Economic Community Of West African States
Communauté Economique Des Etats de l'Afrique de l'Ouest
Comunidade Economica Dos Etsados da Africa do Oeste

" West Africa's Energy Sector and Developments / Regulatory Issues concerning the West African Power Pool"

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Presentation Overview

- **Overview of the West Africa Energy Sector**

- **Situation of the Energy Sector**
- **WAPP & WAGP Projects**
- **Reforms & Regulatory Issues in the region**

Situation of the Energy Sector in West Africa

➢ Important primary energy potential:

- 30% of African crude oil and NGL proved recoverable reserves (3017 Millions tonnes)
- 31% of African Natural gas proved recoverable reserves (3581 Milliards of m3)
- 23900 MW of technically exploitable hydropower capability
- Solar Insulation > 5kwh/ m2 /day

Situation of the Energy Sector in West Africa

- **Unequal distribution of primary energy potential:**

- **NIGERIA : 98 – 99% of West African crude oil and NGL proved recoverable reserves.**
- **91% of hydropower potential concentrated in 5 countries:**

  NIGERIA (37.6%), GUINEA (25.8%),

  GHANA (11.4%), COTE D´IVOIRE (10.9%),

  SIERRA LEONE (5.2%).

Situation of the Energy Sector in West Africa

- **Low level of exploitation of the primary energy potential:**
- **NIGERIA :18.8 billions m3 of flared gas,**
- **16% of hydropower potential capacity used:**

  GHANA (57%), NIGERIA (13%),

  COTE D´IVOIRE (10%),

  SIERRA LEONE (5.2%),GUINEA (1%)
- **Energy consumption mainly based on wood fire and biomass**

Situation of the Electrical Energy Sector in West Africa

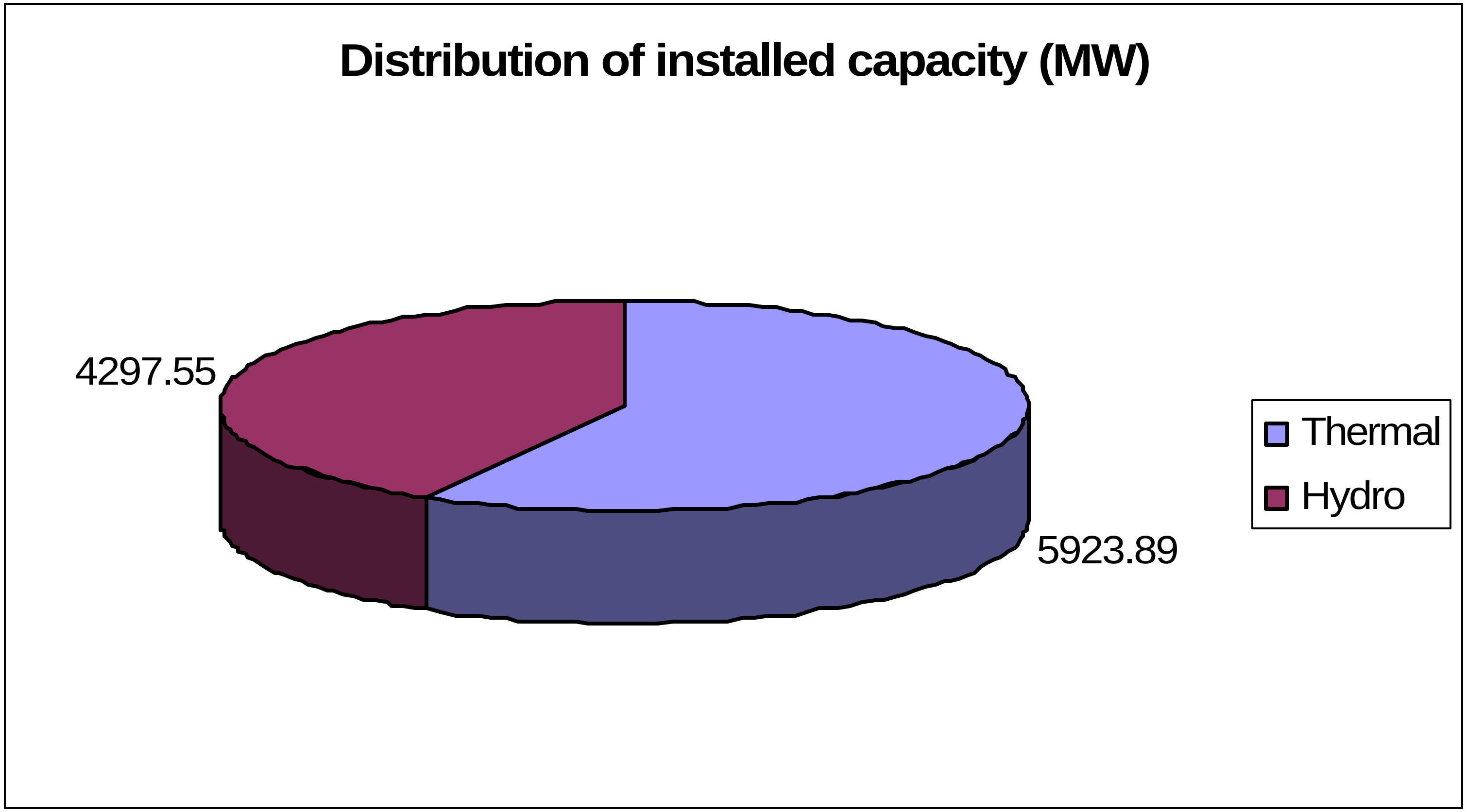
- **Low level of performance :**

- **Low rate of electrification,**
- **Low per-capita electrical energy consumption (127kwh : 3 times less than the average of sub-Saharan Africa),**
- **Disparity in per capita electrical energy consumption between countries: 346kwh– 22kwh,**
- **Low availability of the installed capacity,**

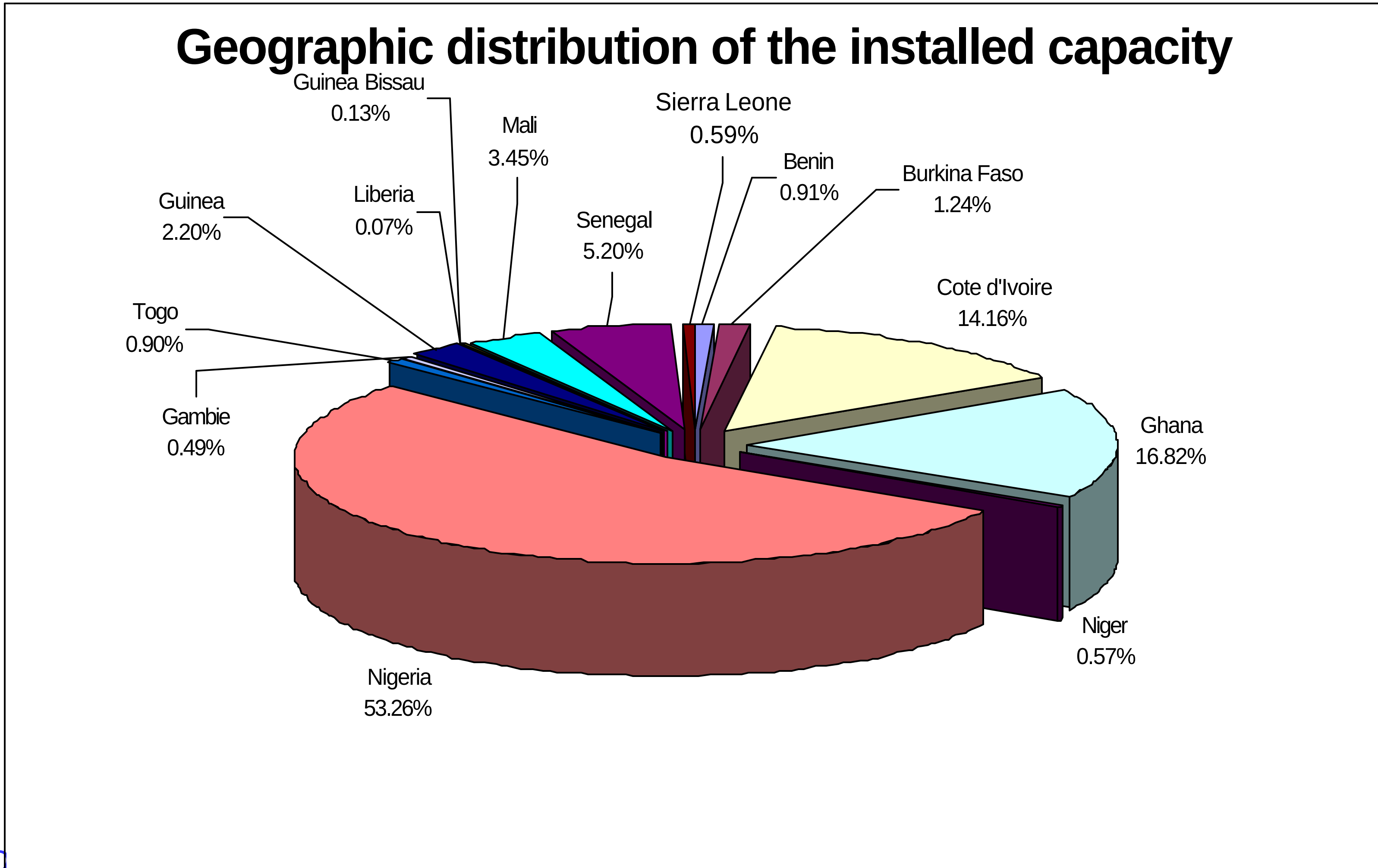
Situation of the Electrical Energy Sector in West Africa

- **Low level of performance (cont.) :**
  - **High level of losses (between 14% and 45% according to the country)**
  - **High level of tariffs & no cost recovery**
- **Difficult mobilisation of funds for investment:**
  - **Tightness of the national energy markets,**
  - **Important investment funds needed to finance the energy generation and transmission infrastructures.**

Characteristics of the ECOWAS Power Sector



Characteristics of the ECOWAS Power Sector



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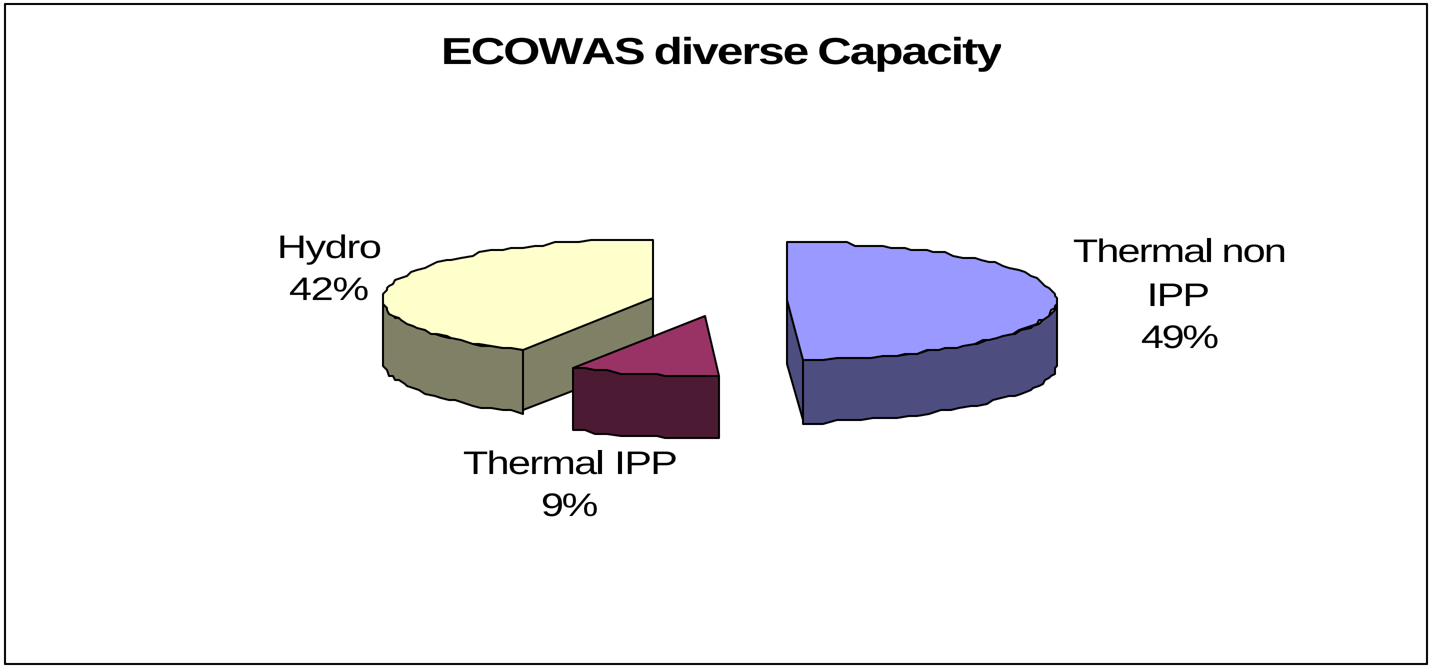
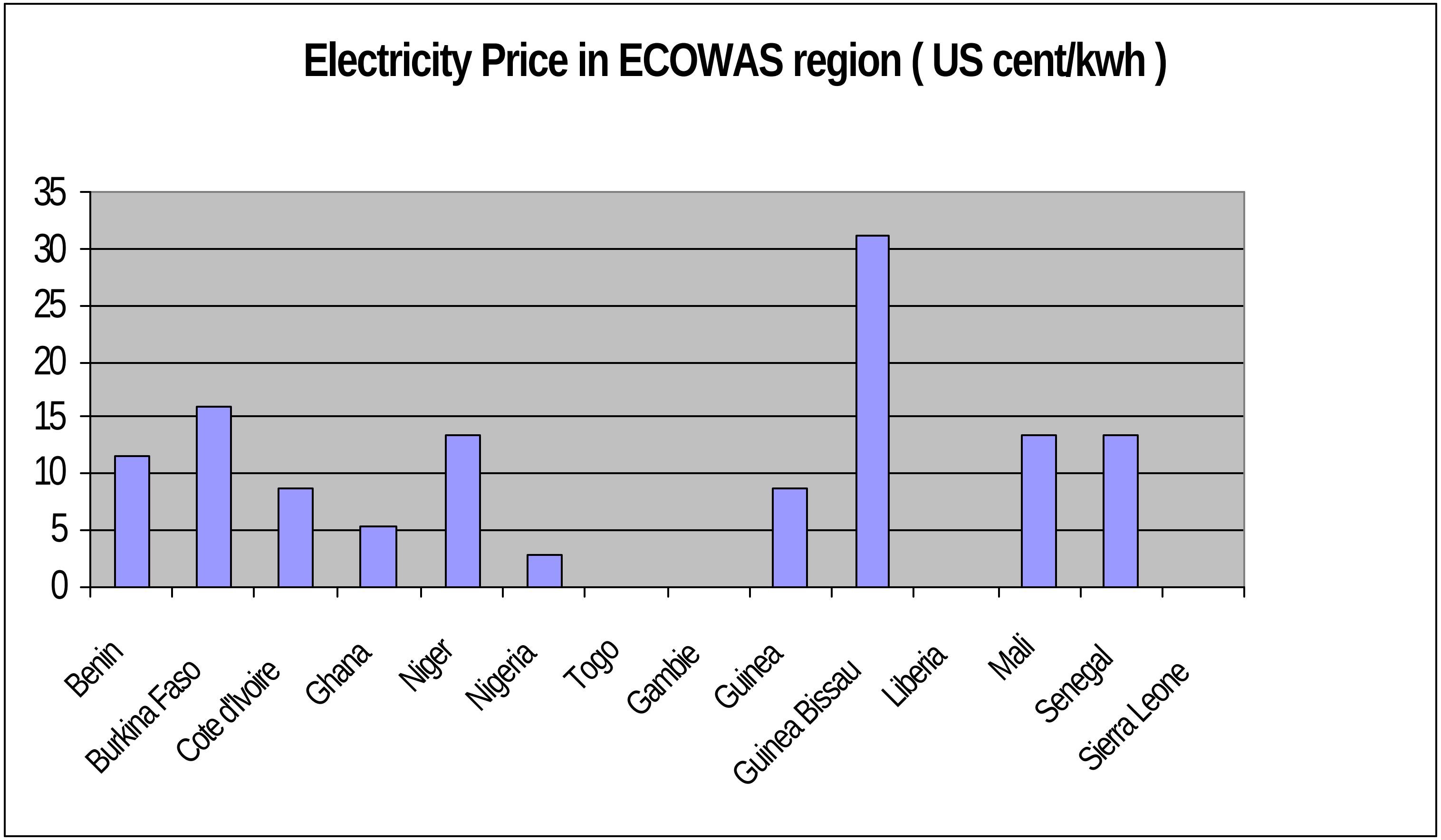


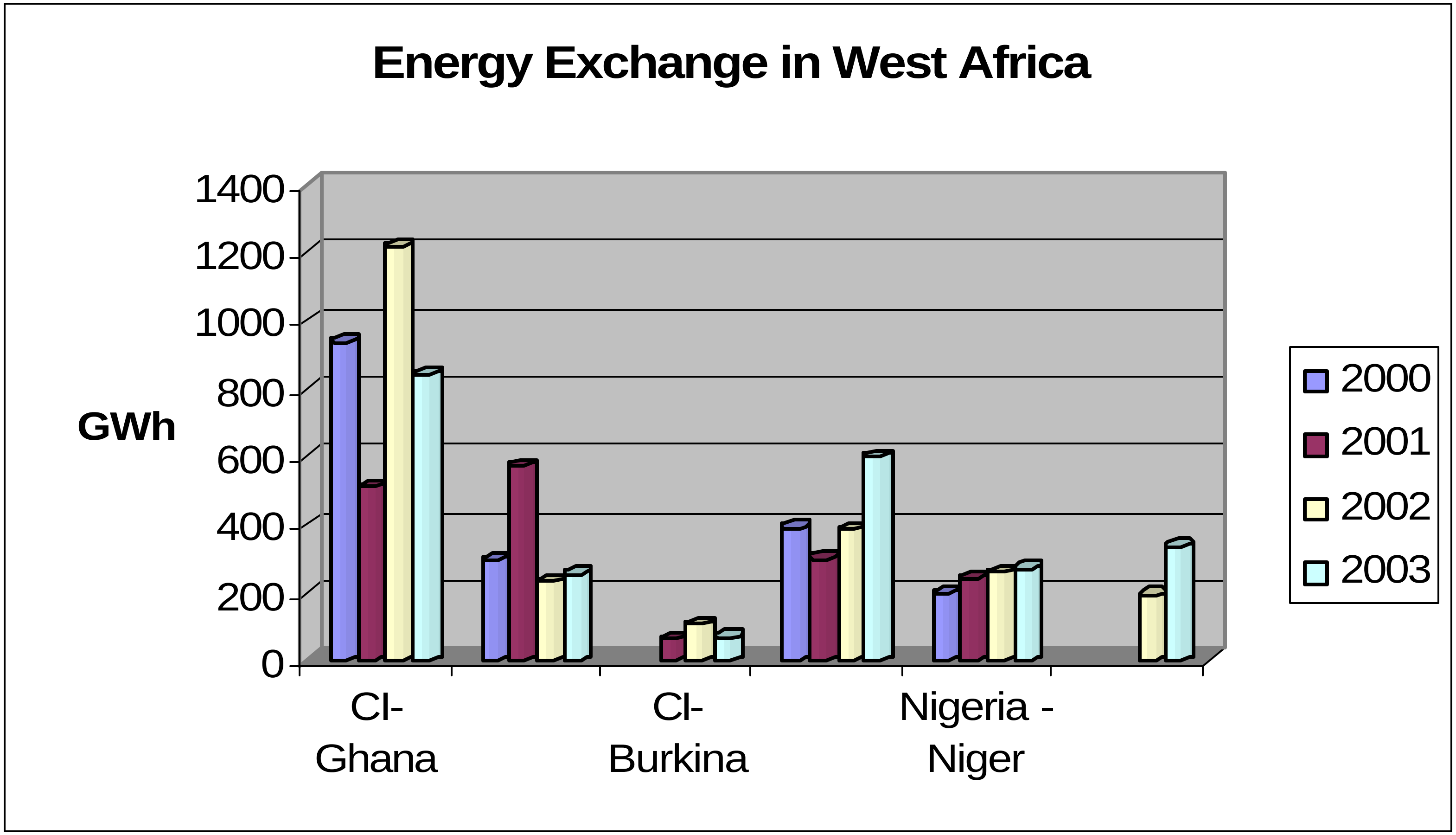
Objectives

- To increase IPP participation
- To reduce non IPP overtime participation in capacity availability

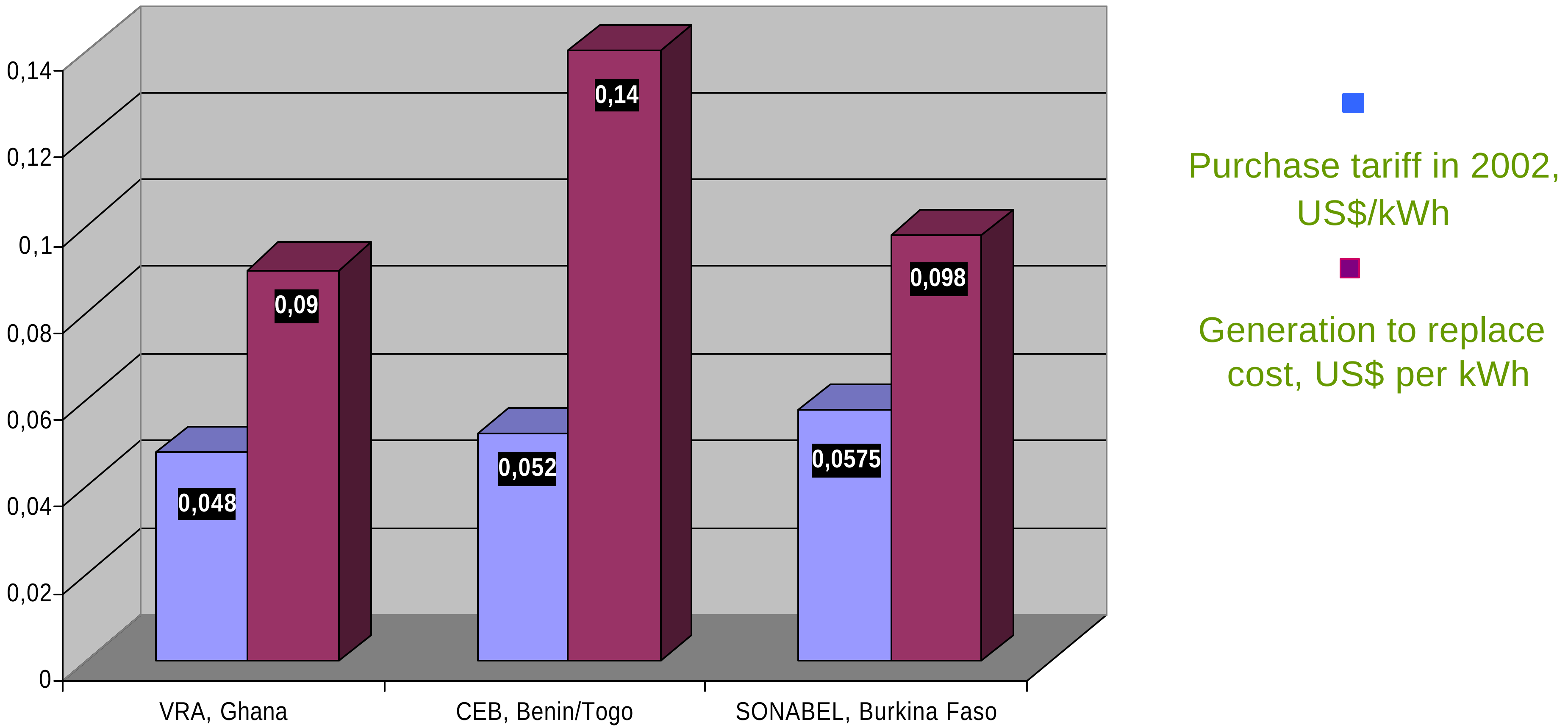
Characteristics of the ECOWAS Power Sector



Trend of the Energy Exchange (GWh)

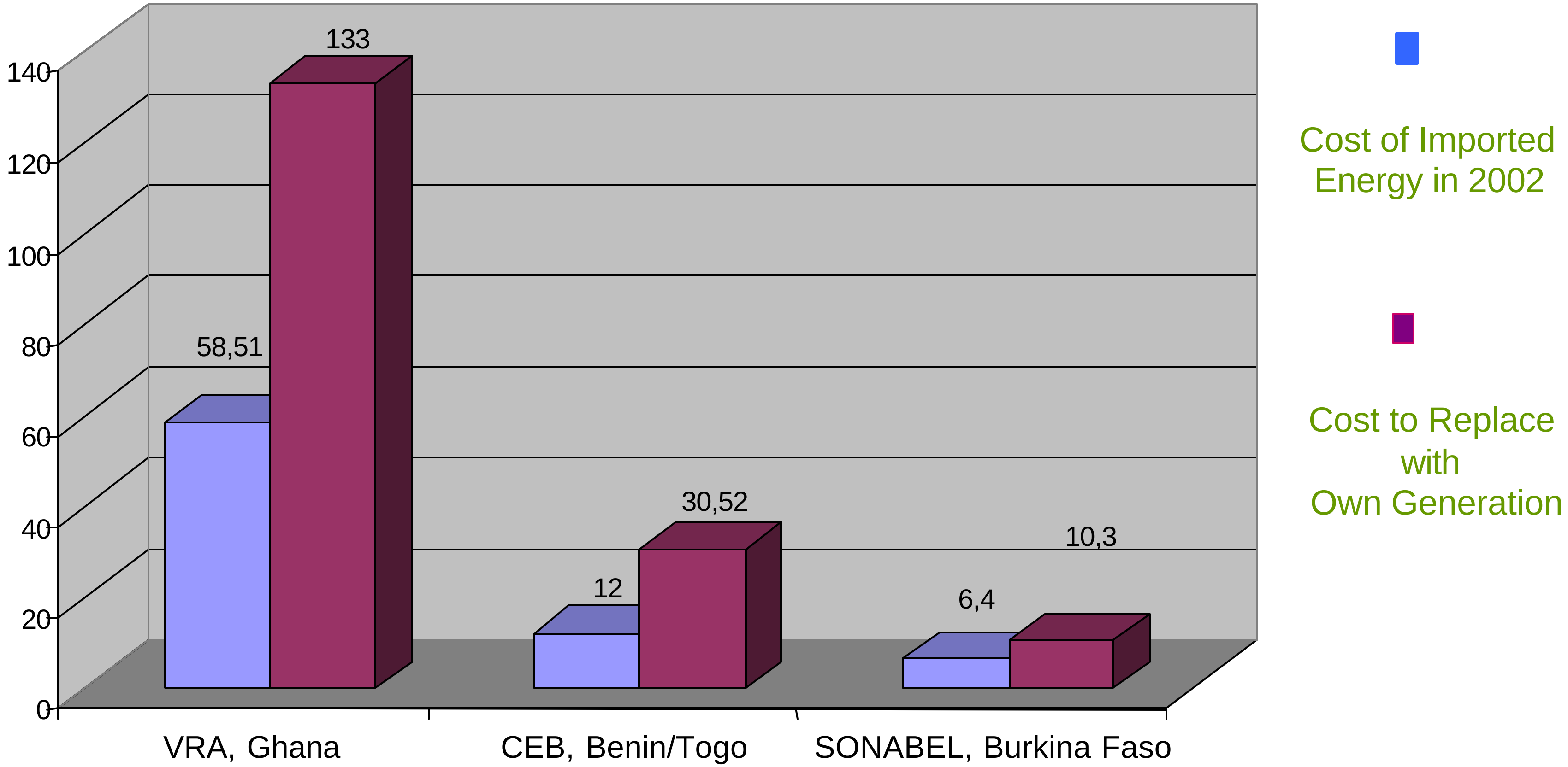


Purchase tariffs from CI vs. generation replacement cost



Export from Ghana to Benin/Togo = 400 GWh in 2002 (estimation)

Cost to Replace Ivorian Import with Own Generation (millions US $)



What strategy to implement to cope with this situation ?

- **To develop interconnection and power exchange between power systems of Member States (WAPP Project);**
- **To use gas flared in Nigeria to feed Power stations in neighbouring countries (WAGP Project)**
- **To promote and protect private investments in energy projects;**
- **To harmonize legislations et standards of operation in the power sector;**
- **To create an open and competitive regional electricity market.**

West Africa Gas Pipeline Project

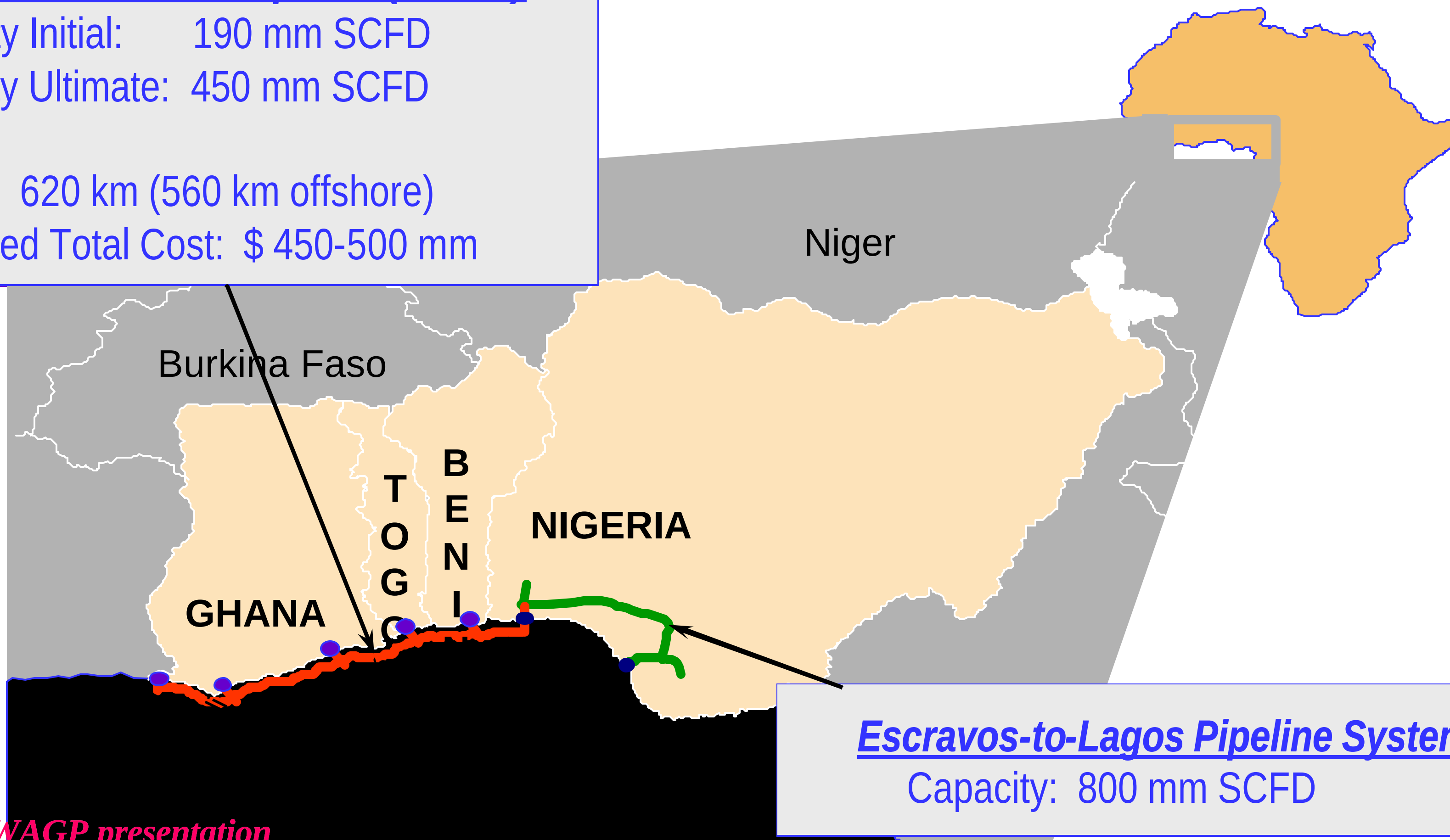
West African Gas Pipeline (WAGP)

Capacity Initial: 190 mm SCFD

Capacity Ultimate: 450 mm SCFD

Length: 620 km (560 km offshore)

Estimated Total Cost: $ 450-500 mm



Escravos-to-Lagos Pipeline System

Capacity: 800 mm SCFD

- *Source: WAGP presentation*

West Africa Gas Pipeline Proj

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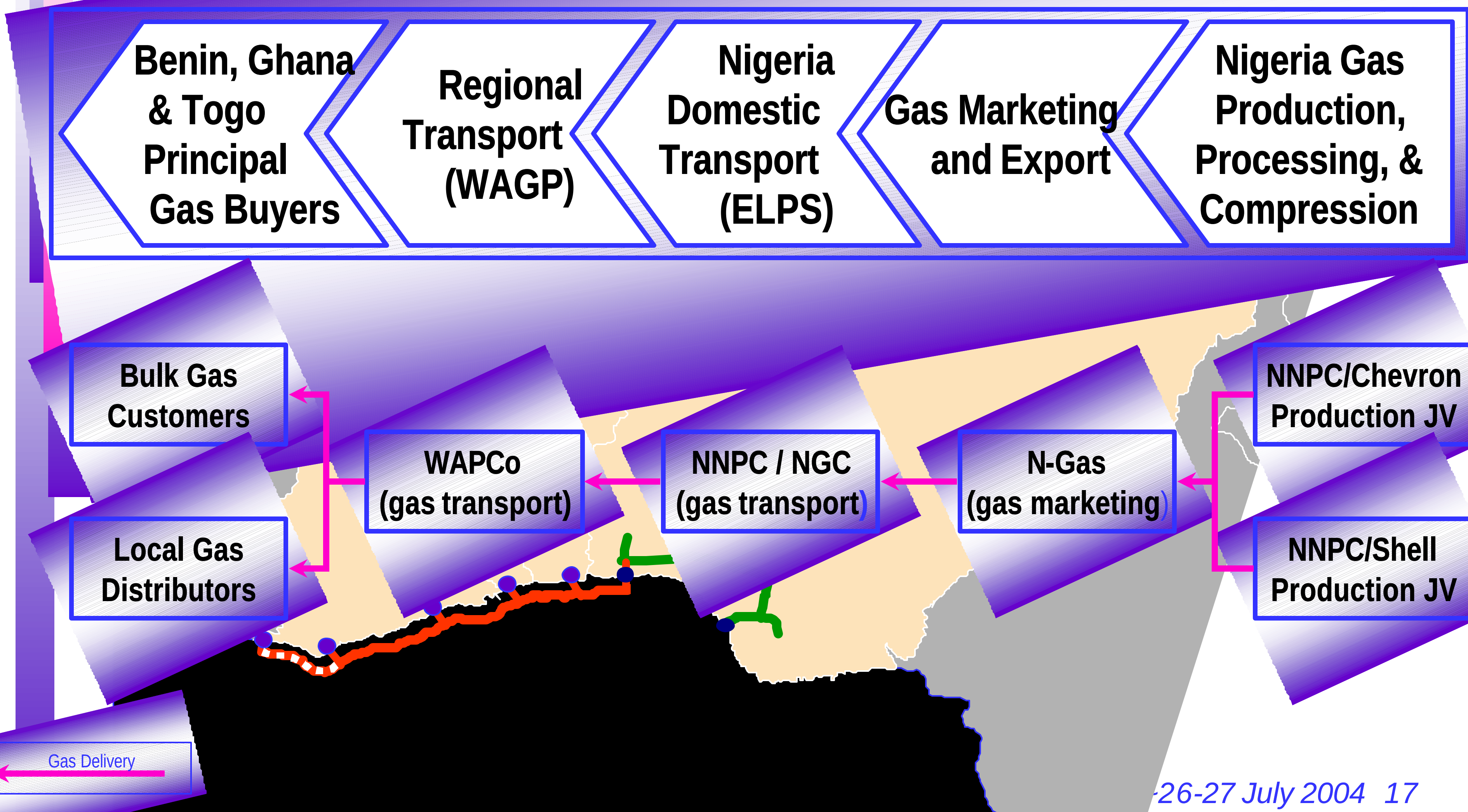


■ *Source: WAGP presentation*

West Africa Gas Pipeline Project Status

- International Project Agreement signed
- EIA completed
- WAGP Authority established
- Commercial agreement to be finalized
- Final investment decision before end 2004
- Operational in 2006

WAPP Development Focus

1. **Development of the interconnected infrastructure in the region**
   - **Definition of priority projects**
   - **Support of international development agencies & Bank**
   - **Participation of private investors (IPPs, ...)**

2. **Institutional design and governance development tasks**
   - **Establishment of the WAPP institutions**
   - **Establishment of an independent regulatory agency**
   - **Development of common legal framework**

WAPP Development Zones

- **Why two zones in WAPP ?**
- **Two zones of 7 countries each were created for the implementation of the WAPP Master Plan because of the different level of interconnection between countries.**
- **Zone A = Benin, Burkina Faso, Cote d'Ivoire, Ghana, Niger, Nigeria and Togo**
- **Zone B = Gambia,Guinea,Guinea-Bissau, Liberia,Mali,Senegal and Sierra Leone**
- **Zone B was experiencing shortage of power in all the countries while zone A had an excess beyond it's capacity to exchange;**
- **Zone B was without effective interconnection when the Master Plan was adopted (1999) while zone A was experiencing exchange of energy since 1972.**

  (1972: Ghana- Togo- Benin; 1984: Cote d'Ivoire; 2001: Burkina Faso)

1999 WAPP MASTER PLAN (Generation)

Main components of the 1999 WAPP Master Plan (presently under review) :

- ***Thermal Generation:***

Rehabilitation of existing power plants;

- ***Construction of new combined cycle power plants***

8,879 MW of additional installed capacity for a total amount of investments estimated at 8.3 billions US$.

1999 WAPP MASTER PLAN (Generation)

- ***Hydroelectric Generation:***

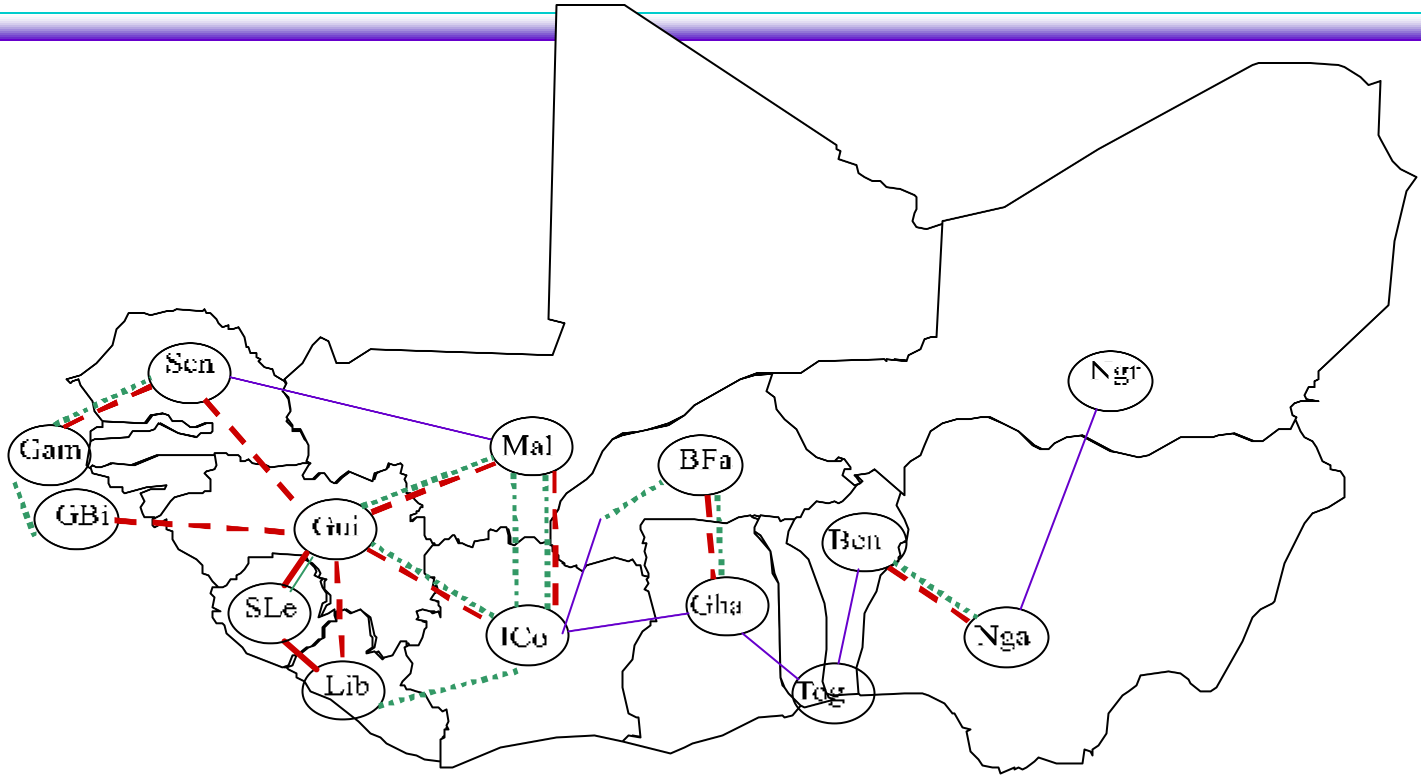
- ***Development of new hydroelectric power plants by year 2005:***

  Bui (Ghana), Fomi, Fello Sounga (Guinea), Manantali (Mali), Sambagalou (Senegal), Bumbuna (Sierra Leone)

- ***For a total installed capacity of 1010 MW;***

- ***For a total amount of investments estimated at 1.7 billions US$.***

1999 WAPP Master Plan (Interconnection of Electrical Networks)



- Existing interconnection lines
- New interconnection lines proposed by the 1999 Master Plan
- Short term priority interconnection lines

WAPP Strategic Transition Plan

WAPP is a long term project using a phased approach

Stage 1 –
Formation of WAPP Project

Stage 2 –
Launch Preliminary Market Entity, Set Rules and Norms

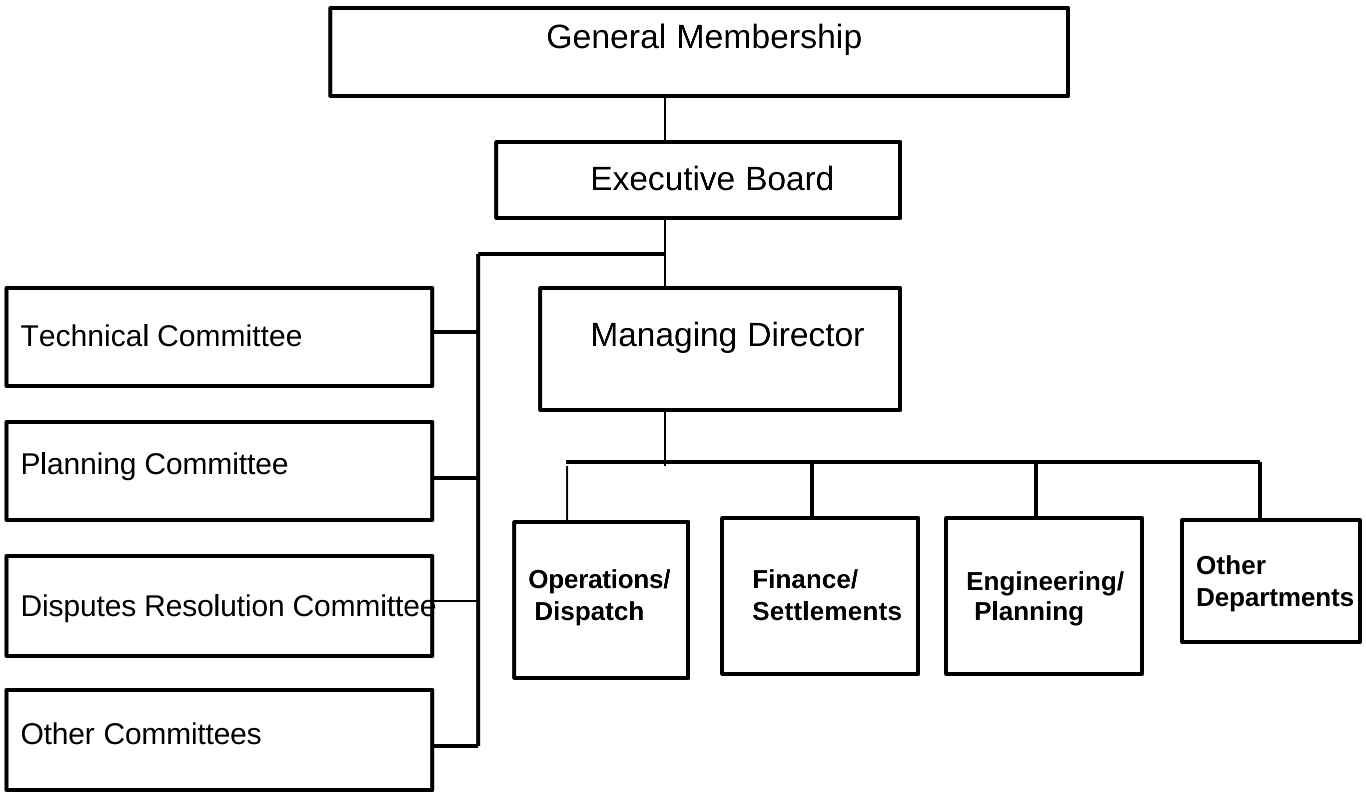
Stage 3 –
Establish Final Market Entities, Sustainable Operation

Stage 4 -
Sustainable ECOWAS Regional Electricity Supply System

Development of the WAPP Governance Institutional Framework

- WAPP will be an independent legal entity with specific organisational structure
- Steering Committee to perform the function until institutionalisation of WAPP

Development of the WAPP Governance Institutional Framework



ECOWAS Energy Protocol

- ***Modelled on the European Energy Charter***
- ***Signed by the Heads of States and Governments***
- ***ratification by the national parliaments on going (Ghana June 2004)***
- ***To be an appendix of the ECOWAS Revised Treaty***
- ***Ensures free trade of energy, equipment and products related to energy between Member States;***
- ***Defines non –discriminatory rules for trade and dispute resolution;***
- ***To attract and protect private investments;***
- ***To ensure the protection of environment and development of energy efficiency.***

ECOWAS Energy Observatory

- ***An information, monitoring and warning system on the member States energy situation:***
- ***To improve the quality of the power energy supply in the region;***
- ***To develop common operating system rules (grid code,stability study…);***
- ***To develop technical standards for collection and treatment of information and performance monitoring.***

Institutional reforms & WAPP Implementation

- **Change of institutional framework still in progress at national level**
  - **Privatisation of the vertically integrated state owned companies operating in the sector**
  - **Unbundling & TPA foreseen**
  - **Introduction of private independent operators in generation and distribution segments of activity,**
  - **Setting up of independent regulatory bodies**
  - **Import / export submitted to authorization.**

- **Existing IPP & bilateral contract to integrate**

Main issues to be addressed for by WAPP Governance - Regulation

- **Deficiency of Regulation and Governance:**
  - **Self sufficiency Planning criteria**
  - **Weight of political aspects**
  - **Non harmonized legislations and structures**
- **Non respect of contractual commitments**
  - **Need for mediation**
  - **Lack of transparent dispute resolution mechanism (payment….)**

Main issues to be addressed for by WAPP Governance - Regulation

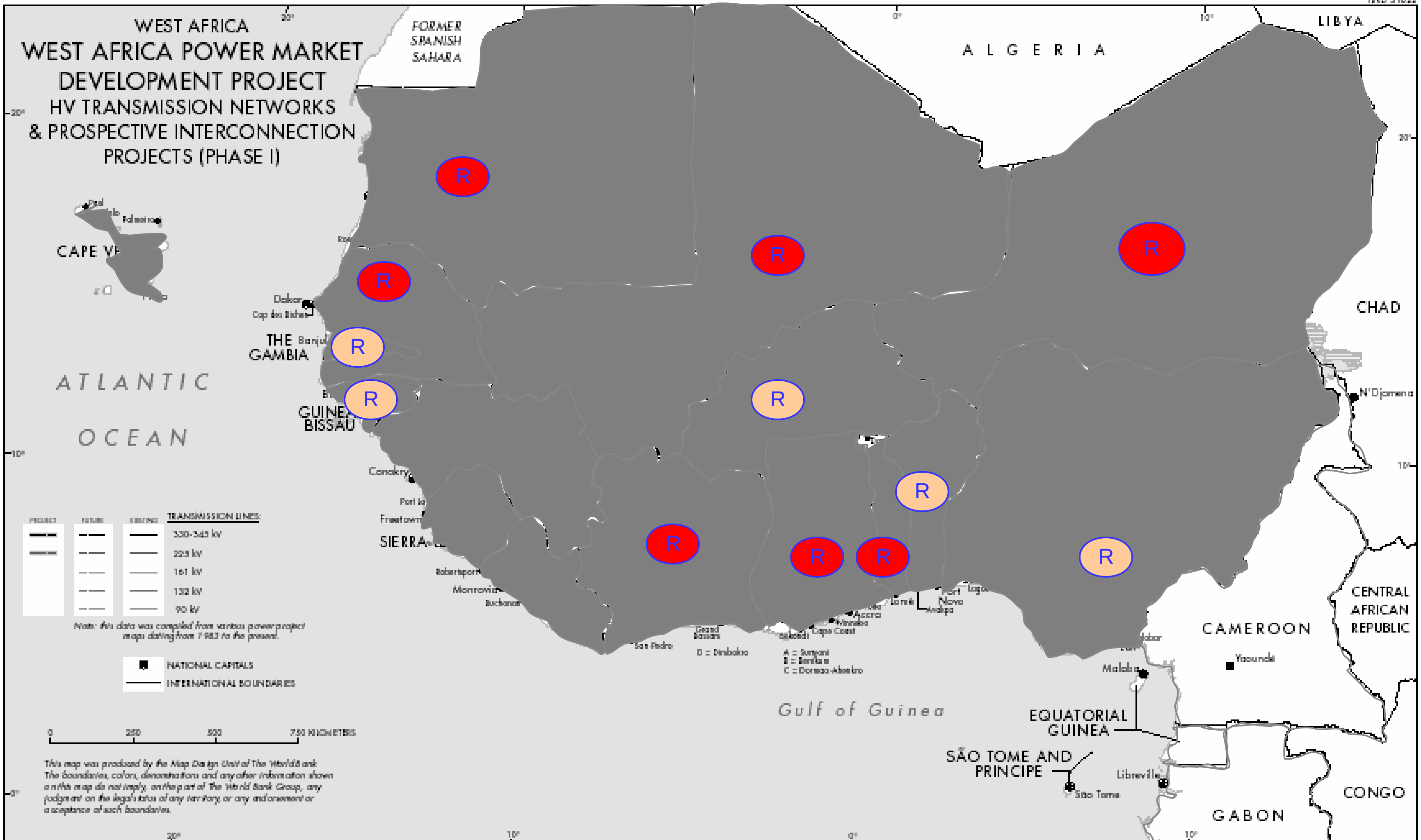
- **Lack of transparent information**
  - **Operational technical and economical data**
  - **Tariffs, wheeling charges…...**
- **Non harmonized standards and Norms (Technical, economical, financial)**
- **Need to establish open market principles and introduce competition**

Development of the WAPP Governance – Regulation

Independent Regional Regulatory Agency (Accra 2002 Decision)

- *To be operational within 3 years*
- *5 member decisional body at the highest level of expertise*
- *Supervise creation of an effective system for resolution of disputes and enforcement of the regulatory function*
- *Create effective communication with member state governments, regulators and utilities*
- *Enforce uniform technical rules for the management of trade on the interconnected grids*
- *Review bulk power transactions to analyse their efficiency and monitor their vulnerability to anti-competitive conduct*

National Regulatory Authorities



R **Régulateur existant**

R **Régulateur en projet**

Source : AFD / TID

Outcome of the WAPP Regional Regulation feasibility study

- **Establishment of a Regional Regulatory Body to**
  - **Develop cross-border exchanges**
  - **Supervise progressive opening to competition**
  - **Improve communication among stakeholders**
  - **Restore investor’s confidence**
- **Main regulatory functions**
  - **Introduce international standards**
  - **Monitor competition**
  - **Ensure stakeholder’s respect of their commercial and contractual commitments**

RRB Development Schedule

(Regional Regulation Development Committee)

2004

Mai - Juin 2004 : élaboration of the AfD/ECOWAS Agreement & finalisation of TORs for the RRDC **Second semester 2004 :** selection and launching of the RRDC

Fin 2004 : first regulatory activities.

2005

2006

2005 – 2006 : Treaty preparation,continuation of regulatory activities.

2007

Fin 2006 : signature of the Regional Régulation Treaty.

2007 : creation of the Regional Regulatory Body (ratification of the Treaty).

2008

2009

2009 : Self financing of the RRB.

Source: ECOWAS /AFD

THANK YOU FOR YOUR ATTENTION