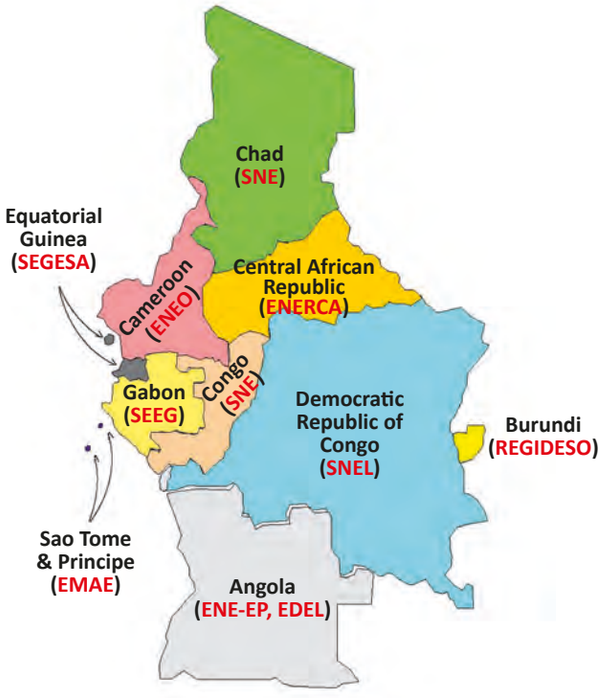
Central Africa Power Pool

REPSP - PEAC

Central Africa Power Pool

Regional Energy Policy Strategy Paper



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R E P S P
Central Africa Power Pool
Regional Energy Policy
Strategy Paper

This report was written by IED under the contract for the mission to provide technical assistance to build the capacities of the Central Africa Power Pool (CAPP) and based on discussions with people met. It does not necessarily reflect the opinions of the European Union Delegation in Congo or of the Permanent Secretariat of the Central Africa Power Pool (CAPP).

PREFACE

The Central Africa Power Pool (CAPP) now possesses an indispensable planning and implementation tool for achieving its medium and long term objectives in its Regional Energy Policy Strategy Paper (REPSP) 2014-2030.

This is the culmination of a decade of study and research on the ways and means to fulfil its mandate and improve the way it interacts and conducts discussion and dialogue with sector donors.

We would hereby like to thank the Commission of the European Union for funding the development of the REPSP as part of the second phase of the European Union's Technical Assistance Mission to the CAPP (TAM2) and more generally for its unwavering technical and financial support to develop power supply interconnections among the CAPP member states and to provide electricity to the people living in villages along common borders.

The CAPP REPSP, which encompasses technical, legal, institutional and financial provisions pertaining to the central issue of this specialised agency's governance, constitutes the strategic and operational framework for setting the priorities and approaches to implement regional energy policy through these interconnected systems.

This key document thus marks an important moment in the movement initiated by the Permanent Secretariat since the creation of the CAPP in 2003, to develop tools and programmes aiming at the maximisation of joint actions to construct the cross-border power lines and interconnected grids that make up the indispensable links in the chain of regional and inter-regional integration, but also to provide an electricity supply without which no meaningful development would be either economically possible or sustainable.

Jean-Chrysostome MEKONDONGO
Permanent Secretary of the CAPP
Head of Diplomatic Mission

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Abbreviations and Acronyms

AfDB	African Development Bank
APUA	Association of Power Utilities in Africa (former UPDEA)
AU	Africa Union
BDEAC	Banque de Développement des États de l'Afrique Centrale / Central African States Development Bank
CAPP	Central Africa Power Pool
CBEP	Cross-border Electrification Project
CEDEAO/ECOWAS	Communauté Économique des États de l'Afrique de l'Ouest / Economic Community of West African States
CEEAC/ECCAS	Communauté Économique des États de l'Afrique Centrale / Economic Community of Central African States
CEMAC/CAEMU	Communauté Économique et Monétaire de l'Afrique Centrale / Central African Economic and Monetary Union
CEN-SAD	Community of Sahel-Saharan States / Communauté des États Sahélo-sahariens
CEPGL	Communauté Économique des Pays des Grands Lacs / Economic Community of Great Lakes Countries
COMESA	Common Market for Eastern and Southern Africa
CORREAC	Commission Régionale de Régulation de l'Électricité de l'Afrique Centrale / Regional Commission for Electricity Regulation in Central Africa
EAC	East African Community
EGL / GLE	Électricité des Grands Lacs / Great Lakes Electricity
IGAD	Intergovernmental Authority on Development
NEPAD	New Partnership for Africa's Development
OHADA	Organisation pour l'Harmonisation du Droit des Affaires en Afrique / Organisation for the harmonisation of business law in Africa
PIDA	Programme for Infrastructure Development in Africa
PPA	Power Purchase Agreement
QHSE	Quality, Hygiene, Security, Environment
REC	Regional Economic Community
REP	Regional Economic Programme
REPSP	Regional Energy Policy Strategy Paper
SA	Société Anonyme
SADC	Southern Africa Development Council
SEI-AC	Systèmes Électriques Interconnectés de l'Afrique Centrale / Interconnected Electrical Systems of Central Africa
SIEPAC	Système d'Interconnexion Électrique des Pays d'Amérique Centrale / Electricity Interconnection System of Central American Countries
SINELAC	Société Internationale d'Electricite des Pays des Grands Lacs / International Electricity Company of the Great Lakes Countries
UMA	Union du Maghreb Arabe
UPDEA	Union of Producers and Distributers of Electricity in Africa
USAID	United States Agency for International Development
WAPP	West African Power Pool

List of Experts at the REPSP Validation Workshop
Yaoundé (Cameroon) from 4 to 7 November 2014

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1 EXECUTIVE SUMMARY

1 Executive Summary

1.1 Context

Regional integration is one of the fundamental objectives underlying the formulation and implementation of Central African countries' development policies. This is particularly the case as regards promoting the region's enormous energy potential and hence, the substantial development in quantity and quality of power supply for both the general population and the many industrial projects awaiting development.

It is therefore hardly surprising that the ECCAS vision for 2025 explicitly defines energy as one of the priority sectors for developing and achieving regional integration. This vision includes strengthening power generating infrastructure as well as stepping up cross-border electricity trade through the development of grid interconnections. The ultimate aim of this process is to facilitate the emergence of a reliable regional electricity supply, at competitive prices.

It is to translate this vision into reality that the ten ECCAS member states created the Central Africa Power Pool in 2003, as this institution's specialised agency responsible for power pooling.

1.2 The CAPP: Role and Institutional Mechanism

As a specialised agency of the ECCAS, the role of the CAPP as stipulated in its founding texts is to contribute to building a regional electricity market able to meet the electricity needs of both industry and the people. The CAPP is thereby responsible for expanding regional infrastructure and for defining the commercial, legal and technical conditions necessary to encourage investment and power pooling amongst all Central African countries.

To fulfil this mandate, the institutional structure of the CAPP is based on two membership categories: ECCAS member countries and national power utilities through, respectively, an inter-governmental framework agreement and an inter-utility agreement.

The highest decision-making body of the ECCAS is the Conference of Heads of State and Government, which meets at the behest of the Council of Ministers for Foreign Affairs of the member states. The CAPP sits just below these ECCAS deliberative structures and is organised in four levels:

- The Council of Ministers for Energy of the member states
- The Executive Committee, made up of general directors or general secretaries of the Ministries of Energy
- The Management Committee, which consists of the managing directors or CEOs of the power utilities, whose meetings are prepared by a committee of experts
- The Permanent Secretariat

With this set-up the technical expertise required to accomplish the missions of the CAPP sits outside the Permanent Secretariat, within the national power utilities which means that:

- There is a shortage of technical expertise within the operational structures of the CAPP. This constitutes a major

disadvantage when it comes to contributing to and/or supervising the development of interconnection projects which involve, by their very nature, complex technical infrastructure.

- The Permanent Secretariat is currently completely lacking in the technical expertise that the technical sub-committees, as yet non-operational, are supposed to provide

This has been corroborated by the analysis of the expected impacts of the Political, Economic, Social, Technological, Legal and Environmental (PESTLE) factors carried out as part of the process to design and develop the Regional Energy Policy Strategy Paper (REPSP).

1.3 REPSP: Regional Energy Policy Strategy Paper

A review of the regional context followed by a review of the national contexts within the ten ECCAS member states highlights the political commitment within the region to a strong and ambitious regional energy policy. This stated commitment contrasts starkly however with the considerable delays noted in (i) the physical construction of power generating and transmission infrastructure and in (ii) the establishment of a regional electricity market.

This is despite the region undertaking several actions to implement its policy since 2005: the formulation of a master plan, the identification of priority projects, progress in the development of some of these projects, the passing of a Central African electricity market law, advanced reflection on a power generation operating law etc.

1.3.1 Definition and Scope of the REPSP

All these actions have led to the development of the REPSP which, between 2014 and 2030, aims to:

i. Firstly identify the actions required to establish a regional electricity market

ii. Secondly define the strategy for setting up the legal, IT and technical tools to plan, manage and monitor the future regional electricity market

The REPSP "specifies the strategic framework that will be used to support regional integration of the electricity market for ECCAS member states and the development of regional infrastructure, power trade and the development of wide-spread access to a modern, available and affordable power supply".

1.3.2 REPSP Strategic Objectives and Priorities

Five strategic objectives corresponding to what the institution is seeking to accomplish have been adopted to reach the ultimate objective:

- Ultimate objective: To establish a regional market that guarantees a reliable, affordable and environmentally-friendly power supply to ECCAS member states,

- Specific Objective 1: To provide assistance for power generating and transmission infrastructure in Central Africa,

- Specific Objective 2: To develop a legal and regulatory environment conducive to the development of a regional electricity market in Central Africa,

- Specific Objective 3: To establish trade rules and set up a regional operator,
- Specific Objective 4: To establish and interpret technical rules for operating, managing and pricing power trade,
- Specific Objective 5: To facilitate institutional capacity building and skills consolidation.

These strategic objectives are fully in line with the mission and mandate accorded by the ECCAS to the CAPP as regards the 2014-2030 energy policy. They have set their priorities according to an equal weighting of two factors:

- The urgency of implementing the specific objective in order to achieve the ultimate objective, and
- The importance of the specific objective in the strategy implementation process.

This process gave rise to three levels of priority for the strategic objectives:

i. **"CRITICAL"**

ii. **"VERY HIGH"**

iii. **"HIGH"**

Piority Level	No.	Strategic Objective
CRITICAL	1	To provide assistance for power generating and transmission infrastructure in Central Africa (PIP, CBEP and all other integrational projects)
	2	To facilitate institutional capacity building and skills consolidation to supervise and manage the regional electricity market.
VERY HIGH	3	To developp a legal and regulatory environment conducive to the development of a regional electricity market in Central Africa.
HIGH	4	To establish trade rules and set up a framework and regional operator responsible for economic and financial regulation.
	5	To establish and interpret technical rules for operating, managing and pricing cross-border power trade.

1.4 Reaching the Ultimate Objective of the REPSP

The results of the ECCAS member states electricity system interconnection feasibility study, carried out in the ten ECCAS member states date from 2010 and serve as a reference for developing grid interconnections in Central Africa. The study constitutes the general framework for increasing interconnections and building a regional electricity market.

In 2004 in Malabo, the ECCAS Council of Ministers officially adopted regional power generating and transmission infrastructure development as one of the priorities for increasing trade through:

i. 15 Priority Integration Projects (PIP),

These are at the heart of the development of a regional electricity market. They focus on constructing additional power generating infrastructure and high-voltage transmission networks which will take advantage of the enormous hydroelectric potential in the region and will facilitate the distribution of the new supply capacity developed by member states.

ii. 15 Cross-Border Electrification Projects (CBEP).

These concern rural projects involving at least two member states. In theory they do not require the construction of new power generating infrastructure or high-voltage power lines.

1.5 The Current Situation, ECCAS Member State Regional Infrastructure Extension and the Key Role of the CAPP

The current reality of regional power supply in Central Africa is that the market is still nascent and electricity is not yet really traded.

This situation has led to the suggestion that regional infrastructure should be extended in two stages:

i. In the short to medium term, from 2014 to 2019, when the priority is mobilising financing. Indeed almost all the infrastructure required to pool generating capacity and to increase grid interconnections is either in the design phase or under construction. The analyses carried out highlight that none of the PIP will come on line until after 2019 and,

ii. In the long-term, from 2020 to 2030, when all the PIP will gradually enter the operating phase. During this period the conditions for establishing and running a regional market will be met.

The role of the CAPP during both these regional market development stages is absolutely crucial and requires the specific developments described in this document:

i. From 2014 – 2019, the CAPP must fully assume the role of Programme Manager, and focus on mobilising the financing required to construct the infrastructure needed to pool power generating capacity and to increase grid interconnections.

It will then be able to take charge of:

- Preparing the harmonisation of national legislation and regional regulations,

- Contributing to improving the regulatory and economic environment to attract private sector investment, and

- Preparing to meet the conditions to ensure the technical regulation of regional power trade which will increase over time.

ii. The period from 2020 to 2030 will be marked by a gradual commissioning of all infrastructure from 2020 to 2024. At this stage, as trade increases, the CAPP Permanent Secretariat will focus on ensuring the conditions are met to manage and supervise the electricity market. Even if they are still relevant, considerations relating to infrastructure development will begin to take a back seat during this period as considerations regarding operational planning for regional market development, setting rates for wheeling and associated services and the regulation of operators come to the fore.

The overall framework for CAPP operations as it builds a regional market has been reviewed and the suggested implementation strategy is described and clearly emphasises the need for the CAPP to have the necessary human and financial resources at its disposal to be able to assume the role of Project Manager on the regional level on behalf of the member states.

1.6 Regional Energy Policy – Action Plan and Implementation Strategy

The REPSP concludes with an action plan. The aim of the action plan is to outline a range of activities that act as a strategic plan the CAPP can implement to cover the two fundamental aspects of the ECCAS energy policy:

- Play a key role in meeting the conditions for implementing regional infrastructure projects,

- Lead the harmonious development of the regional market so that it is effective and complies with the objective of developing cross-border trade and providing industrial investors and the general public with a reliable and affordable supply of electricity.

To conclude, the CAPP has operated since its creation in 2003 with no real strategic plan. The moment has come for this institution to get organised so it may fulfil its mandate on the basis of strategic objectives stemming from the expected results of its activities. This is the scope of the REPSP.

2 REGIONAL CONTEXT

2 Contexte régional

2.1 Political Context

2.1.1 Energy as a Key Element in Regional Development Policy

Regional integration is one of the underlying objectives of the Central African countries' development policies. This notion is at the heart of almost all treaties and agreements signed by the countries of one or other of the two Regional Economic Communities in that area: the Economic Community of Central African States[1] (CEEAC), and the Central African Economic and Monetary Union[2] (CAEMU). The visions of the two institutions converge, particularly as regards promoting the region's enormous energy potential and hence supplying electricity to the people and the numerous industrial projects on the drawing board.

The ECCAS strategic vision to 2025 sets electricity as one of the priority areas for developing and implementing regional integration. The 13th ECCAS Conference of Heads of State and Government held on 30 October 2007 in Brazzaville, Congo, endorsed the fact that this sector will shape to a large degree the effective emergence of a single Central African market. Thus, Strategic Focus Point 15 of the ECCAS 2025 Strategic Vision Document explicitly concerns "the building of power generating capacities and the development of grid interconnections".

In the case of CAEMU, the policy document drafted on the basis of the 2025 Vision: the Regional Economic Programme (REP 2009-2015) clearly stipulates that regional power is a prerequisite for the economic development of the six member countries to 2035. In other words, electricity generation constitutes one of the pillars for achieving this objective and this includes promoting the hydroelectric potential manifest in the objective of an installed capacity of 25,000MW by 2025.

The objectives of the two regional economic communities thus centre on the promotion of the development and well-being of the people and their member countries. Harmonising their programmes will help optimise resource use with a view to establishing a single Central African market.

This harmonisation is all the more crucial in that the ECCAS has been recognised by the deliberative bodies of the Africa Union (AU) as the reference Regional Economic Community to implement the missions and objectives of the Abuja Treaty and NEPAD in Central Africa. In other words, the funding attributed to the Programme for Infrastructure Development in Africa[3] (PIDA) doivent transiter par le canal de la CEEAC.

The Protocol on energy cooperation among ECCAS member countries[4] thus constitutes the reference for regional power integration. Under this protocol member countries undertake to cooperate in promoting hydroelectric and renewable sources of power. In particular, member countries must cooperate to:

- Interconnect their national grids and trade power across borders, and

[1] The six CAEMU countries and Angola, Burundi, D. R. Congo and Sao Tome & Principe.

[2] Cameroun, Congo, Gabon, Guinée Équatoriale, RCA et Tchad.

[3] The priority power projects of the PIDA have been defined and approved by the eight African Regional Economic Communities in a bottom-up approach (CEN-SAD, COMESA, EAC, CEEAC/ECCAS, CEDEAO/ECOWAS, IGAD, SADC and UMA), to respond to the continent's increasing infrastructure needs to 2040. They also serve to drive the objectives of Agenda 2063. The structuring framework that is the PIDA refers to an African and international "donor community" that are stakeholders in the process (AfDB, EU, IDB and DFID).

[4] Appendix VIII of the Treaty setting up the ECCAS

- Train staff from national and/or regional power generating, transmission and supply utilities at all levels.

In line with this protocol, priority electricity supply programmes and policy will focus on:

- The development of infrastructure and transmission services,
- The development of an integrated single market,
- The promotion of energy potential.

Implementation of this vision requires the development of power generating infrastructure, cross-border trade and grid interconnections. This integrated regional approach to the development of electricity infrastructure will make it possible to build a large market with competitive prices, rather than the current co-existence of smaller national markets that more often than not are inefficient.

It is to translate this vision into reality that in 2003 the member states created the Central Africa Power Pool (CAPP). This specialised agency of the ECCAS is responsible for implementing regional cooperation around power supply.

2.1.2 Universal Access to Modern Energy Services and Economic and Social Development

As in other African regions before it, Central Africa has undertaken the development of a White Paper on a regional policy for universal access to modern energy services for economic and social development. This document proposes a joint ECCAS-CAEMU vision of universal access to modern energy services for the people by 2030 with a view to achieving sustainable economic and human development for Central Africa.

Three main principles underlie this vision:

- Good regional, national and local governance,
- Energy security and the development of renewable energies, in particular the promotion of the hydroelectric potential,
- Equity, inclusive development and poverty reduction.

The White Paper is currently being approved by the Conference of the Region's Heads of State and Government.

Implementation of the White Paper will require considerable investment. Nonetheless, the estimated amounts remain realistic, bearing in mind the region's resources, the dynamism of its economy and support from donors. As regards access to energy services provided through electricity, investments required will be around 9.8 million dollars between 2014 and 2030. In terms of developing new capacity, around 68 billion dollars will be required during the period 2014 to 2030, of which more than 91% would be for hydro-electric power stations.

Implementation of the White Paper is perfectly in line with the Central African energy policy. The planned intensive development of power generating infrastructure combined with the development of transmission infrastructure and grid interconnections participates fully towards the ECCAS objectives around promoting energy potential and establishing an integrated single market.

Through the development of regional actions around power supply, the ultimate objective is clearly to respond to the general public's and industrial operators' demand for a reliable and affordable energy supply.

2.1.3 Other Regional Initiatives in the Energy Sector

The Action Plan to Promote Energy Access in the six ECCAS member states presented to the Conference of ECCAS Heads of State in the first quarter of 2006 constitutes another key initiative in terms of increasing public access to energy.

The impact of this plan is primarily felt in peri-urban areas, due to specific infrastructure installed as part of the peri-urban access programme carried out in the selected beneficiary countries[5].

In addition to increasing access in peri-urban areas, this plan was designed as a step in building a community energy policy, in coordination with the activities entrusted to the CAPP. The member countries involved share borders and have electricity systems at varying levels of development. These systems are not yet interconnected, with the exception of a few rare and short cross-border medium or even low voltage power lines.

The Energy Action Plan thus has a Planning section, which principally aims at developing access to electricity services in border areas which are currently poorly supplied if at all. This objective is to be achieved through "nearby and appropriate" hydroelectric power sites that can provide the areas concerned with a satisfactory power supply.

The Planning section complements the "peri-urban access" section. It highlights projects which demonstrate the shared commitment by member countries to think about energy sector development from a regional standpoint. Among the projects identified, some are structuring for the region because they propose to develop a transmission network with the possibility of providing a medium voltage power supply to many hitherto unconnected areas or areas lacking in services due to their remote location. Others are more typical cross-border projects, involving the pooling of generating capacity to supply a clearly defined border area.

2.2 The ECCAS Agency Responsible for Energy Policy Development and Implementation: CAPP

Within the ECCAS, the general objective is to develop existing potential and create a regional electricity market. A specialised regional agency, the Central Africa Power Pool has been created to this end.

2.2.1 Role of the CAPP

As the specialised agency of the ECCAS, the role of the CAPP as stipulated in its founding texts is to contribute to building a regional electricity market able to meet the electricity needs of both industry and the general public. To do this, there must be a reliable, affordable and environmentally-friendly power supply that supports the economic and social development of the region.

The successive CAPP action plans are aligned with NEPAD's priority action projects in the context of Central Africa. They focus on two key aspects:

- The interconnection of all ECCAS national power grids and
- The rehabilitation / interconnection of the Inga dam.

[5] Cameroon, CAR, Congo, Gabon and Chad.

2.2.2 Dispositif institutionnel du PEAC

The 12th Conference of ECCAS Heads of State and Government decided in January 2005 to make the CAPP an autonomous specialised Community agency. The CAPP is thus responsible for:

- Implementation of the regional energy policy,
- Expansion of regional infrastructure,
- Establishing the commercial, legal and technical conditions conducive to investment,
- Power trade activities across all the countries of Central Africa.

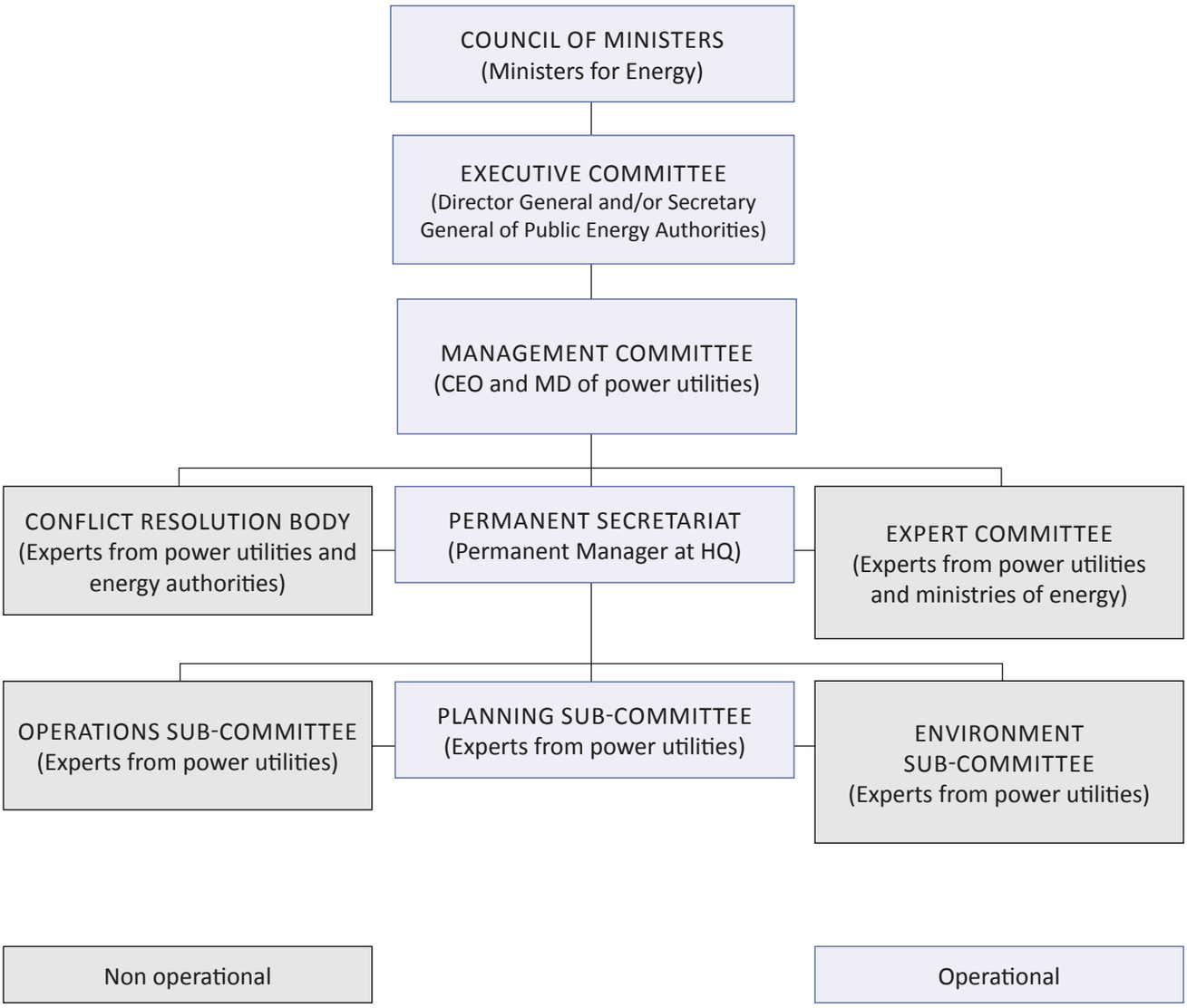
Unlike most of the other cooperative institutions of the sub-region, the CAPP has the particularity of having two types of members: the ECCAS member states and the national power utilities on the basis of, respectively, an intergovernmental framework agreement and an inter-utility agreement.

The highest decision-making body of the ECCAS is the Conference of Heads of State and Government, which meets at the behest of the Council of Ministers for Foreign Affairs of the member states. The CAPP sits just below these ECCAS deliberative bodies and is organised in four levels:

- The Council of Ministers for Energy of the member states
- The Executive Committee, made up of general directors or general secretaries of the Ministries of Energy
- The Management Committee, which consists of the managing directors or CEOs of the power utilities, whose meetings are prepared by a committee of experts
- The Permanent Secretariat

Eventually, the organogram allows for the creation of the Regional Commission for Electricity Regulation in Central Africa (French acronym CORREAC), and a conciliation commission that both the Executive Committee and the Management Committee will attend respectively.

Figure 1 : CAPP Organogram



This figure shows that:

- the technical expertise required to accomplish the missions of the CAPP is outside the Permanent Secretariat, within the national power utilities and in particular,

- with the exception of the planning sub-committee, no technical sub-committee or body is currently operational.

This means that:

- There is a shortage of technical expertise within the operational structures of the CAPP. This constitutes a major disadvantage when it comes to contributing to and/or supervising the development of interconnection projects which involve, by their very nature, complex technical infrastructure,

- The Permanent Secretariat is currently completely lacking in the technical expertise that the technical sub-committees, as yet non-operational, are supposed to provide. The Permanent Secretariat therefore cannot play its role as defined by the theoretical institutional framework. Indeed, to do so it would need to provide technical expertise to retain its position of consolidating contributions from the technical bodies and providing the interface

with the decision-making bodies (Management Committee, Executive Committee and Council of Ministers).

Due to the lack of technical committees and bodies, the Permanent Secretariat looks even more like the centre piece of the CAPP operational structure.

2.3 PESTLE[6] Analysis of the CCAP

2.3.1 Justification

Before developing and implementing a strategic plan an external analysis of the expected impacts of Political, Economic, Social, Technological, Legal and Environmental (PESTLE) factors must be carried out. This evaluation of the various environmental aspects helps to identify potential changes to be recommended to maximise opportunities and minimise threats. Such a strategic analysis is akin to gaining a "cross-section" view of the situation and to understand the long-term issues.

2.3.2 CCAP Factors et Impacts

It is worth identifying the factors that have an influence on the external environment of the CAPP, but which are not directly controlled by it. This identification is based on a literature review and interviews carried out both within the CAPP headquarters and during field missions carried out in the member states.

[6] The PESTLE analysis is a very useful tool for giving an overall view of the environment in which an organisation is operating. In particular it highlights the risks associated with market progression. It is also useful for understanding the external context that impacts the internal context of an organisation.

"Political" Factor	Impact on the CAPP
Limited political influence to accelerate ratification of inter-country protocols on sharing power generating infrastructure and developing grid interconnections.	The CAPP was created in 2003, at the initiative of the Association of Power Utilities in Africa (APUA)[7], as an Economic Community of Central African States (ECCAS) agency in charge of developing member states' power supply systems. The decisions that concern the CAPP are thus taken during its annual meetings presided by the Council of Ministers for Energy. This Council of Ministers for Energy meeting does not coincide with that of the Council of Ministers for Foreign Affairs of the ECCAS, which precedes the ECCAS Conference of Heads of State and Government. The lapse of time required for CAPP decisions to be made is thus extended, and the CAPP's influence over the ratification of inter-country protocols for instance is limited. The development of cross-border trade within ECCAS depends directly on the intervention of the public authorities, at the highest level. It is therefore necessary to be as close as possible to the Conference of Heads of State and Government for optimal effectiveness.

"Environmental" Factor	Impact sur le PEAC
Considerable pressure from outside the ECCAS to promote Central Africa's hydroelectric potential in the search for renewable energy. Imperative for this region to adopt operational environmental and social directives so as not to delay the development of priority projects.	CAPP priority projects should take this "export" vision into account alongside the increase in grid interconnections amongst ECCAS member states. Need for the CAPP to take these directives into account and to disseminate them as widely as possible.

[7] APUA corresponds to the former Union of Producers, Transporters and Distributors of Electric Power in Africa (UPDEA)

"Economic" Factor	Impact on the CAPP
Regulatory, legal and pricing obstacles mean currently only public projects exist. At the present time there are no public-private-partnership (PPP) projects and no private investment at all.	One of the most important issues for the CAPP is to manage to assume its position as facilitator in mobilising funding on behalf of the member states for infrastructure projects over which the majority of the governments wish to retain direct control. There is virtually no correlation between most of the prices in the region and the actual economic costs. Added to this is a high level of technical and non-technical losses. All these factors compromise the long-term financial viability and the capacity to ensure the financial equilibrium of operations and explain the reticence of the private sector to invest or even participate in a PPP. The CAPP must play a role of information provision and standardisation as regards pricing, working towards profitable tariffs; essential if the private sector is to become more involved. Even if current power system developments are being made on the basis of bilateral or multilateral funding, business models involving the member states' power utilities need to be discussed within a real framework of regional integration, i.e. under the management of the CAPP.

"Social" Factor	Impact on the CAPP
Very high demand of industries and people in Central Africa for abundant, reliable and affordable power supply	The transformation of the immense hydroelectric potential of the region into electricity, thus extending coverage, access and supply represents the major challenge of the mission entrusted to the CAPP by the ECCAS Heads of State and Government.

"Technical" Factor	Impact on the CAPP
Of all the African power pools, Central Africa is the one with the fewest interconnections (3) to date, even if 15 are currently under development.	The CAPP, as Project Manager, must play a catalysing role in making a marked increase in the opportunities to share power generating infrastructure and in the development of grid interconnections and cross-border trade. Despite the considerable hydroelectric potential of the region, no member state really has sufficient capacity reserves. Pooling infrastructure run by the CAPP will help to resolve this situation, partially at first, because the member countries are located on either side of the Equator.

"Legal" Factor	Impact on the CAPP
Need to harmonise sector legislation and implement it. Need to improve the legal/contractual agreements between countries (e.g. balance between supply and demand). Differences in regulatory approaches between countries. Interconnection agreements being prepared. The majority of member countries do not allow third party access to grids	One of the most important issues for the CAPP is to manage to assume its position as Project Manager, to coordinate the harmonisation of national legislation and standardisation of agreements required for regional market operation. • Challenge for the CAPP to harmonise and standardise different legislative systems of CAPP member countries. • Key role for the CAPP in regulating these legal/ contractual agreements. • Role for the CAPP in reconciling differences and lobbying for harmonisation • The CAPP must ensure that these agreements are compatible with International Protocols.

3 WHY A REGIONAL ENERGY POLICY STRATEGY?

3 Why a Regional Energy Policy Strategy?

Examination of the regional context and the subsequent review of the national context in each of the ten ECCAS member states highlight the political commitment within the region to a strong and ambitious regional energy policy. This stated commitment contrasts starkly however with the considerable delays noted in the physical construction of regional power generating and transmission infrastructure and in the establishment of a regional electricity market.

This is despite the region undertaking since 2005 several structuring actions to implement its policy: the formulation of a master plan, the identification of priority projects, progress in the development of some of these projects, the passing of a Central African Electricity Market law, advanced reflection on a power generation operating law etc.

However, due to a lack of continuity in actions taken, the initial plans of the Region have fallen well behind those of the other Regional Economic Communities and their Power Pools.

3.1 The Regional Energy Policy Strategy Paper (REPSP)

3.1.1 Objectives of the REPSP

Based on existing Regional structures and actions already underway, in particular the Priority Investment Programme (PIP) resulting from the regional planning study, the Regional Energy Policy Strategy Paper (REPSP) aims:

i. Firstly to identify the actions required to establish a regional electricity market. It defines a development strategy which sets forth the responsibilities of the regional, national and international stakeholders. The REPSP also establishes an implementation timetable that highlights the inter-dependency among activities and the resources required to carry them out.

ii. Secondly to define the strategy for developing the legal, IT and technical tools to plan, manage and monitor the future regional electricity market. This other aspect is based on a SWOT analysis of the investments to be finalised for developing grid interconnections.

3.1.2 Strategy Paper Development

As stipulated in the CAPP founding texts, it is responsible for establishing a regional market that is able to meet the electricity needs of both the people and industrial operators. As a result, the institution must play a catalysing role in cross-border power trade in the region, with the REPSP as the instrument for achieving the power pool's medium and long-term goals.

The strategy timeframe is 2014-2030. During this period the CAPP will set the priorities for establishing Central Africa's regional electricity market as one of the key elements for the region's economic and social development.

The strategy is proposed in two stages:

i. From 2014 to 2019, when the CAPP will work to lay the foundations for the regional electricity market by focusing specifically on the development of power generating infrastructure and, in particular, transmission grids. This is a prerequisite for setting up an institutional and regulatory framework,

ii. From 2020 to 2030, when the market will be set up and come into operation on the basis of the foundations laid during the first stage.

Analyses carried out prior to developing the strategy demonstrate that the activities proposed are all focused on the effectiveness of the power pool's governance framework (CAPP Permanent Secretariat and its sub-committees), that is to say the CAPP's capacity to assist member states in the regional integration process.

3.1.3 Scope of the REPSP

In the terms of reference for this activity, it is specified that the REPSP must "define the strategic framework to support regional integration of ECCAS member states' electricity market, to develop regional power infrastructure and trade, and to increase public access to a modern, abundant and affordable electricity supply".

Two documents underlie the proposed developments:

a. The master plan study for developing an electricity market in Central Africa (2005-2015), and

b. The Central Africa electricity grid interconnection study.

It should be noted that the REPSP is not intended to replace these two documents. Rather it offers a clear path to establishing the regional market by prioritising the investments required.

The proposals and recommendations made are aligned with the two existing Central Africa regional electricity market documents:

c. The Central Africa electricity market law (October 2009), and

d. The Central Africa electrical system operation law (June 2011)

3.2 Central Africa Energy Policy – Objectives and Expected Results

The strategic objectives correspond to what the institution seeks to achieve over the stated timeframe: 2014-2030. These objectives are fully aligned with the mission and the mandate that the ECCAS has attributed to the CAPP as regards energy policy.

3.2.1 Ultimate Objective

ULTIMATE OBJECTIVE	The regional electricity market is established among ECCAS member states to provide affordable and environmentally-friendly electricity to support the economic and social developpement of the region.
PREREQUISITE SPECIFIC OBJECTIVE 1	To provide assistance to develop power generating and transmission infrastructure in Central Africa through the monitoring and implementation of PIP and CBEP + the building of proven skills in infrastructure construction and maintenance.
EXPECTED RESULTS	Grid interconnections are developped and power generating infrastructure is pooled to establish a regional market capable of meeting the electricity needs of industrial operators and the general public within the framework of the regional CAPP energy policy strategy.

3.2.2 Specific Objectives

SPECIFIC OBJECTIVE 2	To develop a legal and regulatory environment conducive to the development of a regional electricity market in Central Africa.
EXPECTED RESULTS	National regulations of ECCAS member states are harmonised and are compliant with the Central Africa electricity market law with a view to regional integration.
	CAPP member states are assisted in implementing the legal and/or institutional electricity sector reforms required for a regional harmonisation.
	Standardised cooperation tools adapted to market needs are developed and provided to the various electircity sector stakeholders.
	A balance between regional integration and adaptation to the specific national legal context is maintained.

SPECIFIC OBJECTIVE 3	To contribute to the development of trade rules, to setting up a regional operator responsible for supervising the regional market and to the development of an economic and financial regulatory framework.
EXPECTED RESULTS	Contribution to the establishment of rules for developing cross-border power trade transactions to ensure compliance among the various regional market stakeholders.
	Contribution to the choice of a transparent trade pricing methodology to increase regional electricity trade.
	Contribution to the definition of conciliation and arbitration rules to help resolve potential conflicts until CORREAC is set up.
	Contribution to the setting up of CORREAC.
SPECIFIC OBJECTIVE 4	To specify and interpret technical rules for operating, managing and pricing cross-border power trade over the regional grid.
EXPECTED RESULTS	Technical regulation : management of electricity transactions and trade and supervision of interconnected electrical systems operating laws.
	Specification and interpretation of technical rules to organise crod-border electricity trade over the grid.
	Use of equipment for administering and maintaining SCADA.
SPECIFIC OBJECTIVE 5	To facilitate institutional capacity building and skills consolidation to supervise and manage the regional electricity market.
EXPECTED RESULTS	The requirements as regards assistance in developping and implemeting capacity business ans skills consolidation programmes for power pool supervision and management in three areas are assessed : i. regional integration of legislative and regulatory frameworks ; ii. iregional trade integration, with a fair commercial framework and power trade ; iii. regional integration of infrastructure with a framework suitable for planning and operating interconnected electricity systems.

3.3 Prioritisation of Strategic Objectives

As regards strategic planning, there are various methods for prioritising the strategic objectives. Some of these methods are relatively complex because they involve multiple criteria or factors, meaning that for each objective several factors need to be taken into account, for instance:

- The factor's relative importance for the operation of the institution,
- The factor's relative implementation time,
- The factor's relative cost,
- The factor's relative viability,
- etc.

These methods present two difficulties as regards their application. Firstly, they require a quantitative "score" to be attributed to each of the factors which are usually qualitative and secondly, all the factors must be able to be weighted. Finally, to a large extent this type of evaluation is subjective.

Therefore, we decided to propose an approach which, although a considerable degree of subjectivity remains, has the merit of being simple. This approach is based on two main factors: urgency and importance. These factors are completely relevant for the CAPP, as certain objectives must be met before others. Thus we consider them to be more "important" than others, as they are prerequisites for the implementation of the overall process.

The two factors that serve as the basis for prioritising the strategic objectives are thus:

- The urgency of implementing the specific objective in order to achieve the ultimate objective, and
- The importance of the specific objective in the strategy implementation process.

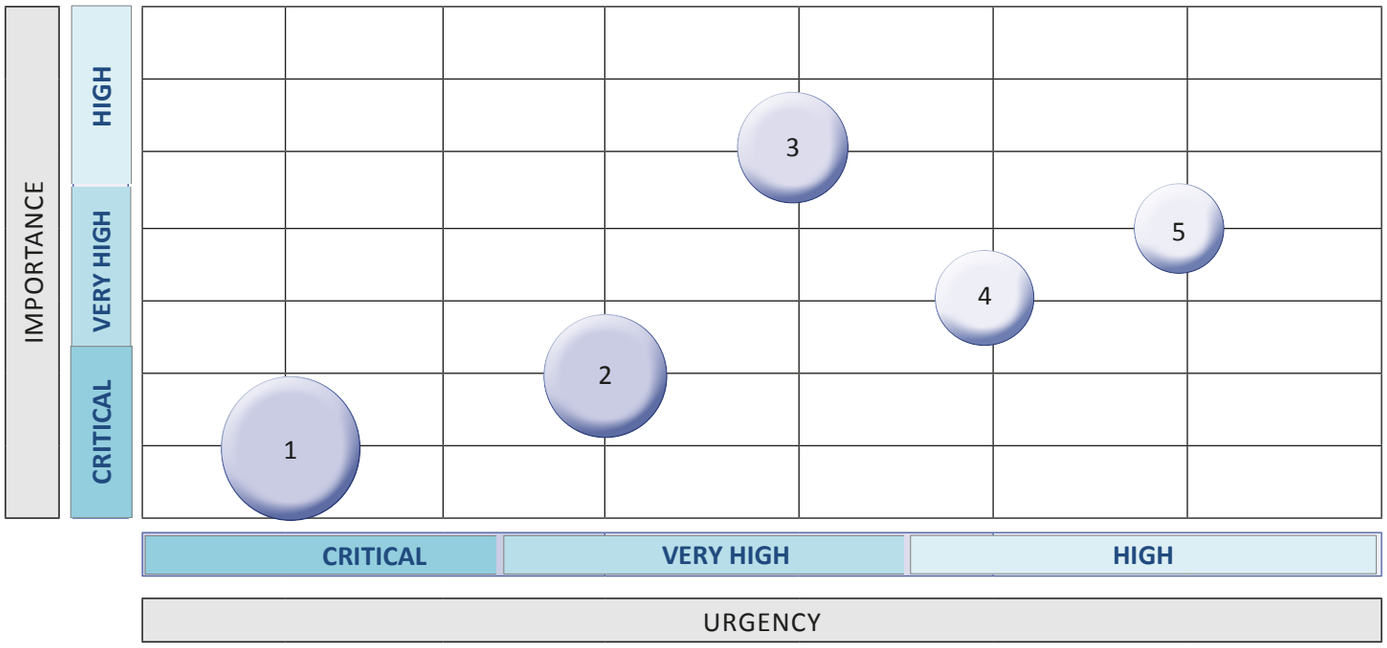
By giving each of these two factors an identical weighting, it is possible to establish three levels of priority: "Critical", "Very High" and "High":

Priority Level	No.	Strategic Objective
CRITICAL	1	To provide assistance for power generating and transmission infrastructure in Central Africa (PIP, CBEP and all other integrational projects).
	2	To facilitate institutional capacity building and skills consolidation to supervise and manage the regional electricity market.
VERY HIGH	3	To develop a legal and regulatory environment conducive to the development of a regional electricity market in Central Africa.

HIGH	4	To establish trade rules and set up a framework and regional operator responsible for economic and financial regulation.
	5	To establish and interpret technical rules for operating, managing and pricing cross-border power trade.

This constitutes the basis for the approach used to attribute a degree of importance to each objective from “High” to “Critical” and similarly a degree of urgency. The results were then plotted on a matrix to prioritise the strategic objectives. This matrix is the foundation of the REPSP Action Plan.

Table 1: Strategic Objective Prioritisation Matrix



Objective 1	:	To provide assistance for power generating and transmission infrastructure in Central Africa (PIP, CBEP and all other integrational projects)
Objective 2	:	To facilitate institutional capacity building and skills consolidation to supervise and manage the regional electricity market
Objective 3	:	To develop a legal and regulatory environment conducive to the development of a regional electricity market in Central Africa
Objective 4	:	To establish trade rules and set up a framework and regional operator responsible for economic and financial regulation
Objective 5	:	To establish and interpret technical rules for operating, managing and pricing cross-border power trade

3.4 Resources for Achieving the Ultimate Objective of the ECCAS Member Countries' Energy Policy

3.4.1 Grid Interconnections in the ECCAS Member Countries

The results of this study date from 2010, and now constitute the reference for grid interconnections in Central Africa. The decision to install grid interconnections dates back to 2002, and the studies themselves began in November 2007, with the aim of:

- Gathering data on electricity systems in ECCAS countries (demand forecasts, existing infrastructure, existing master plans, current or planned projects, institutional, legal and regulatory context etc.),

- Establishing grid interconnection projects amongst the member countries, proposing several variations that took into account national programmes and suggested ways of optimising and integrating these programmes,

- Conducting the technical, economic, environmental and institutional feasibility studies and detailed technical infrastructure design (transmission lines and substations) for the proposed interconnections.

The grid interconnection study was funded by a donation from the African Development Bank, which fully covered the cost of each of the study phases, from the preliminary study to the detailed design study and the preparation of tender documents;

On the basis of the data collected in the ten member states regarding demand forecasts, existing equipment, master plans and current and planned projects, three interconnection options for 2030 were examined.

- Option 1 with two development levels:

  - In the long term: a direct current network associated with the development of INGA and which would support interregional transmission of large quantities of power across very long distances.

  - In the medium term: alongside the planned long term direct current network, set up an interregional alternating current network (400 kV and 220 kV) with two sub-options:

    i. Sub-option 1A: consisting of a "coastal backbone" linking Maquela do Zombo in Angola to Memve'ele in Cameroon, and going through Pointe Noire in Congo,

    ii. Sub-option_1B: consisting of a "continental backbone" linking Maquela do Zombo in Angola to Memve'ele in Cameroon, and going through Grand Poubara in Gabon

- Option 2 consists in Ultra High Voltage alternating current power lines (800 kV) which can be used for both intra-regional and inter-regional transmission.

- Option 3 is identical to Option 2 but includes back-up circuits.

The study retained option 1A as the medium term target. It includes the following interconnections:

- For the coastal backbone Angola - Chad with dual 400 kV AC (apart from the Yaoundé – Ndjamena section, which will have dual 220 kV AC):
  - Maquela do Zombo / Angola - Inga / DRC,
  - Mongo Kamba / Congo – Empress Falls / Gabon,
  - Ntoum / Gabon – Bata / Equatorial Guinea,
  - Bata / Equatorial Guinea - Memve'Ele / Cameroon,
  - Maroua / Cameroon - Ndjamena / Chad,
- For the other interconnections (dual 220 kV AC):
  - Yokadouma / Cameroon - Dimoli / CAR ;
  - Mobaye / DRC - Kembé / CAR

N.B. Along the corridor chosen, a few links are missing for which further studies are underway. These are:

- The Inga / DRC – Cabinda / Angola - Pointe Noire / Congo line,
- The Empress Falls / Gabon – Ntoum / Gabon line,
- The Memve'ele / Cameroon – Maroua / Cameroon line

The grid interconnection study constitutes the general framework for increasing interconnections and developing the regional market. However, in 2004 during the CAPP meeting in Malabo (Equatorial Guinea) the ECCAS Council of Ministers set the priorities for regional power generating and transmission infrastructure development. The CAPP was mandated to work specifically on increasing trade through two complementary components:

- Priority Integration Projects (PIP)
- Cross-Border Electrification programme Projects (CBEP)

These projects are in line with NEPAD priority action projects in Central Africa with:

- The interconnection of electricity grids in ECCAS countries, and
- The rehabilitation / inter-connection of the Inga Dam, with
- A pilot cross-border electrification programme.

3.4.2 Priority Integration Projects – (PIP)

Priority Integration Projects (PIP) are at the heart of regional electricity market development. They involve the construction of power generating and transmission infrastructure so that electricity can be traded and reliable and affordable power can be supplied to industrial investors and the general public.

They systematically involve the construction of power generating plants and additional high-voltage transmission networks to take advantage of the enormous hydroelectric potential of the region. By doing so, the additional capacity developed by the member states can be sold. The aim is to notably reduce the cost of undistributed power and diminish unsatisfied demand as a result of the benefits generated by the ensuing economies of scope[8].

There are currently 15 PIP[9] in various stages of implementation. To give a precise idea of the current state of progress on each of the 15 infrastructure projects a chart giving an overview of the project stages is provided.

The table below gives an idea of the indicative duration of the different implementation stages of an infrastructure project and is colour coded to show the current progress of the 15 PIP that the CAPP is responsible for implementing.

Table 2 : Indicative duration of the implementation stages of an infrastructure project

Activity duration	Total Duration	Activity / Stage
0	0	Registration on PIP list
6	6	Signing of onter-country protocol
12	18	Mobilisation of funding for feasability studies, tender document preparation, call for tender adjudication
12	30	Feasibility and design studies (technical, financial and institutional)
12	42	Validation of the studies, decision by countries to begin construction
12	54	Validation des études, décision des Etats d'engager la réalisation
12	66	Launch of construction, adjudication
36	102	Construction and supervision
12	114	Completion and commissioning
		Infrastructure operation

N.B. all duration figures given in months.

All the PIP projects are listed and positioned in the following table with their implementation durations on a time scale from 2014 to 2030, which is the time period for our strategic plan.

[8] Power generation costs vary considerably among the countries in the region, therefore significant savings can be made through regional optimisation.

[9] The list of the 15 PIP projects and their costs are appended.

Table 3 : Overview of implementation durations for the 15 PIP of the CAPP

N°	Intitulé du PIP	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
1	Development of Djibloho (Eq. Guinea)																	
2	Development of INGA site and associated interconnections																	
3	Inga - Cabinda - Pointe Noire interconnection																	
4	Cameroon - Chad interconnections																	
5	Hydroelectric development of Dimoli & associated transmission lines from CAR - Cameroon																	
6	Cameroon (Memve'ele) - Gabon - Eq. Guinea interconnections																	
7	Gabon (Grand Poubara) - Congo interconnections																	
8	Chollet hydro powerplant and transmission lines to Congo and Cameroon																	
9	Supply of Burundi from eastern DRC - Kolwezi - Bendera [1] interconnection																	
10	Strengthening of Boali - Bangui interconnection and Bangui - Zongo - Libenge interconnection																	
11	Hydroelectric development of the three Lobaye sites																	
12	Connection of the Soyo thermal gas plant to Inga - Cabinda - Pointe Noire																	
13	Interconnexion électrique Inga (RDC) et Calabar (Nigeria)																	
14	Oyem (Gabon) - Mongomo (Eq. Guinea) interconnection																	
15	Study on ECCAS member country grid interconnection																	

[1] line that is complementary to the Bendera - Kalémie, Uvira - kiliba - Bujumbura line

- Registration on PIP list
- Signing of inter-Country protocol
- Mobilisation of funding for feasibility studies, tender document preparation, call for tender, ajudication
- Feasibility and design studies (technical, financial and institutional)
- Validation of the studies, decision by countries to begin construction
- Mobilisation of funding (call for tender + construction + supervision)
- Launch of construction, ajudication
- Construction and supervision
- Completion and commissioning
- Infrastructure operation
- Prerequisite: signing of Inter-Country Agreement
- Additional bilateral studies
- New project awaiting information and data from the Angolan party to begin the process

Although all the PIP projects are by definition integratory projects, those chosen are divided into two groups:

- **"Interregional" PIP**: these represent the contribution of Central Africa to other regions on the continent. This involves connections with the sub-regions to the North, South and West of the African continent. The hydroelectric dam site at Inga in Democratic Republic of Congo constitutes the starting point for the "interregional" PIPs, which are qualified as "ultra-high-voltage electricity boulevards". They are intended to supply other power pools, thus enabling the increased capacity generated thanks to the development of the Inga site in DRC (Inga 3 Low Falls, Inga 3 High Falls, then Inga 4 to Inga 8 in the long term) to be traded.

  These projects are characterised by their pan-African impact, by the involvement of stakeholders from outside the ECCAS region, their scale and the considerable investment required to implement them.

  There are two "interregional" PIPs:

  - The development of INGA and associated interconnections,
  - The INGA (DRC) – Calabar (Nigeria) interconnection.

- **"Intraregional" PIP:** These concern the intraregional AC (400kV and 220kV) network within the Central Africa region, connecting ECCAS member countries. They are basically projects focusing on national power generating infrastructure intended to support regional infrastructure.

  These are the remaining 13 PIPs:

  - Inga - Cabinda - Pointe Noire interconnection,
  - Chollet hydroelectric power plant and associated transmission lines to Congo and Cameroon ;
  - Cameroon - Chad interconnections,
  - Cameroon - Gabon – Eq. Guinea interconnections,
  - Gabon (Grand Poubara) – Congo interconnections,
  - ECCAS member state grid interconnections,
  - Supply of Burundi from eastern DRC - Kolwezi - Bendera[10] ;
  - Strengthening of Boali - Bangui and Bangui - Zongo - Libenge interconnections,
  - Hydroelectric development of Dimoli & associated CAR - Cameroon transmission lines,
  - Hydroelectric development of the three Lobaye sites,
  - Connection of the Soyo thermal gas power plant to Inga - Cabinda - Pointe Noire,

[10] Transmission line supplements the Bendera - Kalémie, Uvira - kiliba – Bujumbura line.

- Oyem (Gabon) - Mongomo (Equatorial Guinea) interconnection,
- Development of Djibloho (Equatorial Guinea).

Box 1: Progress of an "interregional" PIP: INGA III Low Falls

The feasibility studies are completed and the final report was submitted in September 2013, advising the development of the site in 7 successive phases: Inga 3 Low Falls, Inga 3 High Falls, then Inga 4 to 8 to achieve a total generating capacity of 42,000MW.
The first phase currently underway concerns Inga 3 Low Falls with an installed capacity of 4,800 MW.
The recommendations at this stage are to manage to sell a minimum of 2,500MW abroad to make the project bankable. Hence the Great Inga treaty between DRC and the Republic of South Africa, signed in October 2013 which adopts the sale of 2,500 of the 4,800MW generated to South Africa, passing through Zambia and Zimbabwe.
It is then planned to allocate 1,300MW for sale to mining clients in Katanga. The remaining 1,000MW will be sold to the SNEL (national electricity utility) for clients on the western DRC grid.
The project is intended to be run as a PPP, with 70% to be financed by private investors and the remaining 30% by the public sector (DRC and its usual donors). The total estimated cost of Inga 3 Low Falls is 12.6 billion USD.
The business model requires the installation, ex nihilo, of a project management authority: the Inga Site Development and Promotion Agency (French acronym ADEPI). Since its creation in December 2014, this agency has been responsible for taking over the activities of the current Inga 3 Project Management Unit (French acronym CGI3).
The entire project is currently supervised by the Ministerial Commission for the Development of the Inga site (French acronym CODESI).

Source: SNEL – DRC

3.4.3 Complementarity between "intraregional" and "interregional" PIP

On the basis of the grid interconnection studies and in order to set up a Central Africa electricity market, it appears that the 2030 Central Africa Interconnected Power System (French acronym SEIAC), with a view to enabling the free trade of 14,000 MW is a technically viable ultra-high-voltage system which is fully aligned with the other power pools on the continent (WAPP and SAPP).

The CAPP's primary interest is in pooling the enormous hydraulic resources available in Central Africa by 2030, by optimising intraregional interconnections but without neglecting interregional development. This means a certain number of constraints as regards investment decisions must be taken into account.

During the SEIAC construction phase, it is essential, to ensure the operability of these electrical systems, to focus on the reliability of the interconnected systems and the flexibility of the generating means behind them, regardless of the primary energy source. Both the grid interconnection studies and the master plan highlight the need to carefully manage the location of static and rotating compensators to ensure the operability of the SEIAC.

In other words, according absolute priority to the gigantic generating plants means that during the transition phase between 2020 and 2025, 400kV transmission lines will be used with low loads, leading to problems in terms of maintaining voltage, stability and thus operability. The need to install compensators, leads to the recommendation, in terms of priority, that power generating plants be rehabilitated or constructed at even points along the main North-South Central Africa electrical system interconnection backbone.

The intraregional PIP concerning the development of connections between Angola, Congo, DRC, Gabon and Cameroon must rehabilitate and/or construct power generation plants at even intervals across all the areas adjacent to the North-South backbone. This includes both projects linked to the rehabilitation of generating plants and industrial projects (aluminium refineries, mines etc.) as well as private investment projects that are awaiting a reliable and affordable electricity supply in the region.

In short, the optimal complementarity between interregional and intraregional PIP leads to the recommendation that investments be distributed fairly in time and space across central Africa. The reorganisation of the timetable for key decisions highlights the following investments:

1. Rehabilitation/construction of power generating plants evenly distributed across all members states along the North-South backbone,

2. Construction of ultra-high-voltage interconnection and distribution substations with sufficient reactive power compensators,

3. Construction of the North-South backbone infrastructure in sections to connect and operate the foregoing elements to the benefit of regional distribution grids, and

4. Interest for macro-equipment for hydroelectric power generation.

The specific benefits for the region from these 4 elements will facilitate the development of intraregional projects that make a real contribution to equitable power distribution, for instance:

- The finalisation of development of Grand Poubara / Gabon, and even equipping the Empress Falls (Gabon), to benefit Gabon and Congo by adapting the path of the backbone with a hybrid coastal/continental branch,

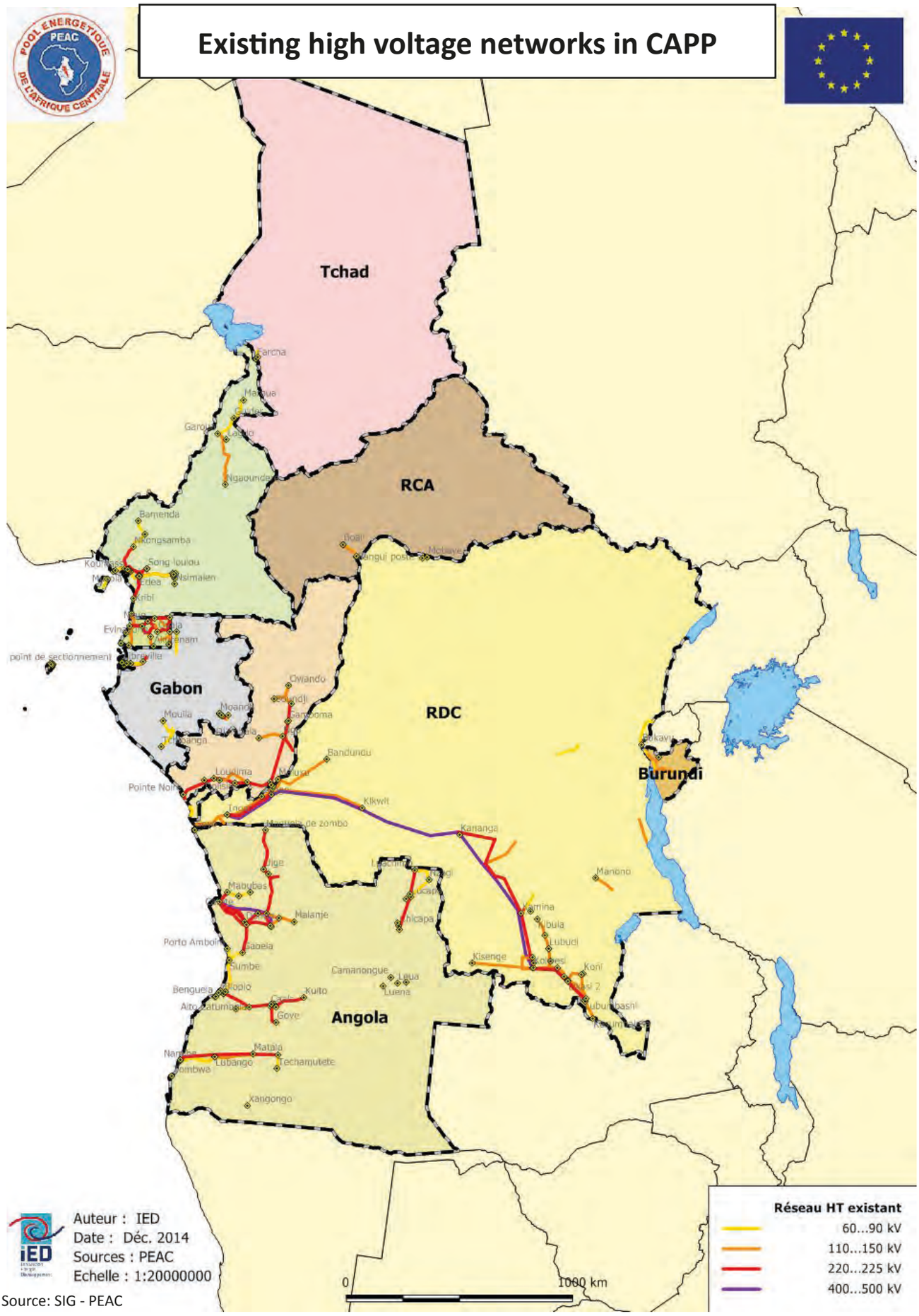
- A focus on equipping Warak and Lom Pangar to benefit Cameroon and Chad,

- A focus on equipping Chollet to benefit Congo and Cameroon,

- A focus on rehabilitating Ruzizi so that the regional needs of eastern DRC and Burundi can be met,

- A focus on rehabilitating Inga generating means to benefit Kinshasa, Brazzaville and Pointe Noire.

Figure 2: Existing high voltage networks in CAPP



Source: SIG - PEAC

3.4.4 Cross-Border Electrification Programme Projects (CBEP)

The 15 projects of the Cross-Border Electrification Programme are rural projects involving at least two ECCAS member countries. They are characterised by the fact that **they do not require the construction of new power plants or high voltage transmission networks**. They make use of what already exists, that is to say the surplus of a member country (A) which supplies a member country (B) through the construction of medium voltage transmission lines.

This option involves unidirectional cross-border power flows and the supply of reliable and affordable electricity to the recipient populations. This, in itself, will contribute to the local economic development of the area concerned.

Table 4 : Current progress on CAPP CEPP

No.	CCEP Name	Situation in 2014	Donor
1	Electrification of Zongo (DRC) from Bangui (CAR)	Design studies & tender completed Seeking funds to carry out construction	African Development Bank
2	Electrification of 7 villages (CAR) from Mobaye (DRC)	Design studies & tender completed Seeking funds to carry out construction	African Development Bank
3	Electrification of 6 localities (Tchad) from Guider (Cameroun)	Design studies & tender completed Seeking funds to carry out construction	African Development Bank
4	Electrification of Bongor (Tchad) from Yagoua (Cameroun)	Design studies & tender completed Seeking funds to carry out construction	European Union
5	Electrification of Datcheka & Alii (Tchad) from Doukoula (Cameroon)	Seeking funds	
6	Electrification of southern provinces (Cameroon), Wole Ntem (Gabon) & Kye Ntem/WoleNzas (Eq. Guinea)	Seeking funds	
7	Electrification of Mbinda & Mayoko from Lekoko (Gabon)	Design studies & tender completed Seeking funds to carry out construction	European Union
8	Electrification of Divénié (Congo) from Malinga (Gabon)	Design studies & tender completed Seeking funds to carry out construction	African Development Bank
9	Electrification of Bambama (Congo) from Boumango (Gabon)	Financement des Études acquis	African Development Bank
10	Electrification of Lékéti & Okoyo (Congo) from Léconi (Gabon)	Seeking funds	
11	Increasing supply for Noqui and electrification of 16 villages (Angola) from Matadi (DRC)	Design studies & tender completed Seeking funds to carry out construction	European Union
12	Electrification of Maquela do Zombo (Angola) + 4 localities in DRC from the high voltage substation of Kwilu (DRC)	Financing for studies acquired	African Development Bank
13	Electrification of Kye Ossi (Cameroon) from Ebebiyin (Eq. Guinea)	Seeking funds	
14	Electrification of Bolobo (DRC) from Makotipoko (Congo)	Seeking funds	
15	Electrification of Kouanmouth (DRC) from Ngabè (Congo)	Seeking funds	

Although they are an integral part of the regional market aspect, these CBEP complement the development of interconnections resulting from the construction of high voltage transmission networks through the PIP.

3.5 The Current Situation of ECCAS Member State Regional Infrastructure Extensions

A review of the situation on the ground as regards regional power in Central Africa shows that the "market" is truly embryonic. T**he lack of trade is the norm today**, the two[11] (2) exceptions to this situation are:

- The INGA (DRC) – Brazzaville (Congo) interconnection,
- The interconnection from the RUZIZI II regional power plant between the east of the DRC, Burundi and Rwanda

This situation gives rise to the suggestion that the future extension of regional infrastructure be divided into two stages:

i. A short to medium term stage from 2014 to 2019, which involves mobilising the necessary financing. The analysis shows that apart from the development of Djibloho (Equatorial Guinea), all the infrastructure required to pool generating resources and increase interconnections is either in the design stage, or construction phase as regards Inga 3 Low Falls. In any case, none of the infrastructure of these PIP will be ready for commissioning until 2019, and

ii. A long-term stage which extends from 2020 to 2030, during which the 15 PIP will successively be commissioned and begin operations and when all the conditions will be met for setting up and operating the regional market.

3.5.1 The Role of the CAPP in Extending Regional Infrastructure in the Medium Term: 2014 - 2019

The mission statement for the CAPP during this stage involves implementing effective, win-win partnership mechanisms among member countries. The priority is to mobilise the financing required to construct the infrastructure needed to pool generating resources and increase interconnections.

This priority is an *absolute prerequisite* for the subsequent development of regional power trade within the ECCAS.

To be in a position to fulfil its financing mission, the CAPP Permanent Secretariat must be entrusted with the role of **Project Manager** by the member states to develop this infrastructure. It will then be in a position to take responsibility for:

- Preparing the harmonisation of national legislation and regional regulations,
- Contributing to the improvement of the regulatory and economic environment to attract the private sector, and
- Preparing the conditions for the technical regulation of regional trade which will increase over time.

[11] In reality, a third exception could be mentioned that is the transmission line connecting INGA (DRC) and Southern Africa (via Zambia).

The following table illustrates the above statements. It confirms that all the PIP – with the exception of the development of Djibloho (Equatorial Guinea) – are still, in this 2014-2019 period, seeking financing to begin infrastructure construction.

Table 5: Progress of the 15 PIP during the 2014 – 2019 period

N°	Intitulé du PIP	2014		2015		2016		2017		2018		2019	
1	Development of Djibloho (Eq. Guinea)												
2	Development of INGA site and associated interconnections												
3	Inga - Cabinda - Pointe Noire interconnection												
4	Cameroon - Chad interconnections												
5	Hydroelectric development of Dimoli & associated transmission lines from CAR - Cameroon												
6	Cameroon (Memve'ele) - Gabon - Eq. Guinea interconnections												
7	Gabon (Grand Poubara) - Congo interconnections												
8	Chollet hydro powerplant and transmission lines to Congo and Cameroon												
9	Supply of Burundi from eastern DRC - Kolwezi - Bendera [1] interconnection												
10	Strengthening of Boali - Bangui interconnection and Bangui - Zongo - Libenge interconnection												
11	Hydroelectric development of the three Lobaye sites												
12	Connection of the Soyo thermal gas plant to Inga - Cabinda - Pointe Noire												
13	Interconnexion électrique Inga (RDC) et Calabar (Nigeria)												
14	Oyem (Gabon) - Mongomo (Eq. Guinea) interconnection												
15	Study on ECCAS member country grid interconnection												

[1] Lign that is complementary to the Bendera - Kalémie, Uvira - kiliba - Bujumbura line

- Registration on PIP
- Signing of inter-Country protocol
- Mobilisation of funding for feasibility studies, tender document preparation, call for tender, adjudication
- Feasibility and design studies (technical, financial and institutional)
- Validation of the studies, decision by countries to begin construction
- Mobilisation of funding (call for tender + construction + supervision)
- Lancement of construction, adjudication
- Construction and supervision
- Completion and commissioning
- Infrastructure operation
- Prerequisite : signing of Inter-Country Agreement
- Additional bilateral studies
- New project awaiting information and data from the Angolan party to begin the process

Figure 3: National Projects of Member Countries and PIP to 2019

Source: SIG - PEAC

3.5.2 The Role of the CAPP in Establishing the Regional Electricity Market: 2020 - 2030

The period from 2020 to 2030 is characterised by a gradual commissioning of all infrastructure from 2020 to 2024. At this stage shaped by the increase in trade, the role of the CAPP Permanent Secretariat will focus on meeting the conditions to implement, manage and supervise the market.

Even if they are still relevant, considerations relating to infrastructure development will begin to take a back seat during this period, as considerations regarding operational planning for regional market development, pricing of transmission and associated services and the regulation of operators come to the fore.

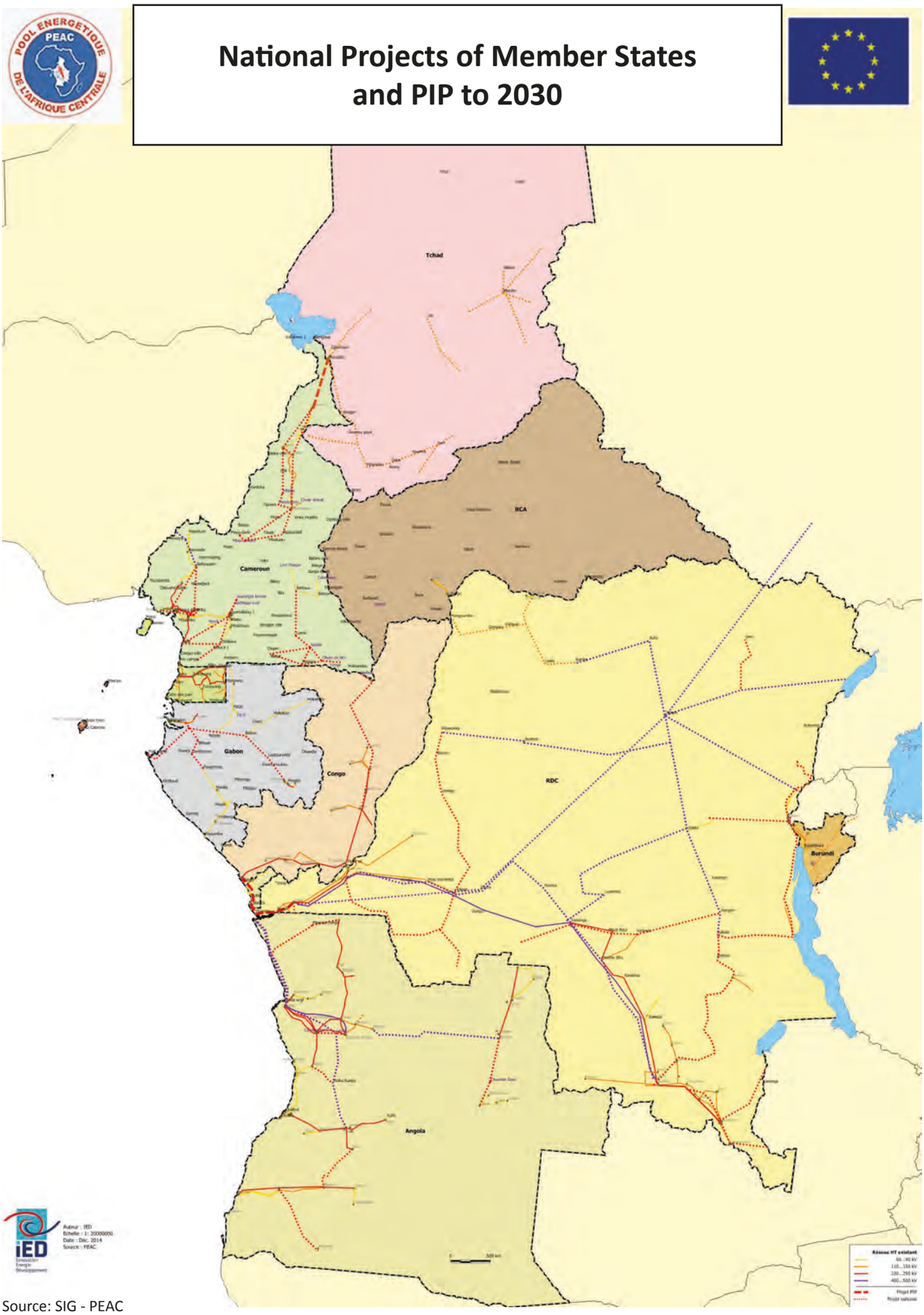
Table 6: Progress on the 15 PIP over the 2020 – 2030 period

N°	Intitulé du PIP	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
1	Development of Djibloho (Eq. Guinea)											
2	Development of INGA site and associated interconnections											
3	Inga - Cabinda - Pointe Noire interconnection											
4	Cameroon - Chad interconnections											
5	Hydroelectric development of Dimoli & associated transmission lines from CAR - Cameroon											
6	Cameroon (Memve'ele) - Gabon - Eq. Guinea interconnections											
7	Gabon (Grand Poubara) - Congo interconnections											
8	Chollet hydro powerplant and transmission lines to Congo and Cameroon											
9	Supply of Burundi from eastern DRC - Kolwezi - Bendera [(1)] interconnection											
10	Strengthening of Boali - Bangui interconnection and Bangui - Zongo - Libenge interconnection											
11	Hydroelectric development of the three Lobaye sites											
12	Connection of the Soyo thermal gas plant to Inga - Cabinda - Pointe Noire											
13	Interconnexion électrique Inga (RDC) et Calabar (Nigeria)											
14	Oyem (Gabon) - Mongomo (Eq. Guinea) interconnection											
15	Study on ECCAS member country grid interconnection											

(1) Lign that is complementary to the Bendera - Kalémie, Uvira - kiliba - Bujumbura line

- Registration on PIP
- Signing of inter-Country protocol
- Mobilisation of funding for feasibility studies, tender document preparation, call for tender, adjudication
- Feasibility and design studies (technical, financial and institutional)
- Validation of the studies, decision by countries to begin construction
- Mobilisation of funding (call for tender + construction + supervision)
- Lancement of construction, adjudication
- Construction and supervision
- Completion and commissioning
- Infrastructure operation
- Prerequisite : signing of Inter-Country Agreement
- Additional bilateral studies
- New project awaiting information and data from the Angolan party to begin the process

Figure 4: National Projects of Member States and PIP to 2030



Source: SIG - PEAC

4 REGIONAL MARKET INFRASTRUCTURE IMPLEMENTATION STRATEGY

4 Regional Market Infrastructure Implementation Strategy

4.1 Context

The ECCAS member countries have fully recognised the pressing need to take a regional approach to complement the efforts undertaken by the individual countries. This regional integration approach including a regional market has the benefit of accelerating optimisation of the enormous power potential in the region. It will help to significantly increase power generating capacity at competitive prices. Indeed, it is based on the optimal use of hydroelectricity in the equator region where the rivers have a virtually constant flow rate. This option also has the advantage over thermal plants of offering an abundant and cheap source of energy. The high voltage transmission lines to be added to this intensive hydroelectric generating infrastructure will enable cross-border interconnections to be established, to make the most of the competitive prices.

To date, the lack of cross-border power trade in Central Africa is the norm. The two exceptions are the connection between Inga (DRC) and Brazzaville (Congo) and the connection between Ruzizi II (DRC) and Bujumbura (Burundi). There are no other interconnections. They will be developed gradually, with the completion of the PIP beginning in 2020.

Initially, the situation will be a scattered market made up of bilateral trade agreements that will gradually come into force: Maroua (Cameroon) – Ndjamena (Chad) or even Inga (DRC) – Cabinda (Angola) – Pointe Noire (Congo). Subsequently, and in the long term (2025-2030), it will be possible as the various generating plants are commissioned and reserves are built up, to begin commercial trading.

The development and pooling of power generating and transmission infrastructure thus constitutes, as has already been highlighted, a prerequisite for subsequent developments. This means that even if the financing and infrastructure Project Management activities are not strictly speaking the tasks of a power trade system, the CAPP Permanent Secretariat has no other choice than to assume responsibility for them to accelerate improvement of power supply availability. They constitute a prerequisite to building a regional electricity market.

This chapter covers all the findings made and identifies the risks associated with the development of these PIP. It proposes elements for solutions that form the basis of the selected priority infrastructure project support and implementation strategy.

4.2 Analysis of the Situation of the 15 Priority Integration Projects

Several lessons can be drawn from analysing the current situation of the 15 priority integration projects as regards their current status. The findings are unequivocal: implementation of the PIP highlights serious hurdles which have been impeding progress on almost all these projects since 2004.

1. Signature of inter-country protocols,

2. Uncertainty around how to align transmission projects and generating projects,

3. Complementarity between “integration” PIP projects and “export” PIP projects,

4. Operating mode adopted to monitor and implement PIP,

5. Low capacity of national power utilities to self-finance,

6. Insufficient human resources within the CAPP to adequately monitor and implement complex projects like the PIPs.

4.2.1 Signature of Inter-Country Protocols

The 15 PIPs have been selected and adopted by the Council of Ministers for Energy, following analysis by the Management Committee then the Executive Committee during the meetings in 2004 in Malabo (Equatorial Guinea).

The initial step in implementation is the signature of the Inter-country Protocol or Agreement, to officially begin the projects. However, upon examination of these PIP a real gap emerges between the year the decision was taken by the Ministers for Energy and the year the protocols were signed by the highest authorities of the countries concerned. At the present time, that is to say ten years after the decision was made, four of the PIP are still awaiting signature of the inter-governmental protocol, without which no action can be taken. These are:

- Cameroon (Memve'Ele) – Gabon – Equatorial Guinea grid interconnections,
- Gabon (Grand Poubara, Tranche 2) – Congo grid interconnections,
- CAR (Dimoli) – Cameroon – Congo grid interconnections,
- Gabon (Oyem) – Equatorial Guinea (Mongomo) grid interconnections.

This finding indicates that the CAPP bodies, that is to say the Council of Ministers for Energy and the Council of Ministers for Foreign Affairs that the ECCAS depends on, must come together. Indeed, it is the meeting of the Council Ministers for Foreign Affairs that precedes the Conference of Heads of State and Government and hence is the linchpin of intergovernmental protocols.

The CAPP bodies must work to have a stronger influence over the executive authorities. This requires that these CAPP bodies no longer work solely with energy sector stakeholders as is currently the case. They should be organised such that they have a direct link with the Conference of Heads of State and Government, because the projects required to establish and operate a regional electricity market must be adopted directly at the highest regional level. Such a mechanism would avoid delays in project start-up. The current system places these "multi-national" projects in a standard bottom-up approach in each of the member states. That is to say they are treated like any national project and the CAPP Permanent Secretariat thus has to carry out advocacy work for which it has neither the financial nor the human resources.

This situation has a serious impact on the development of ECCAS priority projects. The tangible results are that with the exception of two projects[12], the 13 others are still seeking financing to carry out the feasibility studies or are at the feasibility study stage. The operating phases, should financing be secured, will not be until 2020 to 2025 for the final one. This means that from the inclusion of the project on the PIP list to its commissioning and operation, between 192 and 252 months will have passed. This is well above the usual average of 111 months and this situation must change.

[12] These are the development of the INGA site and associated interconnections for which feasibility studies have been completed and the development of Djibloho which is already in operation.

4.2.2 Uncertainty around the Alignment of Transmission Projects and Generating Projects

All the studies for ECCAS member country grid interconnections recommended a North-South coastal backbone that is part of the selected PIPs and the primary aim of which is to increase power trade within the Central Africa region. This interconnection is based on a high voltage corridor of 400kV in alternating current linking Angola, DRC, Congo, Gabon, Equatorial Guinea and Cameroon.

The regional transmission network to be developed depends directly on the joint improvement of member states' national generating capacities. The final report of the grid interconnection study emphasises the point that the North-South backbone adopted requires the countries to take responsibility for a certain number of connections which are essential for the transmission of electricity along the whole distance.

Furthermore, for power to be traded between countries, a certain number of hydroelectric power generation plants need to be built by the member countries. These plants must come into operation before the transmission and interconnection infrastructure can be brought on line.

However, the programming of power generating infrastructure to meet domestic demand in the member states focuses on the need to minimise failure to deliver. In other words, governments sometimes opt for short-term power supply solutions via thermal power stations, at frequently very high cost, because the priority at the time is to limit the risk of outages.

For an ECCAS member state or a group of member states to have the motivation required to commit to implementing a CAPP priority project, the solution for meeting their domestic energy needs must converge or be complementary to the objective, within the CAPP project implementation timeframe and cost. If this is not the case, the CAPP projects will not receive the commitment and resources they need from the different member states.

The issue of alignment between generating and transmission infrastructure highlights the crucial need for coordination by a regional Project Manager, the CAPP Permanent Secretariat, in close collaboration with the operators and the completion on time of national projects without which regional integration projects cannot be carried out.

4.2.3 Operating Mode Adopted to Monitor and Implement PIPs

The master plan study for setting up an electricity market in Central Africa supposes that the member countries' electrical systems will be developed under the supervision of the member countries independently of the CAPP which oversees the regional aspect.

The operating mode adopted places the end responsibility for funding and development of the national parts of the regional projects on the national power utilities of the ECCAS member states affected by these projects.

Nonetheless, this approach has certain limitations:

- Challenges in the management and coordination of project implementation.

  The member countries all have different capacities in terms of expertise to manage the development and implementation of these projects. They also face different challenges in terms of capacity to attract investment to develop infrastructure due to differences in their macro-economic situations. These two

factors can lead to different start dates for the construction of different segments which must nonetheless come together to form a single transmission line designed to be completed at a specific moment in time to meet an identified need for the participating member states.

Furthermore, as the human resource skills in project development and implementation vary from one country to the next, the project will only progress at the speed of the weakest of the member countries, inevitably causing delays. This situation can but lead to those countries that do have the necessary expertise launching their own programmes if an urgent need arises. This will create a gap between the regional programme supervised by the CAPP and those of the individual member countries.

- Difficulties in justifying the viability of the different parts of viable regional projects

The financial and economic advantages of the programme, which are key to mobilising financing to implement the project, can only be proven when the programme is assessed in its entirety and in a regional context.

Indeed, the fact that the programme overall is financially viable does not mean that each of the different segments is viable in itself. The attempts to justify separate segments of the programme to implement them because they are within the geographical boundaries of a particular country could give rise to difficulties and make it harder to mobilise funding for that segment of the project. Such a situation will not occur, or will be much less likely, if the project is considered as a whole.

To conclude on this point, it appears necessary to adopt a project monitoring and implementation approach based on the full support and cooperation of the participating countries at all stages, including the planning stage and the regular updating of regional plans.

The strategy should also make it possible to use the best skills and capacities in the participating member countries. This use of similar expertise in the implementation of the whole project means that a viable project will not be unduly delayed by questionable attempts to justify segments of the project that are not viable on their own.

4.2.4 Low Capacity of National Power Utilities to Self-finance

With the exception of Chad, which has some of the highest prices of the continent, the other CAPP member countries tend to have overall prices that are lower than other African countries. As these prices are not profitable, and also due to the very high level of technical and commercial losses, the national power utilities have very low if not inexistent profit margins to use for self-financing.

The regional integration of power generating and transmission systems constitutes a definite asset to make the most of the comparative advantage the region has in the form of hydroelectricity which, with effective operation would lead to extremely competitive prices. However, these regional advantages will only be achieved if radical measures to reduce inefficiencies in distribution systems are undertaken at the same time.

All these initiatives are crucial for CAPP member country companies to be able to make the most of all the advantages offered by an available and affordable electricity supply thanks to regional integration.

4.2.5 Insufficient Human Resources within the CAPP to Adequately Monitor and Implement Complex Projects like the PIPs.

To carry out its daily activities the CAPP requires adequate and regular funding so the institution can fulfil the region's energy development agenda. Access to automatic financing, without having to systematically wait to recover costs through sales, would make it possible to plan support for the member states' utility companies.

The advantages of sustainable financing would give the CAPP the autonomy required to maintain a real regional momentum. It would give it the latitude to build on the achievements of experts from the member country utilities and it would be in a position to systematically guarantee their participation in certain specific tasks. Otherwise, and this is the current situation, the CAPP is inevitably subject to a high turn-over of experts as the experts provided by the member utilities are not necessarily those required.

The CAPP statutes stipulate that all members must contribute to all the costs associated with fulfilling the role of the CAPP as adopted by the CAPP Executive Committee. Putting this into action is arduous, as the contributions by member states and certain power utility companies are continually insufficient and/or irregular. This lack of adequate financing complicates the work of the Permanent Secretariat considerably. It is difficult for it to:

- List the experts it works with on a regular basis to fulfil its project coordination and implementation role. However, the projects involved in this instance are complex and thus require proven legal, technical, economic and financial skills.

  Without a pool of regular experts, the CAPP Permanent Secretariat can only count on staff seconded by the power utilities to fulfil its tasks. The motivation of seconded staff can restrict the Permanent Secretariat's ability to fulfil its project monitoring and implementation role effectively.

  The experts' profiles may not be exactly in line with the needs at a given moment in time. This can lead to inaccurate estimations of the work required to develop and implement specific projects. Which inevitably leads to staff being replaced mid-way through, which will cause delays in project execution.

  It should also be noted that the hierarchical relationship can be uncomfortable when staff are seconded by member utilities. The reporting line between seconded experts and the Permanent Secretariat may become uncomfortable in the long-term. The motivation of the expert concerned to give their all to their tasks with the CAPP may be fairly low as their salaries, paid by their utility company, are not directly linked to the performance of the CAPP.

  Finally, frequent changes in experts do not enable the Permanent Secretariat of the CAPP to develop internal expertise and improve implementation efficiencies which occurs when a pool of experts collaborates regularly.

- Provide consultancy services as required to carry out the activities essential to project development. The Permanent Secretariat is only able to hire consultants when it has secured funds, usually from international donors. The timing and execution of critical missions is thus dictated by the acquisition of external funding rather than by a timeline determined by the planned commissioning date of the installation.

4.3 The Suggested Implementation Strategy

To successfully and rapidly monitor and implement the priority CAPP projects, a structure is needed that can avoid or at least mitigate the aforementioned causes of delays. This structure, which will implement the project under the supervision of the Project Manager, or CAPP Permanent Secretariat, must have the total support and be fully accepted both by the member countries and by all other stakeholders involved in the priority projects.

It is crucial to have a clearly defined institutional framework within which the participants have harmonised missions, clearly defined roles and responsibilities as well as transparent rules and procedures to effectively implement the projects. This framework must be supported by concrete human, technical, financial and other resources as well as by the effective organisation of the management of each of the project stages.

This way of operating is also a donor requirement[13], because it helps to cover both the execution and fiduciary risks of the infrastructure project concerned.

To avoid delays in project implementation, it will be capital to make recommendations to improve capacities as regards human resources and financial management. These proposals that target the project implementers and hence the acceleration of implementation of priority CAPP projects must be discussed by the institution bodies so they can be officially adopted at the highest level as a capital element of the CAPP's PIP implementation strategy.

In concrete terms, this means formally recommending recourse to two forms of dedicated legal entity, in other words, that these entities be exclusively set up to meet the needs of the PIP implementers :

- **A project company, a** private law company constituted by its shareholders in a specific country where it is registered. The specific type of company is determined for a given project by the project's characteristics. As the vast majority of CAPP member states[14] are also members of OHADA[15], our analysis is based on the type of company most commonly used for projects in the electricity sector which involve substantial investment. Until the reform of company law under OHADA[16], this meant a *société anonyme* (SA) which, besides limiting the liability of shareholders to the level of their investment, presented many advantages such as a flexible number of shareholders, an effective governance system through a board of directors and finally financing modalities suited to large investments involving various entities ; and

- **An international organisation,** made up of the different countries affected by the project in question, such as Great Lakes Energy (GLE), the regional energy sector cooperation structure in the Economic Community of the Great Lakes Countries (ECGLC). Indeed, GLE is responsible for managing, through the Société Internationale d'Électricité des Grands Lacs (SINELAC) the regional hydroelectric complex of Ruzizi, that is to say RUZIZI II but also for monitoring and implementing the 147MW of extensions to RUZIZI II (147MW). GLE is thus an ad-hoc legal entity, that is to say set up specifically to meet a need without ties to company common law and which operates according to the rules set up by its member states.

[13] The African Development Bank (AfDB) which agreed to finance the "Development of the INGA site and associated interconnections" PIP, explicitly identifies in the project evaluation document the implementation risk associated with the current Inga 3 Management Unit. For the AfDB, this unit constitutes a newly created entity and therefore has no background in monitoring and implementing a project of such complexity. The AfDB also mentions the high initial fiduciary risk due to the fact that the unit that serves as execution agency is not yet totally operational and therefore, its capacity to financially manage the project is hard to assess beforehand.

[14] OHADA members are: the Republic of Cameroon, Central African Republic, Democratic Republic of Congo, Republic of Congo, Republic of Gabon, Republic of Equatorial Guinea and the Republic of Chad.

[15] *L'Organisation pour l'Harmonisation en Afrique du Droit des Affaires* (Organisation for the Harmonisation of Business Law in Africa)

[16] Following the reform of company law under OHADA, OHADA member states may also set up Sociétés par Actions Simplifiée (SAS) whose operating rules, while being largely based on those of Sociétés Anonymes, offer greater flexibility and freedom to associates who can considerably adjust the internal operating rules in their statutes. It can therefore be supposed that they will replace the Sociétés Anonymes in setting up projects.

Table 7: Comparative analysis of project companies and international organisations

	PROJECT COMPANY	INTERNATIONAL ORGANISATION
TYPE OF ENTITY	Company under private law constituted with a share capital	Inter-countries Organisation
MEMBERS	The company is made up of shareholders	The Organisation is made up of Member States (MS)
DECISIONS	Shareholders General Assembly	Conference of Heads of State and Government
EXECUTIVE BODIES	Board of Directors which supervise a Chairman of the Board The board holds extended power to make all decisions on behalf of the company	Concil of Ministers which supervises an Executive or Permanent Secretariat The Council of Ministers decides through unanimity of all MS
FINANCING	Company financing is based on : - its share capital which it can increase by issuing shares or by increasing the nominal amount of existing shares, - borrowing from financial institutions, - public offering, and - loans from shareholders	The budget is fed by the MS and all other internal or extenal resources as decided by the Council of Ministers. - contributors by MS ; - loans taken out by MS and passed on to the international organisation, - subsidies, donations, bequests and other donations, including technical assistance.

4.4 Overall Recommended Framework for CAPP Operation to Establish the Regional Market

4.4.1 Language Harmonisation: terms and concepts

Project Promoter : the Project Promoter is the entity that expresses the need that defines the objective of the project, its timetable and the budget dedicated to the project. The expected result of the project is a product. The Project Promoter controls the fundamental idea of the project and thus represents the end users for whom the product is intended. Thus the Project Promoter is responsible for the functional expression of requirements but does not necessarily have the technical skills to produce the product.

Project Manager : When the Project Promoter does not have the specific experience required to run the project, it can call on a Project Manager (who is / becomes responsible for project management). The Project Manager plays a role of interface between the Project Implementer and the Project Promoter in order to help the latter clearly define its requirements and check with the former if the objectives are technically feasible.

Project Implementer The project implementer is the entity selected by the Project Promoter to produce the product, within the timeframe, level of quality and cost set by the latter in the form of a contract. The Project Implementer is thus responsible for making the technical choices to produce the product in compliance with the Project Promoter's requirements. The Project Implementer is thus responsible within the context of its mission for designating an individual to be responsible for the proper implementation of the project, who is the project leader.

Relationship between the Project Promoter/Manager and Implementer:

1. Distinction between project implementation and promotion/management roles

A clear distinction must be made between project promotion/management and implementation, as it helps clarify the responsibilities of the two roles. The expression of needs is the entire responsibility of the Project Promoter/Manager. Indeed, in some instances, the Project Promoter/Manager may delegate operational choices to the Project Implementer, on the basis that they do not have sufficient technical knowledge to make such choices (for instance the IT department of an organisation takes control of the project once the needs have been expressed). However, only the Project Promoter/Manager can fully understand its users' needs. Failure to clearly understand the distinction between the two roles can lead to conflict wherein each casts the blame on the other.

While the Project Implementer must take into account the initial requirements of the Project Promoter/Manager, they are not authorised to add new functions during the project, even if they deem them appropriate. The Project Implementer is however responsible for the technical choices providing these respond operationally to the Project Promoter/Manager's requirements.

2. Communication between Project Implementer and Project Promoter/Manager

For the smooth running of the project, the roles of each entity must be clearly defined and a representative identified within the Project Promotion/Management team and the Project Implementation team. A project group that brings together the Project Promoter/Manager's project leaders and those of the Project Implementer as well as the delegated Project Manager if relevant, must thus meet when this is necessary to resolve conflicts around the Project Promoter/Manager's requirements or coordination of the project.

Finally, it is essential to establish a training plan that will enable both teams to share a common language and agree on how the project is to be run.

4.4.2 Recommended Framework for CAPP

To reiterate, power generating / transmission infrastructure construction projects under the master plan, upon expiry of guarantees, comprise the following phases:

- Development:
  - Master plan ;
  - Feasibility studies ;
  - Drafting of decisions ;
- Studies:
  - Simplified/detailed design studies
  - Contracts

- Construction
  - Construction specifications
  - Supply
  - Construction
  - Commissioning
  - Acceptance

The **Project Promoters** for regional infrastructure construction (PIP) here are the ECCAS member countries, who hold sovereign authority. With regard to the construction of infrastructure specifically for the Central Africa Integrated Electricity System (French acronym SEIAC), and in particular the 15 PIPs, the CAPP Permanent Secretariat is the **Project Manager.** The member states delegate the decisions other than those pertaining to the civil engineering of dams (rock fill and concreting of the dam) for which the member states' heritage societies are responsible.

The Project Manager gives its instructions to the Project implementer, which is a project company set up for the purpose.

To fulfil its missions, in particular that of monitoring and control, the Project Promoter or its Project Manager, seeks project management assistance from skilled personnel within the Permanent Secretariat who provide contractual services purchased from the electricity system operators in the Central Africa region.

The Project Implementer, that is to say the project company, is the entity which is entrusted on behalf of the Project Manager with designing the infrastructure in line with the requirements and obligations and with coordinating its construction and presenting it for acceptance to the Project Promoter or its Project Manager.

The Project Implementers missions include:

- Specifying and proposing solutions
- Organising, planning and leading project implementation
- Carrying out detailed design studies
- Choosing sub-contractors and suppliers
- Launching and managing supplies
- Organising and running the worksite
- Testing and commissioning
- Organising hand-over to the Project Promoter

5 STRATEGY FOR IMPLEMENTING AN ORGANISED ELECTRICITY TRADING MARKET

5 Strategy for Implementing an Organised Electricity Trading Market

5.1 Context: the Characteristics of a Regional Market

The Central Africa regional electricity market is characterised by a certain number of points which it has in common with the four other regional markets on the continent[17]:

a. It is part of a regional economic structure that has wider objectives and is governed by a treaty which can serve as a solid legal foundation and as a guarantee for the development of a regional market,,

b. The CAPP is a "specialised agency" of the ECCAS like the EEEOA of the CEDEAO, the EAPP of COMESA or the SAPP of the SADC.

c. The type of regional market concerned is based on an overall organisational structure made up of :

   i. A supreme body within which the countries are represented at a political level. This body stipulates the political guidelines and takes high-level decisions. For the CAPP this is the Council of Ministers,

   ii. A functional institution which in the case of Central Africa is the CAPP Permanent Secretariat, whose tasks and missions have been specified,

   iii. An independent regulatory body, the CORREAC, which in this case does not yet exist although it is in the pipeline.

   iv. An independent market operator to run the market and coordinate trade. In Central Africa this institution has not yet been set up. It will involve joint supervision of trade agreed and authorised by the national transmission network management authorities[18] ;

   v. An Executive Committee which, although technically independent, is accountable to the supreme bodies of the CAPP (the Council of Ministers for Energy) and must comply with its obligations, account for certain budget decisions, provide annual reports etc.

5.2 The Current Status of the Central Africa Regional Market

A Central Africa Regional Electricity Market law was officially adopted on 24 October 2009 by the ECCAS Conference of Heads and State and Government. Under this law a certain number of mechanisms, institutions and processes should now be in place for the regional market as described in the law to be able to be set up.

[17] Southern Africa, East Africa, West Africa and the Maghreb. This characteristic should be emphasised because it is specific to the power pools of the African continent and the Central American power pool, SIEPAC.

[18] None of the ten member states has set up an independent network transmission management authority for the moment, despite appropriate legislation in Cameroon, DRC and Gabon. This role is currently fulfilled by the power utilities' electricity transfer directorates.

5.2.1 The Institutional Framework

On the institutional level, the only institution of all those required under the regional market law that currently exists, is the CAPP governance structure with:

- The Council of Ministers for Energy, which is the body charged with implementing the Central Africa electricity market law, and
- The CAPP Permanent Secretariat which is the competent body of the Power Pool.

The CAPP Permanent Secretariat in this organisational structure has a key role to play. The fact that only the Planning Sub-committee has been at all functional and that the other sub-committees are not functional at all must be rectified. These organisational sub-committees are essential because ultimately they support and advise the overall governance structure. These technical experts who come from the CAPP member country power utilities must analyse and make recommendations pertaining to all issues surrounding the drafting of a joint policy to develop, maintain and update joint procedures and operating rules for the technical, operational and environmental aspects of the CAPP.

As well as the Planning Sub-committee there must be:

- An Operations Sub-committee, and
- An Environmental Sub-committee.

5.2.2 The Requirements Relating to National Regulations

The industrial organisation of electricity markets in the CAPP member countries consists mainly of vertically integrated national companies, even if in the majority of the countries the national power utility co-exists with independent power producers.

A regional electricity market does not require a specific industrial organisation to be effective. Nonetheless, it is essential for a certain number of agreements to be drawn up to govern cross-border trade, in particular:

- Free access to reserve capacity on transmission networks,
- An agreement on how to pay wheeling charges,
- An agreement on assets/infrastructure that constitute the regional network and the terms of payment for using said assets/infrastructure (wheeling charges).

To date there are only three contracts in Central Africa regarding cross-border trade. This trade is conducted on the basis of bilateral contracts and there are no specific rules for regional trade. This aspect must be covered though the drafting of “Regional Market Rules” for power trade in the Central Africa region. These rules will be supplemented by regional wheeling charges.

5.2.3 Regional Standards

A bill for operating interconnected grids has been drafted and has been available since June 2011[19]. This document has yet to be passed into law, but lays down the foundations for harmonising and applying regional standards.

5.2.4 Infrastructure Development

Since 2004, the CAPP has held the specific mandate from the Council of Ministers for Energy to develop infrastructure identified as Priority Integration Projects to lay the foundations for regional integration.

A regional master plan was drawn up in 2006[20] pby the CAPP, funded by USAID. This master plan identified the infrastructure to be developed and proposed different scenarios for funding and constructing this infrastructure as a first concrete step in building regional integration.

5.3 The Target Situation

The "target situation" corresponds to a situation where the CAPP member states have sufficient transmission infrastructure to begin negotiations in a market environment. This target situation in the case of Central Africa corresponds to two sequential periods[21] :

- Phase 1 (medium term): 2014 - 2019, which corresponds to the mobilisation of funding to study and complete at least all the PIPs and bring them all on line,

- Phase 2 (long term): 2020-2030, during which the ECCAS member states will be in a position to trade on a market that has surplus generating capacity and sufficient transmission infrastructure.

5.3.1 Setting up of a Regional Market in the Medium Term: Phase 1

The first phase (2014 – 2019) to set up the regional electricity market in Central Africa will focus on:

i. The need for infrastructure construction, and

ii. The setting up of the missing institutions required to prepare Phase 2 of the regional market

1. Infrastructure construction must provide the region with sufficient transmission capacity and adequate generating capacity to have a sufficient surplus to be able to exceed its bilateral contracts,

2. Two institutions remain to be created. They must be prepared and set up during the 2014-2019 period in preparation for Phase 2 of the regional market creation:

[19] Operating bill – Version dated June 2011.

[20] PCAPP – Master plan study for the implementation of an electricity market in Central Africa (2005 – 2025), Final Report – January 2006.

[21] It is essential not to lose sight of the fact that for the indicative deadlines associated with the market development phases to be triggered requires the minimum investment programme for the 15 PIP must be in place..

- The first of these institutions is the Central Africa Regional Electricity Regulation Commission or Commission Régionale de Régulation de l'Électricité de l'Afrique Centrale (French acronym CORREAC), whose scope covers aspects associated with the preparations for developing regional power trade. The structure, responsibilities and powers of the regional regulator must be formally specified so it can supervise the drafting and recommendation of rules, the application of rules, decisions regarding pricing, consideration of the components of the regional master plan and conflict resolution.

- An institution that assumes the role of regional market system operator to establish and integrate the technical rules for operating, managing and pricing cross-border power flows by:

  - Monitoring developments in the national electricity sector in the ECCAS member countries,

  - Periodically analysing the economic and technical viability of arrangements for cross-border power trade among users of the transmission network,

  - Maintaining and monitoring the technical performance of the power utilities,

  - Facilitating the drafting of technical standards and requirements to collect and process useful data.

5.3.2 Setting up of a Regional Market in the Long Term: Phase 2

The second phase (2020 – 2030) of regional market implementation or the long-term "target situation" is characterised by the following components:

i. The bringing into operation of all regional infrastructure associated with all the PIPs and the establishment of rules and conditions for pooling this infrastructure,

ii. The coming of age of the institutions that are now all in place,

iii. National regulations harmonised on a regional level.

1. The pooling within the regional market of the now operating infrastructure presupposes that::

   - Rules will have been agreed upon to share the costs and benefits of the regional PIPs that will now all be in operation, and that the terms and conditions for completing projects that are delayed will have been settled,

   - A planning process will have been set up that involves regional optimisation concepts and enables the member countries to take decisions regarding their respective national expansion plans in line with the regional plan.

2. From the institutional point of view, these will all have now been created and will be operational, fulfilling their role on a day-to-day basis. This requires that:

   - The governance structure (CAPP Permanent Secretariat and its bodies) has been set up and reached maturity in terms of supervising and coordinating market developments as well as making decisions on the main policy aspects,

- The regional regulatory authority, CORREAC, is authorised to draw up market rules and standards, apply them and resolve conflicts among operators,

- An institution has been attributed the role of Market System Operator and ensures the regional standards have been harmonised throughout the region and that all the countries comply with the minimum standards for operating, planning and constructing infrastructure/assets,

3. National regulations will have been harmonised on a regional level in the sense that they will now facilitate regional trade by means of free access to transmission capacity for grid users (third party access to networks).

5.4 Transition from the Current Situation to the Regional Market Target Situation

This concerns the path for transitioning from the current situation to the target situation. That is to say to a situation wherein the countries negotiate on an electricity market that has sufficient transmission infrastructure. This requires certain structured measures to be set up and implemented according to a set timetable.

Development of the regional market has been envisaged in two phases:

i. Phase 1: to 2019, when most of the regional transmission infrastructure should be operational.

ii. Phase 2: On the basis of preparatory tasks completed during Phase 1, this phase stretches from 2020 to 2030.

5.4.1 Phase 1 : 2014 - 2019

By 2019 most of the regional transmission infrastructure should be operational. The main tasks of this phase are as follows:

- Development of a training programme with the following objectives:
  - To build project management and power infrastructure project management capacities
  - To build the capacities of existing regional institutions, particularly the CAPP, to be able to carry out the activities required for implementing, operating and monitoring the regional market,
- Formalisation of trade transactions which are currently executed on a “case-by-case” basis and standardisation of procedures such as::
  - Bilateral agreements between countries and between regional companies,
  - Trade instruments (types of contract, short-term trade).
- Wheeling charges agreed upon by the parties.
- Coordination of regional trade

- Agreement on a "harmonisation path" towards regional operating standards and procedures as specified in the regional operating code,

- Agreements to be signed with the various Transmission Network Management authorities in the member states to draw up a plan enabling them to comply with regional standards.

- Preparation for the following phase:

  - Finalisation of the preparation and setting up of the regional regulatory commission (CORREAC),

  - Preparations to create the institution that will play the role of regional market system operator.

This Phase 1 corresponds in fact to the "current" situation. Trade cannot really be envisaged for the moment as the current market does not yet exist. As a result, completion of the tasks listed above constitutes a prerequisite for Phase 2.

5.4.2 Phase 2 : 2020 - 2030

Phase 2: On the basis of all the preparations carried out during Phase 1, during the period 2019 to 2030, it will be possible to focus specifically on:

- Developing a training programme to:

  - Build the capacities of national power utilities to effectively operate the market and power trade in a regional context.

- Bilateral agreements on transit across third-party countries using standardised trade instruments,

- The first short-term trade transactions over the market and not solely via bilateral agreements,

- Regional wheeling charges,

- The functions of the regional market system operator

- A longer-term vision with a liquid regional market with more sophisticated trade transactions (day-ahead, dynamic trade etc.)

6 CAPP ACTION PLAN FOR THE REGIONAL ENERGY POLICY STRATEGY

6 CAPP Action Plan for the Regional Energy Policy Strategy

The objective of the action plan is to identify a panel of activities that constitute a strategic plan which by executing it, the CAPP will accomplish its main mission, which is to cover the two fundamental aspects associated with the ECCAS energy policy:

- Play a key role in meeting the conditions required to carry out regional infrastructure projects,

- Facilitate the harmonious development of the regional market effectively and in compliance with the objective of developing cross-border trade and providing reliable and affordable electricity to the general public and to industrial investors.

The CAPP was created in 2003 and has worked since then without any real strategic plan. It must now regroup to fully assume its mandate on the basis of carrying out the activities to achieve the expected results and hence its strategic objectives. This includes the specification of a response to the strategic review and the identification of the risks that have been carried out. All causes of delays and/or obstacles to the CAPP fulfilling its mission.

6.1 The Fundamental Issue of CAPP Resources

As highlighted in this document, the Permanent Secretariat plays a pivotal role in the CAPP institutional framework. It is therefore essential that it be able to resolve financial difficulties and issues around financial resources without which the transition to a regional market is difficult to envisage.

The actions recommended above and which constitute the strategic plan presuppose that the constraints associated with a lack of human and financial resources to adequately monitor and implement the activities will be overcome

6.1.1 Financial Resources

Reference is made here to the financial risk. The CAPP must be able to generate the funding it requires to function and carry out its activities on a lasting basis.

The current internal funding mechanism of the CAPP can essentially be summarised as the funding of the Permanent Secretariat's operating budget (salaries, office equipment and supplies, organisation of meetings of its statutory bodies and of the technical sub-committees). This budget allocation is set annually by the Council of Ministers for Energy and distributed among the member states and the national power utilities. The money comes from the conventional system of contributions from national budgets.

This mechanism has two major disadvantages:

1. The actual level of budgetary spending is, in almost all cases, below the contributions voted on and insufficient for requirements with regard to implementation of the mandatess[22] ;

2. It transpires from past experience that the irregularity of income constitutes one of the major characteristics of the mechanism due to the delays in receiving contributions.

Furthermore, all the other activities of the Permanent Secretariat (studies and project supervision) depend totally on external financing. On average, external contributions represent 70% of the resources assigned to the CAPP.

The response to these structural weaknesses identified in the funding of the CAPP lies in the proposal of an autonomous financing mechanism for the CAPP[23] which has already been adopted by the Council of Ministers for Energy and which is currently awaiting formal approval by the ECCAS Conference of Heads of State and Government.

This mechanism consists in setting up a CAPP fund to develop the electricity sector fed by a levy on power consumption in the member states. It should be noted that this levy on the power bill is already in place in Cameroon and in CAR to finance their regulatory agencies.

This CAPP electricity sector development fund will be able to cover all the day-to-day operating costs of the Permanent Secretariat, but also project technical studies and even some feasibility studies.

However, it goes without saying that in the long term and when the regional market is completely functional the CAPP structural costs will be covered by a tax on cross-border power trade.

6.1.2 Human Resources

This refers to the risk of execution or implementation. The availability of sufficient, competent human resources is at the heart of the Permanent Secretariat's capacity to supervise the studies and implement the infrastructure projects. The lack of technical expertise within the CAPP operational bodies has been identified. As already mentioned, it constitutes a major handicap for the contribution and/or supervision of the development of interconnection projects which involve, by their very nature, complex technical infrastructure.

The solution currently adopted consists in selecting experts chosen by the stakeholder countries in the project concerned to monitor execution of the studies or the coordination of project implementation. This involves:

- Setting up a Steering Committee and a Technical Monitoring Committee as regards the studies and the coordination of the activities of the consultants recruited for these tasks, as in the case of the Chad - Cameroon interconnection,

- The creation of a management unit or a national execution agency dedicated to implementing the infrastructure project, as in the case of the development of INGA 3 Low Falls.

[22] The contributions received with regard to those agreed are on average 47.4% from 2004-2006 and 69.4% from 2006-2008

[23] ONU-CEA-BSR/AC – Study of an autonomous financing mechanism for the CAPP, May 2010 – Revision by CAPP in 2011.

In both the above cases, the implementation risk associated with the Technical Monitoring Committee or the Management Unit is clearly highlighted by the donors[24]. This type of structure is based on entities newly created for this purpose. They do not have any background in monitoring and/or implementing projects which are, by definition, complex. Furthermore, the African Development Bank for instance also mentions the initially high fiduciary risk due to the fact that this type of "execution agency" is not yet totally operational, and therefore its capacity to properly manage the financial aspects of the project cannot really be assessed beforehand.

The response recommended to best mitigate the implementation risk and the fiduciary risk in the case of all regional power integration infrastructure projects is based on two complementary components :

1. Firstly, the CAPP should explicitly be retained as the main interlocutor and Project Manager for regional energy integration infrastructure,

2. To avoid delays in project implementation, and to bring specific improvements in terms of capacity building, capitalisation on past experience and financial management, two types of legal entity dedicated to monitoring and implementation of the projects are recommended :

    i. Project companies, which are companies under private law set up specifically for the project in question by their shareholders and the specific nature of which will be determined by the type of infrastructure to be constructed,

    ii. An international organisation which is set up via treaty or agreement signed among several countries. It is usually administered by an assembly of representatives of the member states who adopt the main guidelines of the organisation and an executive body which is responsible for implementing them.

The results of the detailed comparative analysis carried out of project companies and international organisations recommend the project company option which has the advantage of ensuring an effective and rapid implementation of infrastructure projects while capitalising on the expertise of the experts it recruits for their specific skills.

The project company approach counteracts the negative points associated with the existing approach to project implementation such as a lack of harmonisation of individual country priorities and the permissive coordination and management of these projects.

6.2 The Risk Matrix and the SWOT Analysis

6.2.1 The Risk Matrix

The CAPP Permanent Secretariat plays a central role and as such, a PESTLE analysis highlighted the external factors liable to influence the way in which it will be able to carry out its activities and accomplish its mission. This made it possible in the context of the strategic planning process to draw up the following risk matrix :

[24] African Development Bank – Support for the development of the INGA site and access to electricity – Project Evaluation Report, October 2013.

Table 8: Strategy Implementation Risk Matrix

	DESCRIPTION AND EFFECT	MITIGATION MEASURE	ATTRIBUTION
Implementation Risk	Implementation suffers from lack of collaboration among stakeholders within countries	Strong focused support from CAPP bodies (Management Committee).	Power utilities concerned and hence the project companies created
Political Risk	New governmental priorities not aligned with regional projects	Very strong commitment at the highest political level in the member countries	ECCAS National Governments
Legal Risk	National parliaments do not approve electrical system reform measures	Lobbying of CAPP bodies (Executive Committee + Council of Ministers).	ECCAS National Governments
Financing Risk	Not all national contributions received to fund CAPP activities	Independent financing mechanism for the CAPP in the pipeline for adoption by the Conf. of Heads of State and Government	CAPP

6.2.2 SWOT Analysis

An analysis of the Strengths – Weaknesses – Opportunities – Threats (SWOT) of the CAPP was carried out to assess the activities and tasks carried out to date by both the CAPP and the member utilities. The aim of this analysis is to be able, via the action plan to be proposed subsequently, to convert the weaknesses into strengths and to mitigate the risks identified.

The SWOT analysis is summarised in the table below.

Tableau 9 : CAPP SWOT Analysis

STRENGTHS	WEAKNESSES
Clear, unambiguous attibutes assigned by the ECCAS to the CAPP to make it a specialised agency responsible for establishing the regional electricity market in Central Africa.	Non-functionnal Sub-committees which lead to a lack of technical expertise within the CAPP operational bodies. This constitutes a major set back for supervising interconnection projects.
An explicit mandate for the Council of Ministers for Energy to lead infrastructure development and specifically to supervise and implement the regional Priority Integration Projects.	CAPP financing is dependant on member state and power utilities' contributions, whit often delays implementation.
Existence and availability of regional planning studies that constitute the foundation for optimising medium- and longterm investment plans	Need to establish systematic modalities to build skills and expertise among professionnals in the member countries concerned.

OPPORTUNITIES	MENACES
Strong internal and external pressure for Central Africa to promote its huge hydro-electric potential	Urgent need to harmonise national legislation and regulations and to standardise the agreements required for the regional market to function.

Hydroelectricity is a renewable energy and thus constitutes a major asset in terms of reducing greenhouse gas emissions and hence for mobilising financing.	Urgent need to adapt eh organisation of power utilities to enable third party access to networks and to move from bilateral contracts to trade transactions.
Excellent willingness of international donors to finance regional integration projects under the supervision of the CAPP permanent secretariat (the specialised regional agency).	Urgent need to adapt profitable pricing systems to be able to guarantee sufficient cash-flow and profitability of capital invested in PPP.
	A business model for leading studies and implementing projects (CP, CTSP, etc.) that does not in itself capitalise on past experience and achievements. Need to set up project companies under CAPP supervision.

6.3 The Action Plan

The recommended actions are divided into the five categories of the results-oriented strategic objective prioritisation matrix:

1. Assistance to develop generating and transmission infrastructure
2. Institutional Capacity Building
3. Creation of a legislative and regulatory environment
4. Establishment of trade rules and a regulatory framework
5. Establishment and interpretation of technical operating rules

The actions are then structured in main activities and sub-activities in:

- The short to medium term (5 years), from 2014 to 2019.
- The long term from 2020 to 2030.

6.3.1 Phase 1 : 2014 - 2019

1. Development of power generating and transmission infrastructure (PIP)

MAIN ACTIVITY	SUB-ACTIVITIES	EQUIPMENT, SOFTWARE, TOOLS	SPECIFIC COSTS	COMMENTS
Supervision by the CAPP as Project Manager of the extension of regional power transmission infrastructure through the completion of all PIP	1. Lobbying ECCAS so that CAPP bodies adopt the REPSP prepared with country experts and implement its proposals, recognising in particular the CCAP Permanent Secreatriat's status as Project Manager for the CAPP and the creation of project companies to develop the PIP.			
	2. Lobbying ECCAS to support the rapid adoption of autonomous fiancing for CAPP such that the CAPP itself but also the project companies can function (HR and financial resources).	**Software to ascertain pricing levels and financial flows** for each of the member states' power systems.		
	3. Organisation by the **Project Manager** of a Donor Round Table to secure financing to construct the infrastructure sections along the South-Norht backbone [Maque a Do Zombo (Angola) - Memve'élé (Cameroon)] so the national generating capacity of the countries crossed by this regional interconnection can be exploited.		Provisional budget : 100,000 to 150,000 USD.	This round table must take place in the first half of 2015, its location remains to be decided.
	4. Development of a plan to support PIP implementation so that the efficiency of the CAPP contribution as **Project Manager** in expanding this regional infrastructure can be monitored and assessed, with a view to proposing fair investment spread over time and around the region.	**Uptade regional power master plan for developing infrastructure and national power master plans** required to establish a national electricity market giving priority to the 15 PIP.	Provisional budget : 1 to 2 millions USD/ year for studies 1 to 2 millions US D/ year for constrution controls	The provisional budgets must be funded for a year period.
	5. Creation of project companies and in the first instance project companies for the priority, i.e. the Comeroon- Chad interconnection and the Inga-Cabinda-Pointe Noire interconnection focusing available skills and financial resources on these priorities. Setting up of the procedure to formalise the relations between the Project Mnaager (CAPP Permanetn Seceatariat) and the Impementers (Project companies). onnections, i prioritpriorirypriorityinterconnections, i	Project company charter, regional master plan, decisions, feasibility studies, GIS data base.	Included in the evalutation of PIP preference costs	
	6. Evaluation of the Project Manager and the provision of assistance to project implementation as regards the CAPP's contribution to PIP implementation and the fair distribution of investments between now and 2020 to establish a regional market implimplementation A quant à la contribution du PEAC quant à la mise en œuvre des PIP et à la répartition équitable des investissements à réaliser à l'hrizon 2020 pour l'établissement du marché régional.	Establishment of a **database of performance indicators** to monitor and evaluate the CAPP supra-national role as Project Manager.		
	7. SCADA review at the end of the period ton understand how power trade systems work and the problems associated with the regional electricity market. compréhension de la dynamique de fonctionnement des Systèmes d'Échanges Énergétiques et des problématiques associées au marché régional de l'électricité.	Teaching tool to use SADA software to monitor cross-border trade from an operational point of view and faciliation of coordination with transmission operators in the member states.	Provisional budget : 200,000 USD.	THe provisional budget allows for the cost of equipment acquisition and training in how to use it. It also includes the cost of existing SCADA audits, in other words around 50 peron-days.

2. Institutional Capacity Building

MAIN ACTIVITY	SUB-ACTIVITIES	EQUIPMENT, SOFTWARE, TOOLS	SPECIFIC COSTS	COMMENTS
As supra-national Project Promoter/manager, CAPP's direct and indirect human resources must have sufficient skills to fulfil their missions	1. Reactivation of the Planning Sub-committee and setting up of Operating and Environment Sub-committees to that all can come into operation over the 2014-2019 period (programme of activities, operating budget etc.).	- Programme of activities set by the Project Manager (CAPP Permanent Secretariat)	Provisional operating budget: 150,000 to 200,000 USD per year	Number of sub-committee meetings and associated travel depending on programme of activities and need for Project Manager input.
	2. Building capacities in project management and management of power infrastructure: learning / consolidation of skills in power infrastructure project management to monitor the regional electricity master plan and the national electricity master plans of the member states.	- IT and video conferencing hardware and software on infrastructure project management and project oversight. - Training courses in construction engineering / construction project management / project planning software / construction project databases	Provisional budget: 150,000 USD	The provisional budget allows for the acquisition of materials and equipment and the cost of training people to use them.
	3. Building capacities in line with taking ownership of the Central Africa Regional Electricity Market operating law, i.e. to be able to conduct the activities key to implementation, operation and monitoring of a regional market.	- Teaching tool to use SCADA software to run and maintain electricity systems - Digital simulator to operate and test sub-stations and protection & analogue simulator for running transmission networks - Training courses in the operation and maintenance of interconnected electricity systems	Provisional budget: 300,000 USD	The provisional budget allows for the acquisition of materials and equipment, the cost of training to use them and support of utility operators not equipped with SCADA.
	4. Formulation and implementation of the CAPP Permanent Secretariat communication policy (participate in the specification of a communication strategy, promote the actions of the CAPP both internally and externally, support focal points and experts from members states in conducting their regionally-focused communication actions).		Communication Unit operating costs	
	5. Provision of interpreting and translation services and revision of regional documents and checking of different language versions of agreements, treaties and contracts (French, English, Portuguese and Spanish) on behalf of the CAPP Permanent Secretariat.		Interpreting/Translation Unit operating costs	
	6. Setting up of an audit task force to monitor technical performance			
	7. Setting up of an audit task force to monitor skills			

3. Creation of a regulatory and legislative environment				
MAIN ACTIVITY	SUB-ACTIVITIES	EQUIPMENT, SOFTWARE, TOOLS	SPECIFIC COSTS	COMMENTS
Harmonisation of national regulations and existence of legal provisions essential for the development of the regional market.	1. Review of national regulations and setting up of a data base of legislation and regulatory documents and any other documents of relevance to the regional market.	Documentary and archive database management hardware and software.	Provisional budget : 150,000 USD including translation costs (FR- En - Sp - Port) + cost of on-line data storage with dedicated extranet access.	The CAPP Permanent secretariat must maintain and update this on-line legal database.
	2. Drafting of bills to be passed by the member states with the preparation of a road map to set up, if necessary, any required ligislatory or regulatory modifications.		Provisional budget : 1 400,000 USD . + translation 30,000 USD	Step to be carried out in close collaboration between CAPP Permanent Secretariat and member states concernd to ensure success. It is planned for an international legal consultant to support the CAPP.
	3. Assistance of member states in adopting bills necessary for harmonisation and the adoption of the fundamental principles for setting up the regional market.		Provisional budget : 120,000 USD.	Coordination of the work of the CAPP lawyer with the support of a local consultant to ensure the member states follow the process to adopt the bills at executive and legislative levels.
	4. Monitoring progress of the commissioning of the PIP and esuring the legislatory and regulatory documents are in line with the situation and needs of the regional market.		Cannot be estimated at this stage	The CAPP has a fundamental coordination role to play and its lawyer must monitor PIP progress.

4. Establishment of trade rules and regulatory framework				
ACTIVITÉ PRINCIPALE	SOUS ACTIVITÉS	ÉQUIPEMENTS, LOGICIELS, OUTILS	COÛTS SPÉCIFIQUES	OBSERVATIONS
Development of draft inter-country and/or inter-stakeholder trade agreements, in particular according to the type of PIP (intra-regional/inter-regional) and the regional market law.	1. Review of the types of agreement that exist for interconnections: - Identification of template contracts/agreements and overarching principles to be validated by member states - Drafting of template interconnection contracts/ agreements for member states to use			The CAPP should maintain a database of the different existing agreements
	2. Formalisation of trade currently done on a «case-by-case» basis and standardisation of procedures such as: - bilateral agreements between both countries and regional companies, - trade instruments (types of contract, short-term trade).			
	3. Alignment of trade agreements and instruments with the Central Africa regional electricity market law			
	4. Setting up of mechanisms for operators and stakeholders to take ownership of the regional market law			
Finalisation of the legal and institutional structure and preparation for setting up the CORREAC	1. Review of national regulations in members states and lessons to be learned for regional regulation. Specification of the structure, responsibilities, operating mode and powers of the regional regulator.			
	2.2. Operating mode of the regional regulator: supervision of drafting and recommendation of rules, application of rules, consideration of how to deal with issues such as wheeling charges and conflict resolution between operators.			
	3. Approval of the regional master plan and harmonisation of regulatory rules for the PIP in the pipeline.			
	4. Review and analysis of the different types of contracts and contract negotiation strategies and techniques»	Teaching sheets and educational software on trade negotiation and contracting techniques		

5. Establishing and interpreting technical rules for operations				
MAIN ACTIVITY	SUB-ACTIVITIES	EQUIPMENT, SOFTWARE, TOOLS	SPECIFIC COSTS	COMMENTS
Preparation to coordinate operations and trade at regional level	1. Establishing and interpreting technical rules, operators take ownership of the 2011 operating law	Code d'Exploitation.Operating law		Operating costs for missions entrusted to the Operations Sub-Committee
	2. Evaluation audit of basic electricity systems (skills, procedures, administration and maintenance of SCADA etc.) Evaluation of gaps between local operating procedures and the regional operating law	Notes on organising basic electricity systems and existing procedures	Provisional budget around 70,000 to 80,000 USD	Cost of evaluation audits of basic electricity systems - around 50 person-days
	3. Skils Upgrade audit	Organisational documents & job sheets & HR policy and other training & employment plans	Provisional budget around 100,000 USD	Cost of skills evaluation audits
	4. Technical upgrade audit	Organisational notes, Operating and maintenance guidelines		Cost of technical level evaluation audits
	5. Preparation to set up a systems operating institution			

6.3.2 La phase 2 : 2020 - 2030

1. Development of power generating and transmission infrastructure (PIP)				
MAIN ACTIVITY	SUB-ACTIVITIES	EQUIPMENT, SOFTWARE, TOOLS	SPECIFIC COSTS	COMMENTS
Project companies' training period completed. Move to independent QHSE operational mode under CAPP control.	1. QHSE audit of project companies and proposals for improvements under the authority and supervision of the CAPP			
	2. Institutionnalisation of project company reporting, setting up of a feedback loop to learn from past experience under the authority of the Planning Sub-committee and CAPP control.			
	3. Audit of generating plant rehabilitation and construction projects carried out during Phase 1 with review of priorities by CAPP			
	4. Evaluation of effectiveness of CAPP contribution (supranational Project Management) as regards the implementation of PIP and the fair distribution of investments			
	5. Arbitration of financial and human resources among project companies in line with PIP development and at the behest of the CAPP .			
	6. Implementation of SCADA action plans			
	7. Harmonisation of document management systems to prepare for the transfer of infrastructure to the operator under the authority of the Operations Sub-committee			

2. Institutional Capacity Building

MAIN ACTIVITY	SUB-ACTIVITIES	EQUIPMENT, SOFTWARE, TOOLS	SPECIFIC COSTS	COMMENTS
HR skills consolidated and strengthened to supervise the increase in regional power trade via the integrated electricity systems during the integration phase	1. Building of individual operator capacities in line with recommendations from the HR audit (Phase 1 - Sub-activity 5)			
	2. Upgrading of protection systems, automatic systems and transmission systems in line with recommendations from the technical audit (Phase 1 - Sub-activity 4)			
	3. Building of collective and organisational capacities of the entities responsible for the integrated electricity systems.			
	4. Building of collective and organisational capacities of the entities responsible for the integrated electricity systems.			
	5. Evaluation of the operating law and update under the supervision of the Operations Sub-committee			

3. Creation of a regulatory and legislative environment				
MAIN ACTIVITY	SUB-ACTIVITIES	EQUIPMENT, SOFTWARE, TOOLS	SPECIFIC COSTS	COMMENTS
Harmonisation of national regulations and existence of legal provisions essential for the development of the regional market	1. Review of suitability of regional and national legislation in light of the actual situation and needs of the regional market following entry into production of the PIP		Non évaluables à ce stade.	This review should be conducted by an international consultant in coordination with the CAPP lawyer according to a timetable to be defined depending on the complexity of the elements set up beforehand
	2. Verification in real time as the PIP come on line of the alignment of legal provisions with the realities and needs of the regional market, if necessary make suggestions and recommendations for any necessary ajustments in coordination with member countries		Non évaluables à ce stade.	It is probable that legal adjustments will be necessary as the market matures. It would be advisable to use the services of an international consultant but this should be assessed further down the line.
	3. Adoption, if necessary, of modified bills beginning with the reform of regional legislation and then moving on to national laws		Cannot be assessed at this stage	It would be adviseable to use a national consultant to help the CAPP lawyer monitor implementation of the necessary reforms.

4. Establishment of trade rules and regulatory framework				
MAIN ACTIVITY	SUB-ACTIVITIES	EQUIPMENT, SOFTWARE, TOOLS	SPECIFIC COSTS	COMMENTS
CORREAC.	1. Presentation in laymans terms of the tools prepared in Phase 1 to member states and sector stakeholders Monitoring and coordination of the use by member states and stakeholders of interconnection agreements/contracts			
	2. Analysis of the optimal institutional structure to manage interconnected networks on the basis of contracts from Phase I			
	3. Draft community agreement and other documents required for the CORREAC to function, including the basic principles regarding the legal structure of the inter-country regulatory body, the composition and operation of its components, guarantees of independence and of course technical and financial resources			
	4. Organisation of seminars so the member states can take ownership of the process with a view to adopting an action plan and a road map			
	5. Coordination and monitoring by the CAPP of the action plan and the roadmap to create and launch the CORREAC			

5. Establishing and interpreting technical rules for operations				
MAIN ACTIVITY	SUB-ACTIVITIES	EQUIPMENT, SOFTWARE, TOOLS	SPECIFIC COSTS	COMMENTS
Coordination of trade	1. Promotion of the operating law			
	2. Monitoring of the SCADA action plan			
	3. Organisation of a single centralised System Operator			
	4. Transfer of integrated electricity systems to the SEIAC			
	5. Audit of financial, human and organisational resources of the SEIAC and proposal of improvements			
	6. Place the SEIAC system operator under an integrated management system (QHSE)			

7 APPENDIX: PIP LIST AND COSTS

N°	PIP Name	Budget		
		Studies	Work	Comments
1	Development of Djibloho (Eq. Guinea)	PROJECT ALREADY IMPLEMENTED WITH EQ. GUINEA FUNDING CURRENTLY OPERATING		
2	Development of INGA site and associated interconnections	15 million USD	12.6 billion USD	The cost of work concens INGA 3 Low Falls
3	Inga - Cabinda - Pointe Noire interconnection	1.3 million USD	230 million USD	"STUDIES CARRID OUT BY FICHTNER AND AWAITING VALIDATION BY CAPP AFDB FINANCING"
4	Cameroon - Chad grid interconnections	2.5 million USD	125 million USD	"Studies beguin December 2014 Planned duration 19 months, including tender files"
5	Hydroelectric development of Dimoli & associated transmission lines from CAR - Cameroon	2.6 million USD	1.5 million USD	Funding for studies obtained: BDEAC / to be paid upon signature of inter-governmental agreement / works to start 1st QTR 2015
6	Cameroon (Memve'ele) - Gabon - Eq. Guinea interconnections	1 million USD	150 million USD	"Mixed commission Gabon-Eq. Guinea set up Feb 2014 Awaiting involvement of Cameroon"
7	Gabon (Grand Poubara) - Congo interconnections	1 million USD	150 million USD	Costs mentioned here are estimates based on reference costs
8	Chollet hydro powerplant and transmission lines to Congo and Cameroon	2 million USD	1.1 billion USD	"Costs mentioned here are estimates that concern the 225 kV line and associated substations only Costs of 600 MW hydroelectric development remain to be estimated"
9	Supply of Burundi from eastern DRC - Kolwezi - Bendera (1) interconnection	En attente d'infos de EGL / CEPGL / SINELAC		
10	Strengthening of Boali - Bangui interconnection and Bangui - Zongo - Libenge interconnection	50 million USD		"Funding acquired from AfDB Work begun in November 2014"
11	Hydroelectric development of the three Lobaye sites	27 million USD	540 million USD	Costs given concern infrastructure for Bongoumba, Bac and Lotémo sites as well as associated transmission lines
12	Connection of the Soyo thermal gas plant to Inga - Cabinda - Pointe Noire	En attente d'infos de ENE - Angola.		
13	Inga (DRC) and Calabar (Nigeria) interconnection	1 million USD	7 million USD	Etude de préfaisabilité à actualiser.
14	Study on ECCAS member country grid interconnection	Awaiting information from ENE - Angola		
15	Oyem (Gabon) - Mongomo (Eq. Guinea) interconnection	DRC - ANGOLA : 156 million USD CONGO - GABON : 459 millions US $ GABON - EQ.GUINEA : 266 million USD GUINÉE ÉQ. - CAMEROUN : 117 million USD CAMEROON - CHAD : 119 million USD Strengthening DRC - CONGO : 244 million USD Strengthening of national grids : 429 million USD		

R E P S P

Central Africa Power Pool

Regional Energy Policy

Strategy Paper

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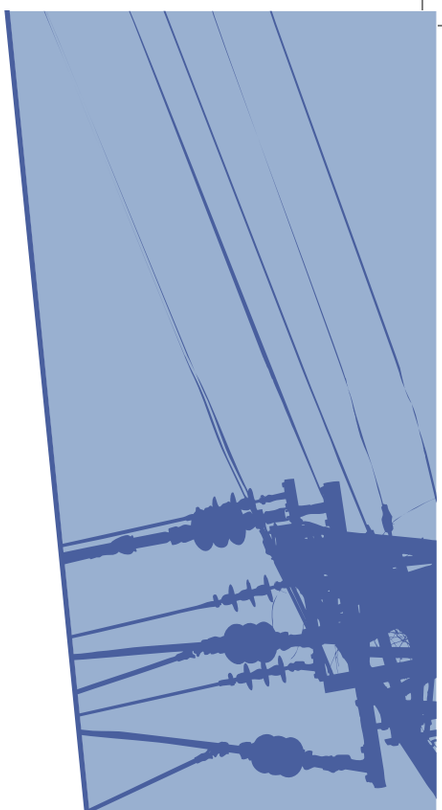

Central Africa Power Pool

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