own safeguarding processes (e.g. for the involuntary resettlement linked to the operation of the Deng Deng National Park). A first draft ESA was publicly disclosed in January 2006, and was the subject of public hearings in February 2006. The Bank commented on the draft ESA and communicated a detailed compliance matrix to the GOC in March 2006. A revised ESA was disclosed in March 2011.

7. Two panels of independent, internationally-recognized experts have been appointed by EDC and have been operational since early 2005, (with an interruption from 2006 to 2008, due to budget constraints) to accompany and supervise project preparation in line with best practice international standards and Bank safeguard policies. The environmental and social panel comprises an environmental expert, a public health expert and a social expert. The dam safety panel comprises a geologist, a dam safety specialist, a hydrologist and a hydro-mechanical engineer. Both panels are currently financed since 2008, through the ESDP.

8. Collaborative donor assistance and recommendations to the environmental and social analytical work resulted in the publication of the following three sets of draft final documents in March 2011:

- The environmental safeguards documentation consisting of an Environmental and Social Impact Assessment (ESA) report, the Environmental and Social Management Plan (ESMP), and accompanying annexes covering for instance sustainable fishery management, archeological resource management, public health management, pesticide management, and the construction ESMP;
- Additional environmental and social studies, including a cumulative impact assessment, forestry study, and land use study for the new village of Lom Pangar;
- the Resettlement Actions Plans (RAPs) for the dam, the transmission line/power plant, the access roads, and the Deng Deng National Park resettlements; and
- A process framework for the Deng Deng National Park.

9. The final ESMP is an ‘umbrella plan’ that comprises several components which are to be integrated and implemented by EDC and its contractors. The ESMP includes the following elements: (i) the objectives of the ESMP; (ii) the ESMP components and descriptions of their future implementation; (iii) the institutional framework, including the agencies responsible for implementing the ESMP; and (iv) the ESMP costs and budget. The ESMP is an 8-year program. Total ESMP implementation costs are estimated at 35.6 billion FCFA (US$73 million).

10. Table 22 lists the safeguard instruments prepared, consulted upon, and disclosed in-country and in the Bank’s InfoShop before appraisal. These documents meet Bank requirements and have been reviewed by the project’s panels of independent experts.

Table 22: Safeguards Instruments Prepared for LPHP Project and Disclosure Dates[51]

Safeguard instrument	Date of disclosure of draft final report
Environmental and Social Assessment (ESA), including: - Volume 1: ESA - Volume 2: Environmental and Social Management Plan (ESMP) - - - Volume 3: English Summary of ESA - Volume 4: ESA annexes (covering for instance sustainable fishery management, archeological resource management, public health management, pesticide management, construction ESMP)	 March 21, 2011 March 21, 2011 (revised and re-disclosed February 20, 2012) March 21, 2011 July 2010 to April 2011
Pest Management Plan	February 7, 2012
Forestry Study	January 5, 2012
Cumulative Impact Assessment (CIA) of the LPHP project	March 18, 2011
Resettlement Action Plan (RAP) for the Dam, including: - Annex 8: Study on vulnerable people of the Peulh/Mbororo tribe	March 21, 2011
Resettlement Action Plan (RAP) for the Transmission Line	March 21, 2011
Resettlement Action Plan (RAP) for the Powerhouse	March 21, 2011
Abbreviated Resettlement Action Plan (RAP) for the Deng Deng National Park	March 17, 2011
Process framework for the Deng Deng national park	March 17, 2011

I-C. Public Consultations

11. Extensive public consultations on the ESA started in 2004, and have continued throughout project preparation. Civil society, project-affected people (PAP), vulnerable groups, and various stakeholders were consulted on all safeguards documents, including the ESMP and the various RAPs. Safeguards documents have been disclosed locally and through the Bank's Infoshop. EDC has recruited an independent panel of environmental and social experts to provide advice during the preparation of the safeguards documents and the public consultation process. During the preparation of the LPHP, the following means selected were used for targeted communication:

- Information was disseminated through an IUCN website until 2009, and through EDC's website after 2009. Other dissemination channels included the Bank website as well as national and international media;
- At the national level, information is disseminated via the press organizations and during information meetings with national and international journalists;
- At the regional level, information is disseminated through the local press and through meetings targeted local authorities, « chefs de canton » and « chefs de village », opinion leaders, elites, NGO and other interested parties;
- At the local level, meetings in all villages were set up during preparation of the ESA and during public hearings organized by EDC, MINEP, and/or MINFOF.

[51] For the associated infrastructure, COTCO has carried out a Specific Environmental and Social Impact Assessment (SEIA) for the Chad Cameroon Pipeline adaptation works and updated the Area Specific Oil Spill Response Plan (ASOSRP) which it will apply together with the National Oil Spill Response Plan managed by the National Hydrocarbons Society (SNH).

12. The following is a summary of the main consultation activities to date:

- January 2004 through 2005 : Launching workshops, followed by collaborative and information meetings in some 60+ sites in total, targeting the whole of the local populations, as well as smaller groups, such as women or agriculturists living close to the future reservoir (Northern Bétaré Oya sector);
- Starting in April 2005, the outcomes of the ESA were presented to the local populations, NGOs and regional/national administrative authorities;
- In 2009, faced with evolutions in the design of the project's, ESA and ESMP, a new cycle of information and local populations consultation was organized;
- On February 3, 2010, an interactive workshop in Yaoundé was attended by approximately 100 representatives from civil society, the private sector, and national, regional and local governments.
- In 2010, the drafts for the dam and power house/transmission line RAP were shared with civil society organizations and their comments were integrated in the final documents.
- In January/February 2011, MINEP, with EDC support, organized a second round of public consultations in Yaoundé, Bertoua, Belabo, Betare-Oya, Garga Sarali and Deng Deng, as well as consultations with EDC in Yaoundé. In April 2011, the Association held consultations with civil society organizations.
- In February 2012, EDC held consultations with civil society organizations. IDA, AFD, AfDB, and EIB attended the meeting.

13. EDC has hired a communication expert and has opened a local office in Bertoua, close to the project site. Consultations with the population South of the dam site (village of Deng Deng and surrounding villages) and North of the dam site (village of Betare Oya and surrounding villages) are ongoing as part of the RAP and the implementation of the Deng Deng national park. EDC is updating its communication strategy and will continue to plan upcoming information and coordination meetings to be held in the framework of the ESA process.

14. IDA has developed a comprehensive communication strategy to explain its approach to energy sector interventions and its support to preparatory activities for the LPHP to civil society, NGOs, and other stakeholders. The communications to date has focused mainly on in-country stakeholders and to some extent on international NGOs who have followed the proposed project in Cameroon. The following communication actions have already been undertaken:

- Support for the preparation and dissemination of analytical work on political economy issues around the project; for example, sustainable management of the Deng Deng forest and the pricing of power for the aluminum industry;
- Promotion of proactive, open consultation with stakeholders including Civil Society Organizations (CSO) and NGOs, including regular meetings at the Bank office in Yaoundé with CSOs to discuss the IDA support to the energy sector in Cameroon in 2007, 2008, 2010, and 2011, and a consultation among donors, Government and CSOs was organized to review options for expanding electrification in Cameroon in early April 2008.

- Communications on Bank safeguard policies, including environmental and social standards as well as procedures for public consultation and disclosure of information.

Part II: Analysis of Alternatives

15. Lom Pangar has been subject to a series of detailed analyses of alternatives in line with OP/BP 4.01 Environmental Assessment. The first level of alternatives considered compared storage enhancement of existing reservoirs, new dams, and thermal power from natural gas to increase power supply within the Southern Interconnected Grid. The economic analysis strongly supported hydropower, if environmental issues were correctly addressed. The issue of green house gases was extensively considered. The conclusion of the analysis was that although initially large scale reservoir might release significantly release greenhouse gases because of the decomposing vegetation, over the long-term their green house gas emissions would be considerably less than those of an equivalent thermal power plant.

16. The LPHP site was selected after a detailed analysis of alternative locations for reservoirs, which is included in the project ESA and considers costs and benefits, as well the technical suitability of the different options. All of the potential locations, raise the same type of environmental issues, including the flooding of forested areas, the relocation affected populations, and downstream impacts, which were assessed as being manageable. The main advantages of the Lom Pangar site include: (i) lower cost per stored m^3 cost, (ii) a larger storage capacity; (iii) greater increased guaranteed generation capacity of the existing hydropower plants at Song Loulou and Edea; (iv) the potential of unlocking downstream hydropower projects on the Sanaga River, the basin where the main demand is located, including both economic and political capital cities; (v) the potential for electrification of neighboring towns and villages in the Eastern Region.

17. Optimization of the reservoir's capacity of the dam was analyzed on the basis of the three reference scenarios for power use taken from the ESDP 2030 ("low" 1,430 MW, "median" 1,680 MW, and "large ambitions" 3,839 MW demand forecast with a 2020 time horizon). Two hydropower options were considered: storage enhancement and new dams. As far as storage enhancement, Lom Pangar was considered superior compared to alternative sites at Bankim, Mbakaou, and Litala because of its lower cost per stored m3 and it large storage capacity. The alternative reservoir locations are summarized in the Table 23.

Table 23: Comparison of Alternative Reservoir Locations

Reservoir site	Storage capacity (million m3)	Surface (km2)	Construction cost (billion FCFA 2002)	Storage cost (FCFA/m3)
Lom Pangar	6,000	540	61.8	10.3
Litala	2,000	120	29	15
Mbakaou	1,000	80	25	25
Bankim-Mape	2,250	190	45	20
Nyanzom	2,700	220	105 (excl. power plant)	40

18. The analysis of alternatives also reviewed alternative technical options for the LPHP, including dam design (spillway design and optimization of the reservoir's capacity); access options (railway and roads); location of the construction camp areas, quarries and material extraction sites; alternative solutions for the removal of biomass from the reservoir before flooding; and alternative routing options for the transmission line. This analysis of technical options resulted in the following measures:

- Reduction of reservoir capacity to 6 billion m^3 by lowering the reservoir level by 1,80 m to preserve over fifty km^2 of land at the tail end of the Lom wing of the reservoir thus reducing impacts on local populations and on natural habitats;
- Modification of the access roads to the site during construction and operation, to reduce induced impacts on critical natural habitats[52];
- Relocation of the main quarry from critical gorilla habitat to a non-critical habitat north of the Lom River;
- Relocation of the temporary construction camps from Deng Deng village to an isolated location north of the Lom River;
- The preparation of a wood salvage plan for the future reservoir;
- A reduction in dam safety risk, especially vis-a-vis exceptional high flows, through the provision of an additional discharge capacity and additional storage volume of 1 billion m^3.

19. The analysis of alternatives also reviewed alternative technical options for the LPHP, such as dam design (spillway design and optimization of reservoir's capacity); comparative analysis of various site access possibilities (railway and roads); analysis of alternatives for construction camp area, quarries and material extraction sites; alternative solutions for reservoir's partial clearing before flooding; and alternative routing options for the transmission line. The designs retained for the powerhouse and the transmission line are technically sound. The designs were carried out after a detailed option assessment. The technical options analysis resulted in the following measures to ensure synergy between environmental, social, and technical considerations:

- Reduction of reservoir capacity to 6 billion m^3 by reducing the reservoir level by 1,80 m to preserve over fifty km^2 of land at the tail end of the Lom wing of the reservoir and to reduce impacts on local populations;
- Optimization of the access to site during construction and operation;
- Improvement of the location of temporary construction camps, quarries and other material extraction areas, thus limiting the pressure on the most sensitive environment,
- Dam safety risk reduction, especially vis-a-vis rare high flows, through the provision of an additional discharge capacity and additional storage volume of 1 billion m^3.

[52] The ESA includes a detailed study of alternatives for the access roads.

Part III: Impact Assessment

III-A. Environmental Impacts

20. EDC prepared an Environmental and Social Impact Assessment (ESA) that describes project impacts according to two complementary analytical frameworks, first according to project activities, then according to environmental and social components.

21. **Construction Phase Impacts**. Impacts during the construction phase are caused directly or indirectly by activities at the nine main work sites, including: the dam site (as defined in the bidding documents, including camps and quarries); the power plant; the transmission line; access roads; the relocation of Lom Pangar Village; the recovery of wood from the reservoir; the Touraké bridge, including its access roads; and the pipeline modification.

22. **Construction activities will have indirect impacts on neighboring settlements and on** regional urban centers where workers will seek services. These impacts are both direct and cumulative and are focused on specific areas the Deng Deng to Ouami corridor, corridors along the access roads from Bertoua and Bélabo, and the cities of Bertoua, Bélabo, and, to a lesser extent, Bétaré Oya. The impacts arise either from these areas hosting workers, creating additional stress on already insufficient services, e.g. health, education and public security, which can in turn cause a population influx into the project's area of influence, increasing pressure on land resources and leading to an expansion of areas under agriculture.

23. While the scope of the impacts at each of the construction sites will vary, the impacts of construction activities on the physical environment are concentrated at these sites, and depend on contractor practices. The indirect impacts of construction at the different sites are cumulative since they all affect either the Deng Deng forest or the populations living in or next to the forest. Accordingly, the impacts of construction activities have been regrouped into five categories: (i) general environmental, social and safety impacts of construction activities, (ii) direct impacts on populations, (iii) indirect and induced impacts on populations, (iv) direct impacts on natural habitats, and (v) indirect and induced impacts on natural habitats.

24. Mitigation measures with regard to the construction ESMP, as described in the ESMP and RAPs, are similar for the same type of impacts at all sites (including the social impacts). These measures have been integrated into bidding documents and contracts by specifying environmental and social clauses.

25. **Impacts on Natural Habitats.** The project will have significant impacts on natural habitats, both during construction and operation of the dam. The reservoir will flood approximately 540 km^2 of natural habitats, including approximately 300 km^2 of natural forest. The cumulative footprint of the construction sites (apart from the reservoir) cover approximately 4,000 hectares that will be converted from forest to other uses. Indirect impacts on natural habitats could in the long term be more significant than the direct impacts. They include loss of biodiversity because of poaching or habitat fragmentation by the road network, including any roads built for the salvage of wood from the reservoir before it is filled, and the expansion of agriculture into forest areas. The construction phase might trigger a process of agricultural penetration into the Deng

Deng forest that could perpetuate itself long after commissioning of the dam and could significantly reduce the integrity and ecological functions of the forest. The reservoir will transform a terrestrial ecosystem of forest and savannas along a river into a lake ecosystem subjected to strong seasonal variations in water levels. While the ESA indicates that none of the flooded terrestrial habitat is critical, the dam site is located next to portions of the Deng Deng forest that include critical habitats, particularly because of the presence of a viable population of gorillas and a significant population of chimpanzees. The environmental significance of the Deng Deng forest was identified in the context of the Chad-Cameroon Pipeline Project and led to the pipeline's realignment to avoid critical habitats. A gradual degradation of the Deng Deng forest could lead to the extinction of its gorilla population.

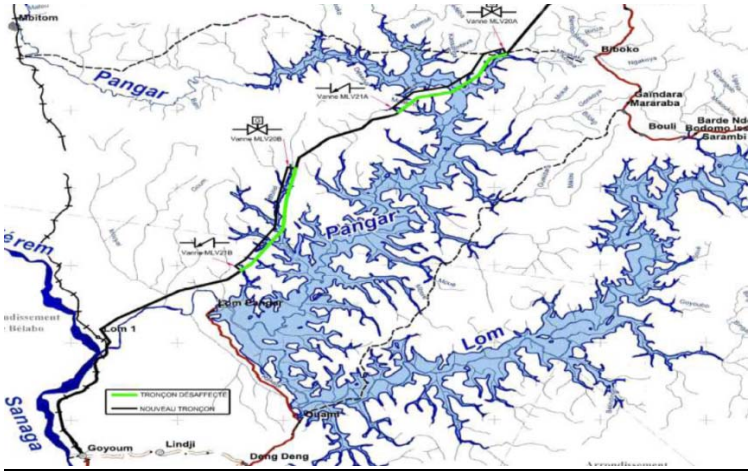
26. **Impacts on Aquatic Fauna:** More than 130 fresh water fish species have been identified in the Sanaga River, of which 26 contribute in a significant manner to the present catches in the river. The Lom River is poor in aquatic species. Measures to ensure sustainable fishery management are addressed as part of the ESA.

27. **Deforestation and Release of Greenhouse Gases.** Forestry issues include recovery of the wood from the future reservoir, as well as control of induced impacts at the periphery of the reservoir. Greenhouse gas emissions from hydroelectric facilities occur primarily during construction, from exhaust gas emissions, from construction machinery, and during early operation as a result of decomposition of organic material inundated in a reservoir. EDC estimates that greenhouse gas emissions from Lom Pangar reservoir would be about 21 million tons-equivalent of CO_2 over 100 years. Over the same timeline, the LPHP will avoid emissions of about 140 million ton-equivalent of CO_2. The LPHP will also avoid the potential local health risks of particulate matter, nitrous oxides and sulfur dioxide emissions from thermal plants. Most of the biomass will be removed from the reservoir to reduce greenhouse gases, particularly methane emissions after flooding. A supplemental forestry study was commissioned to ensure that recovery of the wood follows Bank guidelines, including benefit-sharing with local population, and to limit induced impacts.

28. **Oil Spill Risk in the Reservoir.** The project reservoir will flood approximately 5 kilometers of the Chad-Cameroon pipeline. This creates the risk of an oil-spill in the reservoir and requiring pipeline adaptation and changes to the existing ESMP of the CCP. The reservoir created by the LPHP will require rebuilding two 12 kilometer stretches of the CCP where they cross the enlarged Pangar River. Technical and environmental studies on alternative pipeline routings have been completed and a technical option for the adaptation has been adopted. The GOC has agreed to pre-finance the adaptation works which will be carried out by COTCO. An Environmental and Management Plan (EMP) has been prepared by COTCO for the pipeline adaptation according to Bank Group standards and the existing ESMP of the pipeline will be amended to ensure that its implementation remains compliant. To manage the risk of an oil spill into the reservoir, COTCO has updated the Area Specific Oil Spill Response Plan and the National Hydrocarbons Society (SNH) has finalized the National Oil Spill Response Plan. The pre-financing agreement, the EDC Cooperation Agreement, and the MoU COTCO and MINFOF regarding Right of Way (ROW) for maintenance activities in the vicinity of the Deng Deng National Park have been signed on February 17, 2012, to ensure compliance with the requisite environmental and social

safeguard measures. The signing of the EPC Contract and Project Management Agreement remains an effectiveness condition.

Figure 12: Interaction of the Lom Pangar Reservoir and the Chad-Cameroon Pipeline



III-B. Social Impacts

29. The populations in the area of influence of the project have been studied using a combination of surveys and direct analysis (in particular in the field of health), as well as a review of existing literature. The region has few inhabitants; the most densely populated areas still have less than 10 inhabitants/km². The total population living in the area of influence is estimated at about 30,000 people. Critical economic activities in the area are agriculture (practiced by practically all households), sedentary and itinerant livestock, hunting (essentially for domestic consumption), artisanal gold digging, fishing, and the illegal timber trade using the railroad towards North Cameroon.

30. Expected social impacts are analyzed in detail in the project's ESA and classified into major, moderate, minor, and negligible impacts for the different phases of construction and operation. The major socio-economic impacts are summarized in Table 24. The reservoir will displace economic activities currently, including limited to agriculture, pastoralism, and gold extraction. In addition, the reservoir could increase the prevalence of waterborne diseases along its periphery. Finally, the reservoir may induce the development of some commercial fisheries, although the seasonal and inter-annual variations in the reservoir's level limit the fishery's reliability.

31. The involuntary resettlement of the populations directly affected by the dam, the power plant, the transmission line, the creation of the DDNP and the associated access roads is described in the respective RAPs along with their mitigating measures. Some additional mitigation measures are included in the ESMP.

32. The dam construction contractor has the contractual obligation for traffic, waste, labor force, environmental monitoring, health and safety, and hazardous materials management. This

includes mitigation and management measures to deal with social and health consequences of migrant workers coming into the communities, e.g. risks of development of STI (Sexually Transmissible Infections) and of AIDS, and safety issues from construction traffic.

Table 24: Major Socio-Economic Impacts Identified in ESA

Impact characterization	Phase of works
- Increased STD/AIDS transmission risks	Camp construction
- Increased STD/AIDS transmission risks - Increased frequency and intensity of social conflicts - Forced population moves - Job creation - Impacts on cultural heritage and activities	Dam and power plant construction
- Population influx - Impacts on public safety at village crossings - Criminality risks from uncontrolled origin - Impacts on hunting - Job creation	Pipeline adaptation construction
- Impacts on cultural heritage - Improved living conditions	Access road construction
- Increased STD/AIDS transmission risks - Accident risks - Drowning risks - Decline of traditional activities - Impacts on mining , hunting, and logging activities - Impacts on transport infrastructure - Dam failure risks	Dam and reservoir operation

33. Expected positive impacts include job creation through the hiring of local labor for construction works, improved living conditions through the benefits of rural electrification, the creation of fishing opportunities in the reservoir, and the potential for increased trade and tourism in an enclave area. EDC is committed to undertaking ongoing consultation activities with the local communities to help prioritize community development needs aside from the required livelihood restoration measures.

34. **Land Acquisition and Resettlement.** The proposed project will require about 4,000 ha of direct and permanent land take, including 2,500 ha for the dam construction and reservoir site; 530 ha for the construction of the transmission line; 400 ha for the construction of access roads; 500 ha for the resettlement of the Lom Pangar village; and 70 ha for the access roads for the pipeline adaptation works. Several RAPs have been prepared to mitigate, offset, and reduce negative social impacts and to strengthen positive impacts on the communities in the project area. The RAPs for the dam found that 756 households (3,267 people) and 855 households for the RAP of the transmission line from Deng Deng to Ouami and powerhouse, respectively, were affected. Two villages and twenty eight encampments are located in the proximity of the dam site. The Decree 2012/0034 regarding compensation of project affected people was signed by the Prime Minister on January 24th, 2012. The implementation of the RAPs will start with the compensation of PAPs and then some of the PAPs will be relocated to the new Lom Pangar village. Seven households have been affected by the creation of the Deng Deng National Park. All of them opted for cash compensation and will be assisted by the project to receive comparable agricultural land elsewhere. The abbreviated RAP for the Deng-Deng National Park

was implemented before it was cleared by IDA. A Bank team audited the resettlement process in February 2011, and submitted recommendations to the GOC to ensure compliance. The compensation was recalculated and the difference was paid to the project-affected people.

35. The GOC has committed itself through the RAPs to the requirements of OP 4.12 for resettlement and compensation. These requirements are considerably more stringent than the applicable domestic legal framework and the Government of Cameroon has agreed to compensate PAPs according to Bank standards in all IDA-financed projects.

36. **Impacts on Vulnerable People.** According to a social assessment prepared at the project site in February 2010, no Pygmies or other Indigenous Peoples, as defined in OP 4.10, have been found in the project area. However, the social assessment noted the presence of members of the Peulh/MBororo tribe in the project area, who mostly engage in herding activities. A supplement to the study assessed the project's impact on vulnerable people of the Peulh/MBororo groups and proposes adequate compensation measures in the project's RAPs, such as support, technical monitoring, and medicine for cattle. Furthermore, women, elderly, children, and sick and disabled people can be considered as particularly vulnerable on account of their limited adaptation capacities, their mutual need for dependency, and/or their fragility or specific needs. The needs of vulnerable groups are given specific attention and support as part of the RAPs and in the ESMP.

37. **Dam Safety Concerns.** Dam safety concerns, in particular, potential dam break flooding, are an integral part of the World Bank Group's review of any hydropower development. The safety issues posed by the Lom Pangar dam and its impact on the proposed project, as well as an extensive review of all technical matters, has been undertaken by a dam safety panel. This panel will continue to provide advice through the construction, initial filling, and start-up of the dam, including any design or operational precautions to ensure that the project is consistent with Bank safeguard policies. An Emergency Preparedness Plan (EPP) has been drafted and includes a discussion of procedures for timely and reliable identification, evaluation, and classification of existing or potential emergency conditions. EDC has appointed an independent dam safety panel with terms of reference and staffing acceptable to the World Bank Group. The dam design, including the selection of the project site, seismic design requirements, the general arrangement of the site, the location of the main structures, and the scheme for diversion of the river during construction, has been reviewed by the dam safety panel and is considered appropriate for the site and its construction feasible without undue difficulties. This review has also included the evaluation of flood risks and their incorporation in the design of the Lom Pangar dam and is considered to be consistent with industry design practice. Dam safety plans (instrumentation plan, operation and maintenance plan and emergency preparedness plan) and a construction supervision and quality assurance plan have been elaborated as part of the revised engineering design and have been reviewed by IDA and the dam safety panel.

38. **Impacts on Physical-Cultural Resources.** Physical Cultural Resources were addressed in the draft EA from 2005. Further work was conducted to meet Bank requirements, and agreement was reached with the Ministry of Culture regarding the management of chance finds. According to the supplementary mission in 2010, in the northern sector (between Deng Deng and Bétaré Oya), a total of 72 sites has been surveyed, identified and described over a distance of about 140

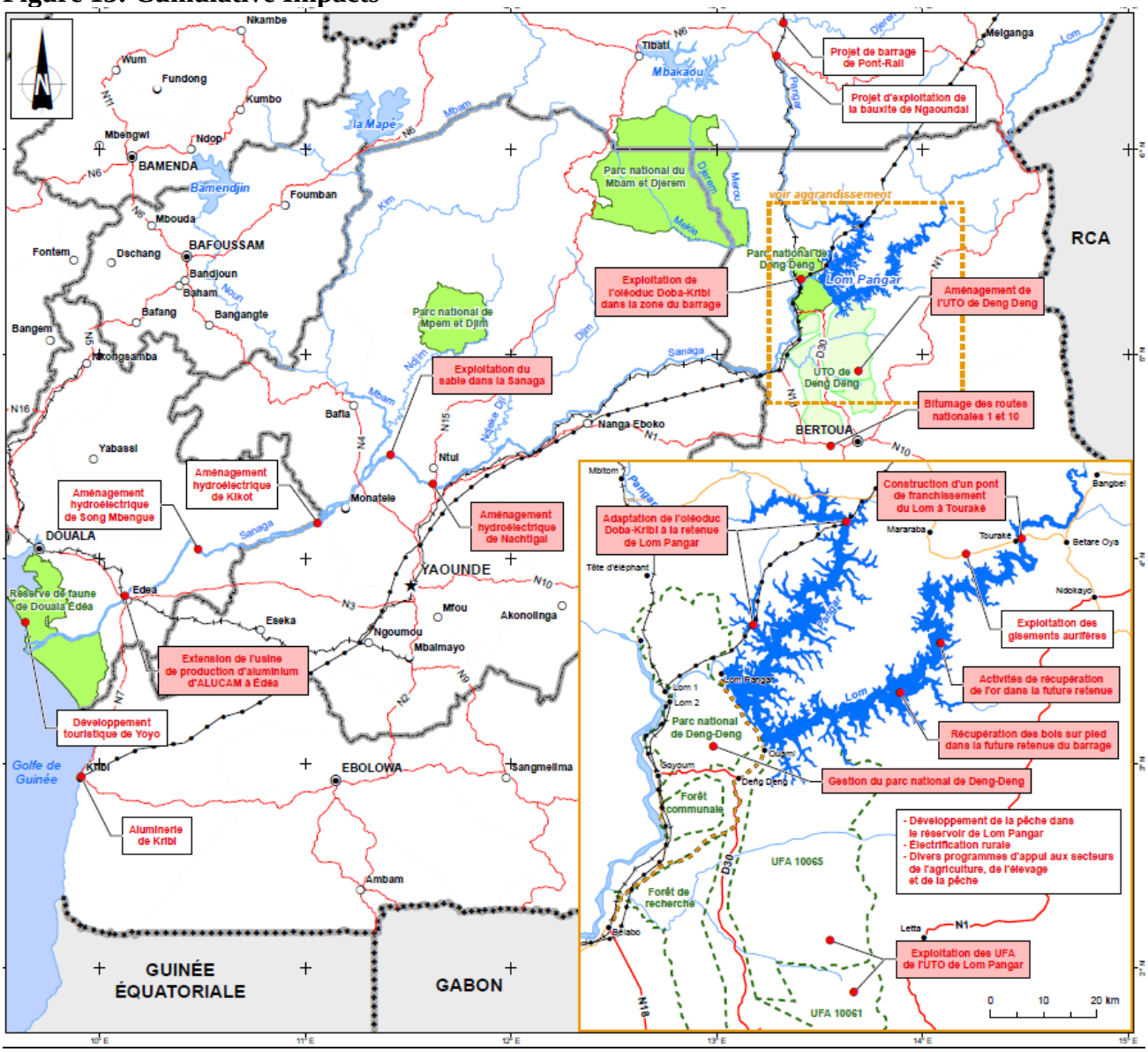
kilometers. The ESMP includes measures to manage the cultural resources. EDC has finalized the archeological survey for the road from Deng Deng to Bélabo.

Other Social Impacts. Throughout the consultations, local communities have requested additional social support from the project beyond the social mitigation measures in the RAP and ESMP. To this end, the project will finance the design and management of a local development program that will include: (i) a series of outreach and training activities to build local capacity, and (ii) the implementation of micro-projects. Such micro-projects may include: a) provision of basic social infrastructure such as wells, latrines, and class rooms b) basic maintenance and rehabilitation of critical sectors of access roads, b) construction of agricultural storage and drying facilities and livestock enclosures. The LDP will be managed by a competitively selected Management Contractor. The ESA notes the possibility of additional social measures that would be managed by the project, and the ESA and ESMP provide guidance on mitigating environmental and social impacts for the types of works that would be undertaken by the Local Development Program. The micro-projects are expected to provide notable local benefits and any negative environmental and social impacts of these micro-projects would be minimal and localized. Once the types and sites of civil works are finalized, Environmental and Social Management Plans for the micro-projects will be prepared, consulted upon, and disclosed when applicable as per the ESA/ESMP.

III-C. Cumulative Impacts

39. The project's immediate area of influence includes (i) the area inside which the project's direct, indirect, and induced impacts are felt, an area that can be represented as the area around the main infrastructure elements required by the LPHP, as well as (ii) a much larger area inside which the cumulative impacts are felt. Beyond LPHP, major projects likely to generate cumulative impacts in the coming decades are the hydroelectric projects at Nachtigal, Song Mbongue, and Kikot, sand extraction in the Sanaga, the Alucam aluminum factory extension project at Edea, and the Pont-Rail dam project on the Djerem, upstream of the Mbakaou reservoir. Those projects have been subject to a census and a description of their potential impacts. The cumulative impact region is defined in Figure 13.

Figure 13: Cumulative Impacts



40. Identified cumulative impacts include:

- Direct and permanent loss of about 3,000 ha of natural habitat;
- Creation of a 540 km² reservoir. The reservoir will trigger major impacts: (i) stratification into water layers, with the deepest being anoxic; (ii) release of greenhouse gases from the decomposition of vegetation, particularly methane, (iii) degradation of water quality immediately downstream from the reservoir; and (iv) changes in seasonal water flows that modify the ecology of the Sanaga River downstream to the estuary;
- Increased risk of oil spills in the reservoir because of the inundation of part of the Chad-Cameroon pipeline;

- Increase in logging, poaching, and agricultural activities, resulting from population influx and increased accessibility of the forest area on the north side of the Lom River through the new Touraké bridge;
- Increase in social conflicts and increased transmission risks of STD/AIDS and other contagious diseases;
- Fragmentation and degradation of the Deng Deng forest area and significant loss of biodiversity; and
- Improved livelihood of local populations, opening of new markets, industrial development.

41. Mitigating measures have been included in the ESMP to mitigate these cumulative impacts. Most particularly, the ESMP includes a detailed plan to monitor environmental impacts in the estuary and middle valley following commissioning, as well as a provision to fund measures if mitigation is required. The LPHP technical assistance component will support the establishment of a Sanaga River basin commission, which will manage tradeoffs, and take into account environmental issues in the management of the basin. The ESMP also includes measures for the management of the Deng Deng forest landscape that will mitigate induced and cumulative impacts upstream from the reservoir.

III-D. Overview of Project Impacts that Require Mitigation

Table 25: Project Impacts that Require Mitigation: Construction Phase

	Construction Activities	Direct impacts on natural habitats (footprints)	Direct impacts on populations (resettlement)	Indirect impacts on natural habitats	Indirect impacts on populations	Forest impacts
Dam (construction site as defined in the bidding documents, including the camps and quarries)	Addressed through the environmental and social clauses for contractors	Loss of 2,500 ha (half in future reservoir)	Covered in dam RAP, including relocation of Lom Pangar and Lom villages	Increased demand for bushmeat causes increase in poaching Illegal logging	Management of workers away from the construction sites (food and lodging, prostitution, AIDS, epidemics, security)	Management of wood salvage at construction site
Power plant	Addressed through the environmental and social clauses for contractors	Included in dam construction site	No resettlement-	Idem	Idem	Management of wood salvage at construction site
Transmission line	Addressed through the environmental and social clauses for contractors	Loss of 528 ha of natural habitat	Transmission line RAP	Idem	Idem	Management of wood salvage at construction site
Access roads	Addressed	Loss of 400	Covered in road	Bushmeat is	Population influx	Management

	through the environmental and social clauses for contractors	ha of natural habitat[1]	RAP	supplied to urban markets, leading to increased poaching. Agriculture expands into natural habitats Illegal logging increases	into the Deng Deng to Ouami corridor and along access road	of wood salvage at construction site
Resettlement of Lom Pangar village	Addressed through the environmental and social clauses for contractors	Loss of approximately 500 ha of natural habitat[2]	Impact on host communities	Increased demand for bushmeat and expansion of agriculture	Increased pressure on land and services in the Deng Deng to Ouami corridor	
Wood salvage	Addressed through the environmental and social clauses for contractors	Degradation of natural habitats (will later be flooded)	No resettlement	Access roads to reservoir induce illegal logging, poaching and agricultural expansion in reservoir periphery.	Management of workers away from the construction sites. Local populations unhappy with sharing of revenue generated by salvage	National wood certification system can be compromised
Touraké bridge	Addressed through the environmental and social clauses for contractors	-	Any possible land acquisi-tion/involuntary resettlement would be addressed through a RAP.	Increased demand for bushmeat	Management of workers away from the construction sites Population influx into Bétaré Oya	Management of wood salvage at construction site
Pipeline adaptation	Addressed through the environmental and social clauses for contractors	Loss of 70 ha[3]	No resettlement	Increased demand for bushmeat leads to increased poaching Increase in illegally logged trees	Management of workers away from the construction sites	
Cumulative impacts of construction	Addressed through the environmental and social clauses for contractors	Loss of approximately 4,000 ha of natural habitat	Approximately 6,700 people affected (see RAPs)	Increased poaching Expansion of agriculture into natural habitats	Influx of population in the overall area. Management of workers away from the construction sites	Increased illegal logging

[1] 100 km long, 40 m wide
[2] Estimated surface required for slash and burn agriculture
[3] 35 km long, 20 m wide.

Table 26: Project Impacts that Require Mitigation: Operation Phase

	Water Quantity/Quality and sedimentation	Green House Gases	Fisheries	Indirect impacts on natural habitats	Direct impacts on populations	Impacts on forests
Dam	Release of water from the anoxic layer. Management of reservoir drawdown in dry years		Reduced fish abundance between the dam and Lom confluence with the Djerem (Sanaga)		Increase in black flies can cause an increase in river blindness disease	
Power Plant	Turbined water is oxygen deficient				-	
Reservoir	Stratification of water in the reservoir	Decomposition of vegetation produces methane	Possible development of commercial fishery in the reservoir Fisheries development will be constrained by annul drawdown of reservoir in rainy season, with a risk of severe fish mortality if water level goes below 650m	**Direct impacts** Loss of 54,000 ha of terrestrial habitats Replacement of river fish species by lake species **Indirect impact** Reservoir could be used to transport bushmeat and illegally felled trees from the reservoir's periphery	**Direct impacts** Land use changes (pastoralism, agriculture, informal gold digging) **Indirect impacts** Waterborne diseases Fisheries and other activities near the reservoir induce population influx	
Downstream from dam	Lack of oxygen		Impacts on the estuary	Impacts on shrimp reproduction	Decrease of revenue generated by coastal fisheries	
Transmission line					Villages along the power line do not have access to electricity	
Access roads				Settlements and agriculture encroach on the Deng Deng Forest	Improved access leads to population influx	Increased logging at the periphery of the reservoir
Resettlement of Lom Pangar village				Increased pressure on neighboring habitats	Increased demand for services (health education)	
Salvage of				Access roads		

wood in the reservoir				facilitate colonization of reservoir periphery		
Touraké bridge				Loss of natural habitats because of agricultural expansion North of the Lom River	Improved access to land and markets stimulates agricultural expansion North of the Lom. Expansion of agriculture disrupts pastoralism and causes conflicts	Increased logging to the North of the Lom River
Adaptation of pipeline	Risk of accidental oil spill			Access roads built next to DDNP		
Cumulative impacts				Natural habitats reduced by 4,000 hectares Fragmentation and degradation of the Deng Deng Forest Significant loss of biodiversity	Improvement in living conditions and economic opportunities Opening up of the area North of the Lom River to development	Loss of forest area and sustainable revenue if Deng Deng forest is not structured

Part IV: The Environmental and Social Management Plan (ESMP)

42. The Environmental and Social Management Plan (ESMP) is made up of mitigation measures that are proportional and sufficient to mitigate the impacts indentified in the ESA. The mitigation measures are organized in four areas:

- Management of the construction sites
- Management of reservoir and downstream areas
- Social measures
- Management of the Deng Deng forest massif
    (a) Management of the wood salvage in the reservoir
    (b) Adaptation of zones in the forest massif
    (c) Management and sustainable financing of DDNP
    (d) Surveillance and control of illegal activities

IV-A. Management of the Construction Sites

43. Management of the construction sites aims to minimize impacts on the environment, the workers, and on neighboring populations. Construction activities will take place over a period of

approximately three years. Construction sites include the main dam construction site as well as several others sites, including worker camps, bridges and crossings, quarries, roads and service infrastructure. Each of those sites could potentially generate negative impacts in terms of health and safety of the workers.

44. Rules on the management of the construction activities are spelled out in Chapter 9 of the Construction ESMP that was disclosed in July 2010. The mitigation measures are included as environmental and social clauses in the contract for the dam construction. Similar clauses will be incorporated in all other works contracts. Each contract legally requires the contractor to prepare a Contractor ESMP before starting works. The clauses cover construction sites activities that might trigger OP 4.01 (Environmental Assessment), 4.04 (Natural Habitats), 4.09 (Pest Management), or 4.11 (Physical Cultural Property). The dam construction contract pays special attention to quality assurance and to the installation of required instrumentation, to ensure the security of the permanent structure as required by OP 4.37.

45. The implementation of the contractor ESMPs will be monitored and enforced through a permanent control by EDC with support of the owner's engineers. Also, various government departments regulate the works as part of their inspection and monitoring mandates. Contracts include a system of warnings and penalties in case of non-compliance. Regular MINFOF patrols will inspect the construction sites and access roads for illegal logging and poaching, while MINDEF/Gendarmerie will patrol for public security.

46. EDC is responsible for the management of the construction sites, except for the modification of the pipeline which rests with COTCO – it being understood that ultimate responsibility for implementation of all the safeguard documents relating to this project rests with the GOC. Although a large part of the land taken for the construction of the dam will be returned to the Ministry of Forestry following construction, EDC will retain an area required for the dam's management and will remain responsible for the management of the reservoir. This requires strengthening of EDC's technical capacity to manage environmental and social issues, the satisfactory performance on the part of the engineers that are entrusted by EDC with the supervision of the construction sites, and close coordination with relevant ministries, most particularly the Ministry of Environment.

47. The following measures will be taken to limit the influx of populations in the area, most particularly in the Deng Deng to Ouami corridor[53]:

- Recruitment in villages close to the construction sites will cause an influx of people seeking work and most likely lead to a long-term population increase in these villages. Recruitment will be either in Bertoua or Bélabo. However, the project will preferentially recruit unqualified manpower that originates from localities close to the construction sites.

- The purchase of produce preferentially from areas next to the sites will facilitate agricultural expansion into forest areas. Contractors are expected to buy their supplies from Bertoua or Bélabo (Bétaré Oya for the Touraké Bridge). Demand for bushmeat will

[53] Management of the induced impacts of the construction sites on neighboring villages and cities are included below under social measures.

be reduced by requiring that contractors feed their workers, and by forbidding restaurants close to construction sites and workers camps.

- Workers will be transported from the dam's construction site to Bertoua or Bélabo, to avoid the development of services targeting them in villages close to the construction site, thus limiting the bushmeat trade, prostitution, and the spread of HIV/AIDS.

IV-B. Management of the Reservoir and Downstream Area

48. Management of the reservoir and of its downstream impacts will be the main environmental challenge of the project during the dam's operation phase. It will seek to avoid or mitigate its direct, indirect, induced and cumulative impacts. It will take into account the strong seasonal variation of the water level, given that drawdown during the dry season will create opportunities for recession agriculture, seasonal pastures, and other land uses. The ESMP also requires that EDC give particular attention during the operation phase to the risks that water releases or a dam breach would pose to persons and their assets downstream. Four measures in the ESMP are directly related to the management of the reservoir:

- **Monitoring of Water Quality:** At best, only a small fraction of the biomass from the future reservoir can be removed before it is flooded. Decomposition of the remaining vegetation and delays in the renewal of the water in the reservoir will lead to a stratification of the water layers, with the deepest layers being anoxic. The ESMP proposes management rules for these impacts and requires that EDC monitor water quality in the reservoir as well as the quality of water released by the dam.

- **Monitoring of Greenhouse Gases:** The decomposition of vegetation in the reservoir will release greenhouse gases, most particularly methane. Under the ESMP, EDC will implement a program to monitor greenhouse gas releases after impoundment.

- **Fisheries Management:** The current artisanal fishery along the Lom and Pangar might develop into a commercial fishery after impoundment of the reservoirs. However, annual variation of water levels will reduce fish stocks if the water level reaches the anoxic layer. The ESMP proposes initially that two fisheries docks be built in Bétaré Oya and the new village of Lom Pangar. In addition, the project includes measures to monitor fish stocks and manage the fisheries through access rights and controls, including measures to address the influx of foreign fishers and a registration system for boats. EDC will also undertake a study to assess the long-term viability and growth of the fisheries. EDC will prepare a MoU with MINEPIA to implement this program.

- **Management of Potential Oil Spills:** The flooding of over 5 kilometer of the Chad-Cameroon Pipeline by the reservoir creates the risk of accidental oil spills in the reservoir. COTCO will modify its management plan accordingly. An interface agreement was signed between EDC and COTCO. As a complement to COTCO's measures, EDC is responsible, in cooperation with Cameroon's national oil company, SNH, for the coordination of Government agencies in the case of an oil spill.

49. Regulation of the Lom River by the dam will have impacts downstream that are cumulative to the modification of the hydrological regime of the Sanaga River by the existing regulating dams at Mbakaou, Mapé and Bamenjing. Further developments along the Sanaga River over the

coming decades will be cumulative to the LPHP. The ESMP includes measures that are based on the recommendations in the Cumulative Impact Assessment. The program includes monitoring of downstream ecosystems to determine the magnitude of changes (e.g. mangroves, marine biodiversity, natural habitats). Water releases from the anoxic water layer in the reservoir will have a negative impact on aquatic biodiversity immediately downstream from the reservoir, but probably no further than the confluence with the Djerem. The water releases could also have an impact on geomorphology and downstream salinity. The ESMP includes a program to monitor this situation during construction and after impoundment. The ESMP also includes a commitment that if significant changes are detected that require environmental mitigation, the mitigation measures will be funded by LPHP**.**

IV-C. Social Mitigation

50. Given its size, the Lom Pangar Hydropower Project will have a significant impact on neighboring populations. The management of physically or economically displaced persons is addressed through various Resettlement Action Plans (RAPs) and is not covered in the ESMP. However, local populations expressed expectations during the consultations held between 2000 and 2010, which go beyond the RAPs. Accordingly, the ESMP includes measures to mitigate additional negative impacts on living conditions, most particularly health services resulting by the influx of population into the project area. In addition, the eventual construction of a bridge at Touraké, which is key to restoring the livelihoods of local herders, will open up new development perspectives north of the reservoir.

51. LPHP will have multiple impacts on human health. The health coverage in the area of influence of the project is already insufficient for the existing inhabitants, and thus must be improved to cover population influxes. Thus, the ESMP includes measures to prevent any increase in waterborne diseases after impoundment. In addition, medical facilities must be significantly improved by adding infrastructure, equipment, medication and personnel.

52. The ESMP also provides other measures to restore livelihoods, including agricultural extension services (training on agricultural techniques, seeds, facilitation of market access, animal husbandry and nutrition), support to fishermen, and assistance to artisanal gold miners (e.g. techniques to mine in an environmentally sustainable manner; training miners in new professions). At Touraké Bridge, health risks to cattle and other herd animals will be mitigated through the establishment of a cattle park and access to veterinary services near the bridge.

53. Rural electrification was a recurrent demand of local populations during consultations is financed under Component 2 of the LPHP. The project will at a minimum provide access to electricity in the Deng Deng to Ouami corridor.

IV-D. Management of the Deng Deng Forest Massif

54. The Lom Pangar dam, its associated structures, and its reservoir are located in the middle of the Deng Deng Forest, an area of approximately 500,000 hectares at the Northern edge of the Central African Forest. According to the Cumulative Impact Assessment, the Deng Deng Forest is included within the area of influence of the project. The ESMP includes measures to mitigate

the project's direct and indirect impacts on the Deng Deng Forest, during the construction and operation phases.

55. The reservoir will flood approximately 50,000 hectares of natural habitats, including slightly less than 30,000 hectares of forest, and will irreversibly transform nearly 4,000 hectares of forest required by the footprints of project activities and infrastructures (dam, power plant, transmission line, access roads, relocated village, bridge). The project will include the recovery of up to one million m3 of wood from the future reservoir. The influx of populations next to the construction sites, attracted by opportunities for jobs, commerce or immigration could, if not controlled, very significantly degrade the forest, most notably through agricultural encroachment along the access roads, and biodiversity loss because of increased poaching of wildlife to meet demand by workers for protein, and more generally to supply urban markets. These issues trigger OP 4.04 (Natural Habitats) as well as OP 4.36 (Forests), and require proportional measures to avoid or mitigate negative impacts on natural habitats and forests.

Management of the Salvage Logging in the Reservoir

56. The project is expected to undertake some wood salvage in the areas that would be inundated by the dam. This would be a major part of the project, given the high commercial value of the timber that will be submerged. The wood salvage could also help reduce adverse effects on water quality and facilitate navigation and fishing in the reservoir.

57. The total volume of organic material from the area to be flooded by the reservoir (including wood of lesser quality that can be used for firewood) is approximately 8 million m³. Of this, about 1 million $m^{3,}$ representing approximately 40 percent of Cameroon's annual timber production could be removed from the reservoir. However, due to technical, economic, environmental, social constraints, a maximum amount of about 475,000 m³ is expected to be salvaged from eight zones. The salvage logging is within the Deng Deng forest as defined in the concept note for the Operational Technical Unit (UTO) prepared by MINFOF in 2006.

58. Salvage logging in the reservoir before impoundment will involve considerable environmental and governance risks. A specific study on the wood salvage[54] identified the following risks: (i) degradation of the Deng Deng forest at the periphery of the future reservoir through illegal logging; (ii) interference with the national process of certification of origin and traceability of wood; and (iii) conflicts on revenue sharing. Another risk is facilitation of poaching in the reservoir area, especially in Bertoua and Bétaré Oya. These risks are accentuated by the weak governance and technical capacity of MINFOF, which has both a technical and a regulatory role in forest management.

59. While the Government undertakes longer-term measures to manage the Deng Deng forest through the UTO, it will be critical during project implementation to ensure there are adequate controls in place to ensure the wood salvage is focused only on the zones being inundated by the dam, protect the forest from illegal logging and hunting, and ensure the environmental protection and sustainability of the forest area. Such efforts would need to include the following: i) effective monitoring of the wood salvage to limit the creation of new access roads in the area, and ensure a

[54] Étude complémentaire forestière du projet Lom Pangar. Volet 1 : Plan de récupération du bois d'œuvre. Pöyry, ONFI, Février 2011.

continuous level of monitoring stations located around the control Deng Deng National Park as well as those specifically established for the wood salvage; ii) a requirement that any logging must be done in such a way as to ensure the traceability of wood. This obliges contractors to have an FSC (Forest Stewardship Council) or OLB (Origine Légale Bois – Legal Wood Origin) certificate; iii) respecting national laws concerning the distribution of revenues from recovery to local communities; and iv) taking strong measures to monitor and control poaching, with checkpoints and guards (ecoguards and community guards). Year-round 24-hour checkpoints, staffed with qualified agents, will be installed at Deng-Deng, Mararaba, Bétaré Oya, Bertoua and Bélabo.

60. This system of control and monitoring will (i) establish firm controls over the areas of the wood salvage, origin of wood, and the access roads, thus preventing illegal logging during and after the wood salvage; (ii) include an independent audit function, per the requirements of FSC and OLB; (iii) avoid wherever possible pathways for the wood salvage that pass through wooded areas outside of the salvage zones; (iv) respect the requirements of the ESMP for the Chad-Cameroon pipeline by avoiding the development of access roads that pass through the pipeline to join the railway Mbitom or Tête d'Elephant; (v) prevent access to the reservoir through the Deng Deng National Park, except via the dam construction site, (vi) limit the removal of wood by the village of Deng Deng to wood from left bank of the Lom between the dam site and the existing boundary of the *Unité Forestière Administrative* (UFA) 10065 forest concession; (vii) establish a single discharge point through Mararaba and towards an improved transfer point at Touraké; (viii) help put in place a mechanism for equitable sharing of revenue along local populations; and, (ix) ensure that an area near Mbitom does not become a transhipment route for illegal timber from Deng Deng National Park and Mbam Djerem.

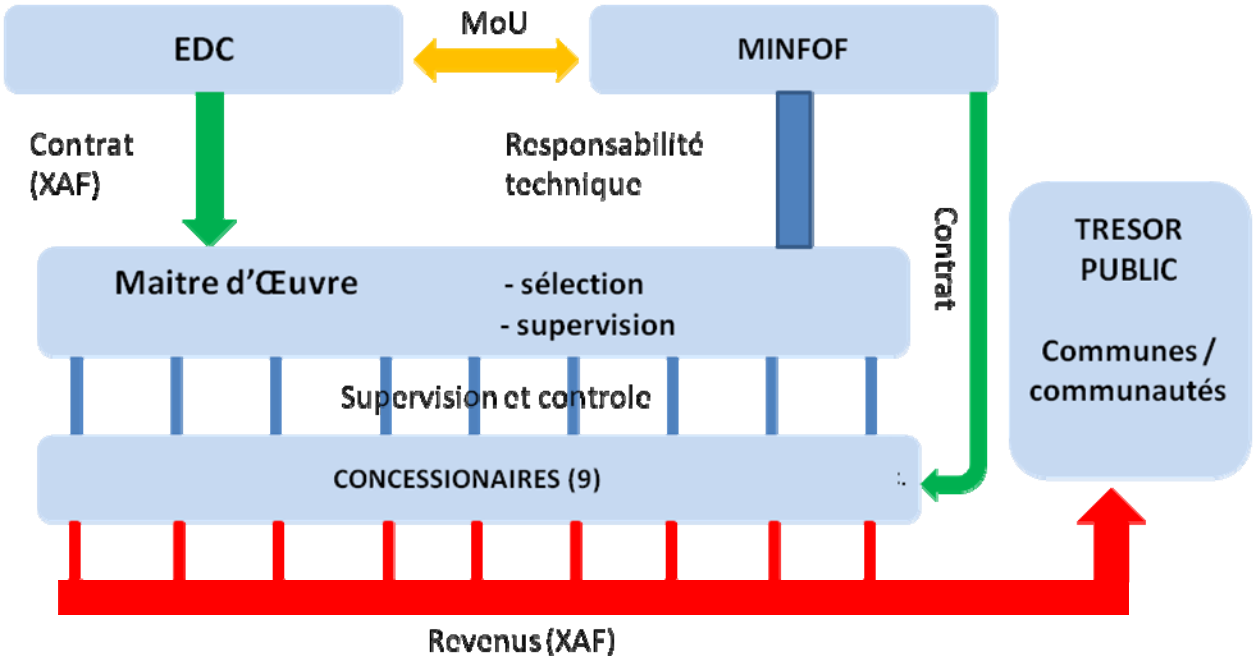
61. MINFOF will entrust the day-to-day oversight of the salvage logging to a third party (technical partner) that will be contracted by EDC and report to MINFOF and EDC (see Figure 14). This technical partner will support MINFOF with the drafting of the bidding documents and selection of the concessionaires, technical oversight of the concessionaires, and monitoring compliance with environmental and social contract clauses and of the Cameroon regulations. These implementation arrangements have been agreed in principle by MINFOF, EDC, and project donors. MINFOF and EDC are currently working on the Terms of Reference for the technical partner, taking into account that MINFOF can delegate its technical role, but that the current Forestry Law does not allow them to delegate certain control function. To ensure this regulatory function, MINFOF will deploy staff in the area who will work closely with the technical partner. As stipulated in the national control strategy, MINFOF will need to rely on local groups to gather information about from the various sites in an effort to counteract any illegal activity or fraud. The civil society organizations (CSOs) in Cameroon, supported by an Independent Observer could fulfill this role. CSOs and MINFOF will require capacity building in this area, which could be provided by the Independent Observer.

62. The area that will be flooded by MINFOF reservoir has been divided into eight lots. For each lot, a concessionaire will be contracted by MINFOF – with the support of the technical partner – to log the area as a short-term Sales of Standing Volume (*Ventes de Coupe*). The tender documents for the concessionaires will include environmental and social requirements based on the Construction ESMP and a system of warnings and penalties in case of non-compliance. During the implementation phase, the technical partner will have a permanent

presence on the ground for the technical supervision of the concessionaires and to support EDC and MINFOF in monitoring logging operations and timber movements and enforcing regulations. The technical partner will submit regular reports to EDC and MINFOF. Regular MINFOF patrols will inspect the logging sites, access roads, and the periphery of the reservoir for illegal logging and poaching, while MINDEF/Gendarmerie will patrol for public security.

63. The existing Cameroonian mechanisms for sharing of logging revenue with local councils and populations applies to the salvage log. For *Ventes de Coupe*, the bidding price is made up of two parts: a minimum price set by the administration, plus the company's offer. The annual fee paid by the concessionaire (*Redevance Forestière Annuelle* or RFA) is the bidding price times the entire surface of the allocated logging title. The RFA, was introduced through the 1994 Forestry Law to make a consistent contribution to the State budget, to contribute to poverty alleviation, and to enhance equity in the redistribution of forest-related resources. The redistribution of the RFA was revised in 2010[55] as follows: 50 percent goes to the Treasury, 20 percent goes to FEICOM, or "any other body in charge of the centralization and equalization of taxes and fees due to municipalities," 20 percent to the municipalities where the logging took place, and 10 percent to rural villages adjacent to the contract zones. Over the past decade, the RFA has become a major source of revenue for many rural municipalities. However, the basic management of the municipalities' budgets remains challenging.

Figure 14: Implementation Arrangements for Wood Salvage Logging of the Reservoir



64. There is a possibility that bids for the wood salvage may be unsuccessful because it is simply too costly and risky to remove the wood. For this reason, it is important to note that one outcome may be that all the wood remains in the reservoir. There will be no significant negative

[55] Arrêté Conjoint No 520: MINATD/MINFI/MINFOF of 03 June 2010 fixing the modalities for the use and monitoring of the management of revenues from exploitation of forest and wildlife resources for Councils and adjacent village communities.

environmental impact (the emission of gases has the greenhouse effect is estimated to increase by 2-3% if the biomass is not removed, and the risks of induced impacts in the area are reduced). If the wood remains in the reservoir, it will not have an impact on the implementation of the dam. Finally, it is possible that the cost to the government to manage the process will be much more expensive than the fees paid by operators, and thus the decision to not cut the wood may have a net positive financial outcome.

65. The planning for the salvage logging operation is as follows:

- ToRs for the technical partner approved by the donor and the start of the selection process - April 2012
- Contract signed between EDC, MINFOF and technical partner - July 2012
- Completion of tender documents for concessionaires - September 2012
- Selection of concessionaires - December 2012.
- Start of salvage logging operation - by January 2013.

66. Monitoring and evaluation will be carried out by MINFOF and EDC, with indicators that include recruitment of technical staff, the amount of wood logged, roads built and closed after logging is completed, management of controls, transparency of wood origin process, documentation, payment of taxes, etc.

Adaptation of Zones in the Deng Deng Forest Massif

67. Effective structuring of the Deng Deng forest area will contribute to its sustainable management. Prior efforts to establish an Operational Technical Unit (*Unité Technique Opérationnelle*, UTO) in 2006, were never completely implemented (except for UFAs and more recently the DDNP). In addition, the 2006 design for the UTO does not allow the satisfactory management of LPHP's induced impacts on the Deng Deng forest. The ESMP notes that the Government of Cameroon is working towards the long-term management of the forest by eventually structuring it into three zones: (i) areas that will remain permanent forest land; (ii) areas that are managed by communities; and (iii) areas that are open to settlement or agriculture. For the purposes of managing the induced impacts associated with LPHP, the GoC is undertaking five specific adaptation measures under the project. These adaptations aim to (i) sustainably exploit the forest in designated forests, particularly the Forest Management Unit (*Unité Forestière Administrative,* UFA), the communal forests, and the community forests; and (ii) maintain the forest's biodiversity, particularly its population of great apes, and most importantly gorillas.

68. The five specific adaptations are:

- *Extension of the Deng Deng National Park*: to increase the size of the gorilla's range that is under protection, the Park will be extended to the south by at total of 9,000 hectares.
- *Creation of the Belabo Communal Forest*: this forest was planned in the zone that us discussed in a) above; as such the communal forest will be established further to the south in the former research forest.

- *Modification of the limits of UFA 10-065*: in order to create an agropastoral zone and community forest for Deng Deng village, the forest concession 10-065 will need to be regazetted and reduced by 9,000 hectares.
- *Creation of an agroforestry zone*: this will be adjacent to the Deng Deng village, and will help reduce agricultural pressures on the national park and adjacent areas;
- *Creation of the Deng Deng Community Forest*: this community forest will serve as an important source of livelihoods for the Deng Deng village.

Management and Sustainable Financing of the Deng Deng National Park

69. The Deng Deng National Park (DDNP) serves a dual purpose: (i) it offsets the direct environmental impacts of the project, as well as the loss of natural habitats because of the reservoir; and (ii) it contributes to the viability of the Deng Deng gorilla population (as well as chimpanzees), although the gorilla population are not confined to the DDNP.

70. The institutional arrangements for the management of the DDNP are based on Prime Minister Decree No 95-466-PM of July 20, 1995, regarding the implementation of wildlife regulations. The institutional arrangements envisage a complement of technical assistance that will help mandated agencies ensure the day-to-day functioning of the national park, with a focus on skills transfer leading to sustainability in the long term.

71. The DDNP was created following extensive consultations with local populations and their traditional authorities to ensure their ownership of the process and the national park. Existing agricultural holdings were excluded from the Park's boundaries, and for the one instance where this was not possible, and abbreviated RAP compliant with Bank requirements was prepared and implemented. Furthermore, as required by the World Bank, a satisfactory Process Framework was prepared and disclosed, to establish a process by which members of potentially affected communities participate in design of project components, determination of measures necessary to achieve resettlement policy objectives, and implementation and monitoring of relevant project activities.

72. MINFOF will put in place a park management team, based in the Deng Deng village, which will include the following positions: a conservator/chief warden, a deputy in charge of protection of the protected area, a deputy in charge of eco-development, a deputy in charge of research and monitoring, ranger supervisor, and an administrative assistant. Through its Memorandum of Understanding with EDC on the management of DDNP, MINFOF has committed to affect 60 rangers to the park for surveillance and control purposes. As an initial and critical first step in managing the park, MINFOF will prepare a management plan for the DDNP, with the support of its technical partner. Three committees (advisory, management and scientific) will be established for the national park, with the following composition and responsibilities:

- *Management*: Approves and monitors delivery of the Park Management Plan, reviews semi-annual park reports and the annual work program. Comprised of representatives of the PM office, EDC, MINFOF, MINEPDED, MINEPIA, AFD, IDA, NGO representatives. Will meet at least twice per year.

- *Advisory*: Provides advice to the Conservator on matters related to the management of DDNP and interface issues with adjacent areas. It will be composed of the Conservator, technical partner director, the prefect or their representative, local representatives of MINEPAT, MINFOF, MINEPDED.

- *Scientific*: Committee exists to promote research and monitoring within DDNP, and to provide scientific and technical advice and support to the Conservator. As a minimum, it will be comprised of the conservator, technical partner director, and the park ecologist.

73. Technical assistance will be provided by a NGO or consultancy firm that will be co-located with the MINFOF team at the Park's Headquarters in Deng Deng village. This technical partner will help mandated agencies ensure the day-to-day functioning of the national park, with a focus on skills transfer leading to sustainability in the long term. The proposed technical partner will have a team comprised of a director, an ecologist, an environmental education specialist, as well as a team of community wardens. Its mandate will include, *inter alia*: assisting with the development of the park management plan; developing and managing a biomonitoring programs, including one specific to gorillas; mobilizing periodic scientific external expertise; participate in the surveillance and controls of the Park and its surroundings; developing and implementing annual training activities for the rangers and community wardens.

74. **Monitoring and Evaluation -** Effective and efficient monitoring and evaluation will be critical to ensuring the successful achievement of the DDNP mandate as an offset to the Lom Pangar dam and the viability of the gorilla population in and adjacent to the national park. The park management plan will define indicators to monitor wildlife and observation protocols; identify groups of species or indicator species for changes in the territory (e.g., species particularly sensitive to issues of competition for habitat, etc.); and describe the research protocol for baseline data collection.

75. The technical partner will support MINFOF to develop the detailed protocol for monitoring, including the parameters to be measured, the methods, sampling sites, frequency of measurements, detection limits, and definition of thresholds that signal the need for corrective actions. The protocol will also identify the scope of independent third party evaluations and approaches for communicating results to stakeholders. The Park Management Team, with assistance from the technical partner, will be required to provide written reports to the Park Management Committee twice per year. A Management Effectiveness Tracking Tool[56] will be used by the National Park as one measure of its performance. Annual Technical audits will be conducted by a third party to certify the functioning of the DDNP and identify recommendations and corrective actions to improve overall park functioning.

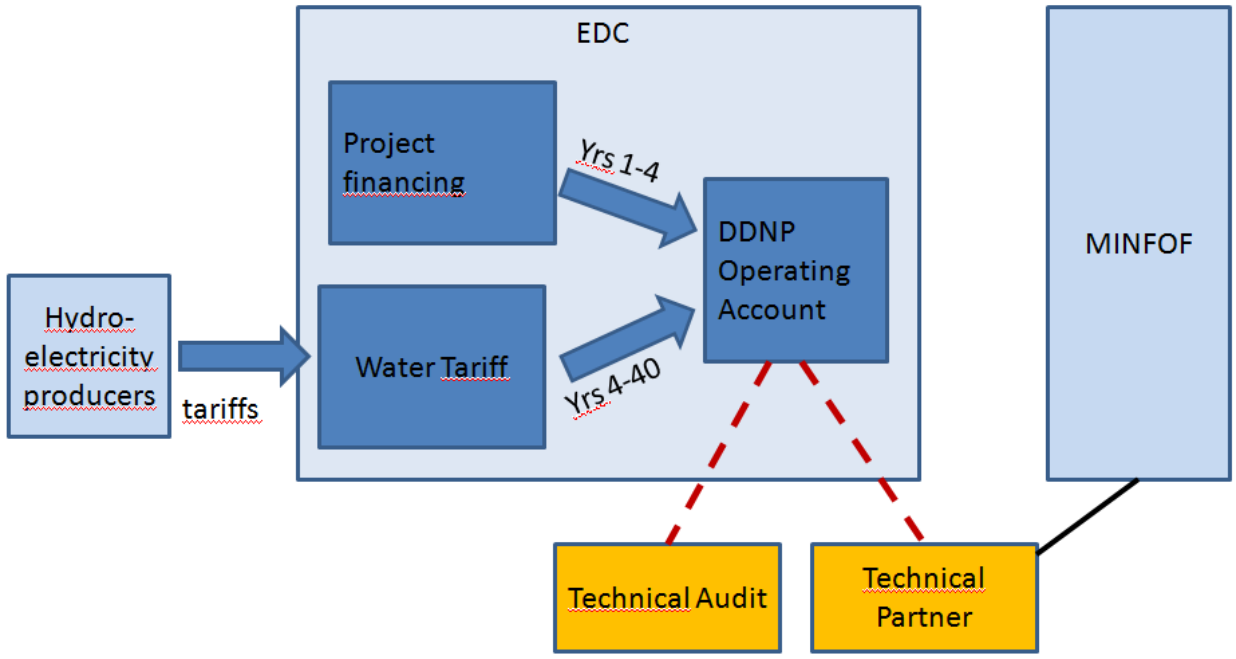
76. **Financing –**The recurrent costs of DDNP are estimated at US$700,000 per year. These costs average out to approximately US$10 per hectare, which is above the current budgets for Campo Ma'an, Mbam, and Djerem National Parks and in line with international standards for national parks. Until the Lom Pangar dam is functional, recurrent costs for the DDNP will be financed by

[56] *Management Effectiveness Tracking Tool: reporting progress at protected areas sites*, WWF and World Bank, July 2007.

the donor financing for LPHP. Once the dam comes on line, recurrent costs will be financed through the water tariffs recovered from downstream hydropower producers.

77. **Flow of Funds -** The recurrent costs (excluding salaries) for DDNP will be paid from a designated account managed by EDC, which will have fiduciary oversight and responsibility for the use of the funds on behalf of the Government of Cameroon. For the first three years of the project, the recurrent costs (excluded salaries) will be financed by donor financing. From year four onwards, recurrent costs (excluding salaries) will be financed from the water tariff. EDC will contract the technical partner as well as the technical auditor (see Figure 15). MINFOF salaries will be paid by the Government of Cameroon. EDC, MINFOF, and MINFI have stipulated these financial arrangements in a Mo U.

Figure 15: Financial Flow for Sustainable Financing of DDNP



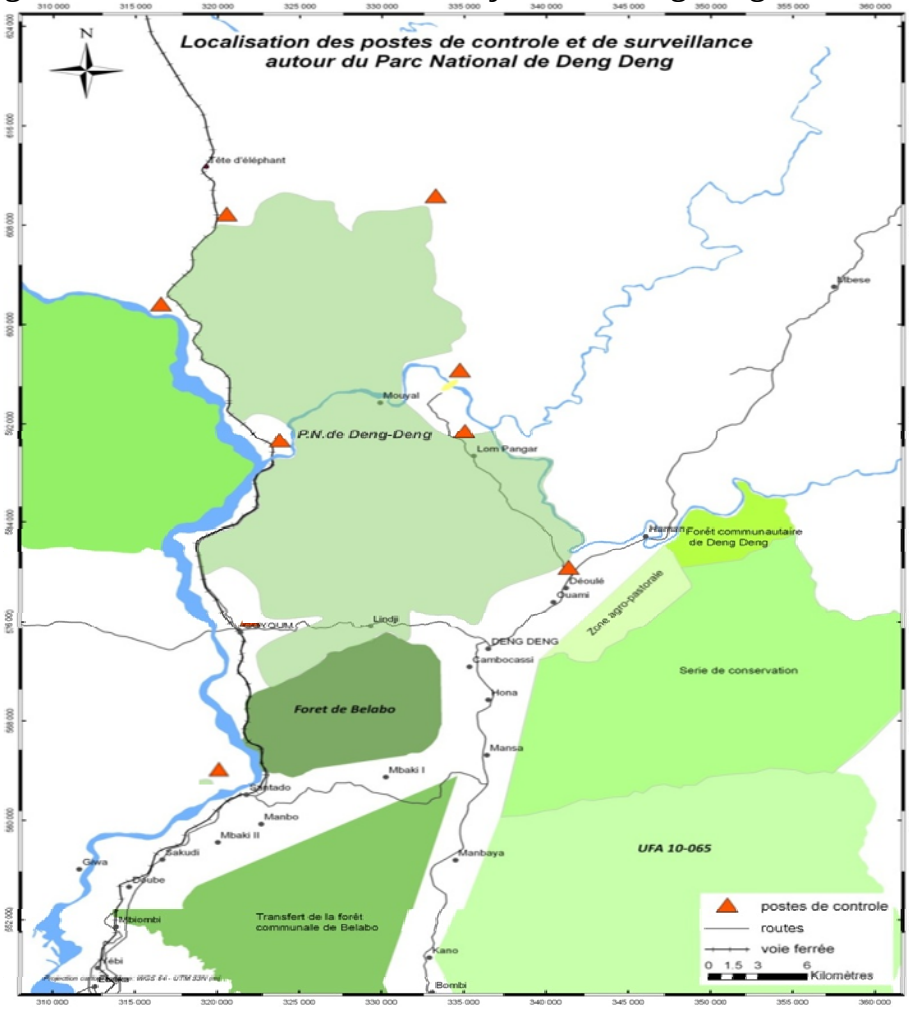
Surveillance and Control of Illegal Activities in and around Deng Deng National Park

78. The ESMP outlines a set of measures to effectively monitor and control illegal activities in and adjacent to the Deng Deng National Park. Given that the project may attract in-migration to the surrounding area, there is a risk of increased illegal activities, notably commercial poaching, if unchecked. While "poaching" by local people for subsistence has only a limited impact, commercial poaching inevitably leads to a significant loss of biodiversity, even to the disappearance of some species. The ESMP includes measures to control commercial poaching, including a complete ban on hunting in the DDNP, the effective deployment of rangers in and adjacent to the National Park and a ban on the commercialization of uncertified bushmeat in Bertoua and Bélabo. The ESMP also includes sustainable management measures for legal bushmeat channels (species that are not on the list of species controlled by MINFOF) and local awareness campaigns, in order to allow local consumption by communities within the forest massif.

79. Surveillance and enforcement activities in and around the DDNP will be carried out by "rangers" vested with police powers so that they may make arrests and seizures as needed and "community wardens" to monitor wildlife, reporting, and community relations. Figure 16 shows the location of the checkpoints that will be constructed and staffed by Park surveillance teams. Table 27 summarizes the number of rangers and community wardens by project phase, based on the following assessment:

- The dam construction phase presents the highest risks to conserving populations of large primates. The National Park team will need to be organized quickly and establish itself with local communities and other stakeholders. Various surveillance zones have been established. Within the boundaries of the DDNP, the road from Ouami to the dam site on the right bank of the Lom will be closely monitored. In addition, the following actions will be put in place outside the DDNP: (i) vehicle checks with the support of police forces on the main road to Bertoua; (ii) monitoring of nearby railway station platforms; (iii) monitoring of the UFA 10-065 and the ecological corridor between the Park and UFA 10065; and (iv) monitoring and sensitization activities in the villages adjacent to the National Park.

Figure 16: Control Post Locations Adjacent to Deng Deng National Park



- The filling of the reservoir will take approximately 18 months to allow animals still present after the logging phase to migrate outside the area of the dam. As such this constitutes a period of high vulnerability for the animals vis-à-vis poaching. During this phase monitoring activities will be maintained with the same intensity as during the construction phase; advocacy and education will continue in nearby communities; and tracking wildlife population trends will start.
- Once impoundment is completed, park management and monitoring will revert to the base case scenario, with MINFOF and technical partners ensuring the day-to-day functioning of the park and outreach to stakeholders. All facilities set up on the right bank of the Lom will be dismantled and, if these sites are out of water, be allowed to revert to their natural state. The bridge over the Lom that gives access to the site is kept in place to allow for maintenance activities. It will, however, be closed and monitored by a barrier. The Ouami barrier is maintained with a permanent guard presence. EDC will return to the national park all land not required for the long-term management of the dam, most particularly the sliver of land between the park and the future reservoir on the right bank of the Lom.

Table 27: Surveillance Needs of Deng Deng National Park and Adjacent Areas

Zone	Characteristics	Area to monitor	# guards/ha	# guards
National Park and surroundings	Left Bank of the Lom (4 posts + HQ)	39 347 ha	1/1000	34
	Extension of the Park Left Bank of the Lom (4 posts)	9 000 ha	1/1000	9
National Park	Right Bank of the Lom (4 posts)	22 000 ha	1/2500	10
UFA 10065	northern part of UFA where gorillas are present	44 000 ha	1/2500	17
Sub-Total				**70**
Additional surveillance during the construction phase (Years 1-3)				
National Park	Left Bank of the Lom (south)			2
	Right Bank of the Lom (north)			3
Dam construction site	Reinforced monitoring during construction			3
Total				**78**

80. The surveillance requirements take into account two important considerations. First, it delineates the evolution of needs based on the construction phases of the project, whereby additional guards will be needed from years 1 to 3. Second, it is important to note that the guard complement will be supported with a base commitment of 60 MINFOF rangers, in accordance with the Deng Deng MoU that has been signed between MINFOF and EDC. Additional guards will be provided by the technical partner in the form of community guards. Therefore, from years 1-3, the partner will employ 18 community guards, then reduce that number to 10 for the remainder of the project period. This division of labor puts a strong initial emphasis on sustainability, given the robust number of MINFOF rangers while at the same time ensuring they will have appropriate technical support to develop their capacities.

IV-F. ESMP Management and Capacity Building

81. The implementation arrangements for the ESMP are fully integrated with the overall implementation arrangements of the project (see Annex 3). The GOC has the ultimate responsibility for the project's compliance with Cameroonian legislation and Bank safeguards policies, though management of the activities to ensure such compliance will be entrusted to EDC. EDC coordinates closely with the Ministries involved in the project, notably MINEPDED, MINFOF, the Ministry of Social Affairs, the Ministry of Economy and Regional Planning (MINEPAT), and the Public Works Ministry for the construction of the access roads. Similarly, COTCO will be responsible for the pipeline adaptation ahead of the reservoir flooding. Accordingly, the GOC will cause COTCO to ensure compliance with World Bank Group requirements and to cooperate with EDC under an Interface Agreement (IA). The GOC will report on progress and compliance of COTCO activities in its regular progress reporting. NGOs will be involved in the monitoring and evaluation of the ESMP and RAP implementation.

82. The independent expert panel is an independent entity set up by EDC in agreement with GOC and donors to provide advice and recommendations on all environmental, social, and dam safety aspects of the project. EDC will extend the mandate of the Environmental and Social Panel of experts throughout the duration of the ESMP.

83. Various reputable consulting firms will be contracted to ensure controls and supervision of construction works, including safeguards aspects. On environmental and social aspects, supervisory engineers will monitor compliance of contractors with the Construction ESMPs and provide EDC with the technical assistance.

84. EDC will implement a monitoring and evaluation program, including monitoring of ESMP indicators, monitoring of impacts and their mitigation, as part of the regular donor reporting. These reports will be available in EDC's local office in Bertoua. The ESMP also includes a program to provide standardized cartographic information to support ESMP implementation.

85. The ESMP includes a periodic technical audit (four per year) which will enable the project team to identify any adverse impacts and, if any mitigation measure is ineffective, will enable EDC to effect corrective action.

86. Given the very rapid social changes that the LPHP is likely to trigger in its area of influence, the ESMP includes a grievance mechanism, a communication program, as well as conflict prevention measures including the mediation and resolution of conflicts. The grievance mechanism provides affordable and accessible procedures for third-party settlement of disputes arising from resettlement. There are grievance mechanisms at the village level and at the EDC communication centers. At the village level, there will a mediation committee and a support team (*cellule de base*). Their role is to register complaints from populations and ensure their resolutions.

87. The ESMP includes continued capacity building measures to strengthen EDC's capacity for technical assistance and to handle safeguards issues according to international standards, particularly in the context of large energy infrastructure projects such as LPHP. The capacity

building measures in the ESMP build on the technical assistance for environmental and social studies, e.g., the AFD is financing the Wildlife Conservation Society (WCS) to assist the GOC with the establishment of the Deng Deng National Park. The GOC and EDC teams will also continue to receive guidance and support as needed from IAD safeguards specialists. Complementing this ongoing support, the proposed project will include further measures to ensure satisfactory handling of safeguards during the construction and operation of LPHP. In particular, the project will include a training program, supported by a technical assistance package as needed.

Annex 7: Policy Letter

REPUBLIQUE DU CAMEROUN
Paix-Travail-Patrie

SERVICES DU PREMIER MINISTRE

N° 017/CAB/PM

REPUBLIC OF CAMEROON
Peace-Work-Fatherland

PRIME MINISTER'S OFFICE

YAOUNDÉ, LE 17 FEB 2012

Le Premier Ministre, Chef du Gouvernement,
À
Monsieur le Président de la Banque Mondiale,
1818 H Street,
Washington, DC 20433
Etats Unis d'Amérique.

Objet : **Projet d'aménagement hydroélectrique de Lom Pangar.-**

Monsieur le Président,

1. La volonté des Autorités Camerounaises, incarnée par le Document de Vision 2035 et le Document de Stratégie pour la Croissance et d'Emploi est de faire du Cameroun un pays émergent à l'horizon 2035. L'aménagement hydroélectrique de Lom-Pangar constitue l'un des projets d'intérêt stratégique dont la réalisation permettra d'atteindre cet objectif.

2. Le projet d'aménagement hydroélectrique de Lom-Pangar comprend la construction d'un barrage réservoir destiné à accroître le débit régulé du fleuve Sanaga pour le faire passer de 720 m^3/s actuellement à 1040 m^3/s, et d'accroître la puissance garantie des centrales hydroélectriques de Song Loulou et d'Edéa installées sur ce fleuve en aval, de 450 MW actuellement à 729 MW en 2015. Une centrale hydroélectrique de 30 MW sera construite au pied du barrage et reliée au poste de la centrale thermique existant actuellement à Bertoua par une ligne de 105 km en 90 kV.

3. Ce projet permettra ainsi d'accroître, à moyen terme, l'offre d'énergie électrique du pays et d'améliorer la pertinence économique des autres projets de centrales hydroélectriques à établir en aval sur le bassin de la Sanaga. En outre, il contribuera à valoriser l'immense potentiel hydroélectrique dudit bassin et à mettre à la disposition des populations du Cameroun une énergie de bonne qualité et à moindre coût.

4. Dans le but d'atteindre l'ensemble des objectifs visés par le projet hydroélectrique de Lom Pangar, le Gouvernement de la République du Cameroun se propose, dans sa mise en œuvre, d'adopter le cadre de politiques suivant :

(i) mettre en valeur les ressources en aval du site de Lom Pangar afin de satisfaire la demande de tous les consommateurs (ménages, industries) de manière équitable ;

(ii) mettre en œuvre le projet Lom Pangar de manière efficace et transparente, et dans le respect des bonnes pratiques de sauvegarde environnementale et sociale ;

(iii) poursuivre les réformes institutionnelles et réglementaires pour mettre en place un cadre favorable au développement du secteur de l'électricité.

5. Les principaux sujets sur lesquels le Gouvernement de la République du Cameroun souhaite effectuer une mise au point dans cette lettre sont :

- Les principes clés de la politique de gestion des ressources hydroélectriques du Bassin de la Sanaga ;
- la performance et les résultats attendus du volet environnemental et social du projet Lom Pangar ;
- la transparence et la participation citoyenne dans la conduite de ce projet.

1. PRINCIPES CLÉS DE LA POLITIQUE DE GESTION DES RESSOURCES HYDROÉLECTRIQUES DU BASSIN DE LA SANAGA

6. Dans le souci d'adapter le cadre légal à sa vision du développement et d'accroître la contribution du secteur de l'électricité à la croissance économique du pays, le Gouvernement de la République du Cameroun a adopté la Loi n° 2011/022 du 14 décembre 2011 régissant le secteur de l'électricité. A travers cette nouvelle loi, le Gouvernement de la République du Cameroun envisage de mettre en place une politique de gestion et de développement optimal de l'ensemble des ressources hydroélectriques du Cameroun en général et celles du Bassin de la Sanaga en particulier. Les objectifs majeurs visés par cette politique sont : (i) garantir un accès non-discriminatoire à l'électricité aux consommateurs et assurer la protection de leurs intérêts ; (ii) mettre à la disposition des populations du Cameroun une énergie de bonne qualité et à moindre coût ; (iii) encourager la participation du secteur privé national et international au développement et à la production de l'hydroélectricité au Cameroun; (iv) développer de façon durable le potentiel hydroélectrique du Cameroun, dans le respect des normes environnementales et sociales ; (v) faire du potentiel hydroélectrique camerounais, une source de revenu majeure et sécuriser les intérêts financiers à long terme du Gouvernement de la République du Cameroun.

7. En outre, pour résorber le déficit énergétique et garantir à long terme la sécurité d'approvisionnement en énergie électrique du pays au moindre coût, le Gouvernement de la République du Cameroun a élaboré un Plan de Développement du Secteur de l'Électricité au moindre coût à l'horizon 2030 (PDSE 2030). La première version date du PDSE 2030 sera mis à jour avant la fin de cette année 2012.

8. Chaque site hydroélectrique sera optimisé dans le but de tirer le maximum de son potentiel. Cette optimisation tiendra compte de la satisfaction de la demande de toutes les catégories de consommateurs (ménages, industries, exportation) selon le PDSE 2030, et avec un aperçu global visant par ailleurs l'optimisation des sites hydroélectriques adjacents ou environnants.

9. Le processus de sélection des futurs producteurs, partenaires du Gouvernement dans le développement et l'exploitation des ressources hydroélectriques, se fera désormais par une procédure d'appel à concurrence, sur une base équitable et transparente, et dans le respect de la réglementation en vigueur. Cependant dans certains cas exceptionnels, et conformément aux dispositions de l'article 48 de la nouvelle loi sur l'électricité, certains sites hydroélectriques peuvent être attribués par la procédure de gré à gré à des Promoteurs, pour des projets industriels considérés comme étant d'une importance stratégique pour l'économie nationale.

10. Tous les producteurs d'énergie électrique publics ou privés installés au Cameroun seront soumis à l'un des régimes juridiques prévus par l'article 11 de la nouvelle loi sur l'électricité, avec des contrats de vente d'énergie approuvés et contrôlés par l'ARSEL. Il est prévu, selon la nature de l'activité de l'Opérateur, l'octroi par l'État d'une concession de stockage d'eau (si ce stockage d'eau n'est pas effectué à titre accessoire de l'activité de production), de production d'énergie hydroélectrique (si l'aménagement hydroélectrique produit l'énergie électrique au fil de l'eau). Dans le cas où l'activité de l'Opérateur consiste à la fois à produire de l'énergie et à stocker de l'eau, tel que précisé ci-dessus, une concession sera exigée pour chacune de ces activités. Les caractéristiques et les modalités de stockage d'eau effectué à titre accessoire à l'activité de production seront fixés dans les textes d'application de la nouvelle loi, tel que prévu dans son article 18 (2).

11. Le Gouvernement de la République du Cameroun mettra en place un système de redevance pour l'usage de l'eau. Tout opérateur public ou privé titulaire d'une concession de production d'énergie hydroélectrique sur un site situé en aval des ouvrages de régularisation est tenu de payer une redevance d'eau pour l'utilisation des eaux stockées par ces ouvrages. La méthode de tarification de l'eau stockée sera applicable de façon équitable à tous les producteurs utilisant cette eau. Cette redevance d'eau vise le recouvrement des coûts des ouvrages de régularisation. Ces coûts comprennent notamment les charges de remboursement des emprunts liés aux investissements, les mesures de compensation environnementales et sociales ainsi que leurs charges récurrentes, les charges d'entretien et d'exploitation des ouvrages de régularisation et les charges liées à la gestion du bassin concerné. Notamment, le recouvrement de cette redevance dans le bassin de Sanaga permettra de régler les charges annuelles du Parc National de Deng Deng.

12. Les auto-producteurs ou industriels intéressés par le développement et l'exploitation des sites hydroélectriques pour leurs besoins énergétiques propres, seront astreints à la vente d'une partie de l'énergie produite au concessionnaire gestionnaire du réseau de transport, sur la base du coût de service en vue de l'approvisionnement des acheteurs publics ou privés. La détermination de la quote-part d'énergie destinée au secteur public camerounais sera basée sur les projections de la demande nationale d'électricité, présentées dans le PDSE 2030 et ses mises à jour respectives.

13. Le Cameroun envisage à moyen et à long terme l'interconnexion électrique en vue de l'exportation de l'énergie vers les pays voisins tels que le Tchad, le Nigéria, le Gabon, la République Centrafricaine et la République du Congo. Ces projets d'échanges d'énergie seront conçus dans le cadre de la coopération bilatérale ou multilatérale, notamment à travers le Pool Énergétique d'Afrique Centrale (PEAC) et le Pool Énergétique de l'Afrique de l'Ouest (WAPP), avec une vision de développement concertée, de façon à optimiser les bénéfices économiques pour chaque pays impliqué.

14. Les engagements du Gouvernement de la République du Cameroun par rapport aux principes clés de la politique de gestion des ressources hydroélectriques du Bassin de la Sanaga sont énumérés en Annexe 1, sous les titres suivants : *Mise à jour du PDSE 2030; processus de sélection des futurs opérateurs des centrales hydro-électriques dans le bassin de la Sanaga; optimisation du site de Nachtigal; processus d'optimisation des sites hydroélectriques du Bassin de la Sanaga; titres administratifs; redevance d'eau et tarification d'électricité; quantité d'électricité produite par les auto-producteurs à mettre à la disposition du concessionnaire gestionnaire du réseau de transport; gestion intégrée des eaux du bassin de la Sanaga; et élaboration de textes d'application de la loi d'électricité*.

2. LA PERFORMANCE ET LES RÉSULTATS ENVIRONNEMENTAUX ET SOCIAUX DU PROJET

15. Le Gouvernement de la République du Cameroun a travaillé en étroite collaboration avec la Banque Mondiale et d'autres partenaires pour s'assurer que le processus de prise de décision, la conception détaillée du projet et le programme de mise en œuvre comportent des mesures adéquates dans la gestion des impacts et des risques environnementaux et sociaux. Le projet Lom Pangar a été préparé avec une adhésion aux politiques environnementales et sociales du Gouvernement de la République du Cameroun et de la Banque Mondiale.

16. Le Gouvernement de la République du Cameroun souscrit pleinement à la vision de traiter de façon efficace les aspects environnementaux et sociaux du projet Lom Pangar. Il est notamment disposé à anticiper, surveiller et atténuer efficacement les risques environnementaux et sociaux du projet. Il s'engage, entre autres, à assurer la gestion durable et le financement du Parc National de Deng Deng (PNDD) qui constitue la compensation environnementale (offset) proportionnelle pour les habitats naturels détruits par le projet Lom Pangar, dont les habitats naturels ennoyés par la retenue. Le Gouvernement s'engage également à respecter les mesures décrites dans le Plan de Gestion Environnementale et Sociale pour suivre et contrôler les activités illégales, notamment la chasse, le braconnage, et l'exploitation illégale du bois dans le PNDD et ses environs immédiats.

17. Le Gouvernement de la République du Cameroun s'engage à mettre à disposition sa contrepartie pour le financement du Plan de Gestion Environnementale et Sociale (PGES) et les Plans d'Indemnisation et de Réinstallation (PIRs), incluant les coûts de salaires relatifs à la mise en œuvre des mesures environnementales et sociales des différents ministères impliqués.

18. Le Gouvernement de la République du Cameroun s'engage à financer les coûts récurrents des mesures environnementales et sociales au terme du financement des bailleurs de fonds (six années).

19. Les mesures environnementales et sociales du projet Lom Pangar sont multisectorielles et comme telles, plusieurs ministères jouent un rôle important dans leur mise en œuvre. Les ministères suivants continueront de jouer un rôle important dans les mesures de sauvegardes environnementales et sociales : Ministère de l'Eau et de l'Énergie (MINEE), Ministère des Forêts et de la Faune (MINFOF), Ministère des Travaux Publics (MINTP), Ministère de l'Agriculture et de Développement Rural (MINADER), Ministère de l'Élevage, des Pêches et des Industries Animales (MINEPIA), Ministère de la Santé Publique (MINSANTE), Ministère de l'Environnement, de la Protection de la Nature et du Développement Durable (MINEPDED), Ministère des Domaines, du Cadastre et des Affaires Foncières (MINDCAF) et Ministère de Arts et de la Culture (MINACULT).

20. Pour assurer une coordination efficace entre les ministères dans la réalisation du projet, il est crée un comité de pilotage présidé par le Secrétaire Général des Services du Premier Ministre. Ce comité de pilotage comprend tous les ministères impliqués et il suit l'avancement du projet en s'assurant de son bon déroulement.

21. Les engagements du Gouvernement de la République du Cameroun en rapport avec la performance et les résultats environnementaux et sociaux du projet sont énumérés en Annexe 1, sous les titres suivants : *Panel d'experts indépendants; Gestion de la récupération du bois de la retenue; Gestion du Parc National de Deng Deng; Audits environnemental et social; Impacts cumulatifs; Indemnisation et réinstallation.*

3. LA TRANSPARENCE ET LA PARTICIPATION CITOYENNE

22. Le Gouvernement souscrit pleinement aux principes de transparence, d'accès libre à l'information, et de consultations régulières avec les populations affectées et les autres parties prenantes du projet. Les populations, les administrations locales, la Société Civile et les ONGs régionales ont été consultées et leurs avis sur le projet pris en compte. Cette consultation sera poursuivie.

23. En conclusion, le Gouvernement de la République du Cameroun tient à rassurer la Banque Mondiale et tous les autres partenaires au développement qui l'appuient dans ce projet qu'il ne ménagera aucun effort pour poursuivre cette approche transparente et participative dans la phase d'exécution du projet. Le Gouvernement s'engage notamment à mettre en œuvre un dialogue continu avec les parties prenantes sur le projet Lom Pangar et sur les questions qui sont importantes pour les populations affectées par le projet. Il s'engage également à rendre public et accessible les documents clés du projet au fur et à mesure de l'avancement du projet. Le Gouvernement continuera à mener régulièrement les consultations directes avec les communautés et les citoyens dans la zone du projet, commencées pendant la phase de préparation du projet. Ces consultations permettront de solliciter leurs points de vue sur diverses questions, parmi lesquelles les mesures d'atténuation des impacts sociaux et environnementaux et les résultats du projet.

24. Compte tenu des changements sociaux très rapides anticipés dans la zone d'influence du projet, le Gouvernement de la République du Cameroun est conscient du potentiel de conflits entre différents groupes de personnes dans la zone. Pour cette raison, le Gouvernement mettra en œuvre des activités de sensibilisation, d'implication des citoyens, et de médiation des conflits.

25. Les engagements du Gouvernement de la République du Cameroun par rapport à la transparence et la participation citoyenne sont énumérés dans l'Annexe 1.

26. Enfin, le Gouvernement de la République du Cameroun saisit cette occasion pour faire part de sa profonde gratitude pour l'assistance multiforme et immuable que la Banque Mondiale et les autres partenaires au développement lui apportent dans la préparation du projet Lom Pangar. Il souhaite pouvoir continuer à compter sur leur concours technique et financier pour matérialiser ce projet cher au peuple camerounais. Nous transmettons copie de cette lettre à tous les autres partenaires impliqués dans la préparation et le financement dudit projet.

Veuillez agréer, **Monsieur le Président**, l'expression de ma très haute considération./-

Philemon YANG

Pièces jointes :

1- Les principes clés de la politique de gestion des ressources hydroélectriques ;
2- La performance et les résultats environnementaux et sociaux du projet ;
3- La transparence et la participation citoyenne.

ANNEXE 1:

Principes clés de la politique de gestion des ressources hydroélectriques

1.1. Mise à jour du PDSE 2030	1. Le processus d'actualisation du Plan de Développement du Secteur de l'Électricité à l'horizon 2030 (PDSE 2030), dont la première version date de 2006, a été initié en 2011 et s'achèvera à la fin de l'année 2012. Le Gouvernement s'engage à mettre en œuvre ce processus de mise à jour conformément aux principes énoncés dans cette lettre, notamment en y associant toutes les autres parties prenantes du secteur d'électricité et la société civile. Le PDSE 2030 révisé comprendra : (i) une analyse prévisionnelle de la demande des différentes catégories de consommateurs (ménages, industries, exportation) d'électricité ; (ii) un plan de développement à moindre coût du bassin de la Sanaga, ainsi qu'un plan de développement des aménagements hydroélectriques les mieux appropriés en termes de capacité et de localisation afin de répondre adéquatement à la demande ; et (iii) un plan de développement du réseau de transport répondant en tout temps et de façon fiable aux besoins de la production et de la demande à l'échelle nationale et à l'exportation. 2. Le Gouvernement s'engage à ce que le document final approuvé du PDSE 2030 soit rendu public.
1.2. Processus de sélection des futurs opérateurs des centrales hydro-électriques dans le bassin de la Sanaga	3. La sélection des futurs promoteurs de projets hydroélectriques sur le bassin de la Sanaga se fera par voie d'appel d'offres ou selon une procédure de gré-à-gré conformément aux dispositions de l'article 48 de la Loi n° 2011/022 du 14 décembre 2011 régissant le secteur de l'électricité. 4. Il est stipulé dans cet article que les conditions d'octroi des concessions de production et de transport d'électricité à des fins industrielles seront définies par voie réglementaire. Le Gouvernement s'engage à ce que les principes suivants soient incorporés dans les textes d'application de la nouvelle loi, en référence à cet article : (i) la confirmation que le Premier Ministre, Chef du Gouvernement, est l'Autorité habilitée à décider de l'octroi d'un site hydroélectrique à un développeur selon la procédure de gré à gré, (ii) les critères qui permettent de considérer un projet industriel comme étant d'une importance stratégique pour l'économie nationale, (iii) le processus de prise de décision d'octroi d'une concession de production et de transport d'électricité à des fins industrielles selon la procédure de gré à gré.

	5. Le Gouvernement confirme que quatre (04) sites hydroélectriques dans le bassin de la Sanaga (en aval du projet Lom Pangar) ont déjà été attribués par le Gouvernement de la République du Cameroun à un opérateur, pour des projets industriels d'intérêt stratégique pour l'économie nationale. Il s'agit des sites de Nachtigal Amont, Song Mbengue, et Grand Ngodi et d'un quatrième à déterminer, qui ont été attribués au groupe industriel Rio Tinto Alcan (RTA)/Alucam. 6. Le Gouvernement confirme que tous les autres sites hydroélectriques à développer sur le bassin de la Sanaga n'ont encore été attribués à aucun opérateur. 7. Le Gouvernement de la République du Cameroun envisage d'effectuer des études de préfaisabilité pour ces sites hydroélectriques et lancer en tant que de besoin des appels d'offres pour la sélection des Producteurs Indépendants d'électricité.
1.3. Optimisation du site de Nachtigal.	8. Le Gouvernement confirme que la Centrale hydroélectrique projetée sur le site de Nachtigal Amont, dont le développement a été attribué au groupe industriel Rio Tinto Alcan (RTA)/Alucam, aura une capacité installée minimale de 360 MW. 9. Le Gouvernement s'engage à veiller à ce que la conception de cet aménagement hydroélectrique intègre les exigences associées à la faisabilité de la centrale de Nachtigal Aval, de façon à optimiser globalement le potentiel de ce site hydroélectrique.
1.4. Processus d'Optimisation des sites hydroélectriques du Bassin de la Sanaga.	**Cas des sites hydroélectriques non attribués à des Développeurs** 10. L'Article 16 de la Loi régissant le secteur d'Électricité stipule que les concessionnaires de stockage d'eau pour la production d'électricité sont soumis à des obligations particulières qui leur sont imposées dans le cadre du service public, notamment l'optimisation de la gestion de la ressource en eau. 11. Les caractéristiques et les modalités de stockage d'eau effectué à titre accessoire à l'acticité de production seront fixées dans un texte d'application de la nouvelle loi, tel que prévu dans son article 18(2). Le Gouvernement s'engage à ce que le principe de l'obligation d'optimiser la production de l'électricité soit incorporé dans ce texte d'application. 12. Pour les sites qui ne sont pas encore attribués à des Développeurs ou Promoteurs, Le Gouvernement s'engage à ce qu'une étude d'optimisation du potentiel de chaque site hydroélectrique soit conduite à l'étape de préfaisabilité ou de faisabilité du Projet. 13. Plusieurs études d'optimisation des sites hydroélectriques du bassin de la Sanaga pourront être effectuées avec l'appui financier de la Banque Mondiale dans le cadre du Projet de Développement du secteur de

	l'Énergie (PDSEN). 14. Ces études seront conduites par Electricity Development Corporation (EDC), en concertation avec toutes les administrations concernées. **Cas des sites hydroélectriques attribués à des Développeurs** 15. Il appartient au Gouvernement de la République du Cameroun ou à EDC d'initier et de conduire en toute transparence les études d'optimisation du potentiel hydroélectrique du site dont il est question. Ces études devront se dérouler et s'achever avant les négociations contractuelles (contrat de concession) avec le développeur du projet.
1.5. Titres administratifs	16. Tous les producteurs d'énergie électrique publics ou privés installés au Cameroun, seront soumis aux régimes juridiques de Concession, de Licence, Autorisation, Déclaration et Liberté, avec des contrats de vente d'énergie approuvés et contrôlés par l'Agence de Régulation du Secteur de l'Électricité (ARSEL). L'Administration chargée de l'électricité accorde les Concessions et Licences. L'ARSEL est compétente pour les autres régimes. 17. L'article 101 de la nouvelle loi sur l'électricité prévoit que dans un délai maximum de cinq (05) ans fixé dans le titre administratif, tout site de production d'électricité attribué à un opérateur et non mis en valeur peut, après mise en demeure restée sans effet pendant une durée de six (06) mois, faire l'objet d'une restitution à l'état, après un audit effectué par l'ARSEL, selon les modalités fixées par voie réglementaire. 18. Le Gouvernement s'engage à ce que les textes d'application de cette nouvelle loi définissent et clarifient le rôle des différents acteurs du secteur de l'électricité, notamment celui d'EDC en ce qui concerne les aspects techniques associés aux différents titres administratifs (concessions, licence, autorisation, déclaration, liberté).
1.6. Redevance d'eau et tarification de l'électricité	19. Le Gouvernement de la République du Cameroun mettra en place un système de redevance pour l'usage de l'eau. Selon l'article 15 (1) de la loi régissant le secteur de l'électricité. Le Gouvernement confirme qu'un décret de Premier Ministre précisera le contenu de la redevance d'eau, à savoir qu'elle vise le recouvrement des coûts des ouvrages de régulation liés à l'utilisation des eaux stockées par les ouvrages de régulation pour la production d'énergie hydroélectrique. Ces coûts comprennent notamment les charges de remboursement des emprunts liés aux investissements, les mesures de compensation environnementales et sociales ainsi que leurs charges récurrentes, les charges d'entretien et d'exploitation des ouvrages de régulation et les charges liées à la gestion du bassin concerné. 20. La redevance d'eau est due pour l'utilisation des eaux stockées dans

	les ouvrages de régularisation aux fins de production d'énergie hydroélectrique. Celle-ci sera tarifée sur la base de la puissance installée (MW) de chaque Utilisateur. Le montant dû par chaque utilisateur sera égal au taux de la redevance d'eau multiplié par la capacité installée de chaque utilisateur. 21. Le taux et les modalités de la redevance d'eau relative au stockage d'eau pour la production de l'électricité sur le bassin de la Sanaga seront fixés par arrêté du Ministre en charge de l'eau. Le Gouvernement s'engage à s'assurer que les charges annuelles du parc national de Deng Deng seront acquittées en priorité. 22. L'accord d'achat d'électricité entre AES SONEL et RTA/Alucam a été respecté et a été en vigueur depuis 2010. Le Gouvernement confirme que c'est un tarif fondé sur le coût du service et qu'aucune subvention n'est accordée à Alucam. Les tarifs définis dans les accords d'achat d'électricité avec les utilisateurs industriels (tels que Alucam) continueront d'être valables et seront respectés à l'avenir.
1.7. Quantité d'électricité produite par les auto-producteurs à mettre à disposition du concessionnaire gestionnaire de réseau de transport	23. La Loi d'électricité stipule que les auto-producteurs ou industriels intéressés par le développement et l'exploitation des sites hydroélectriques pour leurs besoins énergétiques propres, mettent à la disposition du concessionnaire gestionnaire de réseau de transport une quantité d'électricité pour l'approvisionnement des acheteurs publics ou privés [article 57(1)]. 24. La quantité d'électricité destinée au réseau public est convenue dans l'acte de concession de production à des fins industrielles. Cet acte de concession inclura de manière non limitative les spécifications techniques suivantes : (puissance garantie/ non garantie, puissance en période d'étiage/crues). 25. Ces quantités d'énergie électrique seront déterminées au cas par cas. Un texte d'application de la nouvelle loi sur l'électricité précisera les principes et les critères permettant la détermination des quantités d'énergie à mettre à la disposition du concessionnaire gestionnaire de réseau de transport par l'Auto-producteur. Ces principes porteront de manière non limitative sur : (i) les projections de la demande nationale et de l'offre en électricité, comme présentées dans le PDSE 2030 ; (ii) la préférence de la mise à disposition de l'électricité au secteur public, à la vente directe à d'autres utilisateurs industriels ou à l'exportation ; (iii) les arrangements nécessaires entre l'auto-producteur et le concessionnaire du réseau public ou de distribution ; (iv) les caractéristiques physiques du site ; (v) les besoins propres de l'auto-producteur. 26. Le Gouvernement de la République du Cameroun, dans le cadre de

	l'élaboration des textes d'application de la nouvelle loi, s'engage à préciser, en référence à cet article 57 : (i) l'Autorité habilitée à prendre la décision relative à la quantité d'énergie qui doit être cédée par l'Auto-producteur au concessionnaire du réseau public de transport ; (ii) le processus concourant à la définition de la quantité d'énergie à mettre à la disposition du concessionnaire gestionnaire de réseau de transport par l'Auto-producteur , notamment si la décision doit être prise avant ou après la réalisation des études d'Avant -Projet Détaillé ; (iii) que les licences de vente et, le cas échéant, d'exportation y afférentes soient octroyées sur la base des quantités convenues dans les concessions. 27. Le Gouvernement de la République du Cameroun confirme que Rio Tinto Alcan (RTA) / Alucam s'engage envers le Gouvernement à ce que les projets hydroélectriques Rio Tinto Alcan (RTA) / Alucam permettent de mettre à disposition du concessionnaire gestionnaire du réseau de transport environ 600 MW d'énergie ferme à l'horizon 2030, avec la mise en place de tous les réservoirs de régulation envisagés. Cette quantité représentera 20% de la capacité installée de trois sites attribués à Rio Tinto Alcan (RTA)/Alucam dans le bassin de la Sanaga (Nagtchigal Amont, Song Mbengue et Grand Ngodi) et correspondant à 64% de la capacité actuelle d'électricité installée de production au Cameroun et pourrait couvrir une partie importante des projections de la croissance de la demande secteur public. Le Gouvernement s'engage à veiller à ce que les engagements stipulés dans ce paragraphe soient respectés. Le Gouvernement s'engage en conséquence à confirmer dans l'acte de concession à établir pour chaque site, en faveur du groupement Rio Tinto Alcan (RTA) / Alucam, la quantité d'électricité destinée au réseau public, ainsi que les modalités de sa mise à disposition. 28. La nouvelle Loi sur l'électricité stipule que le prix de l'électricité ainsi mise à la disposition au réseau public est approuvé par l'ARSEL sur la base du cout du service. 29. En application de l'article 55(2) de la Loi régissant le secteur de l'électricité, lorsqu'une partie de l'énergie produite est destinée, à être mise à disposition dans le cadre du service public de l'électricité, le titulaire d'une concession de production et, le cas échéant, de transport à des fins industrielles organise des procédures d'appels d'offres pour l'attribution des contrats majeurs d'ingénierie, de maîtrise d'œuvre et d'acquisition des équipements d'envergure nécessaires à la construction des installations de production et, le cas échéant, de transport à des fins industrielles. 30. L'ARSEL est informée des résultats des appels d'offres et s'assure que ces procédures d'appel d'offres sont transparentes et équitables.
1.3. Gestion intégré	31. Le Gouvernement de la République du Cameroun s'engage à mettre

bassin de la Sanaga.	en place un organe en charge de la gestion participative, intégrée, concertée, équitable et non discriminatoire des ressources en eaux du bassin de la Sanaga. 32. Cet organe regroupera en son sein les représentants des différentes parties prenantes. 33. Les règles de gestion des ouvrages de régularisation du fleuve Sanaga seront préparées par EDC et adoptées par le Gouvernement après concertation avec toutes les parties prenantes notamment les utilisateurs de l'eau dudit bassin. 34. Un texte d'application de la nouvelle loi apportera des précisions sur les modalités de gestion des eaux stockées dans les barrages réservoirs.
1.9. Élaboration de Textes d'application de la loi d'électricité	35. Le Gouvernement de la République du Cameroun s'engage à élaborer tous les textes d'application de la Loi 2011/022 régissant le secteur de l'électricité en consultation avec les parties prenantes du secteur d'électricité. La priorité chronologique sera accordée aux textes organiques et à ceux relatifs aux aspects sur l'hydroélectricité en rapport avec le projet Lom Pangar. 36. Pour l'élaboration des textes d'application de la loi régissant le secteur de l'électricité, le Gouvernement de la République du Cameroun s'engage à s'associer, en tant que de besoin, les services d'un Conseiller juridique qualifié, spécialisé dans les questions l'énergétique. Les ressources du Projet de Développement du Secteur de l'Energie (PDSEN) pourront être mises à contribution à cet effet.

ANNEXE 2:

La performance et les résultats environnementaux et sociaux du projet

2.1. Panel d'Experts Indépendant	1. Le Gouvernement de la République du Cameroun s'engage à maintenir en place le Panel d'Experts Environnemental et Social du Projet Lom Pangar pour toute la durée du projet. La mission de ce Panel d'Experts est de donner un avis indépendant et des conseils afin qu'EDC soit en mesure de respecter, ou de faire respecter par les entités concernées, les engagements pris par le Gouvernement dans: (i) l'Etude d'Impact Environnemental et Sociale (EIES), (ii) les plans d'indemnisation et de réinstallation (PIRs), et (iii) le plan de gestion environnementale et sociale (PGES), y compris les prescriptions du Cahier des Clauses Environnementales et Sociales (CCES) applicables aux entrepreneurs. 2. Les conclusions de chaque mission seront publiées sur le site web du projet au plus tard un (01) mois après la fin de la mission.
2.2. Gestion de la récupération du bois de la retenue	3. La récupération du bois dans la retenue est un élément majeur du projet, compte tenu de la valeur commerciale élevée des bois qui seront submergés, sa complexité, et les risques des impactes induits associent avec sa mise en œuvre. 4. Le Gouvernement de la République du Cameroun s'engage à ce que la récupération du bois soit réalisée selon les normes nationales et le processus décrit dans le Plan de Gestion Environnementale et Social du Projet Lom Pangar. 5. La récupération de ce bois se fera sous la supervision d'un Maître d'œuvre que le Gouvernement s'engage à recruter.
2.3. Gestion du Parc National Deng Deng (PNDD)	6. Dans le cadre de la gestion du Parc National de Deng Deng (PNDD), le Gouvernement de la République du Cameroun s'engage : (i) à élaborer et mettre en œuvre le Plan d'aménagement du Parc national en cohérence avec le PGES du projet Lom Pangar. (ii) à affecter et maintenir en permanence une équipe de gestion du PNDD, y compris 60 eco-gardes, pour assurer le dispositif de contrôle et de répression des activités illégales. (iii) à assurer le financement durable des actions de conservation et des activités du PNDD et de ses environs. 7. Les coûts récurrents de gestion du Parc National Deng Deng seront financés par les revenus de système de tarification de l'eau stockée, applicable aux opérateurs hydroélectriques dans le bassin de Sanaga.

	8. Les modalités de gestion du parc seront formalisées dans un protocole d'entente (Memorandum of Understanding) entre MINFI, MINFOF et EDC.
2.4. Audits environnementaux et sociaux	9. Le Gouvernement de la République du Cameroun s'engage à appliquer les recommandations de l'Auditeur Technique Indépendant pour les mesures de sauvegardes environnementales et sociales. EDC devra recruter un tel auditeur pour effectuer des missions périodiques à Lom Pangar pour la duree du projet Lom Pangar afin d'examiner les mesures prises pour assurer la conformité avec celles énoncées dans les différents instruments environnementaux et sociaux. 10. Les rapports de l'Auditeur Technique seront soumis en parallèle au Comité de Pilotage, aux bailleurs de fonds, et à EDC. Un résumé d'audit sera publié sur le site web du projet Lom Pangar en même temps.
2.5. Impacts cumulatifs	11. Le Gouvernement de la République du Cameroun est conscient des impacts cumulatifs potentiels du projet Lom Pangar et des projets futurs dans le bassin de la Sanaga jusqu'à son estuaire. 12. Aussi, il mettra en œuvre des programmes de suivi pour l'estuaire et la moyenne Sanaga et prendra les actions nécessaires pour atténuer les impacts si requis.
2.6. Indemnisation et réinstallation	13. Le Gouvernement de la République du Cameroun a préparé et divulgué les plans d'indemnisation et de réinstallation (PIRs) pour le barrage, la ligne de transmission/la centrale électrique, les routes d'accès et le Parc National Deng Deng. 14. Le Gouvernement de la République du Cameroun s'engage à assurer la réinstallation et l''indemnisation des populations affectées par le projet Lom Pangar, conformément aux dispositions du décret n°2012/0034/PM du 24 janvier 2012 portant indeminisation des personnes victimes des destructions des biens dans le cadre des travaux de construction du barrage hydroélectrique de Lom Pangar dans la région de l'Est et aux PIRs. Ces PIRs sont du reste conformes à la politique de la Banque Mondiale (PO 4.12) sur la réinstallation et l''indemnisation.

ANNEXE 3:

Transparence et la participation citoyenne

3.1. La transparence	1. Le Gouvernement de la République du Cameroun s'engage à rendre public et accessible la documentation sur les sauvegardes environnementales et sociales du projet Lom Pangar, les cahiers de charges et la cartographie des infrastructures sociales dans les villages (prévision et progrès), ainsi que les résumés des rapports techniques de l'Auditeur Indépendant sur les mesures environnementales et sociales. 2. EDC rendra public et accessible une version du rapport trimestriel du projet dans une forme satisfaisante à la Banque Mondiale au plus tard 45 jours après la fin de trimestre et mettra à jour régulièrement leur site web du projet Lom Pangar sur l'avancement du projet et les résultats obtenus.
3.2. La participation citoyenne	3. Le Gouvernement de la République du Cameroun mènera des consultations directes avec les communautés et les citoyens dans la zone du projet pendant toutes les phases du projet. Ces consultations permettront d'une part de solliciter leurs points de vue sur diverses questions, dont l'état d'avancement et les résultats du projet, et d'autre part d'ajuster le projet et affiner les programmes d'atténuation et de suivi. 4. Le Gouvernement de la République du Cameroun s'engage également à organiser une consultation régionale avec la société civile chaque trimestre et une consultation nationale chaque semestre pendant la durée du projet. Les invitations et la documentation des réunions de consultation seront envoyées aux parties au moins une semaine avant la réunion. Le Procès Verbal de chaque réunion sera publié sur le site web du projet et distribué aux participants à la réunion. 5. Pour accueillir et traiter les plaintes des populations (en rapport aux indemnisations ou autres questions), EDC a déjà mis en place une hiérarchie d'instances de médiation et un mécanisme pour accueillir et traiter les plaintes des populations devant être indemnisées, notamment (a) au niveau des villages abritant des centres de communication EDC ou des grands villages et (b) au sein de l'entreprise EDC siège de résolution des plaintes. 6. Le Gouvernement de la République du Cameroun s'assurera qu'EDC répond à chaque plainte dans un délai de deux (02) semaines.

	EDC mettra en place à cet effet, un système de traçabilité des plaintes et publiera sur son site Internet son fonctionnement et les statistiques de gestion des plaintes. 7. EDC – par son Maître d'œuvre – impliquera les organisations de la société civile et les représentants des villages dans le suivi de l'exécution de la construction des infrastructures sociales dans les villages.

Annex 7A: English translation of Policy Letter[57]

From the Prime Minister, Head of Government,
To
The President of the World Bank
1818 H Street
Washington DC, 20433
USA

Subject: Lom Pangar Hydropower Project

Dear Mr. President:

1. The goal of the Cameroonian Authorities to make Cameroon into a Middle-Income Country by 2035 is reflected in its Vision 2035 and the Strategy Paper for Growth and Employment. The Lom Pangar Hydropower Project is one of the strategic project which will contribute to this objective.

2. The Lom Pangar Hydropower Project includes the construction of a dam and a reservoir to regulate the flow of the Sanaga River from the current 720 m3 / s to 1040 m3 / s, and to increase the guaranteed capacity of the downstream Song Loulou and Edea hydropower plants from 450 MW currently to 729 MW in 2015. A 30 MW hydropower plant will be built at the foot of the dam and connected to the current thermal power plant in Bertoua by a 105 km 90 kV line.

3. This project will thus increase electricity supply in the medium term and improve the economic returns of other hydroelectric projects to be developed downstream in the Sanaga basin. In addition, it will serve to develop the vast hydroelectric potential of the basin and to provide high quality low-cost electricity to the people of Cameroon.

4. To achieve all of the objectives of the Lom Pangar hydropower project, the Government of the Repubic of Cameroon is proposing in the following Implementation Policy Framework:

(i) develop the hydropower resources located downstream from the Lom Pangar site in order to meet the electricity demand of all consumers (households and industries) in an equitable manner;
(ii) implement the Lom Pangar Hydropower Project efficiently and transparently respecting environmental and social good practices;

[57] This annex is a translation of the original letter from the Prime Minister of the Republic of Cameroon in French dated February 17, 2012 which is included in annex 7 of the PAD. The translation is provided as a service to interested parties. In case of discrepancy between the French original and the translation, the French text shall prevail.

(iii) continue the institutional and regulatory reforms to create an enabling environment for the development of the electricity sector.

5. The main topics that the Government of the Republic of Cameroon would like emphasize in this letter are:

(iv) The key principles of the hydropower policy for the Sanaga Basin;
(v) Ensuring environmental and social performance and outcomes of the Lom Pangar project, and
(vi) Transparency and citizen participation in the implementation of the project.

1. Key principles of the hydropower policy for the Sanaga Basin

6. On December 14, 2011, the GOC adopted Law No. 2011/022 governing activities in the electricity sector in order to align the legal framework with its development vision and to enhance the contribution of the energy sector to economic growth. The new law has enabled the Government of Cameroon to introduce a policy for the optimal management and development of Cameroon's hydropower resources in general, and these resources in the Sanaga Basin in particular. The main objectives of this policy are: (i) to ensure non-discriminatory access to electricity for consumers and protect consumers' interests, (ii) to make available quality low-cost energy to the population of Cameroon, (iii) to encourage national and international private sector participation in the development and generation of hydropower in Cameroon, (iv) to develop the hydropower potential of Cameroon in a sustainable manner and in line with environmental and social standards; (v) to turn the the hydropower potential of Cameroon a into a major revenue source and secure the long-term financial interests of the Government of the Republic of Cameroon.

7. In addition, the Government of the Republic of Cameroon has developed the lowest cost Electricity Sector Development Plan for 2030 (PDSE2030) that aims to reduce the energy deficit and ensure long-term energy security at the lowest cost. The first version of the PDSE2030 will be updated before the end of this year 2012.

8. Each hydropower site will be optimized to maximize its potential. This optimization should ensure that the demand of all categories of consumers (households, industries, export) is met, in accordance with the PDSE 2030 while on the other had allowing for optimization of adjacent or nearby hydropower sites.

9. The selection of process for future producers, partners of the government in the development and exploitation of hydropower resources, will consist of an equitable and transparent competitive bidding process that complies with the existing regulations. However, in a few exceptional cases as defined in Article 48 of the new electricity law, hydropower sites may be assigned on a sole source basis to operators for industrial projects that are considered to be of strategic importance for the national economy.

10. All public or private electricity producers in Cameroon wishing to sell electricity sales will be subject to one of the legal regimes set out in Article 11 of the new electricity law. The Electricity Sector Regulatory Agency (ARSEL) will approve and regulate such contracts. Depending on the nature of the operator's activities, the government will grant a water storage concession (if a reservoir does not form part of a hydropower plant), or a hydropower production concession (if the project uses run-of-river hydroelectric generation). In the event that the operator's activity involves both energy production and water storage, a concession will be required for each of those activities. The characteristics and conditions for operating reservoirs that form part of hydropower plants will be specified in secondary legislation, in accordance with Article 18(2) of the new electricity law.

11. The government of the Republic Cameroon will introduce a tariff system for the use of the water. Each public or private hydropower producers in the Sanaga Basin holding a hydropower production concession downstream of the regulating dams will have to pay this water tariff. Water tariffs will be applied equitably to all producers. Water tariff will cover the costs of the regulating dams and reservoirs. These costs include, inter alia, debt service charges for the investments, environmental and social mitigation measures and their recurrent costs, the cost of the maintenance and operation of the regulating dams, and the costs connected with the management of the basin. It should be noted that the water tariff in the Sanaga basin will cover the annual expenses of Deng Deng National Park.

12. Industrial auto- producers interested in the development and operation of hydropower sites for their own energy needs will be required to sell a part of the produced energy on a cost of service basis to the concessionaire of the transportation grid for the supply of public and private consumers. The calculation of the proportion of energy to be sold to the public grid will be based on national electricity demand projections for included in the PDSE2030 and its updates.

13. Over the medium and long term, Cameroon is planning to interconnect its electricity grid for the export of energy to neighboring countries such as Chad, Nigeria, Gabon, the Central African Republic and the Republic of the Congo. These energy exchange projects will be designed in the context of bilateral or multilateral cooperation, particularly through the Central African Power Pool (CAPP) and the West African Power Pool (WAPP), with a coordinated development vision that will optimize the economic benefits for each country involved.

14. The commitments of the Government of the Republic of Cameroon in relation to the key principles of the hydropower policy for the Sanaga Basin are listed in Annex 1 and are grouped under the following headings: *Update of the PDSE 2030, the selection process of future operators of hydro power plants in the Sanaga basin, optimization of the Nachtigal site, process to optimize hydropower sites in the Sanaga basin, administrative autorisations, water tariffs, quantity of energy produced by auto-producers to be made available to the concessionaire of the electricity grid, integrated water management in the Sanaga Basin, and drafting of secondary legislation for the electricity law.*

2. **Ensuring Environmental and Social Performance and Outcomes of the Lom Pangar project**

15. The Government of Cameroon, in close collaboration with the World Bank and other partners, has worked to ensure that the decision-making process, detailed design, and implementation arrangements of the project include adequate measures to manage the environmental and social impacts and risks. The Lom Pangar project has been prepared in compliance with the environmental and social policies of the Government of Cameroon and the World Bank.

16. The Government of Cameroon is fully committed to the effective management of the environmental and social aspects of the Lom Pangar project. It is committed to anticipate, monitor and effectively mitigate the environmental and social risks of the project. It commits, inter alia, to ensure the sustainable financing and management of Deng Deng National Park, which constitutes the proportional environmental offset for the natural habitats destroyed by the Lom Pangar project, particularly the natural habitats flooded by the reservoir. The Government also commits to comply with the measures described in the Environmental and Social Management Plan to monitor and control the illegal activities in the Deng Deng National Park and its imeediate vicinity, including hunting, poaching, and illegal logging.

17. The Government of Cameroon commits to make available its counterpart funding for the financing of the Environmental and Social Management Plan (ESMP) and the Resettlement Action Plans (RAPs), including the salary costs relative to the implementation of the environmental and social measures by the different ministries involved.

18. The Government of Cameroon commits to finance the recurrent costs of the environmental and social measures after the end of the donor financed project (six years).

19. The environmental and social measures of the Lom Pangar project are multi-sectoral and as such, several ministries play an important role in their implementation. The following ministries will continue to play a key role in the environmental and social measures: Ministry of Water and Energy (MINEE), Ministry of Forestry and Wildlife (MINFOF), Ministry of Public Works (MINTP), Ministry of Agriculture and Rural Development (MINADER), Ministry of Livestock, Fisheries and Animal Industries (MINEPIA), Ministry of Health (MINSANTE), Ministry of Environment, Nature Protection, and Sustainable Development (MINEPDED), Ministry of Property Survey and Land Tenure (MINCAF), and Ministry of Arts and Culture (MINACULT).

20. In order to ensure the effective coordination between ministries during the project implementation, a steering committee chaired by the Secretary General of the Office of the Prime Minister has been created. This steering committee includes all of the ministries involved and will monitor the project, ensuring its proper implementation.

21. The Government of Cameroon's commitments regarding environmental and social performance under the project are set out in Annex 1 under the following titles: *Independent Panel of Experts, Management of the salvage logging operations, Management of Deng Deng National Park, Environmental and Social Audits, Cumulative Impacts, Compensation and Resettlement.*

3. **Principle of transparency and citizen participation in project implementation**

22. The government fully subscribes to the principles of transparency, access to information, and regular consultations with the affected populations and other project stakeholders. Communities, local authorities, civil society and regional NGOs were consulted and their views on the project taken into account. This consultation will be continued.

23. In conclusion, the Government of the Republic of Cameroon wishes to reassure the World Bank and all other development partners who support this project that it will carefully undertake this transparent and participatory approach during project implementation. The Government commits to engage in a continuous dialogue with the Lom Pangar project stakeholders on issues that are important to the populations affected by the project. It commits to disclose key project documents and make then accessible as the project moves forward. The Government will continue to regularly hold the direct consultations with the communities and citizens in the project zone that were started during the project preparation phase. These consultations will solicit their views on various issues, including the social and environmental mitigation measures and the project results.

24. Given the very rapid social changes anticipated in the project's area of influence, the Government of Cameroon is aware of the potential for conflict between the various groups. For this reason the Government will undertake outreach, citizen involvement, and conflict mediation activities.

25. The Government of Cameroon's commitments regarding transparency and citizen participation are listed in Annex 1.

26. Finally, the Government of the Republic of Cameroon takes this opportunity to express its deep appreciation for the multifaceted and immutable assistance that the World Bank and other development partners bring to the Government in preparing the Lom Pangar project. It hopes to be able to continue to rely on their technical and financial support to materialize this important project to the people of Cameroon. We transmit a copy of this letter to all other partners involved in the preparation and financing of the project.

Please accept, Mr President, the assurances of my highest consideration.

Philemon Yang
Prime Minister

Annexes:

1. The key principles of the hydropower policy for the Sanaga Basin;
2. Ensuring environmental and social performance and outcomes of the Lom Pangar project
3. Transparency and citizen participation in the implementation of the project.

Annex 1: The key principles of the policy for management of the hydropower resources

1.1. Update of the PDSE 2030	1. The process to update the Electricity Sector Development Plan for 2030 (PDSE 2030) was launched in 2011, based on the first 2006 version. This update is scheduled to be completed by the end of 2012. The GOC commits to conduct the update in line with the principles of this letter and in collaboration with the other electricity sector stakeholders and civil society. The revised PDSE 2030 will include: (i) Projections of the electricity demand of various consumers groups (households, industries, export); (ii) A least cost hydropower development plan for the Sanaga Basin including identification of hydropower projects that are best suited, in terms of capacity and location, to respond adequately to the demand; and (iii) A plan for the development of the electricity transmission grid that is suited to respond flexibly at all times to production needs and national and export demand. 2. The GOC commits to publicly disclose the final approved version of the PDSE 2030.
1.2. Selection process for future operators of hydropower plants in the Sanaga Basin	3. Developers of future hydropower projects in the Sanaga Basin will be selected through competitive bidding or on a sole source basis in accordance with the terms set forth in Article 48 of Law No. 2011/022 of December 14, 2011 governing the electricity sector. 4. This article stipulates that the conditions for granting concessions for the production and transport of electricity for industrial use will be further defined by secondary legislation. The GOC commits to incorporating the following principles in the secondary legislation of the new law, with reference to the aforementioned article: (i) Confirmation that the Prime Minister, the Head of the Government, is vested with the authority to assign a hydropower site to a developer on a sole source basis; (ii) The criteria for consideration of an industrial project as being of strategic importance for the national economy; and (iii) The decision process for granting a concession for the production and transport of electricity for industrial use on a sole source basis. 5. The Government confirms that four hydropower sites in the Sanaga Basin (downstream of Lom Pangar) have already been assigned by the Government of the Republic of Cameroon to an operator to develop industrial projects of strategic interest for the national economy. The sites are Nachtigal

	Amont, Song Mbengue, and Grand Ngodi, and a fourth site to be identified—All four sites have been assigned to the Rio Tinto Alcan (RTA)/ Alucam industrial group. 6. The Government confirms that all the other hydropower sites to be developed in the Sanaga Basin have not yet been assigned to an operator. 7. The Government of the Republic Cameroon intends to conduct pre-feasibility studies of these hydropower sites and issue, as necessary, calls for bids to select independent power producers.
1.3. Optimization of the Nachtigal site	8. The Government confirms that the planned hydropower plant for the Nachtigal Amont site, which is to be developed by RTA/Alucam industrial group, will have a minimum installed capacity of 360 MW. 9. The Government commits to ensure that the design of this hydropower project incorporates measures to assure the feasibility and optimization of the Nachtigal Aval hydropower site.
1.4. Process to optimize the hydropower sites in the Sanaga Basin	**Hydropower sites not assigned to developers** 10. Article 16 of the Electricity Law stipulates that concessionaires that store water for the production of electricity are subject to specific public service obligations, including the optimization of water resources management. 11. Article 18(2) of the Electricity Law stipulates that the characteristics and modalities of water storage as an auxiliary activity to electricity production will be determined in a statutory instrument under the new law. The Government commits to incorporate an obligation to maximize electricity production in this statutory instrument. 12. The Government commits to conduct an optimization study for each hydropower site that has not yet been assigned to developers or operators at the pre-feasibility or feasibility stage of the project. 13. Optimization studies for several hydropower sites in the Sanaga basin could be carried out with the financial assistance of the World Bank through the Energy Sector Development Project (PDSEN). 14. These studies will be conducted by the Electricity Development Corporation (EDC) in collaboration with all the relevant ministries. **Hydropower sites assigned to developers** 15. The Government of Cameroon or EDC will initiate and conduct, in a

	completely transparent manner, the optimization study of the hydropower potential of the respective site. This study should be carried out and completed prior to contract negotiations (concession contract) with the project developer.
1.5. Administrative autorisations	16. All public or private electricity producers in Cameroon shall be subject to legal requirements of concessions, licenses, permits, declarations, releases and with sales licenses approved and controlled by the Electricity Sector Regulatory Agency (ARSEL). The Ministry in charge of Energy grants concession and licenses, while ARSEL has responsibility for the other administrative authorizations. 17. Article 101 of the new electricity law stipulates that any electricity production sites assigned to an operator that has not been developed after a period of five years shall be returned to the State. This will be done after a formal notice has been issued and there has been no response to this notice for six months and after an audit by ARSEL in accordance with the procedures set forth in the regulations. 18. The GOC commits to ensure that the secondary legislation of the new law will define and clarify the role of the various electricity sector stakeholders, in particular the role of the EDC with respect to the technical aspects related to the various administrative authorizations (concessions, licenses, permits, declarations, and releases).
1.6. Water tariff	19. The Goverment of the Republic of Cameroon will put in place a tariff regime for water use. According to article 15(1) of the Electricity Law. The Government confirms that a decree from the Prime Minister will specify that the water tariff will cover costs including debt service charges for investments, environmental and social mitigation measures and their recurrent costs, the cost of maintenance and operation of the regulating dams, and the costs associated with management of the basin. 20. The water tariff is to be charged for the use of water for electricity production for water stored by regulating dams. It will be priced on the basis of the installed capacity (MW) of each user. The amount owed by each user rate will be equal to the water rate multiplied by the installed capacity of each user. 21. The rates and terms of the water tariffs for electricity generation the Sanaga basin will be defined by an order of the Minister in charge of water. The Government commits to ensure that the annual expenses of Deng Deng National Park will be paid in priority. 22. The power purchase agreement between AES Sonel and RTA / Alucam

	has been in force and has been implemented since 2010. The Government confirms that its tariff is based on cost of service and no subsidy is paid to Alucam. Rates defined in the power purchase agreements with industrial users (such as Alucam) continue to be valid and will be enforced in future.
1.7. Quantity of energy produced by auto-producers to be made available to the concessionaire of the electricity grid	23. The electricity law stipulates that industrial auto-producers interested in the development and operation of hydropower sites for their own energy needs shall provide a quantity of the electricity they produce to the concessionaire of the electricity grid for sale to public and private buyers (Article 57(1)). 24. The quantity of electricity intended for the public grid is established in the concession contract for industrial production. The concession contract shall include, *inter alia,* the following technical specifications for (firm/non-firm power, power during low/high water periods). 25. The quantity of electricity shall be determined on a case-by-case basis. Secondary legislation of the new law on electricity will specify the principles and criteria for to determine the quantity of energy that the auto-producer shall make available to the concessionaire of the electricity grid. These principles will include, inter alia: (i) Projections for national electricity demand and supply, as set forth in the PDSE2030; (ii) Preference for making electricity available to the public grid, above direct sale to other industrial users, or for export; (iii) The necessary arrangements between the auto- producer and the concession holder for the transmission lines or distribution network; (iv) The physical characteristics of the site; and (v) The specific needs of the auto- producer. 26. The Government of the Republic of Cameroon commits to specify in the secondary legislation for Article 57 of the new law: (i) The authority empowered to make decisions regarding the proportion of energy to be provided by the auto- producer to the concessionaire for the public electricity grid; (ii) The process used to define the the quantity of electricity to be provided to the public grid by an auto-producer, especially if the decision will be taken before or after detailed pre-project studies are conducted; and (iii) That sales licenses and, where applicable, export licenses can only be granted on the basis of the agreed quantities set forth in the concession agreements.

	27. The Government of the Republic of Cameroon confirms that Rio Tinto Alcan (RTA) / Alucam has committed to the Government that its hydropower projects will enable it to make available approximately 600 MW of firm energy to public grid by 2030, taking into account the various proposed regulating dams. This quantity will represent 20% of the installed capacity of three sites granted to Rio Tinto Alcan (RTA) / Alucam in the Sanaga basin (Nachtigal Amont, Song Mbengue and Grand Ngodi), corresponds to 64% of current capacity of installed electricity generation capacity in Cameroon, and could cover a significant portion of the projected growth in household electricity demand. The Government commits to ensure that the commitments set forth in this paragraph are met. The Government therefore commits to confirm the quantity of electricity for the public grod, and the terms of its provision in the concession agreement for each hydropower site with RTA/Alucam. 28. The new electricity law stipulates that the price of electricity into the public grid is approved by ARSEL on a cost of service basis. 29. Article 55(2) of the law governing the electricity sector stipulates that when a portion of produced electricity is sold into the public grid, the production concessionaire and, where applicable, the transmission concessionaire shall use competitive bidding procedures for awarding major engineering, project management, and equipment contracts for its production and transmission infrastructure. 30. ARSEL is informed of the results of the competitive bidding process and shall ensure that these bidding procedures are transparent and equitable.
1.8. Integrated water management in the Sanaga Basin	31. The Government of the Republic of Cameroon commits to establish an agency responsible for participatory, integrated, joint, equitable, and nondiscriminatory management of the Sanaga Basin's water resources. 32. This agency will be composed of representatives of various stakeholders. 33. The operating rules for the regulating dams will be developed by EDC, and approved by the Government after consultation with all stakeholders, including the water users in the basin. 34. Secondary legislation of the new law will specify the procedures for managing water storage reservoirs in the basin.
1.9. Drafting of secondary legislation of the electricity law	35. The Government of the Republic of Cameroon commits to draft all the secondary legislation of Law No. 2011/022 governing the electricity sector in consultation with sector stakeholders. Priority in time will be accorded to the regulations pertaining to hydropower and related to the Lom Pangar project.

	36. The Government of the Republic of Cameroon will, where necessary, work with a qualified and specialized legal counsel to draft the secondary legislation. Funds from the Energy Sector Development Project (PDSEN) could be made available for this purpose.

Annex 2: Ensuring environmental and social performance and outcomes of the Lom Pangar project

2.1. Independent Panel of Experts	1. The Government of the Republic of Cameroon commits to maintain an Independent Environmental and Social Panel of Experts for the Lom Pangar Project for the entire duration of the project. The mission of this Panel of Experts is to provide independent opinions and advice in order to EDC to fulfill, or ensure that the relevant entities fulfill, the commitments made by the Government in: (i) The Environmental and Social Impact Assessment (ESIA); (ii) The Resettlement Action Plans (RAPs); and (iii) The Environmental and Social Management Plan (ESMP), including the environmental and social specifications applicable to the contractors. 2. The conclusions of each mission will be published on the project website no later than one month after completion of the mission.
2.2. Management of the wood salvage operation	3. The wood salvage from the reservoir is an important aspect of the project because of the commercial value of the timber that will be submerged, its complexity, and the risks of induced impacts associated with its implementation. 4. The Government of Cameroon commits to ensure that the wood salvage operation complies with national standards and the process described in the Project's Environmental and Social Management Plan. 5. The salvage log will be carried out under the supervision of a project management firm that the Government commits to recruit.
2.3. Management of Deng Deng National Park	6. The Government of Cameroon commits to the following management measures for the Deng Deng National Park: (i) Develop and implement the National Park's management plan consistent with the ESMP for the Lom Pangar project;

	(ii) Assign and permanently maintain a management team for the Deng Deng National Park, including 60 eco-guards, to ensure control and reduce illegal activities; and (iii) Ensure the sustainable financing of conservation activities in the Deng Deng National Park and its surroundings. 7. The recurrent costs of the management of Deng Deng National Park will be financed by revenues from the water tariffs to be imposed on hydropower operators in the Sanaga Basin. 8. The procedures for managing the park will be formalized in a Memorandum of Understanding between MINFI, MINFOF, and the EDC.
2.4. Environmental and social audits	9. The Government of Cameroon commits to implement the recommendations of the technical auditor for environmental and social safeguard measures. The EDC shall contract an independent technical auditor to conduct periodic missions to Lom Pangar for the duration of the project in order to review compliance with the measures set forth in the various environmental and social instruments. 10. The technical auditor's reports will be submitted in parallel to the steering committee, the donors, and the EDC. A summary of the audit will be published on the Lom Pangar website at the same time.
2.5. Cumulative impacts	11. The Government of Cameroon is aware of the potential cumulative impacts of the Lom Pangar project and future projects in the Sanaga Basin, including impacts on its estuary. 12. It will also implement monitoring programs for the estuary and the middle reaches of the Sanaga River and will, if required, take the necessary steps to mitigate impacts.
2.6. Compensation and resettlement	13. The Government of Cameroon prepared and disclosed the Resettlement Action Plans (RAPss) for the dam, the transmission line/power plant, the access roads, and the Deng Deng National Park. 14. The Government of Cameroon commits to ensure that the resettlement and compensation of populations directly affected by the Project will be carried out in accordance with Decree no 2012/0034/PM of 24 January 2012 relative to the compensation of persons affected by the destruction of property in the context of the construction of the Lom Pangar hydropower dam in the East and with the RAPs. The RAPs lay out the requirements of the World Bank Policy on involuntary resettlement (OP 4.12).

Annex 3: Transparency and citizen participation in the implementation of the project

3.1. Transparency	1. The Government of Cameroon commits to disclose environmental and social safeguards documents of the Lom Pangar project, including the technical specifications for social infrastructure in villages, regularly updated maps of social infrastructure in villages, and the summaries of the technical reports from the independent auditor on the environmental and social measures. 2. EDC will disclose the quarterly project report public no later than 45 days after the end of the quarter in a format satisfactory to the World Bank and will regularly update the Lom Pangar project website on the project's progress and results.
3.2. Citizen participation	3. The Government of Cameroon will conduct direct consultations with the communities and citizens in the project area during all phases of the project. These consultations will solicit their views on various issues including the project's progress and results, which will in turn enable adapting the project and improving the mitigation and monitoring programs. 4. The Government of Cameroon undertakes to organize a regional consultation with civil society each quarter and a national consultation every six months during the duration of the project. Invitations and meeting documents will be distributed at least one week before the meeting. The minutes of each meeting will be published on the project website and distributed to meeting participants. 5. EDC has established a mediation and a complaints management system to collect and address the complaints of populations (regarding compensation or other issues). This includes EDC communications centers at village level and a complaint resolution system at headquarter level. 6. The Government of Cameroon commits to ensure that EDC responds to each complaint within two weeks. EDC will establish a complaints tracking system and publish the performance and statistic of its complaints management system on its website. 7. EDC – through its owner's engineer – shall involve civil society organizations and representatives from the villages in monitoring the construction of social infrastructure in the villages.

Annex 8: Project Budget and Financing Plan

No	Description	Type	Amount (US$ million)	Financing				
				AfDB/ BDEAC	AFD	EIB	IDA	GOC
1	**Component 1 - Lom Pangar regulating dam**							
1.1	Dam EPCM contract	Works	152.8			40.3	112.5	
1.2	Contingency	Works	22.9				2.4	20.5
1.3	Preparatory works							
1.31	Access roads	Works	8.8					8.8
1.32	Lom and Sessé bridges	Works	8.9					8.9
1.33	Residential area for implementing agency and owner's engineer	Works	11.2					11.2
1.4	Owner's engineer	Consultant	11.7		11.7			
	Sub-total Component 1		**216.2**	**-**	**11.7**	**40.3**	**115.0**	**49.3**
2	**Component 2 - Power plant and transmission line**							
2.1	Hydropower plant	Works	29.7	18.0				11.7
2.2	90 Kv line and HT/MT substation	Works	27.7	23.6				4.1
2.3	Rural electrification along the Bertoua transmission line	Works	2.9	1.3				1.7
2.4	Social management	Consultant/Works	1.3	1.3				
	Sub-total Component 2		**61.6**	**44.1**	-	-	-	**17.4**
3	**Component 3 - Environmental and social measures**							
3.1	Environmental and social management of construction sites							
3.11	Contractors' supervision	Consultant	0.6		0.6			
3.12	Conservation of cultural heritage	Consultant/Works/Goods	2.0		2.0			
3.2	Environmental and social management of the reservoir and cumulative downstream mitigation							
3.21	Water quality of the reservoir	Consultant/Works/Goods	1.2		1.2			
3.22	Security of the reservoir	Consultant/Works/Goods	2.9		2.9			
3.23	Meteorological and hydrological monitoring	Consultant/Works/Goods	0.5		0.5			
3.24	Greenhouse gases monitoring	Consultant	2.0		2.0			
3.25	Downstream impacts monitoring	Consultant/Works/Goods	3.9		3.9			
3.26	Contingency	Consultant/Works/Goods	0.5		0.5			
3.3	Social mitigation measures							
3.31	Public health	Consultant/Works/Goods	4.0		4.0			
3.32	Support to fisheries management	Consultant/Works/Goods	0.7		0.7			
3.33	Livelihood restoration	Consultant/Works/Goods	0.5		0.5			
3.34	Touraké bridge	Works	19.5		19.5			
3.35	Contingency	Consultant/Works/Goods	0.4		0.4			
3.4	Management of the Deng Deng forest							
3.41	Management of the wood salvage in the reservoir	Consultant/Works/Goods	1.9		1.9			
3.42	Adaptation of forest zoning of Deng Deng forest	Consultant/Works/Goods	0.3		0.3			
3.43	Management of Deng Deng National Park	Consultant/Works/Goods	5.0		4.3			0.7
3.44	Control of illegal activities and poaching	Consultant/Works/Goods	0.3		0.3			
3.45	Contingency	Consultant/Works/Goods	0.4		0.4			
3.5	Technical audits of environmental and social measures	Consultant	2.4				2.4	
3.6	ESMP management							
3.61	Institutional set-up							
3.611	International environmental advisor	Consultant			1.8			
3.612	Owner's engineer for works under component 3	Consultant			1.6			
3.613	Senior environmental specialist	Consultant			0.4			
3.614	LPHP specialist working for MINFOF	Consultant			0.3			
3.615	Equipment and training	Consultant/goods			2.3			
3.62	Monitoring and evaluation	Consultant	2.7		2.0			0.7
3.63	Panels of Experts	Consultant	3.5		3.5			
	Sub-total		**61.8**	**-**	**58.0**	**-**	**2.4**	**1.4**

No	Description	Type	Amount (US$ million)	Financing				
				AfDB/ BDEAC	AFD	EIB	IDA	GOC
3.7	Resettlement and Action Plans							
3.71	Individual compensation and resettlement	Works/Goods	4.5					4.5
3.72	Collective compensation	Works/Goods	0.1					0.1
3.73	Activities in the areas where population is resettled	Works/Goods	1.4					1.4
3.74	Oversight of resettlement	Consultant	0.8					0.8
3.75	Contingency	Consultant/Works/Goods	1.4					1.4
	Sub-total		**8.1**	-	-	-	-	**8.1**
3.8	Local Development							
3.81	Management of the Local Development Plan	Consultant	0.7				**0.7**	
3.82	Local development investments	Works/Goods	2.7				**2.7**	
	Sub-total		**3.4**	-	-	-	**3.4**	-
	Sub-total Component 3		**73.3**	-	**58.0**	-	**5.8**	**9.5**
4	**Component 4 - Technical assistance and project management**							
4.1	Technical assistance							
4.11	Studies on operation and management of the dam and reservoir	Consultant			2.6			1.4
4.12	Studies on basin management and optimization of hydropower sites	Consultant			6.1			
4.2	Strategic communication and consultation	Consultant					3.9	
4.3	Project management							
4.31	Staff and consultants							
4.311	Deputy director (senior engineer)	Consultant					0.4	
4.312	Procurement staff	Consultant					0.7	
4.313	Financial management staff	Consultant					0.3	
4.314	Accountant	Consultant					0.3	
4.315	Monitoring and evaluation specialist	Consultant					0.4	
4.316	International technical advisor	Consultant					1.0	
4.317	Communication specialist	Consultant					0.4	
4.318	Other staff	Consultant						6.8
4.32	Equipment	Goods					0.9	
4.33	Training	Consultant					0.7	
4.34	Monitoring and evaluation	Goods/Consultant					1.5	
4.35	Audits	Consultant					0.7	
4.36	EDC operational costs	Consultant/Works/Goods						13.5
	Sub-total Component 4		**41.6**	-	**8.7**	-	**11.2**	**21.6**
	TOTAL		**392.7**	**44.1**	**78.4**	**40.3**	**132.0**	**97.9**

Annex 9: Implementation Support Plan

1. For high risk projects such as the proposed project, experience recommends that Bank preparation and supervision teams need to be adequately resourced and staffed and be present in the field. Successful implementation and realization of the project's development objective will require intensive supervision. The implementation support plan below responds to the complexity of the project, the significant technical and policy issues that are critical to its success, and the challenging governance environment in which the project will be implemented. Adequate World Bank resources and staffing to assure this level of supervision will be made available throughout the project implementation cycle. Project supervision will be undertaken by an inter-disciplinary team of field- and headquarter-based World Bank experts, with continued strong support from senior management in the Africa Sustainable Development department as well as from country management.

2. Joint supervision with other project donors. The IDA supervision team will continue to work intensively with the supervision teams of the four other project donors (AfDB, AFD, BDEAC, and EIB). Within the joint donor supervision team, each donor will emphasize its supervision on the components it finances, with AfDB and BDEAC focusing on the powerhouse, transmission line, and rural electrification, and AFD, EIB and the World Bank on the regulating dam, the ESMP and the TA component. The World Bank, as lead donor agency for the project, will take the lead on general project issues and policy dialogue as well as implementation and fiduciary issues. Missions will be joint whenever possible, and will issue joint Aide Memoires. However, field supervision missions might be staggered to ensure frequent presence on the ground. IDA is the lead donor of the project and as such will continue to help EDC in donor coordination. EDC will report through joint quarterly reports for all donor agencies. Donors will provide joint non-objections for critical contracts financed by one of the donors.

3. **Implementation Support Phasing.** The project implementation support strategy is based on the phased nature of the project: Years 1-2 entail intensive construction activities and mitigation activities associated with the ESMP; Years 3-4 when the reservoir will be filled; and Years 5-6 when the dam will commence operations. Each phase outlines the technical, fiduciary, and policy support that will be needed from Bank staff and development partners.

4. **Team Composition.** The core implementation support team will be based in the country office and will consist of a Task Team Leader (TTL), a power engineer, a forestry/environmental safeguard specialist; social safeguards specialist (based in Chad); procurement specialist, and financial management specialist. The team will be complemented by headquarters, country office, and consultant support on issues associated with construction works and policy dialogue. Support from headquarters, country offices in the region, or through consultants will include electricity sector institutional or regulatory specialist, a hydropower specialist with expertise in system analysis and cascade operations, a communications specialist, and an M&E specialist. The team will liaise and coordinate with other energy projects in Cameroon to create consistency and increase efficiency.

5. **Frequency of Implementation Support.** There will be at least two full joint supervision missions with all development partners each year. Country-based staff will monitor implementation progress on a continuous basis and will have monthly meetings with the PIU to review annual work program progress and address emerging issues. Safeguard and technical field visits (during the construction phase) will be undertaken quarterly. IDA supervision teams will include environmental and social safeguard specialists or appropriately qualified consultants, in major missions, to review progress in the implementation of the ESMP and RAP. The performance of EDC and its Engineering, Procurement, and Construction (EPC) contractor, as well as cooperating third parties, in the implementation of these activities will be a standard element of IDA project supervision reports.

6. Table 28 provides an overview of the human and financial resources needed for effective implementation support.

Table 28: Resources Needed for Implementation Support

Years 1-2: Construction Phase		
Focus	***Skills Needed***	***Resource Estimate* per year (US$)**
Dam construction	Power Engineer / hydropower specialist	6 weeks: 30,000 2 trips: 20,000
ESMP compliance: salvage logging, DDNP management; RAP implementation	Task team leader Forestry Specialist Environmental Safeguard Specialist Social Safeguard Specialist	2 weeks: 12,000 4 weeks: 20,000 6 weeks: 36,000 5 weeks: 10,000 1 trip: 10,000 Local Travel: 10,000
Policy dialogue on sector reforms	Task Team Leader Senior management	6 weeks: 36,000 1 week/1 trip: 10,000
Access infrastructure construction (roads, bridges)	Civil Engineer	2 weeks: 4,000 Local Travel:1,000
Procurement monitoring of major contracts	Procurement Specialist	4 weeks: 8,000
Financial management post reviews	Financial Management Specialist	4 weeks: 8,000
Communications and stakeholder consultation	Task Team Leader Communication specialist Social Safeguards specialist	2 weeks – 12,000 3 weeks – 15,000 2 weeks – 4,000
Cross cutting dialogue/implementation support	Task Team Leader	8 weeks:48,000
	Total	294,000
Years 3-4: Reservoir filling phase		
Focus	***Skills Needed***	***Resource Estimate per year (US$)***
Dam operation and cascade operations	Hydropower specialist	4 weeks: 20,000 1 trip: 10,000
ESMP compliance: DDNP management; induced impacts	Task Team Leader Forestry Specialist Environmental Safeguard Specialist	2 weeks: 12,000 4 weeks: 24,000 4 weeks: 8,000 2 weeks: 4,000

	Social Safeguard Specialist	1 trip: 10,000
Policy dialogue on sector reforms	Task Team Leader / Electricity sector institutional or regulatory specialist Senior management	6 weeks: 36,000 1 week/1 trip: 10,000
Procurement monitoring of major contracts	Procurement Specialist	2 weeks: 4,000
Financial management post reviews	Financial Management Specialist	2 weeks: 4,000
Communications and stakeholder consultation	Task Team Leader Communication specialist Social Safeguards specialist	2 weeks – 12,000 2 weeks – 10,000 2 weeks – 4,000
Cross-cutting dialogue/implementation support	Task Team Leader	7 weeks:42,000
	Total	210,000
Years 5-6: Dam operation Phase		
Focus	***Skills Needed***	***Resource Estimate per year (US$)***
Dam operation	Hydropower specialist	2 weeks: 10,000 1 trip: 10,000
ESMP compliance	Forestry Specialist Environmental Safeguard Specialist Social Safeguard Specialist	2 weeks: 4,000 2 weeks: 12,000 2 weeks: 4,000 1 trip: 10,000
Policy dialogue on sector reforms	Task Team Leader Senior management	4 weeks: 24,000 1 week/ 1 trip: 10,000
Procurement monitoring of major contracts	Procurement Specialist	2 weeks: 4,000
Financial management post reviews	Financial Management Specialist	2 weeks: 4,000
Cross cutting dialogue/implementation support	Task Team Leader	8 weeks: 48,000
	Total	140,000

Annex 10: Summary of Related Projects in Cameroon

1. The Association is currently financing the following projects in Cameroon that are directly related to LPHP:

- *Energy Sector Development Project (ESDP), US$65 million IDA, under implementation* - The overall objective of the Energy Sector Development Project (ESDP) is to increase access to modern energy in targeted rural areas and improve the planning and management of sector resources by all energy sector institutions. Through its intervention, the project is expected to contribute to improved reliability of electricity supply in Cameroon. There are three components to the project. The first component of the project is a Rural Energy Fund (REF). This component has helped set up a rural energy fund as foreseen under National Energy Plan for Poverty Reduction (PANERP) and the decree establishing the Rural Electrification Agency (AER). The second component of the project is capacity building. This component provides technical assistance to the Ministry of Water Resources and Energy (MINEE), the regulator ARSEL and the rural electrification agency (AER) to better execute their respective mandates. The third component of the project is project preparation. This component assists Electricity Development Corporation (EDC) with the preparation of LPHP and AER with the preparation of rural energy projects.
- *IDA Guarantee for Kribi Gas Power Project, US$82 million IDA, approved, not yet effective* - The primary project development objective for the project is to increase the capacity and reliability of electricity supply in Cameroon through the implementation of the Kribi gas power generation project to create a solid base for growth and poverty reduction in Cameroon. A secondary project development objective is to improve access to private finance for the development of Cameroon's electricity sector, including local currency financing. The IDA guarantee will help mobilize the first private local currency financing for an infrastructure project from the country's financial markets. The Kribi gas power project will be operated by Kribi Power Development Corporation (KPDC), an affiliate of AES-SONEL, under an IPP structure. KPDC will receive electricity production and sales licenses from the electricity regulator ARSEL. The Kribi project consists of a 216 MW nameplate gas-fired power plant located in the Mbolongwe village in the southern province of Cameroon. Additional investment components include the Sanaga South gas field which is being developed by a joint venture between the national oil company (*Societé Nationale des Hydrocarbures*, SNH) and Perenco Cameroon, a private oil and gas company, under a production sharing agreement and financed by Perenco, and the Central Processing Facility site at Bipaga and a gas pipeline linking the Central Processing Facility and the power plant at Mpolongwe, financed by SNH. A Gas Supply Agreement has been signed between SNH and Perenco, where SNH will sell the gas to KPDC under the second Gas Supply Agreement. AES-SONEL will be the sole off-taker of electricity produced by KPDC under a 20-year arms-length Power Purchase Agreement (PPA) under negotiation. Alucam will ensure a stable base load for the project by taking up to 50 MW. KPDC will sign an operations and maintenance contract with AES-SONEL. Total project costs are estimated at US$325 million. This is the first development of Cameroon's gas reserves.
- *Environment and Social Capacity Building Project for the Energy Sector (PRECESSE), US$20 million IDA, under implementation* - The development objective of the

Environmental and Social Capacity Building for the Energy Sector Project for Cameroon is to improve the management of and the accountability for environmental and social issues related to large infrastructure investments, with an initial focus on the energy sector. The has initially focused capacity building efforts towards the energy sector, in support of the Energy Sector Development Project. The expected long-term benefits of the project are to: (i) reduce the negative externalities of large infrastructure projects; (ii) develop a transparent, stable and fair framework for managing environmental and social risks that can improve the enabling environment for large infrastructure investments; and (iii) institutionalizes information flows between the populations affected by large infrastructure projects and other stakeholders, and political decision-makers. The project includes the following three components: (i) strengthening the ministry in charge of the environment to fulfill its mandate to define, monitor and control environmental and social obligations of large infrastructure projects, in compliance with the environmental law of 1996, and its implementation decrees; (ii) establishing frameworks to manage social externalities associated with large infrastructure projects, in compliance with international best practices; and (iii) supporting the environment unit in the Ministry of Water and Energy to ensure that the environmental and social issues arising from large energy sector infrastructure projects are addressed in compliance with international best practices.

- *Community Development Program Support Project II (PNDP), US$40 million IDA, under implementation* - The Community Development Program Support Project (PNDP) is the first phase of the program aiming to assist the Government of Cameroon in setting up and implementing a decentralized financing mechanism to ensure participatory community development in rural areas. The project has (i) established a system for channeling funds to rural communities to finance infrastructure, (ii) strengthened the capacity of communities and local governments to plan and manage their own development, and (iii) improved the legal and regulatory framework for decentralized rural development. Communities and communes are engaged in a participatory appraisal of their needs, culminating in the implementation of subprojects cofinanced by the project. Efforts are made to clarify procedures and build local governance capacity for communes so that resources and local development responsibilities could be transferred to them. Special efforts are undertaken to enable marginalized people (indigenous communities, nomads, women, etc.) to participate in the project.

2. The Bank administered Public-Private Infrastructure Advisory Facility is providing a grant to ARSEL to develop an economic-financial sector regulation model.

3. The table belows lists related projects financed by other donors.

Agency	***Project***	***Target Issue(s)***
AFD	LPHP: financing of environmental studies and of the independent panel of experts; co-financing of LPHP	Financing of initial EIA/ESMP for the LPHP Technical Assistance to management of Deng Deng National Park Preparation of the LPHP and subsequent investment lending
AfDB	Rural Electrification Project Regional Interconnection Study Financing of Lom Pangar powerhouse,	Increase supply of electricity Increase transfer capacity and enhance security of supply

	transmission line and distribution network	Rural Electrification Master Plan (2000) Roadmap for regional interconnection in the Central African Power Pool Investment finance for Lom Pangar powerhouse
EIB	LPHP: co-financing of investment loan	Co-financing of the LPHP regulation dam and ESMP
GTZ, SNV	Biomass strategy	Increase the share of renewable energy in the energy mix and reduce greenhouse gas emissions
EU, Spanish cooperation, Islamic Development Bank	Small scale rural electrification projects in selected rural areas	Improve access in selected regions

Annex 11: Team Composition

Bank staff and consultants who worked on the project:

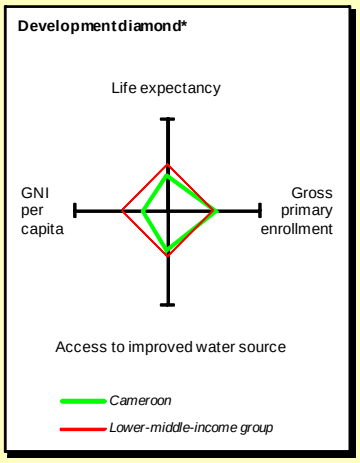
Name	Title	Unit
Meike van Ginneken	Sector Leader (TTL)	AFTUW
Astrid Manroth	Senior Energy Specialist	ECSS2
Daniel Murphy	Senior Operations Officer	AFTEG
Arnaud Braud	Financial Specialist	AFTEG
Tjaarda Storm van Leeuwen	Consultant, Financial Specialist	AFTEG
Alessandro Palmieri	Lead Dam Specialist	OPCQC
Brent Gary Hampton	Senior Energy Specialist	AFTEG
Franklin Gbedey	Power Engineer	AFTEG
Peggy Mischke	Power Engineer	AFTEG
Gabrielle Puz	Consultant, Water Resources Specialist	AFTWR
Ramon Lopez-Rivera	Consultant, Procurement Specialist	ECSS2
Alexandra Bezeredi	Regional Environmental and Safeguards Advisor	AFTSG
Yves Andre Prevost	Environmental Advisor	ENV
Emeran Serge Menang Evouna	Forestry Specialist	AFTEN
Mohamed Arbi Ben-Achour	Consultant, Social Development Specialist	AFTCS
Lucienne M'Baipor	Sr Social Development Specialist	AFTCS
Vivien Foster	Sector Manager, Energy	SEG
Cecilia Briceno-Garmendia	Senior Infrastructure Economist	AFTSN
Moez Cherif	Senior Energy Economist	AFTEG
Rita Cestti	Senior Rural Development Specilist	OPCQC
Ahmad Slaibi	Natural Resource Economist	ECSS3
Kouami Messan	Senior Procurement Specialist	AFTPC
Rahmoune Essalhi	Procurement Assistant	AFTEG
Ousmane Kolie	Senior Financial Management Specialist	AFTFM
Sekou Keita	Financial Management Specialist	AFTFM
Enagnon Adda	Financial Management Specialist	AFTFM
Anthony Molle	Senior Counsel	LEGAF
Nathalie Munzberg	Senior Counsel	LEGEN
Heather Worley	Senior Communications Officer	ENVCI
Timothy Carrington	Consultant, Communication	ENV
Sarwat Hussain	Senior Communications Officer	AFRSC
Marie-Paule Ngaleu	Program Assistant	AFTEG
Rita Ahiboh	Program Assistant	FEUFS
Laurence Hougue Bouguen	Program Assistant	AFCC1
Natalie Tchoumba Bitnga	Team Assistant	AFCC1

Annex 12: Country at a Glance

Cameroon at a glance

2/25/11

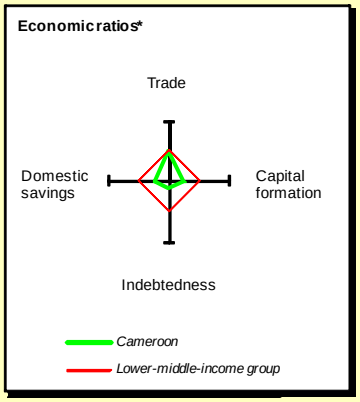
POVERTY and SOCIAL	Cameroon	Sub-Saharan Africa	Lower-middle-income
2009			
Population, mid-year *(millions)*	19.5	840	3,811
GNI per capita *(Atlas method, US$)*	1,190	1,126	2,316
GNI *(Atlas method, US$ billions)*	23.2	946	8,825
Average annual growth, 2003-09			
Population *(%)*	2.3	2.5	1.2
Labor force *(%)*	2.8	2.9	1.5
Most recent estimate (latest year available, 2003-09)			
Poverty *(% of population below national poverty line)*	40	..	..
Urban population *(% of total population)*	58	37	41
Life expectancy at birth *(years)*	51	52	68
Infant mortality *(per 1,000 live births)*	95	81	43
Child malnutrition *(% of children under 5)*	17	25	25
Access to an improved water source *(% of population)*	74	60	87
Literacy *(% of population age 15+)*	76	62	80
Gross primary enrollment *(% of school-age population)*	111	100	107
Male	119	105	109
Female	102	95	105



KEY ECONOMIC RATIOS and LONG-TERM TRENDS

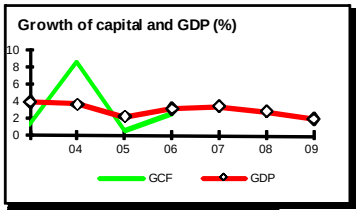
	1989	1999	2008	2009
GDP *(US$ billions)*	11.1	10.5	23.7	22.2
Gross capital formation/GDP	17.1	14.9	..	..
Exports of goods and services/GDP	20.7	21.5	32.5	26.6
Gross domestic savings/GDP	20.0	19.2	..	..
Gross national savings/GDP	18.8	15.9	..	..
Current account balance/GDP	1.8	-3.6	-1.8	-2.7
Interest payments/GDP	1.8	2.5	0.5	0.3
Total debt/GDP	48.2	100.7	11.6	13.3
Total debt service/exports	17.2	24.3	6.6	5.6
Present value of debt/GDP	..	..	..	3.5
Present value of debt/exports	..	..	..	10.9

	1989-99	1999-09	2008	2009	2009-13
(average annual growth)					
GDP	0.5	3.4	2.9	2.0	2.7
GDP per capita	-2.1	1.1	0.6	-0.3	..
Exports of goods and services	1.4	-0.5	0.7	-4.8	1.5

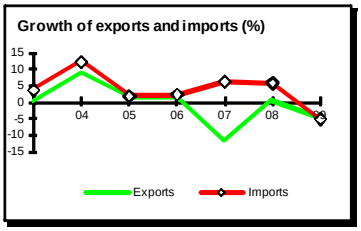


STRUCTURE of the ECONOMY

	1989	1999	2008	2009
(% of GDP)				
Agriculture	26.1	24.4	..	..
Industry	29.7	32.1	..	..
Manufacturing	14.4	21.0	..	..
Services	44.2	43.6	..	..
Household final consumption expenditure	69.2	71.3	..	..
General gov't final consumption expenditure	10.8	9.5	..	..
Imports of goods and services	17.8	17.2	35.5	30.9



	1989-99	1999-09	2008	2009
(average annual growth)				
Agriculture	4.6	3.6	..	..
Industry	-2.8	0.5	..	..
Manufacturing	-0.3	7.0	..	..
Services	-0.7	6.0	..	..
Household final consumption expenditure	2.0	4.8	..	..
General gov't final consumption expenditure	-0.1	3.2	..	..
Gross capital formation	-1.0	4.9	..	..
Imports of goods and services	3.5	4.4	5.8	-5.2



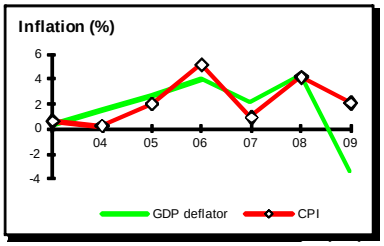
Note: 2009 data are preliminary estimates.

This table was produced from the Development Economics LDB database.

* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

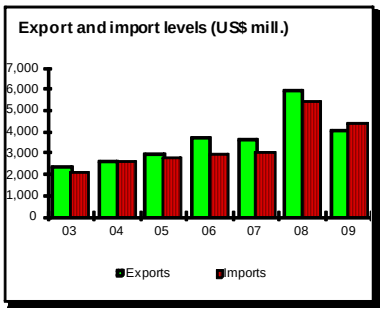
PRICES and GOVERNMENT FINANCE

	1989	1999	2008	2009
Domestic prices				
(% change)				
Consumer prices	-1.7	2.9	4.1	2.1
Implicit GDP deflator	-1.8	1.9	4.2	-3.4
Government finance				
(% of GDP, includes current grants)				
Current revenue	16.0	11.5	20.8	18.4
Current budget balance	0.4	2.5	7.7	4.2
Overall surplus/deficit	-4.5	-5.1	2.3	-0.1



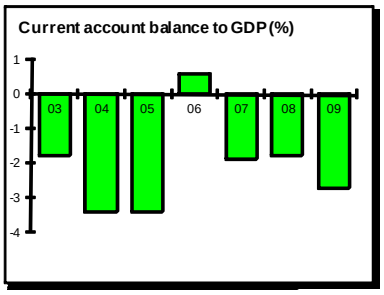
TRADE

	1989	1999	2008	2009
(US$ millions)				
Total exports (fob)	1,837	1,682	5,891	4,080
Oil and refined oil	746	529	..	..
Cocoa beans, butter, cake	207	157	..	..
Manufactures	300	399	..	..
Total imports (cif)	1,352	1,484	5,431	4,406
Food	155	169	..	..
Fuel and energy	10	12	..	..
Capital goods	424	407	..	..
Export price index *(2000=100)*	52	91	..	..
Import price index *(2000=100)*	50	99	..	..
Terms of trade *(2000=100)*	105	92	..	..



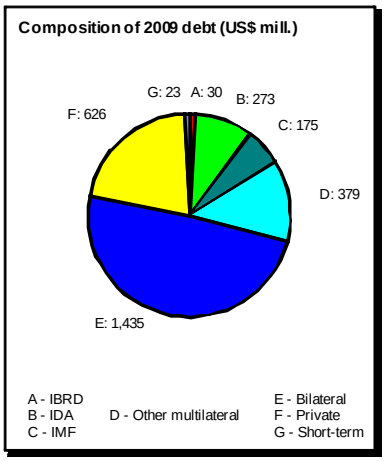
BALANCE of PAYMENTS

	1989	1999	2008	2009
(US$ millions)				
Exports of goods and services	2,307	2,241	7,718	5,896
Imports of goods and services	1,980	2,268	8,435	6,856
Resource balance	327	-27	-717	-960
Net income	-218	-468	-328	-127
Net current transfers	85	117	..	..
Current account balance	195	-378	-424	-597
Financing items (net)	-64	381	757	909
Changes in net reserves	-131	-4	-333	-311
Memo:				
Reserves including gold *(US$ millions)*	..	4	3,991	4,590
Conversion rate *(DEC, local/US$)*	315.4	588.4	447.8	472.1



EXTERNAL DEBT and RESOURCE FLOWS

	1989	1999	2008	2009
(US$ millions)				
Total debt outstanding and disbursed	5,365	10,562	2,756	2,941
IBRD	572	276	35	30
IDA	239	749	225	273
Total debt service	406	548	478	395
IBRD	80	91	7	7
IDA	4	11	2	3
Composition of net resource flows				
Official grants	226	190	872	382
Official creditors	312	36	26	16
Private creditors	241	-52	-106	-12
Foreign direct investment (net inflows)	-86	-15	-60	340
Portfolio equity (net inflows)	0	-10	-1	0
World Bank program				
Commitments	340	13	125	100
Disbursements	109	67	29	48
Principal repayments	37	71	6	7
Net flows	71	-4	23	41
Interest payments	46	32	3	3
Net transfers	25	-36	20	37



Note: This table was produced from the Development Economics LDB database. 2/25/11

IBRD 39102

CAMEROON
LOM-PANGAR HYDROPOWER PROJECT

CITIES AND TOWNS
PROVINCE CAPITALS
NATIONAL CAPITAL
MAIN ROADS
RAILWAYS
PROVINCE BOUNDARIES
INTERNATIONAL BOUNDARIES

FEBRUARY 2012