

**Communauté Economique et  
Monétaire de l'Afrique Centrale**



# **Action Plan for the Promotion of Access to Energy in the CEMAC Region**

Summary of Final Report

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## Subject

At their Brazzaville workshop in July 2005, the Energy Ministers of the Economic and Monetary Community of Central Africa (CEMAC) called for the elaboration of a CEMAC Energy Action Plan, scheduling it for presentation at the Conference of the CEMAC Heads of State in the first quarter of 2006.

This plan, which is geared primarily to rural and peri-urban zones, is intended to initiate a CEMAC-wide impetus in the energy sector in a bid to meet the objective of reducing poverty by 2015.

The plan targets concrete activities at CEMAC level, leading to greater value added whilst upholding the principle of subsidiarity. The plan is also designed as a step towards building up a CEMAC policy that is coordinated with the decentralised electricity generation activities of the Central African Power Pool (PEAC).

## Energy potential

The CEMAC zone has a wealth of renewable energy sources, the most important of which are:

- **Hydropower:** This is spread throughout the following countries in descending order of potential: Cameroon, Gabon, Congo, Central African Republic and Equatorial Guinea (only Chad has a weak potential). In spite of high investment costs and some major delays in implementation, the five states having hydropower capacity could secure their entire electricity supply needs through this source. They could also optimise the exploitation of this resource and supply Chad by building a regional network within the scope PEAC.
- **Solar energy:** This is at its greatest in Chad, followed by Northern Cameroon and the Central African Republic, but is also still a viable option in the equatorial zones. Owing to its high cost, this technology is reserved for specific applications, such as pumping for general water supply or for powering telecommunication systems as well as for low-energy applications such as low-consumption lamps, radios and televisions, telephone recharging and small computing equipment. Solar energy can also be developed on a medium scale in the form of solar farms capable of producing several megawatts, with a view to feeding energy from renewable sources into the public power supply network.
- **Biomass:** This is obtained from annual wood production and other woody materials such as scrubs and high grasses from the forests and savannahs. Wood-derived energy is the most attractive domestic fuel in the rural context, provided its renewability is assured and energy-efficient technology is used. An important biomass waste potential is also to be found in the agro-industry sector.

Five of the six CEMAC member states are hydrocarbon producers. This sector has been undergoing rapid change since the end of the 1990s, with no let-up in sight given the latest hike in petrol and gas prices.

The foremost principle of an environmentally-friendly energy policy is to favour renewable sources of energy and refrain from using fossil fuels except in those cases where renewables are unable to meet demand. On the one hand, this principle aims to reduce the greenhouse effect and, on the other, to avoid exhausting the earth's natural resources, since these do not belong to one single generation.

A healthy balance between renewables and fossil fuels involves mobilising some of the financial resources earned through hydrocarbon export to make strategic investments in renewables, such as hydropower dams or transport infrastructure to maintain the flow of exports.

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## Ongoing development status

Given the exceptionally enticing development scenario in terms of energy potential, the hands-on reality in the energy sector is very concerning:

- The large majority of the population within CEMAC uses wood energy harvested without concern for its renewability which is burned in unhealthy conditions.
- With the exception of Gabon, very little use is made of GPLs (bottles of gas) in urban areas, even though this product is the best option for replacing wood charcoal.
- Several electricity companies that have been unable to invest and thus keep up with growth in demand in the localities they serve, or which have suffered conflict-related damage, now find themselves with inadequate or obsolete production and transport facilities. In the best-case scenarios, private-sector companies providing a good level of service are not able to be the driving force behind hydropower investments owing to the new institutional framework.
- No power company has developed a pro-poor commercial culture. The overall rate of household electrification in CEMAC is less than 15%.
- Peri-urban electrification is in most cases below standard and, with the exception of Cameroon and Gabon, rural electrification has not been pursued on a significant scale.

## Energy service access objectives against the backdrop of the MDGs

Although energy has been taken into consideration in the Poverty Reduction Strategy Papers (DSRP) now being wound up or elaborated with a view to completion in 2006, no system exists for describing and assessing energy objectives. Thus, the Energy Action Plan gives these states an opportunity to take an overall look at energy-specific objectives, with each state then having to specify the targets for their national framework. The Action Plan complies with the objectives laid down by the African Energy Ministers at the New York Millennium Summit in September 2005 where they undertook to work together to ensure that, in the course of the next ten years, 50% of their populations would have access to a modern energy service, *thus enabling Africa to achieve the MDGs*.

Access objectives differ depending on the size of the built-up areas, which are set to look as follows in 2015:

- |   |                        |
|---|------------------------|
| • Town centres  | 1.3 million households |
| • Peri-urban areas  | 2.6                    |
| • Secondary centres with 5 to 10,000 inhabitants                    | 0.5                    |
| • Larger villages with 2 to 5,000 inhabitants                       | 0.9                    |
| • Villages having 1,000 to 2,000 inhabitants                        | 0.8                    |
| • Villages having fewer than 1,000 inhabitants and remote dwellings | 1.4                    |

**Using an electrification simulation technique for each place category combining centralised and decentralised methods, the energy service access objective of 50% is achieved using a pragmatic approach, i.e. by:**

- **supplying 50% of the peri-urban population via the power grid**
- **providing individual power supplies to 35 % of rural households (grid or solar kits)**
- **installing a corresponding infrastructure in non-electrified villages, giving 56% of rural inhabitants access to power supplies.**

**The investment costs involved in generating access to power supplies are estimated at FCFA 933 billion for the entire CEMAC zone over a period of ten years.**

Methodical and coordinated national rural electrification plans will indicate the kind of investments needed and their spatial configuration, leading to the determination of budget costs for each country. Given the sheer scale of investment, CEMAC's rural and peri-urban Energy Action Plan will have to exert leverage. This means providing both methodological support and contributing financially to the investments, mainly through integrative projects.

#### **Domestic fuel objective**

An ambitious objective would be to sort out the domestic fuel problem by up to 80% in peri-urban and rural areas by the year 2015.

#### **Development will be balanced between:**

- **strong GPL dissemination in peri-urban areas (70%), even stronger usage in secondary towns (50%) with use rates decreasing from 35 down to 10% depending on the size of the inhabited area;**
- **usage, by other households, of improved stoves with chimney exhausts (proportion of households goes up from urban to rural areas).**

**These two investment axes will help achieve the 80-% control objective, whereby gas accounts for 44% and improved stoves for 36%.**

The Action Plan is designed to generate the wherewithal needed to conduct a detailed analysis of the fuel market situation and thus to plan subsequent investments.

### **Summary of the CEMAC Rural and Peri-urban Energy Action Plan**

The Action Plan covers a 5-year period and involves several different approaches:

- sharing of expertise between the Member States
- national-level implementation in line with the major themes of CEMAC's emerging policy
- CEMAC-specific sector structuring and implementation
- policy action

Tasks will be organised in keeping with their respective logic. Thus, some aim to equip a zone in each country with a mixture of energy sources whilst others concentrate on CEMAC-level issues (e.g. domestic fuel) and others focus on promoting a network.

Several tasks combine various approaches. What is more, certain issues, such as GPL promotion, are approached from two mutually complementary angles.

Energy control (MDE) has not been set aside as a separate activity. Instead the Action Plan will mainstream it systematically and intensively into all its activities. In keeping with the design of the Action Plan, none of the selected activities would make any sense nor have any impact if energy control measures are not included.

The Action Plan consists of eleven strategic activities:

**Activity no. 1– Energy planning in line with rural and peri-urban demand**

**Activity no. 2 – Coordinated development of hydropower**

**Activity no. 3 – Rational use of surplus biomass waste from agroindustrial units in rural and peri-urban areas**

**Activity no. 4 – Rural energy service projects in the promotion zones**

**Activity no. 5 – Intensive peri-urban electrification project**

**Activity no. 6 – Promotion of photovoltaics**

**Activity no. 7 – Optimising the domestic fuel market**

**Activity no. 8 – Support for the coordinated development of the hydrocarbon market**

**Activity no. 9 – Elaboration of an Energy Charter in the CEMAC zone**

**Activity no. 10 – Establishment of an energy access observatory in the CEMAC zone**

**Activity no. 11 – Technology transfer and strengthening of national value added**

## Timeframe

The timeframe covers a 5-year period (2007 – 2011):

### TIMEFRAME FOR THE CEMAC RURAL AND PERI-URBAN ACTION PLAN

		RURAL & PERI-URBAN ENERGY ACTION PLAN					
		2006	2007	2008	2009	2010	2011
<b>Steering unit – Energy Access Observatory</b>							
Power-sector planning (rural and peri-urban)	Rural & peri-urban management systems						
Coordinated hydropower development	Implementation Studies						
Co-generated industrial biomass	Studies – Training						
Intensive peri-urban electrification projects	Tests 6 states						
Promotion zones for rural energy services	Feasibility						
Promotion of photovoltaics							
a/ kits (infrastructure and habitat)	New concepts studies, financial and legal framework						
b/ regional solar farms	Implementation						
Optimising domestic fuel market	Planning/ feasibility						
Coordinated development of hydrocarbon market	Studies and coordination						
CEMAC Energy Charter / CEMAC energy code, chapters from energy code							
Technology transfer	framework						

IED – Innovation Energy Development

## **Back-up and organisation measures**

The approach provides for modifications to country and regional strategic documents and for the introduction of energy as a focal point in the plans for economic development and poverty reduction.

It is also aimed to generate synergy, not only with the Central African Power Pool (PEAC), but with different regional and CEMAC programmes capable of providing expertise and complementary resources (for example, ECOFAC (Conservation and Rational Use of Forest Ecosystems in Central Africa)).

Implementation of the Action Plan is based on the establishment of a steering unit as of October 2006. This will not entail the establishment of a new institution, but an autonomous project management unit which will operate the successive annual budgets and be endowed with the following key functions:

- generate impetus, assure CEMAC and PEAC financial partners that the study schedule and targeted inputs are implemented in line with provisions
- provide for own technical capacity so as to be able to guide each activity in line with a relevant critical path and participate in activities on the ground
- manage activity components; either direct management or supervision, depending on the case concerned. Forward financial statements to the various donors, making copies of summaries for CEMAC's Executive Secretariat
- report to CEMAC Executive Secretariat on the progress of being made with the various activities and prepare all follow-up documents for the Energy Ministers on behalf of the Executive Secretariat
- lay the groundwork for the Energy Access Observatory.

## **Cost and financing modalities for the Action Plan**

The budget for the 5-year period (2007-2011) amounts to FCFA 155 billion (EUR 236 million) or FCFA 31 billion per annum (EUR 47.2 million). It complies stringently with the thematic priorities given in the Action Plan, namely:

- strategic role in implementing hydropower plants, without predetermining either their location or their size. CEMAC's contribution to investment costs – by way of leverage - corresponds to the equivalent of 5 MW per member state (total of FCFA 63.6 billion or 41% of budget)
- The promotion zones correspond to the pilot projects recommended at the Ministers' meeting in Brazzaville. Investment comes to FCFA 25.9 billion (16.7% of budget) for implementation on the scale of some 600,000 inhabitants: Access to predominantly renewable-based electricity supplies and control of domestic fuels via an environmentally-friendly approach
- With regard to systematic electrification designed to benefit poor population groups and having a dissemination rate of 75%, the greatest impact is expected from peri-urban electrification: total of FCFA 31.4 billion (20.3% of budget) to supply electricity to 750,000 inhabitants ;
- Solar energy is promoted in a well-organised manner that complements hydropower: some FCFA 15.7 billion in all (10.1% of the budget), plus part of the budget from the promotion zones including PV installations.
- Significant account is taken of developments linked to sustainable biomass exploitation through a promotion budget of FCFA 3.5 billion for industrial applications, through the "domestic fuel" project (FCFA 500 million stakehold in national components) and through the "promotion zone" project (some FCFA 24 billion)
- development of the GPL market and improvements to the overall petroleum set-up in the zone, are supported with FCFA 5.5 billion

- In compliance with the demands of the experts who met up at Douala, significant funding (FCFA 5 billion) is earmarked to implement a technology transfer strategy.
- Overall, the management and organisation tasks, including the steering unit, account for only 8.4% of the total budget.

The overall financing input by the six CEMAC Member States required to achieve the energy development indicators (EDI) in line with the MDGs has been put at FCFA 933 billion between 2006 and 2015, averaging approx. FCFA 100 billion a year.

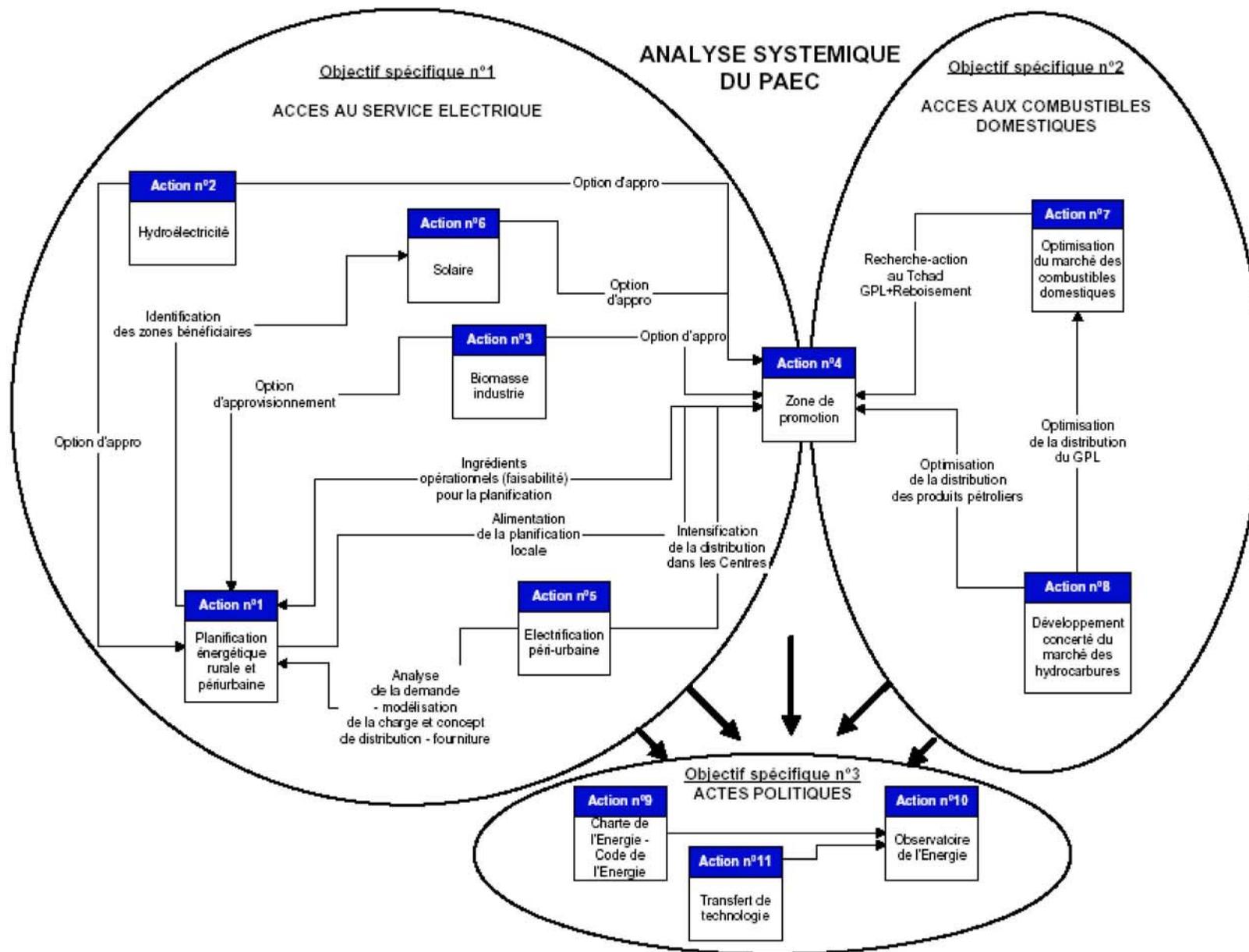
**The Action Plan as outlined above will generate around FCFA 30 billion per annum. It will thus contribute some 30% to financing and implementation of regional energy development based on the fight against poverty.**

The steering unit will look into financing-based synergy, with a view to initiating leverage effects between subsidy funding and concessional funding and so as to foster the best possible results in terms of “energy access scores”. Under the auspices of CEMAC, it will oversee preparation of each activity.

In every activity, rigorous work should produce an outcome characterised by its clarity (quality of portfolio) and commitment (unanimous engagement of states) which should translate into positive effects at the national, regional and international level of public and private financing. The same, namely clarity of outcome and consensus, applies with regard to major interactions with PEAC’s field of activity.

BUDGETARY BREAKDOWN OF CEMAC'S RURAL AND PERI-URBAN ENERGY ACTION PLAN (2)

ACTIVITY	ANTICIPATED INVESTMENTS OR PRODUCTS	Preparation	Major investment costs
		FCFA billions	FCFA billions
Energy plans based on rural and peri-urban demand	Management schemes for rural networks + production component + distribution component + institutional framework	600	
Coordinated development of hydropower	5 MW HYDROPOWER SHARE PER MEMBER STATE	600	60,000
Solar promotion kits	30,000 INDIVIDUAL KITS OR 5,000 COMBINED SYSTEMS (or a combination of two applications)	150	3,000
Regional solar farm project	3 MW farm	200	12,000
Cogenerated industrial biomass	FACILITATION OF AN INVESTMENT OF AROUND 500 kW IN EACH MEMBER STATE	200	3,000
Intensive peri-urban electrification project	EXTENSION OF MEDIUM-VOLTAGE POWER LINES + LOW-VOLTAGE NETWORKS AND CONNECTIONS (LV) + ORGANISATION OF DECENTRALISED MANAGEMENT	400	30,000
Optimising the domestic fuel market	Leverage effect on national programmes ( 6 x 100,000 equipment)	300	3,000
Coordinated development of hydrocarbon market	IDENTIFICATION OF STRUCTURAL INVESTMENT FOR THE REGION INITIAL SUPPORT FOR PRIVATE INVESTISMENT (regional refinery – coordinated GPL deployment)	200	3,000
Promotion zones for rural energy supply	MEDIUM-VOLTAGE POWER LINES + LOW-VOLTAGE NETWORKS + SOLAR KITS AND OTHER GENERATORS OF RENEWABLES + GPL AND AUXILIARY EQUIPMENT	900	24,000
CEMAC Energy Charter	Ad-hoc policy and legal documents	50	



Option d'appro = Supply option

CENTRAL AFRICAN POWER POOL (PEAC) SYSTEMS ANALYSIS

<u>Specific Objective No. 1</u>	<u>Specific Objective No. 2</u>
ACCESS TO POWER SUPPLIES	ACCESS TO DOMESTIC FUELS

**Activity no.2**

Hydropower  
research in Chad  
reafforestation

Supply option

**Activity no. 7**

Optimising domestic fuel

**Activity no. 4**

Promotion zone Action

GPL+

Identification of beneficiary zones  
distribution

**Activity no.6**

Optimising distribution

Supply option  
Optimising GPL

petroleum products

Solar

of

**Activity no.3**

Industrial biomass

Operational inputs (feasibility)  
for planning

Greater distribution in  
urban centres

Support for local planning

**Activity no.1**

Rural and peri-urban  
energy planning

**Activity no. 5**

Peri-urban electrification

Demand analysis

Load model and distribution concept

Supply

Specific objective no 3

**POLICY ACTION**

**Activity no. 9**

Energy Charter  
Energy Code

**Activity no. 11**

Technology transfer

**Activity no. 10**

Energy observatory

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