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INTEGRATION OF SOCIAL AND ENVIRONMENTAL CONCERNS INTO POWER SECTOR REFORM : SENEGAL'S EXPERIENCE

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The decade spanning the 1990s, ushered in a period of accelerated reforms in the energy sector of many countries, such as Great Britain. Where as in the **industrialised countries**, the **motivating factor of institutional reform** was the race for greater efficiency, inspired by **competition** ; in the **developing countries**, such reforms were necessitated by the **funding needs of the energy sector expansion**.

Hence, in **Latin America, budgetary constraints** weighed heavily against reforms, where as in **Asia, institutional reforms (designed to give the private sector a bigger role)**, were imposed by **the necessity of overhauling and developing existing infrastructures**, within the context of a very robust economic growth.

Concerning **Sub-Saharan Africa (SSA)**, arguments in favour of reforming the power system could easily be based on any one of the factors listed previously. Undoubtedly however, the most common reasons why governments in these countries embark on reforms, appear to be due to **constraints related to investments and mis-functionning** of the management systems of african power compagnies.

1 – Senegal's power sector reform : a new approach

Senegal's power sector reform falls within the framework of a general reformation of the energy sector, which is itself part of a global economic adjustment strategy, aimed at creating the right conditions for rapid and sustainable economic growth and reduction of poverty. Under the country's economic policy, the energy sector is **assigned the objective of reducing the technical costs of production**, in order to strengthen the competitive edge of compagnies. This involves :

- The **eradication of inefficiency** ;
- the **reduction of supply costs** (usually borne by the consumer) and,
- **enhancing the funding** of the sector's development.

To achieve this, it would be necessary to :

- **Redefine the role of the state ;**
- **encourage a wider participation of the private sector ;**
- **Liberalise this sector ;**
- **Create the right conditions for healthy competition**.

This **strategy** involves the adoption of measures which include, amongst others :

- A **modification of the legal and regulatory framework**, so as to encourage a high level of competition and participation of the private sector in investment ventures and in the management of the power sector.

- The **privatisation and restructuring of SENELEC**.

2 – The objectives of reforming the electric power sector

According to the government **Letter on Energy Sector Development Policy**, the principal objectives of government with respect to the power sub-sector consist of the following :

- **Ensuring a stable electricity supply** for the general population and other consumers, **under the best possible conditions (in terms of security and cost)**, compatible with the country's present economic situation.

- **Accelerate the pace of rural electrification** (15 % by the year 2005 and 60 % by the year 2005 for urban electrification).

To achieve this, the government has opted for **greater involvement of the private sector** in the electricity subsector, so as to not only consolidate and substantially improve efficiency and productivity, but also to enhance the development of the subsector. The reformation of the latter therefore comprises **an important component of industry restructuring** ; **in addition to the change of ownership**.

It should be noted that until recently, reforming the african electric power sub sector was an uphill task. Past experiences involved fruitless in-depth studies and or ineffective measures relating to industrial restructuring or regulation.

On the whole, the measures adopted, amounted to either a delegation of management or contracting out of the management. The relative set backs which past experiences suffered (with the exception of Cote d'Ivoire), prompted the senegalese government to adopt more radical privatisation measures, consisting of :

- **privatising electricity ;**

- **restructuring the industry ;**

- **allowing greater autonomy in the regulation.**

3 – The structure of the power industry

Due to the nature of Senegal's power system (small scale and modest level of development), the **model adopted is that of the single buyer**. SENELEC plays this role, but within a **fixed contract period** and big clients could contract directly with independent producers. SENELEC enjoys a monopoly over electric power transmission nationwide.

- The principle of **third party access** to electric power transmission and distribution, is entrenched in the nation's laws.

In order to enhance competition, SENELEC will have to **separate (on the accounting level), its principal activities**, ie – generation, transmission and distribution, **prior to creating subsidiaries**.

- **Any new increase in generation capacity should be made on a competitive basis**.

- The exercise of any activity in this sector will be subject to the possession of :

    - A **licence** or permit covering generation or sales ;
    - A **legal concession** covering transmission and distribution.

Conditions covering delivery have been simplified relatively ; for example, generation for personal consumption is subject only to a prior declaration of intent.

4 – Regulation of the electric power sector

The law regulating the electric power sector (n°98-29), created **an independent body – (the Power Sector Regulatory Commission)**, encharged with regulating the sector. The commission's objectives are the following.

- To **enhance the rational development** of electricity supply ;

- **preserve the economic and financial equilibrium of the power sector** and the **economic conditions necessary for its viability** ;

- safeguard the **interest of consumers** and **protect their rights**, with respect to cost, supply and quality of electricity ;

- **enhance competition and private sector participation** in generation, transmission, distribution and sale of electricity, and to

- **safeguard the conditions favoring the financial viability of compagnies** operating in the power sector.

The Commission is composed of three (3) members, appointed by the President of the Republic. The Commission enjoys **complete immunity** during the exercise of its mission ; ie, members cannot be prosecuted, hunted down, arrested or judged. **They cannot be dismissed**.

In addition to other duties, the Commission has the following responsibilities :

- It **investigates applications for licenses and concessions** ;
- It **monitors the strict compliance with the terms of licences and concessions**, particularly those dealing with an obligation to maintain certain services ;
- In general terms, it has jurisdiction over the **modification of licences, concessions and conditions of service** ;
- It ensures that there is **respect for heatlhy competition** in the sector ;
- It **determines the structure and composition of tariffs**.

The minister in charge of energy consults the Commission on all legislative draft texts relating to the sector.

The Commission derives its **financial resources** from the **annual fees paid by compagnies** under licences or concessions and from **application processing fees**.

The Commission has the **power to impose fines or sanctions**, to penalise defaulting compagnies operating in the sector.

Regulation of tariffs

- Only tariffs applied on **activities enjoying monopoly features are subject to regulation**.

- Tariff regulation will be based on **price ceiling ot price caps (ipc-x)** and not on cost of service.

- Tariffs or pricing policies are specified in the conditions of service annexed to the licenses or concessions.

These regulations remain in force for a fixed period, specified in the conditions of service.

5 – Privatisation of SENELEC

This measure falls within the **government's general policy of state disengagement** and **enhancement of private sector development**. On the sectorial level, investment should encourage :

- The **financing of development efforts** in the power sector ;
- An **improvement of the conditions of supply**, especially in terms of continuity ;
- An **improvement of the various branches of management** : - technical, economic and financial ;
- A **reduction of electricity costs**.

6 – The delicate issue of access to electricity

Unlike other experiences with power sector reforms undertaken in other african countries, the reform undertaken in Senegal had as its **main objective**, **the widening of access to electricity for rural populations**.

To this end, one of the major innovations introduced into the institutional framework of the sector, was **the creation of the Senegalese Agency for Rural Electrification (ASER)**. The principal mission of the latter is to enhance the access of rural populations to electric power supply. To this effect, ASER provides technical and financial assistance in support of initiatives relating to rural electrification.

It should be stressed that **since 1995, the state has made considerable financial effort to cover rural electrification programmes** executed by Senelec, under agreements signed with the Ministry in charge of Energy, concerning delegated public works. **Nearly 20 billion CFA francs (30.5 million euros)**, provided by the national budget, have gone towards extending the rate of electrical coverage in the rural areas. However, those programmes have mainly been beneficial to the more densely populated boroughs, which (with only rare exceptions), were electrified by extending the existing SENELEC network.

Apparently, this **arrangement, based on a single operator** (SENELEC) ; a **single investor** (the state), a **single technology** and a **single approach** ("top-down" approach) ; **without any participation of consumers or consumer-groups** was **unsustainable**.

There have been cases where, after having established electric power substations and power lines in certain areas, SENELEC could not operate the services (even after ten years), due to lack of subscribers. In other villages, the sparse distribution imposed by lack of resources, only aggravates the frustation of the local populations living in areas not covered by the network.

Unquestionably, one of the greatest ambitions of ASER is to be able to replace the present single pole system, with a multi-pole system, consisting of several stakeholders using a variety of technologies and supported by different categories of investors. An arrangement that will give beneficiaries and local communities a central role.

To this end, the following principles have been adopted, based on past-experience with rural electrification :

- **Rejection of uniformity in the technology employed**, by instituting measures, which consist of, on the one hand, a revision of technical minimas (relaxation of norms, return to single wire systems, etc.) and on the other hand, investment in solar energy, particularty in photo-voltaic solar energy, whose users by the year 2005 will be 20,000 out of a total of 104,000 households with access to electricity. The figure for 2015 will be 70,000 out of a total of 270,000 ;

- **Emergence of new stakeholders along side SENELEC**. These operators should be able to contribute about 70 % of the total electrification by the year 2015. To achieve this objective, the national territory has been split up into concessions. The award of legal concessions will be by tender ;

- **Introduction of innovative financial mechanisms** which combine (amongst others), subsidies, loans at low interest rates, contributions from users and local communities etc. ; the objective being to ensure the viability of electrification programmes undertaken by private promoters ;

- **Greater participation of the local population** in identifying the needs that have to be satisfied and the services which will be offered and in contributing to rural electrification cost covering.

With the implementation of the new organisational scheme and innovative financial mechanisms, one can safely say that it is not only on paper that things are moving, but also on the ground.

The wealth of experience already available, the ingenuity of the new concepts based on sustainability and the ruffling of activity that is already perceptible in the execution of pilot programmes, indicate interesting perspectives for decentralised energy.

Initiatives already taken by some international stakeholders, the local private sector and the interest shown by financing organisations, notably the World Bank and the African Development Bank in the new strategy is in harmony with the government's political will to make electricity accessible to rural populations, by accelarating the rate of rural electrification in Senegal, over the period 2000 – 2015.

The issue of access to electricity does not only concern the rural areas, but also includes the **cities, where 40 % of the inhabitants are without electricity**. Being located within the concessions of SENELEC, extending power supply to such urban populations, depends entirely on **SENELEC's capacity to respect the obligations of its conditions of service**, contained in its concession contract.

The privatisation of SENELEC, by creating the right conditions for private investments and improving the quality of management, should facilitate the extension of electricity services to sub-urban areas, especially since it is the responsibility of another institution (ASER) to provide electricity for rural populations.

7 – Some social and environmental considerations

Like many other african power companies SENELEC possesses **signficant potential for efficiency gains**, whose exploitation will definitely be reflected on the cost per kilo watt-hour. However, **certain factors present a strong opposition to a reduction of electricity costs** : **the size of the market**, **the narrow variety of technology available**, **the lack of energy resources** and consequently **the necessity of importing petroleum products** which eat into SENELEC's financial resources.

Never the less, the possibility of regulating prices by applying **price – cap type measures**, as well as the **progressive introduction of competition**, should prevent any abuse of monopoly and limit price rises to levels that are compatbile with profit margins already agreed on.

Regarding the **environmental dimension** of the new energy policy, it is mainly based on **bio-mass**, whose exploitation as an energy source greatly **threatens environmental equilibrium**, due to the effects of deforestation, soil erosion and decrease in bio-diversity.

Whereas until recently environmental constraints were not taken into consideration during the formulation of developmental strategies in the power sector, new and wide ranging projects do include **systematic studies on environmental impact**. Nearly all financing institutions in the energy sector, demand the execution of such studies as a pre-condition.

Nowadays, environmental concerns are present in all negociations relating to privatisation ; because of the **risk of pollution** from the use of aging equipments and out-dated practices. Under what circumstances should the state (after having ceded its enterprise), intervene to compensate third parties for example ? Exactly how much compensation should be paid ? and what should be the expiration date for clauses relating to the environment ?

Considering the priorities of the World Energy Council, especially concerning **access**, **availability** and **acceptability** (the "3 A"), it is recognised that where energy in developing countries is concerned, the **issue of access carries the greatest importance**.

Clearly, strategies employed in the **fight against poverty** and **execution of the "Millennium Development Goals"**, require the **provision of high quality energy**, particularly electricity, for local populations.

Access to electricity encourages (in a certain way), the creation of jobs and helps to generate income. No one is claiming that energy strategies can reduce energy costs in developing countries, buy they can increase the number of jobs, because access to energy favours the creation of jobs.

Moreover, **any sustainable energy policy should as much as possible enhance local potentials**, taking account of the social, economic, financial and environmental constraints.

On this point, the energy programme outlined in the **New Partnership for Africa's Development (NEPAD)**, constitutes a sustainable development strategy. The programme emphasizes the exploitation of Africa's vast hydro-electric potential ; 280 GW of which only 5 % is currently being exploited. For example, Nigeria's huge flaring gas could be developed into a **vast african energy market**, constructed on an inter connected system of electrical energy and gas. In this way, the energy will be made available, at reduced cost, in particular for countries which lack energy resources and whose balance of payments are seriously burdened by the importation of petroleum products.

The execution of this programme which seeks to **fill the gap between developing african countries and industrialised countries** is bound to have a **positive effect, both on the social as well as on the environmental plans** :

- It will provide local populations with **easier access to electric energy** ;
- It will provide **cheaper energy** ;
- It will **enhance the security of supply** ;
- It will **limit green house gas emissions**, especially when compared with thermal energy alternatives used for power generation.

Hence, NEPAD which counts a lot on private sector investment to finance energy infra-structures, should succeed in reconciling the process of liberalisation/privatisation of the energy sector with the social and environmental objectives of sustainable development. Thus NEPAD appears to offer a new opportunity for the reform of the african energy sector.

In fact, Senegal has experienced two attempts in privatizing SENELEC. In the first operation, 34 % of capital shares of SENELEC was sold in 1999 to the consortium made up by Hydro-Quebec (from Canada) and Elyo (from France). The consortium was granted the full control of the management of SENELEC even though it was a minority shareholder. But he failed to achieve one of the main goals of the power sector reform, i.e. the improvement of the supply

/demand balance ; so, twenty months after the consortium took over the control of SENELEC, the whole country was struck by continuous and severe black outs with damaging social and economic effects. Moreover, the consortium was unable to give insurances based on a realistic investment programme that the required supply capacity will be put in place in a reasonable period of time.

Hence, the Government and the consortium decided to put an end to their partnership in SENELEC, with the Government yet reassuring its option for privatization and liberalization of the power sector. This paved the way to a second privatization attempt.
As far as social issues are concerned in both experiences, the issue of access is dealt with in terms of quantified obligations spelled out in SENELEC conditions of service document.
Drawing the lessons of the first privatization which witnessed the marginalisation of local competences, the Government put a limitation on the total number of expatriates at a maximum of five for the first year and three two years later in the second operation. Candidates were also informed that no job loss will be accepted during the first five years period unless a retrenchment programme satisfactory to the Government accompanied job cuts. The reason was that before the closing of the first privatization 450 personnel left the company against a very interesting compensating financial and social package.

For this second privatization, not yet completed, the Government has gone through lengthy discussions with two bidders VIVENDI and AES, but both face financial challenges to develop new projects due to their difficulties to tap equity or debt sources of financing.
Hopefully, donors like The World Bank are ready to help SENELEC finance its 5 years investment programme which will contribute to secure the transaction since the main requirement for investing will be satisfied.

Hence, if an agreement cannot be reached with either VIVENDI or AES because none of them can fulfill its financial requirement, the Government will keep SENELEC in the state portfolio and try to solve the technical, financial and managerial problems of SENELEC.

Yet, this will not be the end of the history since once the technical and financial equilibrium of SENELEC is achieved, this will open the road to a new privatisation process with likely a greater chance of success.

ANNEX

Main features of Senegal's Electric Power System

- An exclusively thermal production system, which uses imported petroleum products (heavy fuel and diesel oil) ; without taking account of the low consumption of local natural gas.

- Some statistical figures :

  - **Power installed (2000) : 422 MW**
  - **Production (2000) : 1476 GWh**
  - **Computed energy : 1150 GWh**
  - **Peak power (2000) : 241 MW**
  - **Number of subscribers (2000) : 398,000**
  - **Total turn over (2000) : 84 billion CFA francs**
  - **Personnel : 1706 (237 professional staff)**
  - **Rate of electrification (in 2001) :**
    - **Nation wide : 32 %**
    - **Urban areas : 56,4 %**
    - **Rural areas : 8,3 %**