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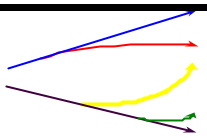
KITE 

POWER SECTOR REFORM IN GHANA: THE UNTOLD STORY

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CONTENTS

List of Abbreviations and Acronyms

AGC	Ashanti Goldfield Company
AGI	Association of Ghana Industries
BSP	Bulk Supply Point
BST	Bulk Supply Tariff
CIE	Compagnie Ivoirienne d'Electricite
CIPREL	Compagnie Ivoirienne de Production d'Electricite
CSA	Civil Servant Association of Ghana
DCEP	District Capital Electrification Project
DFID	Department for International Development
DSC	Distribution Service Charge
DSM	Demand-Side Management
EC	Energy Commission
EECI	Energie Electrique de la Cote d'Ivoire
ECG	Electricity Company of Ghana
EF	Energy Foundation
EGF	Embedded Generation Facilities
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EDMP	Energy Demand Management Program
EPA	Environmental Protection Agency
ERP	Economic Recovery Program
ETU	Electricity Transmission Utility
GDP	Gross Domestic Product
GELDIC	Ghana Economic Load Dispatch Center
GOG	Government of Ghana
GRIDCO	National Grid Company Ltd.
IPP	Independent Power Producer
LLGM	LeBeouf, Lamb, Greene and MacRae
LTC	Long term Contract
MECA	Michigan Electric Cooperatives Association
MME	Ministry of Mines and Energy
MOU	Memorandum of Understanding
NEB	National Energy Board
NED	Northern Electricity Department
NEDCO	Northern Electricity Distribution Company Ltd
NES	National Electrification Scheme
NRES	National Renewable Energy Strategy
PEF	Private Enterprise Foundation
PER	Preliminary Environmental Report
PNDC	Provisional National Defense Council
PSRC	Power Sector Reform Commission
PUC	Pennsylvania Utility Commission
PURC	Public Utilities Regulatory Commission
QSP	Quality of Service Performance
RETs	Renewable Energy Technologies
SAR	Staff Appraisal Report
SAP	Structural Adjustment Program

SBU	Strategic Business Unit
SEC	State Enterprise Commission
SHEP	Self-Help Electrification Project
SNEP	Strategic National Energy Plan
SOE	State-Owned Enterprise
TAPCO	Takoradi Power Company
TF	Task Force
TUC	Trades Union Congress
USAID	United States Agency for International Development
USDOE	United States Department of Energy
VALCO	Volta Aluminum Company
VRA	Volta River Authority

1. INTRODUCTION

Ghana's power sector, a hitherto vertically integrated monopoly is undergoing a reform program that is seeking to ensure that an unbundled and competitive industry evolves. This paper will attempt to unearth the main motivations for reform, who the key reform players and actors were and why a particular reform model was chosen over another. The paper will also seek to bring out the extent to which public benefits have been catered for and how public benefits came to be considered under reform.

The rest of the paper is organized into four chapters. The next chapter captures the pre-reform institutional arrangements. The third chapter tries to answer the "why" of reform while the fourth looks at the reform process and also discusses the political economy of reforms in Ghana. The last chapter then draws some conclusion

2. The Pre-Reform Situation

2.1 Political Background

Ghana, previously known as the Gold Coast, gained independence from the British in 1957 and subsequently became a republic three years later in 1960. Dr. Kwame Nkrumah, who was appointed Prime Minister at independence and later became President upon the attainment of republican status, had led the independence movement. Nkrumah's government was overthrown in a *coup d'etat* in 1966 and Ghana was ruled by a military-cum-police regime until 1969 when Dr. K. A. Busia, who had served as an opposition leader during the Nkrumah era, was elected Prime Minister of the Second Republic. Busia's government lasted about two-and-a-half years. It was overthrown in another *coup d'etat*, which brought Colonel I. K. Acheampong to power in 1972. After a series of military takeovers, by General F. W. K. Akuffo in 1978 and Flt. Lt. J. J. Rawlings for a brief period of just over three months in 1979, the Third Republic was ushered in with the election of Dr. Hilla Limann. Limann's civilian government, like Busia's a decade earlier, lasted just over two years. In 1981, Flt. Lt. Rawlings staged his second successful *coup* and ruled Ghana for almost twenty years, initially as Chairman of the Provisional National Defense Council (PNDC), and since January 1993, as President of the Fourth Republic. Rawlings has finished serving his term and Ghana now has a new President, Mr. J. A. Kufour, who has pledged to usher Ghana into a new private business and all-inclusive democracy.

2.2 The Economic Background

At independence in 1957, Ghana led by its first President Dr. Nkrumah pursued a state-led economic development strategy – the development paradigm then in vogue. Consequently several state-owned enterprises (SOEs) were set up by the state as statutory bodies or companies to carry out specific tasks. It was felt that the private

sector was unable or unwilling to undertake such ventures at the time. Other SOEs owed their establishment, especially in early years of independence, to the then prevailing views, not only in Ghana but also in the developed countries, of the necessity for government to own, operate and control the "commanding heights" of the economy. Still others were established with the sole aim of providing vital public services or utilities such as the provision of electricity, water and telecommunication. Central to this state-led strategy was industrialization based on import substitution.

The experiment with the state as the engine of economic growth chalked moderate successes – notably in the area of job creation and proliferation of import substitution industries– in the sixties and early seventies. However, severe crisis beginning in the late seventies through the early eighties quickly reversed this. For many years, poor financial performance and low productivity characterized many of Ghana's SOEs. This resulted in the accumulation of huge financial losses to the state that had to be funded by taxes or borrowing, both of which imposed a heavy burden of debt repayment on the country and a diversion of resources which could be better utilized for other purposes (Edjekumhene, 2000). According to Berenschot et al (1985) total operating deficits of SOEs in 1982 amounted to over 3 per cent of Gross Domestic Product (GDP), which was not much less than total government spending on education, health, social security and welfare in that year. Support for SOEs ranged from 10 per cent of government expenditure in 1982 to 8% in 1986 (Adda, 1987).

Ghana's import substitution industries were under-producing, mainly because of their dependence on extensive importation of raw materials and intermediate goods. This coupled with declining prices of cocoa (the then major foreign exchange earner) led to balance of payments problems and a foreign exchange shortage. In addition, successive regimes practiced lax fiscal and monetary policies that gave rise to inflation[1]. The worst period of economic stagnation occurred between mid seventies to early eighties evidenced by negative growth rates in GDP, decline in agricultural and industrial output and rapid deterioration in infrastructure (Hutchful, 1996). In terms of economic indicators, Ghana registered negative GDP growth rates between 1980 and 1983, during which per capita Gross National Product declined by about 17%, export earnings by over 53%, and gross domestic income by about 17%. External debts rose by 17% while international reserves declined by about 12% (Kapur, *et al*., 1991)

Commenting on the state of the Ghanaian economy prior to structural reforms, Partiff, (1995) concluded that 'by any conceivable yardstick, Ghana's economy was on the verge of disaster'. Tangri (1991) also concluded *inter alia* "the PNDC government, which overthrew the civilian government of Ghana on 31 December, 1981 inherited an economy in crises".

It was this crisis situation that pushed the PNDC government in 1983 to launch the Economic Recovery Program (ERP) it had negotiated with the Bretton Woods Institutions – the World Bank and International Monetary Fund (IMF). The ERP involved liberalizing the economy under a Structural Adjustment Program, which was introduced in 1986. The SAP which was to be introduced in three Phases – SAP1,

[1] Between 1972 and 1982, inflation rose by 35 percent annually (see Brew-Hammond, 1994)

SAP2, and SAP3 – entailed macro-economic objectives such as achievement of annual GDP growth rate of 5 per cent; reduction of inflation to single digit levels by the 1990s; generation of external payments arrears; and the build-up of official reserves. It was in pursuit of these objectives that policy measures such as state retrenchment, floatation of the exchange rate, price liberalization and privatization were employed (Partiff, 1995). Privatization was a major component of the SAPs under which a government policy on divestiture was put in place in the late eighties converting a large number of SOEs to public limited liability companies. Other SOEs were privatized through outright sale of assets or shares. The ERP and SAP saw the revamping of infrastructure and institutional base of the country in which the power sector was given priority attention (Opam and Turkson, 2000).

2.3 Power Sector Institutional Framework Prior to Reforms

2.3.1 Background

The power sector of Ghana was institutionalized in the early 1960s as the Electricity Department of the then Public Works Department of the Ministry of Works and Housing. The sector evolved into a public monopoly, with generation and transmission vertically integrated in the Volta River Authority (VRA) while distribution was handled by the Electricity Corporation of Ghana (ECG), a fully state-owned enterprise, and Northern Electricity Department (NED), a subsidiary of VRA (Opam and Turkson, 2000). By the early nineties, other important institutions in the power sector were the Ministry of Mines and Energy and the State Enterprises Commission. The nature and operations of these institutions are discussed below. Appendix 1 shows the structure of the electric power market before reforms.

2.3.2 Policy and Regulatory Institutions

2.3.2.1 Ministry of Mines and Energy

The Ministry of Mines and Energy (MME) is the policy-making authority for electricity (and petroleum) in Ghana. The MME has primary responsibility for policy development and coordination for the power sector. In discharging its duties, the MME is assisted by a technical wing, with support from VRA and ECG. The Technical Department of MME comprises staff of the secretariat of the erstwhile National Energy Board[2]. Apart from formulating policies, the MME, prior to reforms, also set electricity tariffs[3] in consultation with VRA and ECG.

[2] The NEB was established in 1983, became operational in 1985 and was abolished in March, 1991 by the PNDC government.

[3] The procedure for tariffs setting was that the utilities would make tariff proposals to the MME, which reviews and revises the proposed tariffs in consultation with the utilities. The agreed tariffs are then submitted to the cabinet for approval. Following cabinet approval, the tariffs, especially the level of taxes built into the tariff, are sent to Parliament for final approval.

2.3.2.2 State Enterprises Commission (SEC)

The State Enterprises Commission (SEC) was established in 1987 to oversee the operations of state-owned corporations and companies. In collaboration with the Ministries of Finance and MME, and the power utilities, the SEC develops and puts in place annual performance contracts to serve as benchmarks for state-owned companies to achieve in a given year. In the case of the power utilities, the performance contracting idea is to ensure that they change their management practices and improve upon their performance.

2.3.3 Operative Institutions

2.3.3.1 Volta River Authority

The Volta River Authority (VRA) was established under the Volta River Development Act, 1961, (Act 46). The principal functions of VRA were to generate electric power, initially, by the construction of a dam and hydroelectric generating station at Akosombo, and to construct and operate a transmission system to carry the power to serve industrial, commercial and domestic needs of the country. In addition, VRA had the responsibility for the development of the Volta Lake as a source of fish and as a means of transportation, as well as for other river basin development projects.

VRA is a body corporate, comprising a Board, which is appointed by government, and consists of a Chairman, the Chief Executive, and six other members, including a person experienced in financial matters, and two representatives of the major consumers of VRA (VRA Annual Report, 1998). VRA has since its foundation been operating as a quasi-enclave within Ghana; enjoying a high degree of autonomy.

VRA's generation activities cover the operation of two hydroelectric plants in Akosombo (912 MW) and Kpong (160 MW), also on Volta River, downstream from Akosombo. In addition VRA runs a 30 MW diesel generating station at Tema, which was commissioned in 1992. In 1995, the VRA started constructing a new 330 MW Combined Cycle Thermal generating Plant, comprising two 110 MW Combustion Turbines and one 110MW Steam Turbine Generator and associated Heat Recovery Steam generator (HRSG) at Abaodze, near Takoradi. The Thermal Project at Aboadze is intended to bring on board 660 MW of power when completed. Currently 550 MW of the estimated 660 MW has been installed.

VRA supplies electricity in bulk to ECG, the Volta Aluminum Company (VALCO), several mines, the Akosombo Textile Company and Akosombo Township. VRA has since 1972, been exporting electricity to Ghana's eastern neighbor, Togo and Benin, through Communaute Electrique du Benin (CEB) under an international agreement signed in August, 1969. An interconnection between Ghana and its neighbor to the west, Cote d'Ivoire, was completed in June 1983 and in pursuance to the protocol for the interconnection, VRA has been exchanging electrical power with its Ivorian counterparts Energie Electrique de la Cote d'Ivoire (EECI) and Compagnie Ivorienne

d'Electricite (CIE)[4] since February 1984. Currently however, VRA is a net importer of electricity from CIE.

VRA's operations were supported by foreign power utilities through "twinning" arrangements with Ontario Hydro of Canada, which for more than twenty years has provided an extensive range of specialist advise and management services, including term assignment in Ghana and training facilities for VRA staff in Canada; and more recently the Electricity Supply Board (ESB) of Ireland. Furthermore, over the past two decade, VRA has relied largely on consultancy services from ACRES International of Canada for system planning and project development work.

2.3.3.2 Northern Electricity Department (NED)

In 1987, as part of the arrangements to expedite the Northern Grid Extension and Systems Reinforcement Project, Act 46 was amended to extend VRA's mandate to distribution of electricity in Ghana and VRA has since created a Northern Electricity Department (NED) to implement the northern distribution zone component of the National Electrification Project. The NED is responsible for electricity distribution in the northern zone of Ghana (i.e. Brong-Ahafo, Northern, Upper East and Upper West Regions) and serves about 30,000 consumers in its area of operation (Opam and Turkson, 2000).

2.3.3.3 Electricity Corporation of Ghana

The Electricity Corporation of Ghana (ECG) was established in 1967 by a decree (NLC Decree No. 125) of the military government, which overthrew the Nkrumah government. ECG replaced the Electricity Department, which had been operating under the Ministry of Works and Housing. ECG was charged with the bulk purchase of electricity from VRA for distribution throughout the country to all categories of consumers, with the exception of VALCO, the Akosombo Township, and the Mines. The decree establishing the ECG also required it to conduct its affairs on "sound commercial basis". In 1987, ECG's distribution activities were restricted to the six southern regions[5] of the country following the establishment of the NED. Currently, ECG provides services to about 400,000 consumers in the southern part of the country. Under the provisions of the Statutory Corporations (Conversion to Companies) Act, 1993 (Act 461), ECG has since February 1997, been converted into a limited liability company called Electricity Company of Ghana to take over the assets and operations of the Corporation.[6]

A government-appointed Board of Directors governs ECG, which is responsible for formulating policies. ECG's Managing Director, as well as the Chief Executive of VRA, are members of the Board. Over the past decade, ECG has been supported by foreign power utilities through performance contracts with ESB Consultants of Ireland on organizational restructuring and development which has been ongoing

[4] Most of EECI was taken over in 1990 by Compagnie Ivorienne d'Electricite (CIE) after Cote d'Ivoire's privatization of its power sector.
[5] In all there are ten regions in Ghana.
[6] This move is part of the government's reform program.

since the mid-1980s and more recently a consortium of Electricity de France (EdF) and SAUR to establish and operationalize the ECG's Directorate for Customer Services.

2.4 History of Donor Involvement in the Power Sector Before Reforms

Multilateral and bilateral donors have financed development of a large part of the power sector in Ghana. Since the early 1960s when the Akosombo hydropower facility was built, VRA has relied almost exclusively on sovereign guaranteed loans from over 20 foreign governments and donor agencies to finance generation and transmission projects (MME, 1997). The Bank Group has been closely involved in the development of Ghana's power sector, with eight lending operations as at 1995 (World Bank, 1995). Appendix 2.1 shows long-term external loans to VRA for major generation and related activities.

The first phase of the Volta River project, which involved the construction of the main dam and 588 MW power plant, cost Ghana US$ 196 million; about half of this was financed by the government of Ghana and the balance was financed by the governments of the United States of America and United Kingdom, and the World Bank. The World Bank in particular contributed a large proportion of the external loans, some US$47 million, and this loan marked the beginning of the Bank's involvement in Ghana's power sector (Brew-Hammond, 1994). The World Bank and the Canadian International Development Agency (CIDA) financed the US$ 13.6 million required to expand the capacity of the Akosombo dam and construct the intertie between Ghana and Togo/Benin.

When the second hydro power facility (Kpong) was built, the government of Ghana secured the financing from eight multilateral and bilateral agencies including CIDA, World Bank, Saudi, OPEC, and Kuwait Funds, Arab Bank for Economic Development in Africa (BADEA) and the European Development Bank. The African Development Bank and the European Investment Bank financed the inter-connection between Ghana and Cote d'Ivoire. ADB once again financed the Northern Grid Extension and System Reinforcement Project, which extended transmission lines to the northern sector of the country (MME, 1997).

The financing requirements of ECG have in the past been dominated by loans and credit from the World Bank and KfW, the West German Bank for Reconstruction. The ERP launched in 1983 brought in other external donor agencies, which have financed substantial proportions of ECG's distribution infrastructure (Brew-Hammond, 1994: MME, 1997). Appendix 2.2 shows the inflow of external loans and grants for ECG under the ERP.

3. The Reform

3.1 Why Power Sector Reform

Interviews with key informants and review of strategic documents on power sector reforms have revealed that two main factors precipitated the reform program in Ghana. These are the growing demand and constraint in power supply and difficulties with traditional financing sources.

3.1.1 Constraints in Power Supply and Growing Demand

Prior to the reforms, virtually all of Ghana's electricity (about 99%) was produced from the two hydro dams at Akosombo and Kpong. However, a prolonged drought in 1983-84 severely curtailed the power generation capabilities of the plants as the water level in the Volta Lake reduced drastically beyond the minimum operating level. According to Opam and Turkson (2000), power generation by 1983, had declined to only 30 per cent of its 1980 level. The 1983 drought led to mandatory rationing, hence curtailment of power to all customers of VRA.[7] Before the Volta Lake could recover from the 1983 drought, it was hit by another drought in 1993-94, which again led to serious curtailment of power to VRA customers.[8] The power crisis that accompanied the droughts sent a signal to VRA and the government of Ghana that the nation's almost exclusive dependence on hydroelectric power was flawed and that hydropower cannot be solely relied upon to meet the energy requirements of Ghana.

Over this same period, domestic consumption of electricity was growing steadily and substantially, spurred on by positive economic growth (which accompanied the SAP) and the requirement of the National Electrification Scheme[9]. Domestic demand growth rate was estimated at an average of 10% between 1985 and 1993, increasing further to 15% between 1993 and 1995 (MOME, 1996).[10]

With demand gradually catching-up and eventually outstripping supply, there was the need for the generation capacity to be increased to reliably meet domestic load, contractual obligations to VALCO and the export market. Additional generation capacity was also needed to cater for the projected growth in demand. Furthermore there was the need for existing transmission and distribution infrastructure to be improved to reduce technical losses.

It had been estimated that over US$ 1.5 billion would be required over the next decade to finance infrastructure development in the electricity sector. This involved

[7] According to the then Ministry of Fuel and Power, the 1982-83 drought led to a 50% cut in electricity exports to Togo and Benin and 95% to VALCO. In addition there were also mandatory rationing for residential and other industrial consumers.

[8] VALCO, the largest single consumer of electricity took VRA to court to prevent VRA from further reducing supply to it. They claimed that such a move constituted a breach of contract.

[9] See Box 4.1.

[10] Recent load forecast studies suggest that peak demand on the Ghana system would double in 10 years requiring over 2000 MW of peak capacity compared to the present peak demand of 980 MW (Opam and Turkson, 2000).

US$ 1.2 billion for new generation capacity to keep up with growth of demand for electricity and establish a system reserve margin of about 25% (PSRC, 1997). Over US$ 100 million was also required for transmission expansion and reinforcements while another US$ 100 million would be required in improving distribution infrastructure (Opam and Turkson, 2000). For VRA, a total of US $1,187 million was required for the implementation of its investment program for the period 1992 to 2000[11] while ECG needed US$ 300 million to implement its investment plan for 1992 to 1999 (World Bank, 1995)

3.1.2 Difficulties with Traditional Financier

These major investments were needed at a time when the World Bank – the traditional financier of the power sector in Ghana – had made clear its inability and unwillingness to fund power sector investments (especially in developing countries), unless recipient countries demonstrate some commitment towards reforming the sector. [12] There were five major guiding principles in the policy paper: transparent regulation, importation of services, commercialization and corporatization, commitment lending, and private investment.

On transparent regulation, the policy required an explicit country movement toward the establishment of a legal framework and regulatory processes that were transparent, clearly independent of power suppliers and that avoided governmental interference in the day-to-day power company operations. On importation of services, the paper encouraged least developed countries to import power services from developed or more advanced countries. This was seen as a necessary first step in bringing about power sector reform and improving power sector management efficiency. The paper also urged the commercialization of, and private sector participation in developing countries power sectors. On commitment lending, the paper made it clear that the Bank would focus lending for electric power investments on those countries with clear commitment to improving sector performance. And regarding private investment, the paper mentioned the Bank's intention to encourage private investment in the power sector, by using some of its financial resources to support programs that facilitated the involvement of private investors.

The World Bank's determination to enforce these lending principles are enshrined in the principle of "commitment lending", and it is quite clear that countries seeking its financial support will have to prove to the Bank that efforts have been made towards addressing these principles. Ghana therefore had no alternative but to reform its power sector in order to first become eligible for the Bank's commitment loan facility and second, to attract private investments into the power sector.

The two needs discussed above – the need to expand existing generating capacity and the need to attract both World Bank and private capital – are together responsible for the GOG's decision to reform the sector. The most compelling reason however was the Bank's policy stance regarding investments in the power sector. As indicated by

[11] A major component of the investment program was an addition of 300 MW of thermal capacity (combustion turbines) to VRA's generation capacity.
[12] See World Bank, 1993, "The World Bank Role in the Electric Power Sector".

several reform actors[13], if the World Bank had provided the funds needed for the thermal project without insisting on reforms, no reform would have taken place. However the Bank's conditionality can only explain the "timing" of the reform (i.e. when the process was initiated) but not whether or not the reform would have taken place. Looking at the problems confronting the sector, reforming the sector was inevitable if generation capacity and system performance were to be increased significantly. Besides it was only a question of time before the privatization program, which the GOG had already launched in 1988 caught up with the utilities.[14]

The GOG's stated motives for reform however portray reforms as a pragmatic response to solving the problems of an ailing and cash-strapped power sector, which has been conceived and initiated exclusively at the instance of the GOG. In its policy statement on reforms[15], the GOG linked the reforms to its overall goal of ensuring that Ghanaians have universal access to electricity as contained in Ghana's Vision –2020 document[16]. In pursuit of this objective, the GOG recognizes that public sector resources alone are inadequate because of the nature of investments required and the constraints imposed by fiscal revenues, hence the need to attract private sector investments to the sector. Attracting private capital meanwhile would require reformation of the sector (to create an enabling environment) since, in the GOG's view, the set up of power sector prior to reforms had imposed "unnecessary constraints and impediments" to private sector investments. These constraints and impediments include (World Bank, 1995b):[17]

- Statutory restrictions on the entry into the power sector by privately owned entities;
- Inadequate definition of, and lack of transparency in, the application of "regulation", "rules of practice", and standards of performance that are intended to govern operations in the power sector;
- Unpredictable criteria for the setting of tariff level and structure to ensure that the costs of power utilities services are adequately covered; and
- Lack of clarity in GOG policy on measures to assist prospective investors to mitigate the risks of investment in power sector development.

According to the policy statement, the main thrust of the GOG's power sector reform strategy is to shift emphasis from the country's traditional reliance on multilateral organizations to finance the existing power utilities with the aim of encouraging "non-traditional sources, including direct private investments, to participate in power sector development. With the emphasis shifted to private investments, the reform was targeted at ways of removing the bottlenecks identified above.

[13] All the members of PSRC interviewed were unanimous on this point
[14] The Privatization program was a component of the SAPs implemented as part of the ERP.
[15] See Ministry of Mines and Energy, "Statement of Power Sector Development Program", (1999.)
[16] The "Vision 2020" is a coordinated program of economic and social development policies that was launched in 1995 by the GOG with the aim of transforming the economy to middle income status by 2020. The idea of ensuring that electricity reaches every corner of the country by 2020 was first conceived in 1989 under the National electrification Scheme (NES).
[17] It should be noted that these barriers were identified as barriers to private sector investment in general but not power sector specific.

Against this background, the GOG has listed the following as its objectives for reforms in Ghana (PSRC, 1994):

- Enhancing transparency in the regulation of the power sector, and also increasing management accountability in the existing public utilities, including more effective commercialization of the operations of existing power utilities;
- Effecting structural changes that would move the power sector away from the existing monopolistic and centralized structure (i.e., for the planning and operation of the power system) towards a more decentralized structure that would expose the utilities to competition in both the generation and distribution of electricity;
- Encouraging private sector investment in the power sector through the establishment of independent power production schemes, and the provision of open access transmission service to facilitate direct electricity sales by independent producers to consumers;
- Minimizing the extent to which public resources and /or GOG sovereign guarantees are relied upon by the power utilities to finance power generation projects by introducing alternative arrangements to address specific non-commercial (country-specific) risks to be faced by investors, and to target the application of available public resources to enhance the cost-effectiveness of power transmission and distribution projects under the NES.
- Establishing a regulatory framework that is transparent and enables healthy competition to occur in the sector.

It is significant to point out that the stated objectives for reforming the power sector are consistent with the five guiding principles laid down in the World Bank's 1993 policy paper. This confirms the point made earlier that the main impetus for reform was to satisfy the Bank's conditionality so as to make the GOG eligible for Bank groups' power sector credits. Having said that it will be fair to add that although a conditionality, the GOG saw the reform as the most pragmatic way of solving some of the deep-seated problems that were confronting the power sector.

3.2 The Reform Process and Proposals

As indicated earlier on, the reform process was born out of negotiations between the World Bank and the MME (representing the GOG) to secure a credit to construct the Takoradi Thermal Power Plant. Having agreed in principle to reform its power sector, the GOG in January 1994 prepared a strategic framework called "Ghana Power Sector Development Policy". The main tenets of this framework are summarized in Box 3.1. The GOG then engaged the services of SYNEX Consulting Engineers, Santiago, Chile[18] to conduct a diagnostic study to assess and develop in more detail the proposed framework, and to suggest changes, which would enhance the achievement of the desired objectives. Specifically, SYNEX was required to evaluate the key issues and options for applying a market oriented approach to enhancing efficiency, promoting competition, and encouraging private sector participation in the power sector of Ghana (Power Sector Reform Committee, 1997).

[18] According to key members of the PSRC and World Bank staff, SYNEX was recommended by some World Bank official when the GOG was looking for alternatives to IPPs.

Box 3 1 Summary of Strategic Framework for Power Sector Development Policy

a. Development of Future Power Generation
   - Hydro resources related to Lake Volta will continue to be developed by VRA. Nevertheless VRA may enter into Build, Operate and Transfer (BOT) arrangements with independent power producers (IPPs) to develop some of the proposed hydro schemes on rivers that feed into, or draw from the Volta Lake reservoir.
   - BOT contracts, as well as IPP, will be promoted to develop the Western River's resources (i.e. the Pra, Tano and Ankobra Rivers). VRA would purchase electricity from the producers, and additionally would provide "open access" to wheel the energy from the IPPs directly to large mines and industrial consumers.
   - Thermoelectric IPP would complement the operation of the Lake Volta Reservoir in dry years, and also sell secondary power to the deregulated market.

b. Coordination of Generation and Transmission and Generation Operations
   - Transparent rules will be set for the economic load dispatch of generation from VRA and IPPs, with the criteria of minimizing the operating costs of the whole system and maintaining "open access" for power sales IPPs to the deregulated market.

c. Framework for Distribution of Electricity
   - A framework for a greater private sector participation in delivering parts of ECG's commercial operations will be set up
   - Concessions for electricity distribution will be allocated

d. Framework for Electricity Pricing
   - A "Node Price" system at the generation-transmission level, based on marginal costs, will be implemented. These prices will be regulated and used for valuing the transfers between the VRA and IPPs, as well as for bulk sales to distributors.
   - Regulated consumer tariffs would be based on "Node Prices" plus standard costs of distribution representative of efficient development and operation of distributors.
   - Supplies from VRA and IPP to large consumers would be deregulated, and would operate under a competitive and open access framework

e. Regulatory Body
   - An independent regulatory body would be formed, in charge of maintaining competition in the sector, awarding and monitoring concession agreements for generation and distribution, regulating prices and monitoring performance agreements of SOEs.

Source: MOME, *Power Sector Development Policy in Ghana, 1994*

SYNEX concluded their study in June 1994 in which they proposed a new power market for the country. The main characteristics of the proposed structure are summarized in Box 3.2 and diagrammatically presented in Appendix 3.

Based on the SYNEX's diagnostic studies, the MME (on behalf of the GOG) in June 1994 issued a "Statement of Power Sector Policy", which outlines the strategic framework for power sector reform in Ghana. It is believed that this policy statement actually marks the beginning of a comprehensive drive towards reforms in the sector. (Opam and Turkson, 2000). Following the issuance of the policy statement, the MME constituted a Power Sector Reform Committee (PSRC) to coordinate the design and implementation of reforms in the sector in line with the recommendations made by SYNEX. It has to be pointed out that these two events – issuing of policy statement and setting up of the PSRC – were carried out as part of the requirements set by the World Bank before the commencement of stalled negotiations on securing the credit

for the thermal project[19]. Satisfied that the GOG has demonstrated sufficient commitment to reform the power sector, the World Bank granted a US$ 175.6 million loan facility for the thermal power project. Out of this amount, the GOG was to on-lend US$ 170.6 million to the VRA for the construction of the thermal plant. One million dollars out of the remaining US$ 5 million was earmarked for the reform process. US$ 3.5 million of the remaining US$ 4 million was allocated for the demand-side management component of the thermal project with the rest going into VRA's institutional development (World Bank, 1995).

Box 3.2 Proposed Power Sector Structure

1. The power industry in Ghana would be organized considering free entry to the system at the generation level as well as decentralization at the distribution level. Utilities would not be vertically integrated, but rather specialized in generation or distribution. The transmission system belonging to VRA would be open to every generator (open access) through payment of the corresponding wheeling charges, and large final consumers (over a certain capacity) would be supplied at negotiated prices by generators or distributors
2. An Economic Load Dispatch center (ELDC), whose operations would be regulated by law with representatives of the generators, would plan the operation of the system with the criteria of minimizing the total operation cost of the system, including the effect of interconnections with neighboring countries and the cost of unserved energy. The ELDC would also compute the short-run marginal cost (SMRC) or the spot price of energy associated with each block of hours. Energy transfer among generators – difference between the sum of contracts of an individual generator and its generation set by ELDC for a given block of hours – would be evaluated at the SRMC. Thus the SRMC would "clear" the spot market.
3. Apart from the spot sales or purchases to other generators due to the optimization of the operation of the system, direct sales at negotiated prices in long term contracts to large consumers and other generators (in the latter case only if the whole energy generated is supplied to the purchasing generator) would be allowed. This means that a new generator would have three basic alternatives:
    a. Selling directly to the spot market. A capacity component, related to the firm capacity of the generator, would be paid in any circumstance. The energy dispatched would be valued at the spot price.
    b. Establishing a long-term contract at an agreed price with VRA (or with any other generator) for all the energy produced.
    c. Establishing long-term contracts with distributors or final consumers, for an amount equal to the firm energy, and interacting with VRA (and other generators) at the spot price.
4. Generators would supply distributors at regulated price, called the node price, which would be computed by the Regulatory body as a moving average of the expected spot prices for the following 2 or 3 years.
5. The transmission system belonging to VRA would operate as a common carrier for every generator (including VRA itself), and wheeling charges would be regulated by the Regulatory Body, in such a way as to cover the efficient costs of the system. The transmission system would be operated by VRA as a separate cost center.
6. Several distributors would exist, each one operating in a defined concession area. At the first stage ECG and NED would be the only distributors, but in the medium term new service areas would be served by other newly created companies or by subsidiaries of ECG. In each concession area obligation of service would exist for any small customer located in the area, at a regulated price. The price would be equal to the node price at which the distributor is purchasing the energy, plus an added value corresponding to the reference cost of standardized efficient distributor.
7. Generators and distributors would compete to supply large final customers located in or out of the concession area; prices for these customers would be agreed among the parties, and generators using the distribution grid would pay a toll to the distributor.

Source: *SYNEX Consulting Engineers, 1994*

[19] (PSRC, 1997; Not-for-attribution interview with PSRC member, September 15, 2000)

3.3 The Design of Reform

The actual design of the reform was entrusted to the PSRC, which was required to work out the modalities, milestones, and timetables for the reform process. Specifically, the PSRC was mandated under its terms of reference to develop the detailed strategy and agenda to address the following:

1. Define the mandate for future development of Power Generation, Transmission and Distribution infrastructure;
2. Clarify arrangement and responsibility for Planning and Coordination of Power Systems Operation so as to establish a Competitive Power Market Regime;
3. Define a regulatory framework for establishing and revising Prices and Tariffs for Public Electricity Supply in a transparent manner; and
4. Establish a stable and comprehensive legal and institutional framework to enhance transparency in the regulation of power sector operations by the State.

The PSRC consisted of eight members drawn from the MME, VRA, ECG and the private sector. In executing it duties, the PSRC adopted and applied a process that was structured to maximize the direct involvement of local power sector professionals, and to facilitate the transfer of know-how from international consultants and independent experts to the local professionals (PSRC, 1997). This approach was contrary to what the World Bank had proposed; the Bank wanted the services of high-priced consultants to be hired to carry out the whole exercise, which idea the PSRC refused[20] The PSRC created a number of Task Forces (TFs) to perform the key analytical work that forms the basis of its final recommendations to the government. The work of each TF was supported by international consultants, and where appropriate for transfer of know-how, the PSRC sponsored study tours for TF members to enable them evaluate the "lessons from experience" with power sector reform and regulatory processes in other countries, including Chile, Malaysia, the UK and the USA (PSRC,1997).

Initially the PSRC formed two TFs to develop further the recommendations of SYNEX Consultants. Task Force I, assisted by SYNEX, was to review and develop the necessary tools for the operational technicalities of the reform program, particularly pricing and commercial organization of the power market. Task Force II was responsible for reviewing the legal implications of the proposals for reform and was assisted by LeBeouf, Lamb, Greene and MacRae (LLGM) Attorneys of Washington DC, USA. Each of the TFs comprised professionals from the utilities, the MME, and other relevant institutions including the universities.

A workshop, involving most of the stakeholders was organized in August 1996 in Accra to discuss proposals emerging from the work of Task Forces I and II. Participants were drawn from a cross-section of the business community (both local and foreign), including representatives from the Mines, VALCO and all energy sector institutions. Also in attendance were representatives from the World Bank and special guests among whom were resource persons from the Public Utilities Commission

[20] Not-for- attribution interview, September 15, 2000; January 11, 2001.

(PUC)[21] from Pennsylvania, USA, the Michigan Electric Cooperatives Association (MECA), the EECI, Cote d'Ivoire, and TRESP Associates of the USA. Representatives of SYNEX as well as LLGM were also present. Following the workshop, two additional TFs were set up to address outstanding issues concerning electricity distribution and customer services. The distribution Task Force was to refine the proposal developed by Task Force I to ensure cost recovery for distribution services, and to structure commercially viable cost centers that would in future be converted into distribution concessions. TRESP Associates Inc. assisted this Task Force to review information systems processing requirements for the proposed business units. The customer service task force was asked to address issues concerning the protection of customers' rights and the obligations of power utilities. The Task Forces completed their work in February 1997.

The PSRC subsequently consolidated the findings of the various task forces into a report, which was submitted to the GOG in April 1997. In the report, the PSRC recommended the following "Four-Point Action Plan" to GOG:

- Introduce new legislation to establish a four-tier regulatory framework that *inter alia* would evolve the **creation of a new body** to replace the previously dissolved National Energy Board (NEB), introduce explicit **"regulations**", **"rules of practice"** and **"standards of performance"** to cover all aspects of power sector operations;
- Introduce competition in wholesale power supply transactions, introduce "open access" transmission services to facilitate competition in the supply of power to large customers and distribution utilities;
- Reorganize existing state-owned private utilities into "strategic business units, improve management accountability to corporate board of directors, and re-capitalize the power utilities through public-private partnerships and joint ventures; and
- Introduce specific guidelines and procedures to ensure transparency in the setting of tariffs for the power sector.

The GOG accepted the PSRC's recommendations. Cabinet however, directed the GOG to proceed with regulatory reforms under a two-tier institutional framework, under which:

- An independent Public Utilities Regulatory Commission (PURC) is created to regulate the setting of tariffs for, and enforcement of customer service obligations of, all public utilities.
- A separate body, an Energy Commission (EC) is created in place of the previously dissolved NEB to assume responsibility for granting licenses to qualify operators in the energy sector, and also to enforce their compliance with the regulation, "rules of practice and "standards of performance".

The decision to opt for two regulatory bodies instead of one recommended by the PSRC was to satisfy a constitutional requirement. The 1992 Constitution requires that

[21] The PUC was particularly instrumental in shaping the regulatory requirements for the reform. It has been revealed that the PUC did not charge the GOG for any of the services rendered. The PSRC as part of its specific recommendations to the MOME, recommended a formalization of a "twinning arrangement". The PSRC went on to prepare a draft MOU for the MOME's consideration.

certain key sectors, including energy, should have a commission set up under the sector ministry to serve as the technical wing. These Commissions, which play an advisory role on technical issues, are not "very independent". The GOG however wanted an independent body (separate from the ministry) to handle the issue of tariffs

The power sector reform implementation secretariat was then established to coordinate implementation of the PSRC's recommendations. The secretariat, which was headed by the Special Advisor to the Minister of MME, prepared the necessary bills and model contracts for generation and distribution concessions. Table 3.1 shows a chronology of key events in the reform process.

Table 3.1 Chronology of Key Power Sector Reform Events

Date	Events
January 1994	GOG issued a Strategic Framework for Power Sector Development Policy.
March 1994	Ministry of Mines and Energy (MME) engages a consultant (SYNEX of Santiago, Chile) to study the opportunities for restructuring the power sector to enhance competition and efficiency
June, 1994	SYNEX concludes study and submits report, which proposes a new power market for the country
June 1994	Preparation of a sector policy letter by the MME, which laid out sector objectives, institutional guidelines and regulatory principles.
September, 1994	Establishment of the Power Sector Reform Committee (PSRC) by the MME to co-ordinate the design and implementation of reforms.
Mid-1995	Formation of two Task Forces by PSRC: Task Force I was to review and develop the necessary tools for the operational technicalities of the reform program (particularly pricing and commercial organization of the power market) and Task Force II was responsible for reviewing the legal implications of the proposals for the reform.
August, 1996	Stakeholders' workshop organized in Accra to discuss proposals emerging from the work of the Task Forces
September, 1996	Formation of Review Task Forces to address specific issues emerging from the stakeholders' workshop. In all 2 Task Forces were constituted – Distribution Task Force and Customer Service Task Force.
April, 1997	PSRC submits a report containing findings and recommendations from the various task forces to government.
May, 1997	Establishment of Power Sector Reform Implementation Secretariat to co-ordinate implementation of the recommendations contained in the report. The secretariat prepared the necessary bills and model contracts for generation and distribution.
February, 1997	Electricity Company of Ghana registered as a limited liability company to takes over the assets and operation of the Electricity Corporation of Ghana.
October, 1997	Enactment of the Public Utilities Regulatory Commission Act, 1997 (Act 538) which establishes Public Utilities Regulatory Commission (PURC), as regulatory body with powers to set tariffs, ensure compliance of the obligations by concessionaires, and arbitration of disputes between power utilities or between power utilities and customers.
December, 1997	Enactment of Energy Commission Act, 1997 (Act 541), which established the Energy Commission – a regulatory body whose main responsibility is to license and develop rules to cover the technical operation of the utilities. The EC will provide policy support for MOME.
September, 1998	PURC approves tariff increase for all categories of consumers. Lifeline consumption decreased while lifeline tariff is increased.
July, 1999	PURC organizes a stakeholders' workshop on guidelines for rates chargeable for electricity supply services.
December, 1999	PURC prepares guidelines for electricity rate-setting in accordance with Act 538.
July, 2000	MOME submits draft Electricity Regulation to Parliament for approval.

The ultimate objective of the reforms is to create an effective framework to enable a competitive and unbundled industry to evolve (Opam and Turkson, 2000). Consequently, the action plan recommended by the PSRC was mainly targeted at ways of eliminating the main obstacles to private participation in Ghana's Power Sector. Appendix 3 shows the framework that has been proposed for the new electricity market while Appendix 4 shows the regulatory framework. The main features of the model proposed are as described in Box 3.2 above.

3.4 The Political Economy of Power Sector Reform In Ghana.

The reform process described above connotes a smooth process devoid of any major disagreements or dissenting views among key power sector stakeholders. However lengthy wrangling over and discourse on some key issues characterized the process, notably among which is the choice of the reform model and the decision to unbundle VRA.

3.4.1 The Choice of Reform Model

As described above, the GOG acting on the recommendation of PSRC opted for the "competitive model" which entails *inter alia* the unbundling of VRA. The choice of this model suggests that both the GOG and the World Bank had divergent views as to how best private sector participation could be ensured in the sector. The story has it that the Bank was not pushing for any significant reform in the sector at all; it only wanted a narrow reform of ECG (considered the weakest link in the chain) and the incorporation of IPPs. The GOG of Ghana objected to this model because it wanted the whole sector to be reformed. The GOG therefore hired SYNEX to recommend how best the sector is to be reformed. It was even hinted that the Bank wanted Ghana to follow the Cote d'Ivoire model[22]. A slightly different account was presented during interviews with two key members of the PSRC. According to the two, the Bank did not recommend any specific model to be followed by the GOG[23] There is however evidence to suggest that even if the Bank did not explicitly "prescribe" a particular model to be followed, certain elements within the Bank at least were happy with the operations of the VRA, thus did not want it to be unbundled.

For instance the Staff Appraisal Report (SAR) on the Takoradi Thermal Project describes the VRA as "a well-run public utility which enjoys a high degree of autonomy, a commercial orientation and relatively few institutional problems" (World Bank, 1995). The report went on to conclude that in view of VRA's "efficacy as a public utility and its financial strength", the most appropriate role for the private sector at the time was participation in "performance-based management contract" for the proposed thermal power project. The report further recommended strongly that the thermal project should remain an integral part of the VRA system, citing complementarity of the project to the effective operation of VRA's hydro system as its reason (World Bank, 1995). It is also important to note that in the SAR, the kind of

[22] Not-for-attribution interviews with World Bank staff, September, 22 and October 30, 2000)
[23] Not-for-attribution interviews with members of PSRC, December 6, 2000 and January 11, 2001).

power sector reform that the World Bank had conceived was only a regulatory reform that will ensure private sector participation in the sector. Thus the reform component of the Takoradi Thermal Project was intended to "assist the government to establish suitable regulatory arrangements" that will provide "necessary regulatory authority over tariffs" (World Bank, 1995, p21). Judging from the 1995 SAR alone, it is apparent that at the inception of the reform process, the Bank wanted the status quo of VRA to be maintained. Moreover, the World Bank had prior to reform in 1987 (under the Power VI Project) supported the setting up of NED and its incorporation into the VRA, thereby making VRA a vertically integrated monopoly in generation, transmission and distribution. It was this move that led to the suspicion that the Bank was at the time promoting in Ghana what later became the Ivorian Power Sector Privatization model[24] [25]

The GOG however had a different vision for the sector; it "wanted a fundamental and far-reaching reform for the power sector" (PSRC, 1997, p1). Consequently a series of dialogues went on between the Bank and GOG before the former finally agreed to the reform path Ghana wanted to follow. The most contentious issue during the negotiations was a tariff formula, which the Bank had designed in 1994 for which the GOG had covenanted to implement over a period of time[26] Essentially, the formulas provided for phasing-in prevailing tariff to LRMC adjusting for inflation and exchange rate movements from 1991 onwards. The Bank in 1994 got the GOG to agree that tariffs approximate LMRC by 1996 and remain at LMRC thereafter. The GOG, after a year of implementation, realized that the formula was "convoluted" and difficult to sustain, given the need for more transparency in the rate-setting process.[27] The World Bank team resisted changes in approach, until it became obvious after the public outcry against tariff increases in 1997 that the formula had to be simplified, which led to the setting up of PURC.[28] Prior to the setting up of the PURC, a GOG team comprising two previous Energy Ministers and the then Energy Minister, visited Washington DC to impress upon the World Bank team that Ghana would prefer to follow a market-oriented agenda for power sector reform, and that VRA would not be allowed to maintain its monopoly position in power generation (*ibid*).

The question then is "why did the GOG opt for a complete "overhaul" of the whole sector, with emphasis on breaking up the VRA into Strategic Business Units (SBUs). The greatest motivation, it may seem, is the GOG strategic objective to minimize the extent to which public resources and/or government's sovereign guarantees are relied upon by power utilities to finance power generation operations. Simply put the GOG was no longer prepared to provide sovereign guarantees for future loans to be contracted by the utilities for power sector investments, many of which were expected to go into adding to generation capacities. As discussed earlier, it has been the aim of

[24] In the Cote d'Ivoire model, Electricity de France (EDF) took over (through lease/management contracts, etc) the operations of EECI to create CIE (a single buyer monopoly) for sponsored IPPs, such as la Compagnie Ivoirienne de Production d'Electricite (CIPREL) and Azito Thermal Power Project (CINERGY).

[25] Personal Communication with World Bank staff, January 16, 2001

[26] See Annex 1-11 of "Staff Appraisal Report" on the National Electrification Project, February,1994 for the formula.

[27] At the time Cabinet approval and Parliamentary LIs were required before a new electricity tariffs could be put into effect.

[28] Not-for-attribution interview with World Bank official, October 31, 2000; Personal Communication with World Bank staff, January 2001).

the GOG to shift emphasis from traditional to non-traditional and private sources of finance for power sector infrastructure development. To be able to effectively achieve this objective, VRA thermal power operations had to be separated from the core hydro, and run as a subsidiary. This subsidiary was to be privatized ultimately, through a joint venture with strategic and institutional investors. By so doing the GOG will not be called upon to guarantee subsequent loans contracted by VRA-Thermal; "the GOG did not want to be saddled with contingent liabilities"[29].

The move to unbundle VRA could also stem from disenchantment on the part of certain bureaucrats within the MME with the VRA's hegemony and autonomy in the power sector. Since its establishment the VRA has enjoyed complete autonomy. The legal structure of the VRA permitted it to by-pass the Ministry and reported directly to the office of the President. The VRA was "twinned" with VALCO (Kaiser Aluminum and Reynolds Metals) and Ontario Hydro to form an enclave. The VRA, like other SOEs, was exempt from income tax. In the case of VRA it was allowed to retain all the foreign exchange accruing from power exports and sale to VALCO. The overall management of VRA was placed under the Chief Executive Officer (with the rank of a minister for all practical purpose) who cannot be hired or fired without the World Bank's consent[30] Although none of the interviewees officially admitted this as a possible reason for unbundling VRA, it can be conjectured that certain elements within the government saw the reform as an opportunity to "dismantle" the VRA empire of near-complete autonomy.

3.4.2 VRA's Reactions and Perspectives

Naturally the VRA objected to the decision to unbundle its operations. The authority made its reservations known to the PSRC on several occasions through memos and position papers. The VRA saw the idea of unbundling as "blind copying" of the Chilean's model. To them, the reform processes should have focused on addressing the bottlenecks in the power sector, which for a long time have been identified to be in distribution. The VRA also thinks that if the main objective of reform is to attract private sector investments, then the GOG ought to have taken another critical look at tariffs, which according to the VRA "has been a major bane to private investors" [31]. The VRA also sees the idea of unbundling as not being in the interest of the nation if VRA is expected to assume a leadership role on the development of the proposed West Africa Power Pool[32]. The VRA however failed in its bid to prevent functional unbundling of its operations and is now statutorily required[33] to be separated into four distinct strategic business units.

[29] Personal Communication with World Bank staff, January, 2001
[30] Not-for- attribution interview with PSRC member, January 12, 2001, Act 46.
[31] Not-for-attribution interview with VRA official, September 12, 2000)
[32] See Vision 2020: Goals for Power Development.
[33] See MME, "Electricity Regulations", 2000.

Meanwhile, although the VRA has taken concrete steps to unbundle[34] as stipulated by the law, its unwillingness to do so is still evident. The VRA is currently expanding the Takoradi Thermal Plant (Takoradi II) under a joint venture with CMS Generation Company with IFC co-financing. As co-financiers, the IFC is demanding a 25-year power purchase agreement (PPA).[35] VRA is using this IFC condition to block unbundling, with the claim that "unbundling will jeopardize the IFC deal"[36].

It has to be pointed out however that there is a strong suspicion that the VRA's resistance to unbundling has come mainly from top level management and that a greater percentage of the staff are in fact in support of unbundling. This is because many of them see unbundling as an opportunity to break into the top hierarchy of the authority, because each of the four distinct subsidiaries to be created is to be headed by a General Manager; currently all the operations are consolidated under one person – the Deputy Chief Executive in charge of engineering and operations.[37]

3.4.3 The Role of Civil Society

The role of civil society during the formulation of reform was rather minimal. There were no NGOs, pressure groups or coalitions advocating the inclusion or exclusion of certain components of reform, like the model to be adopted. Although certain people in academia served on some of Task Forces constituted by the PSRC, it is not clear what their positions were and the intellectual contribution they made to the whole reform process.[38] The only time the voices of civil society were very much heard during the reform process was when an attempt was made by MME in May 1997 to increase electricity tariffs.[39] The announcement led to massive public outcry and sustained demonstrations, which forced the President to intervene by ordering suspension of the new tariffs and recall of parliament from recess to consider and approve draft legislation for the setting up of the PURC. The main champions of the civil unrest were the Civil Servants Association (CSA), Trades Union Congress (TUC) and the Association of Ghana of Ghana Industries (AGI).

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[34] VRA has registered the Takoradi Power Company Ltd. (TAPCO) to handle thermal generation assets, at the Takoradi Thermal Power Complex. It has also registered the National Grid Company Ltd. (GRIDCO) as a wholly owned subsidiary that will take over the transmission and load dispatch assets and also operate as the ETU. The VRA had intended to transfer the NED into another subsidiary, a proposed Northern Electricity Distribution Company Ltd. (NEDCO). This was however refused by the GOG because of its plan to consolidate NED and ECG into a single company with strategic business units to manage the five proposed distribution areas.

[35] See IFC letter to the Ministries of Finance and Mines and Energy, July 2000.

[36] Not-for-attribution interview with World Bank staff, September 22, 2000.

[37] Personal communication with member of PSRC, January 11, 2001. According to the member, this came to light during PSRC interactions with the staff of the authority to allay their fears that the whole utility was going to be privatized as has been done in Cote d'Ivoire. This suspicion could not be confirmed because only a handful of VRA staff were interviewed.

[38] The authors did not have access to any of the PSRC's meeting proceedings to be able comment on who said what. The feeling one gets after talking to many of PSRC members is one of consensus and perfect understanding.

[39] The tariff increase was in response to a tariff conditionality imposed by VRA under the terms of the Takoradi Thermal project (See World Bank, 1995).

3.4.4 The Role of Foreign Consultants

By reading through reports on the power sector reform in Ghana and from interviews conducted with key informants (mostly members of the PSRC), the impression one gets is that the whole process was entirely home-grown and that foreign consultants were used sparingly. While not disputing the fact that Ghanaian power sector professionals, who were drawn mainly from the utilities, dominated the whole process, the role of international consultants cannot be slighted. As a matter of fact, foreign consultants made critical inputs, which formed the basis of extensive policy development activity by Ghanaian professionals. For instance recommendations made by SYNEX Consulting Engineers in their diagnostic study constituted the main framework within which the reform model for Ghana was designed. In discharging its duties, the PSRC initially formed two TFs and international consultants – SYNEX and LeBeouf, Lamb, Greene & MacRae – supported both of them. A third TF – Distribution Service task force – formed after the stakeholders workshop in Accra was also supported by TRESP Associates of USA. Thus it would be right to conclude that although the GOG (and for that matter PSRC) rejected the use of high-priced consultants, they made use of some consultants (albeit judiciously) whose inputs may have influenced the reform outcome significantly considering the fact many of the Ghanaian professionals who were involved in the process did not have prior experience with power sector reform at the time.

4. Public Benefit Imperatives

The main question to be discussed in this section is how public benefits have been factored into the reform process and how considerations for the advancement of these benefits affected the design of the reform. The discussion of public benefits covers social benefits, environmental benefits and good governance.

4.1 Social Benefits

4.1.1 Access to Electricity

According to GOG, its decision to reform the power sector was primarily motivated by the desire to ensure that electricity reaches every corner of the country by the year 2020. It is important to point out that this vision of the GOG of making electricity accessible to the entire population over a 30-year period dates back to 1989 when it launched the National Electrification Scheme. To reiterate its commitment to achieving this objective, universal access was made an overarching goal for development of the power sector in the Vision 2020 document. To ensure that this goal is pursued even under reform, the GOG has made rural electrification its sole prerogative, in which case extension of electricity to rural communities is being carried out with concessionary loans contracted by the government for that purpose (Opam and Turkson, 2000). There are however plans to involve the private sector at a later date in the pursuit of this objective.

Box 4.1 National Electrification Scheme

As part of its economic recovery program (ERP), the GOG committed itself to extending electricity to all communities with population above 500 by the year 2020. As at 1989, only 478 out of the 4221 such settlements – the overwhelming majority of which are rural – had access to electricity. The GOG views the electrification of rural areas as a giant leap towards rural agro-based industrialization, employment creation, increased incomes and improved standards of living. To achieve these objectives, the GOG instituted the NES as the principal instrument of its policy of national electrification.

A complementary activity to the NES is the Self-Help Electrification Project (SHEP). Under the SHEP, communities that are 20km from the national grid can bring forward their electrification projects provided they procure all the low voltage (LV) poles required for the LV network and have a minimum of 30% of the houses within the community wired

Since the inception of the NES, all district capitals (110) have been connected to the national grid system. From 1990 to date 2450 towns were electrified; more than 2000 of these were connected through SHEP. The NES has been funded mainly through bilateral and multilateral assistance. In October 1992, the GOG and the IDA concluded an agreement for an IDA syndicated credit of US$ 185 million to implement the National Electrification Project (NEP), which comprises sub-projects under Phase 1 & 2 of the NES. IDA provided US$ 80 million. Other foreign co-financiers of the NEP were ORET of Netherlands, DANIDA, the Nordic Development Fund (NDF) and Caisse Development de France (CDF).

Source: *MME, 1996; MME, 2000*.

The GOG recognizes that it may not as yet be practical to impose on distribution licensees the obligation to provide service within their respective zones to all consumers on demand. Nevertheless to ensure that universal access can be cost-effectively pursued even after the privatization of the distribution utilities, [40] a two-tier structure will be introduced alongside the establishment of the proposed five distribution areas. The first tier will comprise all urban centers and areas covered under the District Capital Electrification Project (DCEP)[41] component of NES. Such areas are to be classified as the "commercialized electricity zones" for which distribution licensees will have the obligation to provide service connections on demand to all consumers. The other tier would cover all areas that qualify for electrification under the SHEP. These areas are to be classified as "SHEP electrification zones" for which distribution licensees will provide services under "operations and maintenance" contracts to be established on behalf of the GOG. In addition each distribution strategic business unit will be required to set up a "cost center" to handle separately the account for all SHEP activities. The GOG expects, through this approach to increase the role of the private sector in the delivery of electricity distribution and retail services, and thereby "freeing up public sector resources to support the expansion of the coverage of SHEP" (MME, 1999,). The GOG is also intending to introduce a bill in parliament that will lead eventually to the establishment of a "National Electrification Fund Board" who will have oversight responsibilities for mobilization of funds from domestic sources (such as levies),

[40] Privatization of the distribution zones will be difficult in the NES/SHEP areas since the donors are not prepared to allow distribution infrastructure built with public funds to be transferred into private hands

[41] The DCEP was aimed at connecting all 110 district capitals to the national grid. Currently, all the 110 district capitals are connected to the national grid.

donor and the private sector. Further to that, the Board will be required to implement mechanisms for the recovery of investments made by GOG, donors, and the beneficiary communities in the NES/SHEP projects.

4.1.2 Access in Terms of Affordability

As seen from above, the GOG has made every effort to ensure that universal access to electricity is achieved even under reform. Meanwhile it is one thing making electricity available to consumers and another "ball-game" altogether ensuring the consumers are able to pay. Since reform will inevitably lead to tariff hikes, at least in the short-run, unless "affordability" is critically considered as part of the reform package, many consumers will be unable to pay for their electricity. When this happens access will be reduced, since privatized utilities without any hesitation will disconnect their supplies to defaulters. How then has the reform process in Ghana catered for this inevitable outcome?

According to the GOG, affordability of electricity tariffs, especially to poorer sections of the Ghanaian population, is one of its key commitments in the whole reform program.[42] Hence the issue of tariffs setting has been made an integral part of the whole reform process. The PSRC recommended *inter alia* the introduction of specific guidelines and procedures to ensure transparency in the setting of tariffs. The key objective of the reform of the existing arrangements for setting tariffs was to ensure transparency for all stakeholders, cost recovery for the power utilities, and to protect the interests of customers (PSRC, 1997).

However, even before the PSRC recommendations could be implemented, tariffs for all categories of consumers were increased in May 1997. The tariff increase caused a national uproar, which led to the suspension of the implementation of the tariffs by the President, who then directed that the setting up of PURC be accelerated. This event thus fast-tracked the setting up of the PURC as Parliament was recalled from recess to consider and approve the draft legislation for the PURC. The PURC Act became law in October 1997.

PURC has since coming into existence reviewed electricity tariffs on two occasions - February and September, 1998 - and these reviews have resulted in increase of electricity tariff by about 300%. The tariff increase also saw a reduction in the "lifeline consumption" from 100kWh per month to 50 kWh while "lifeline tariff" was increased from 1200 cedis to 4000 cedis. Although the tariff increment implemented by the PURC was almost the same in magnitude as that proposed by the MOME in 1997, the PURC's upward review was not characterized by the same furor as in the case of the latter. The PURC has attributed the difference in reaction of the public to the strategy it adopted before implementing the new tariffs. [43] [44] While not down-playing the effectiveness of the PURC's strategy, it has to be conceded that the context within which the tariffs were increased played a crucial role in getting the

[42] Brief on Government's Power Sector Policy, 1995.

[43] The PURC adopted a strategy of "consultation" and dialogue. Workshops and public fora were organized at which the utilities and consumers were brought together to discuss how best to price electricity and make it affordable to consumers and economical to providers.

[44] Not-for-attribution interview with former PURC official, September, 2000.

public to accept the new tariffs. Ghana was going through another power crisis[45], which was caused by yet another drought in 1997. In the midst of the crisis, the public, especially industry, were more concerned with the availability of power, thus prepared to pay more for electricity. This view was shared by a government official who is reported to have said, "it (power crisis) has enabled them to raise energy prices to a more realistic rate" (Quentin Peel, 1998).

This notwithstanding, consumers still protested against the steep increment in tariffs when the full impact of the hike began to tell on their "pockets" but this was to no avail. The most vocal of the groups who protested against the tariff increase were the TUC, AGI and CSA. Ashanti Goldfields Company Limited (AGC)[46], a gold mining company also protested. The management of AGC complained that unless tariffs were reduced, the company would close down some of its operations because the increase in rates had led to a rise in the cost of producing an ounce of gold by US $20, thereby affecting its competitiveness in the global market.

The CSA's protestation was on the grounds that its members could not afford the tariff increases because it was not accompanied by a comparable increase in wages and salaries. This point was strongly made by the Executive Secretary of CSA during a press conference organized by the Association in September 1998 to press for the early implementation of the recommendation of the Price Water House Report[47]. He indicated at the press conference that much as the CSA appreciates that the utilities should break even, no one in the civil service was breaking even[48].

The main provision made for low-income residential consumer under the 1998 tariff hikes was the "lifeline supply tariff", which had been introduced earlier on, first in 1992 and then in 1994.[49] The "lifeline" consumption level for electricity is set at 50 kWh/month and attracts a flat rate of 4000 cedis. It is estimated that the lifeline consumption is adequate to satisfy the basic monthly requirements of the rural customers and the urban poor who may be earning the government approved minimum wage of 2800 cedis per day (DANIDA, 1999). As can been from Box 4.1, if urban consumers had had access to this breakdown and understood it, it would have constituted a ground for agitation since under the new tariffs structure, they were paying more for a reduced "lifeline". It must be conceded however that the allowances made under the 100 kWh lifeline consumption appear extravagant and far in excess of the minimum power requirements of a poor urban household.

[45] For a period close to about six month the VRA embarked on drastic power rationing - 12 hours on and 12 hours off - for all consumers through the country except some vital industries.
[46] AGC is the second largest single consumer of electricity in Ghana. Its power requirement is 70 MW.
[47] Price Water House Cooper Consulting was contracted by the government to come out with a universal salary structure for all categories of workers. Workers were calling for its implementation because they expecting salary increase under the proposed structure.
[48] http://www.joy997.com.gh/busreporthtm, Sept. 1997
[49] The lifeline tariff idea was first recommended by ACRES International in 1992. Pegged at 50 kWh/month in 1992, the lifeline was increased to 100 kWh/month in 1994 but reverted to 50 kWh in 1998.

Box 4.1 What 100kWh of Electricity Can do for a Household In One Month

1. 4 40watt bulbs lighted for 6hrs everyday	=	29kWh
2. 1 70watt fan running for 8hrs everyday	=	17kWh
3. 1 7watt Radio running for 24 hrs everyday	=	4kWh
4. 1 60watt Television for 8 hrs. Everyday	=	19kWh
5. 1 100watt Stereo for 5 hrs everyday	=	15kWh
6. 1 Iron for 1 hr everyday	=	15kWh
TOTAL		100kWh

Source: *MOME, 1994*

Meanwhile the utilities have also been clamoring for further upward review of tariffs claiming that prevailing tariffs are still uneconomic. Indeed, tariffs are still nowhere near economic level and even lower in real terms with their values drastically reduced by rapid inflation and depreciation of the Cedi. The PURC has however not granted the utilities this request as yet but has decided to ultimately achieve economic tariffs within a three-year period for industrial consumers and a four-year period for residential consumers. PURC's objective is to introduce some amount of gradualism in the attainment of economic electricity rates to minimize the impact of tariff increment on all classes of customers (PURC, 2000).[50]. It has been revealed during this study that the PURC has come under intense pressure, both overtly and covertly, from bilateral donor agencies such as USAID and DANIDA (on behalf of private investors from their countries who want to invest in the sector) to increase tariffs but the PURC has refused to grant the increment because in the opinion of the Commission, the utilities have made no effort since the last tariff adjustments to increase efficiency, reduce system losses and improve quality of services to customers, hence there is no justification for another increment[51].

Box 4.2 PURC's Transitional Plan (2000-2002)

The transitional period has been defined as the period from 2000 until end of year 2002 when it is highly expected that natural gas will be available for power generation in Ghana, via the West African Gas Pipeline Project.[1] Thus the transitional plan has been linked to the availability of natural gas in Ghana, which is expected to translate into lower end-user tariffs under natural gas-fired thermal plant regime. The transitional plan has been couched in a manner that will afford the PURC the opportunity to transit current electricity tariffs with respect to generation, transmission and distribution, to economic rates, without imposing undue financial burden on all classes of customers. The plan is also expected to give ample time to customers to gradually adjust to the economic tariffs and simultaneously, enable the utility providers to cover their operating and maintenance costs and also to make a reasonable rate of return on their average revalued net fixed assets.

The Commission's strategy is to ensure that charges that pass-through to consumers do not contain inefficiencies on the part of the utility. In that regard, PURC's end-user tariffs during the transition period will be adjusted, taking cognizance of efficiency improvement and other cost-reduction measures that the utilities should be adopting.

Source: *PURC, 2000*

[50] See Box 4.2 for PURC's transitional plan.
[51] Not-for-attribution interview with a Commissioner of PURC, September 15, 2000

4.2 Demand Side Management (DSM)

An important feature of Ghana's Power Sector Reform is the Demand Side Management (DSM) component. Unlike the reform component of the Takoradi project, the DSM component was included because the GOG requested for it during negotiations with the Bank (MME, 1994; World Bank, 1995). The GOG requested for the IDA credit (as part of the Takoradi project) so as to enable it implement an expanded program on energy efficiency improvements in the industrial and commercial sectors (MME, 1994). [52] The World Bank acceded to the GOG's request and granted an IDA credit of US$ 4 million for the DSM component, which was to be implemented over a three-year period at an estimated cost of US$ 8.5 million.[53] According to the World Bank, the main objective for the inclusion of the DSM component was to assist Ghana to develop and implement market-based strategies and programs to promote and sustain the application of electricity efficiency and conservation measures at the end-use level (World Bank, 1995). Originally implemented by the Project Implementation Unit (PIU) of the MME, the DSM component is currently being implemented by the *Energy Foundation (EF)* – a quasi-public set up. Established in November 1997 and inaugurated in August 1998, the EF is the brainchild of the Private Enterprise Foundation (PEF)[54]. The MME endorsed the idea and collaborated with PEF to establish the EF, whose activities will *inter alia* cover the promotion of energy efficiency and conservation, sustainable development of energy and protection of the consumer from the inefficiencies of the utilities (Energy Foundation, 1999). The objectives of the EF are as follows:

- To promote sustainable development of energy resources and efficient consumption of energy in all its forms;
- To educate consumers through publicity campaigns, educational programs and seminars about the rights and responsibilities of consumers, benefits of reducing energy waste, and assist residential, commercial and industrial consumers in improving energy efficiency;
- To advocate policies that address customer service issues and promote national policies for sustainable development of energy and adoption of energy-saving technologies;
- To strengthen the private sector to improve economic productivity by developing energy efficiency, renewable energy and productive use of electricity programs and businesses; and,
- To undertake other energy related research and development activities for itself and on behalf of other entities.

[52] Ghana's first major steps to introduce DSM measures were taken to counteract the effects of the severe drought of 1983. There followed an Energy Assessment report on Ghana in 1986, an ESMAP industrial energy rationalization study in 1988, and Industrial Energy Efficiency Program (Phase I) in 1990.

[53] It should be pointed out that IDA was only a partial financier of the DSM component. The rest of the US$ 8.5 million was to be mobilized from domestic and/or bilateral sources.

[54] PEF bring together the major energy consumer groups including the Association of Ghana Industries, the Ghana Chamber of Mines, Ghana Chamber of Commerce, Ghana Employers Association, Federation of Associations of Ghanaian Exporters etc.

The GOG's prime motive for the introduction of DSM program – dubbed Electricity Demand Management Program – was to free electricity supply capacity which had been "tied-up" in some sectors of the economy (due to inefficient practices and/or equipment) for economic development, thus reducing the need for additional generation capacities (MME, 1994). Field investigations by MME consultants had indicated that over 20 MW of tied-up electricity could be freed within a year if all consumers on VRA/ECG high voltage and low voltage tariffs (i.e., the industrial plants, mining establishments, and large commercial buildings) were to implement "power factor correction"[55] measures. An estimated cost of US$ 2 million was required to provide the capacitors before the 20 MW savings could be achieved (MME, 1994). While some industries and mining establishments took the initiative to implement the measure, the GOG had to restructure tariffs to incorporate a surcharge to penalize those that do not take up the power factor correction measures.[56]

It has to be added that the EDMP was not only intended to free tied-up electricity but also to help cushion consumers of the adverse effect of the inevitable tariff increase as Ghana moves from cheap hydropower to expensive thermal. According to the MME, energy efficiency and conservation had assumed greater importance in the energy policy of Ghana "in view of the rising cost of energy" (MME, 1996).[57] Consequently, the PIU, (and now EF) launched a public information and awareness campaign using advertisements in the press and other medium of mass communication, as well as educational programs and seminars, to sensitize all categories of energy consumers about the potential benefits associated with energy efficiency and conservation. It has to be mentioned however that this objective of the DSM program (i.e. cushioning consumers of the effects of tariff increase) was not cited during the GOG's negotiations with the World Bank for the inclusion of the DSM component and may have been advanced later on during implementation to make DSM attractive to consumers.

4.3 Environmental Benefits

Interviews conducted with key informants reveal that the environmental agenda was not prominent during the formulation of the reforms. According to a member of the PSRC, environmental concerns were not raised during the reform process because it was not an issue at the time[58] The Committee's mandate was to bring about an institutional restructuring in the sector, which will allow private sector participation.

[55] Power Factor correction is achieved through the installation of equipment called "capacitor banks" to bring down the maximum demand of a consumer thereby freeing generating capacity at the utility end.

[56] To provide impetus for consumers to expedite corrective actions, the Power Factor Surcharge (PFS) (payable from January 1995) was designed to levy a penalty which will be equivalent to 1% increase in maximum demand charge for each 1% decrease in power factor below the minimum performance standard of 0.95 (the standard was later reduced to 90%). Once a customer takes the necessary measures to correct the power factor above the minimum performance level, the surcharge is eliminated. The revenue accruing from the PFS is paid into a special account – Electricity Demand Management Fund (EDMF) to be used to expedite the bulk procurement and importation of the equipment and instrumentation for power factor correction, time-of-day metering and pre-payment meters.

[57] An official of the Energy Foundation in a not-for-attribution interview on September 14, 2000, corroborated this fact.

[58] Not-for-attribution interview with a member of the PSRC, September 13, 2000.

To the members of the committee therefore, the most important issue was how to design the process to attract much needed private capital, which will ensure that adequate power is made available to meet ever-growing demand. Environmental concerns were expected to be tackled by the regulatory body that would be emerging under reform.[59] Environmental issues may not have been raised in the Committee's deliberations because the Environmental Protection Agency (EPA)[60] was already in place with a clear mandate to ensure that all investments (power sector investments inclusive) meet set environmental standards (Turkson and Amadu, 1999). Environmentalists also made no representations during the design of the reform. So has the reform left the environment to cater for itself; how effectively have potential environmental damages been mitigated and benefits advanced?

4.3.1 Damage Mitigation

The Energy Commission (EC) is the regulatory body charged with the responsibility of ensuring that environmental concerns are effectively addressed in a restructured power sector. This is to be achieved through Sections 11 and 59 of the Energy Commission Act, (Act 541) which provide as follows:

> **Section 11**
> *Except expressly exempted under this Act, no person shall engage in the business or any commercial activity for:*
> *a) The transmission, wholesale supply, distribution or sale of electricity or natural gas; or*
> *b) The refining, storage, bulk transportation, marketing or sale of petroleum products*
> *Unless he is authorized to do so by a license granted under this Act*.
>
> **Section 59 (4)**
> *Any person who on the date of the coming into force of this Act holds a valid license for the supply of electricity, natural gas or petroleum products or by law operates any service for the provision of electricity, natural gas or petroleum products shall, where he intends to continue to operate the service, apply within six months of the coming into force of this Act for the appropriate license under this Act; and shall unless authorized under this Act cease the operations after the expiry of the six month period.*

Box 4.4 contains the requirements for obtaining a license.

[59] Not-for-attribution interview with a member of the PSRC, September 13, 2000.
[60] The EPA was created by the Environmental Protection Agency Act, 1994 (Act 490). Act 490 transformed the Environmental Protection Council from an organization that was primarily concerned with research and advisory functions (without power to enforce any measures for improving the environment or preventing damage to it) to an enforcement agency.

Box 4.4 EC Licensing Requirements

Electricity Service Providers

A) New Entrants

- A detailed Business Plan
- A feasibility report on new facility and installations
- EPA certified Environmental Impact Assessment Report on new facilities or installations to be used by service provider
- Evidence of EC's authorization permit to construct new facilities
- Implementation agreement
- Power purchase agreement
- Ownership structure and agreement
- Supply agreement
- Construction contract
- Operations and maintenance agreement

B) Existing Service Providers

- Provide information as per Public Notice EC. N. 001
- EPA certified Environmental Impact Assessment on new facilities or installations or an Environmental Impact Management Plan for existing facilities
- EPA's assessment of all old and new facilities to ascertain their environmental compliance.

Source: *Energy Commission: Public Notice, EC. N. 003*

The requirement to obtain EPA certification is strictly enforced and failure to obtain it constitutes sufficient grounds for a license to be refused. The EC disclosed that a private company, which applied for a license to import used vehicle tires for power generation has been refused a license because it could not obtain EPA certification. Also, the Tema Oil Refinery (TOR), the only oil refinery in Ghana, was refused a license because it could not provide the EC with EPA certification. A license was only obtained after certification had been obtained from EPA[61]. It is significant to point out the EPA demanded, reviewed and approved the environmental impact assessment (EIA) for the Takoradi Thermal Power project. It is also worthy of note that the World Bank reviewed and approved the Environmental Impact Assessment Report on the thermal project before granting the credit. The main environmental issues from the report were as follows (World Bank, 1995):

i. the effect of spent cooling water on marine life and the consequent effects on the fishing industry near the site of the project;
ii. air quality impact;
iii. the effects of the loss of site land on a handful of families who as at the time of the assessment were practicing subsistence agriculture on the land; and
iv. potential oil spillage and/or leakage.

The World Bank pressured the VRA and the GOG to agree to implement an Environmental Mitigation Plan for the project during its construction and later, operation. The plan was approved by the IDA, which also agreed to assist VRA in

[61] Not-for-attribution interview with a commissioner at the EC, September 13, 2000

training needs and equipment for the agreed monitoring plan of the environment (World Bank, 1995).

4.3.2 The Choice of Thermal Power Technology

There is a relationship between the thermal power technology used and the amount of pollutants emitted into the environment. Of all the fossil fuel based generating plants, the Combined Cycle Gas Turbine (CCGT) is the cleanest, most reliable and efficient (Turkson and Amadu, 1999). Ghana opted for the CCGT technology for the 330 MW Aboadze thermal plant. The fuel being used at the moment is low sulphur light crude oil or distillate oil with the possibility of later conversion to natural gas, should supply become available from the West African Gas Pipeline Project (WAGPP)[62]. Although the main impetus for choosing the CCGT was to make use of relatively cheap natural gas from Nigeria, there will be an environment benefit (reduction in GHG emissions) accruing when the gas finally arrives by 2004.

4.3.3 Environmental Gains

It has to be acknowledged that although environment considerations did not feature prominently in the reform debate, certain measures implemented so far (ostensibly for other reasons) have resulted in beneficial environmental outcomes. Two such outcomes are the Embedded Generation Facilities (EGF) and DSM program.

4.3.4 Embedded Generation Facilities (EGF)

EGF has been defined as a power generation facility that is electrically connected (at low to medium voltage) directly to a sub-station within a particular distribution system (PURC, 1999). To qualify as EGF two provisos will have to be satisfied. First, the total output of such a generation facility should be distributed and retailed locally by the distribution utility without any requirement for the use of the high voltage transmission system and second, the firm capacity for electricity should not exceed 50 MW (Electricity Regulations, 2000). The EGF concept emerged from the need for adding supply at the 33kV level for diesel generators to meet the shortfall in supply during the 1997-98 drought. Over time, it was seen as a tool for renewables, notably wind and solar.[63] The last two sentences connote the idea that the renewables were not given any consideration during the reform process and were only "sneaked in" as an afterthought. However, according to the GOG's Statement of Power Sector Development Policy, which basically reiterates the government's commitment to reforms, promoting the development of renewables was a key policy objective to be pursued under reform (MME, 1999). Thus the EGF may not have been introduced with only diesel-generated electricity in mind but rather more generally targeted at all other decentralized options of power generation. In fact in the above cited policy statement, the GOG made mention of only renewables, such as wind power,

[62] The WAGPP is a project to pipe natural gas from Nigeria to Ghana, Benin and Togo and it is expected to be completed in 2004.
[63] Not-for-attribution interview with member of PSRC and former PURC official, December 6, 2000

cogeneration and/or mini-hydro, when she talked about localized power generation facilities.

Regardless of how the EGF came to be introduced in the reform process, the facility now exists and given the criteria for eligibility, renewable energy are by nature the most likely "candidates" for the EGF. The environmental benefits associated with the utilization of renewable energy technologies are massive and electricity generated from renewable sources is known to be the most environmentally benign way of producing electricity.[64]

Ghana has a lot of renewable energy resources, and chiefly among them are solar and biomass. The wind and small hydro resources have, however, been assessed to be modest (KITE, 2000). Most of these resources have been exploited using various renewable energy technologies (RETs) and have been found to be technically feasible. Unfortunately commercialization and wide-scale utilization of the RETs has been hindered mainly by the fact that these technologies are seen as more expensive, compared with conventional energy. Conventional energy appears to be cheaper because they are highly subsidized. Consequently there has been a clarion call over the years in Ghana, mostly directed at the GOG, to *inter alia* ensure a level-playing field for renewables but this has not been fruitful.

The EGF appears to provide just the exact answer that renewable energy advocates have been asking for. Under the Electricity Rate-Setting Guidelines, the PURC is required to approve a specific bulk supply tariff (BST) for electricity supply from EGF. In fixing the tariff, the PURC shall require that the level of such specific BST shall not exceed the avoided costs of procuring electricity directly from the spot market plus the applicable transmission service charges for the delivery of the electricity from the spot market to the particular distribution system. As the PURC gradually adjusts tariffs to economic levels while approving a premium rate for EGF, RETs will be more favored by distribution licensees under the reform regime, where they are found to offer a cheaper alternative to meeting their obligation within a particular distribution concession area.

Perhaps the greatest legacy that power sector reform has "bequeathed" to decentralized energy in general and renewables in particular is the "legal status" it has granted to private generation and sale of electricity. Prior to reform the existing laws did not permit any entity, be it corporate or private individual, to generate electricity in Ghana. With this main barrier removed, it is hoped that the scope of application of renewables (and with it the benefits to the environment) will be enlarged since private individual and/or companies can now apply for license to develop and disseminate renewables in remote rural communities where it would be uneconomical to extend electricity from national grid. However, there are other key barriers that will have to be removed before widespread adoption and utilization of renewables can be achieved. Hopefully these barriers will be removed by the on-going DANIDA funded Renewable Energy Development Project (REDP). The REDP was set up under a cooperation agreement between the GOG and Denmark to provide technical assistance to the MME and EC in the management and promotion of renewable

[64] For instance a 5 MW small hydro plant typically replaces 1400 tonnes of fossil fuel annually, avoiding emission of 16,000 tonnes of CO_2, and over 100 tonnes of SO_2, while supplying the electricity need for over 5000 families (See Renewable Energy World, July 1999, p169)

energy technologies (RETs) in Ghana. A key component of the REDP is the formulation of the National Renewable Energy Strategy (NRES), which is basically aimed at identifying and removing barriers to RETs in Ghana.[65]

4.3.5 DSM and the Environment

There are environmental benefits associated with every DSM program. The EF has tried to quantify the potential environmental, as well as financial benefits that would accrue if Ghana were to introduce and enforce a European Union[66] type minimum efficiency standards. The findings of a survey conducted by the EF in collaboration with the Lawrence Berkeley National Laboratories, California, USA under the auspices of the MME and USAID, indicate the following:

- Implementing a European type minimum energy performance standard for refrigerators could result in saving up to US$ 50 million by 2010 for consumers, and reduce carbon emissions over the same period by 230,000 tonnes;
- A 10% saving in energy consumption for room air conditioners could save residential consumers nearly US$ 8 million and reduce carbon emissions by 38,000 tonnes by 2010; and
- For lighting, saving 10% of the residential load through policy and regulation would translate into US$ 6 million in consumer savings by 2010 for urban customers only. The carbon reductions in this case will amount to 24,000 tonnes (Energy Foundation, 1999).

4.4 Governance

Although good governance per se cannot be said to constitute a "public benefit", it is a prerequisite for the effective advancement of the public benefit agenda in a reform process. For public benefits to be effectively represented, the reform process must be characterized by transparency, access to information, accountability to the public and space for private participation (PRAYAS, 1999). These principles could be operationalized to include the following: public notice of intent; inclusion of alternatives; public access to documents; public hearings; complete and open access to regulatory process; opportunity for submission of objections and challenges with sufficient time allowed for submissions; clear rules of process for investigation of irregularities; and institutionalized means of communication with advocates of public and environmental interests (Chella Rajan, 1998). A key question here is whether any of these desirable principles are present in the governance structure that has evolved after reform in Ghana.

The governance of Ghana's power sector reform process has been vested in the two main regulatory bodies - PURC and EC. Acts 548 and 541, together have established

[65] In 1996, the governments of Denmark and Ghana agreed that the energy sector would be one of the priority areas for future Danish-Ghana development cooperation assistance. Pursuant to this agreement, the Danish government is funding the Energy Sector Program Support (ESPS). It is under the renewable energy component (REC) of the ESPS that the NRES is being developed.

[66] The EU introduced its minimum efficiency standards from 1st January 1999.

a new dispensation under which the GOG's central role in formulating policy and implementing strategy for power sector development is to be handled at "arms length" from the day-to-day regulation of the power sector operators.[67]

Under Section 4 of Act 538, the PURC is an independent body and is not subject to the direction or control of any authority in the performance of its functions. For administrative purposes, however, the PURC is under the office of the President.

4.4.1 Regulatory "Checks and Balances"

A number of mechanisms have been put place to ensure "checks and balances" in all aspects of the PURC's regulatory mandate and these are as follows (Opam, 1999):[68]

4.4.1.1 Tariff Setting Guidelines

The PURC is, *inter alia*, statutorily required to prepare guidelines for setting tariffs. These guidelines are intended to serve as a transparent mechanism for setting and adjusting tariffs. PURC in consultation with all stakeholders (through the organization of workshops and seminars) has prepared these guidelines.[69]

4.4.1.2 Public Hearing

Act 538 also stipulates that the PURC shall before approving rates provide as far as practicable the public utility and consumers affected by the rates a reasonable opportunity of being heard and shall take into account any representation made before it. Apart from being a strict statutory requirement, these proceedings have proved to be a useful mechanism for engaging stakeholders and the general public in a meaningful dialogue on the critical issue of tariffs. The hearing process is preceded by a publication, in the mass media, of the summary of the utility companies' proposals for tariff adjustment. Representations are invited from consumers. These proposals are presented again at a public forum where submissions, whether written or oral, are received from persons who wish to make representations.

4.4.1.3 Funding the PURC

The funds of the PURC, under Act 538 include government subvention, loans, grants and monies accruing to the PURC in the course of the performance of its functions. The bulk of PURC's budget has been financed through central government subvention, a situation, which PURC would want to see reversed since it can potentially weaken its independence. There has been some assistance from the World

[67] To maintain this arm's length relationship between the regulatory body, the power utilities, and the GOG, membership of the regulatory body will exclude persons that are directly associated with energy sector operation, especially power. Similarly, the consultants of the utilities will be ineligible to participate in the work of the regulatory bodies (MME, 1994).
[68] These "checks and balances" are all contained in PURC Act, 1997 (Act 538).
[69] See PURC, "Electricity Tariff Setting Guidelines", 2000

Bank and DFID but these are seen by the PURC as inadequate. The PURC is planning to seek approval from parliament to allow it to establish its own source of funding through levies on electricity and other utility services under its jurisdiction.[70]

4.4.1.4 Subsidiary Legislation

The PURC is mandated under Act 538 to issue certain specific regulations to establish complaint procedure to determine consumer/utility complaints, and establish Consumer Services Committees. The Act also grants the PURC general power to issue regulations considered necessary for implementing its functions. Certain instruments have been prepared under the PURC's legislating powers. The procedures adopted by the PURC in issuing these regulations are elaborate and culminate in the laying of the regulations before parliament. Stakeholders' views and comments are also taken into account in the legislating process.

4.4.1.5 Reporting to Parliament

The PURC is statutorily required to submit an annual report of its work to Parliament each year. The report is accompanied by audited accounts of the PURC for the year reviewed as well as the Auditor General's comments on the accounts. The reporting requirement means that the PURC is accountable for its operations to somebody, in this case the legislative hand of government.

4.4.1.6 Institutional Representation

The institutional representation of industry, labor and domestic consumers on the PURC is only symbolic but of significance in representing the interest of these groups. It is to be noted that institutional representations, persuasive as they may be, have on no occasion been made to supersede the national economic interest.

The Energy Commission has also been set up as an "independent" body with the mandate of granting licenses and setting standards of performance and rules of practice for transmission, wholesale supply, distribution, and sale of electricity and natural gas among others. The Minister of Mines and Energy may give to the Commission such direction of general character as appears to him to be required in the public interest relating to the discharge of its functions. The EC has a membership of 8 consisting of a chairman, a representative of the National Development Planning Commission (NDPC), an Executive Secretary and four other persons with knowledge in matters relevant to the functions of the Commission. The President in consultation with the Council of State appoints members of EC.

In carrying out its functions, the EC is subject to certain checks and balances as well. For instance Section 18 of Act 541 empowers the EC to modify licenses already granted. However this cannot be done arbitrarily but has to be done in consultation with the parties involved. The EC cannot modify any license unless it has given a

[70] Not-for-attribution interview with a Commissioner of PURC, September 14, 2000.

minimum of 60 days written notice stating the EC's intention to make modification and setting out the effects of the modification. It is also a statutory requirement that the EC in all cases should consider any representations or objections that are made to it before the modifications are finalized. The same procedure applies to a suspension and/or cancellation of licenses. Here again a written notice will have to be issued by the EC specifying the cause of its dissatisfaction and giving directions for rectification of the breach and action proposed to be taken by the Commission in the event of non-compliance with the notice. The Commission shall not suspend licenses without first giving the licensee the opportunity of being heard and shall where considered appropriate, give him such period as the Commission considers reasonable to comply with the EC's direction (Section 19 (2&3)). The EC is further required to publish in the Gazette and other newspapers of national circulation notice of every license, modification, suspension or cancellation of license made under Act 541.

An aggrieved person may seek redress from the Minister of Mines and Energy and if still dissatisfied with the decision of the Minister, pursue the matter in the courts. Like the PURC, the EC is required to submit its annual report and audited account to Parliament at the end of each year.

5. Conclusion

5.1 Key Findings

The following conclusions can be drawn from Ghana's power sector reform story as told so far:

The decision to reform the Power Sector in Ghana was taken in fulfillment of a World Bank conditionality that was attached to an IDA credit facility granted to the GOG/VRA to build a 330 MW thermal power plant at Takoradi. The Takoradi project had become necessary following the renewed growth in the Ghanaian economy after a period of stagnation leading to an increased demand for power, at a time where the supply and distribution of power were facing increasing problems and power shortages (due mainly to prolonged droughts). An estimated US$ 1.5 billion was required for power expansion over a decade at a time when Ghana's traditional financier of power sector investments, the World Bank, had as a matter of policy been pushing for reforms. The GOG therefore had no alternative than to embark on reform so as to benefit from the Bank's "commitment lending" credits as well as attract other private sector capital. However, as shown by the objectives sought to be achieved through reform, the GOG saw reform as a window of opportunity to address the deep-seated problems and bottlenecks identified in the sector.

Although a conditionality, the GOG did not rush into hasty implementation. Through the PSRC (assisted by foreign consultants), the GOG weighed all the options available in the reform spectrum and chose the model it thought will best address the problems of the sector, contrary to what the "initiators" themselves had in mind. The reform process was thoroughly negotiated through dialogues with the World Bank team, during which the GOG rejected the model recommended by the Bank. The GOG also rejected the World Bank's recommendation that high-priced consultants be used to design the process and rather resorted to a strategy that aimed at maximizing the direct involvement of local power sector professionals and facilitating the transfer

of know-how from international consultants and independent experts. Foreign consultants were used sparingly but they made critical inputs, which formed the basis of more extensive policy development activity by Ghanaian professionals. The final choice of a model was dictated by the GOG's resolve to limit its direct involvement in the financing of future power sector investments while encouraging private investors to participate in the sector. The ultimate objective of the reforms is to create a framework to enable a competitive and unbundled industry structure to evolve. Implementation of reform started with the passing of the PURC and EC Acts in 1997. The two Acts established two regulatory bodies into whose hands the governance of the industry has been entrusted.

In designing the reform, its adverse effects on the public appear to have been addressed while potential benefits have been exploited. The issue of increased access to electricity even under reform was made an explicit goal of the government. In fact the GOG asserts that its decision to reform the power sector was primarily inspired by its commitment to electrify the whole country by 2020 through the NES. The GOG still intends to pursue its NES even under reform using concessionary loans from the donor community. It has also incorporated in the reform process, a strategy that will allow private distribution concessionaires to participate in the NES. In addition, provisions appear to have been made under Act 538 to ensure that consumers are able to afford services provided by the utilities. This is to be achieved through a gradual phase-in of economic tariffs and the introduction of "lifeline" consumption level of 50 kWh per month. A DSM program intended to free tied-up electricity in key sectors of the economy has also been targeted to help consumers cut down on their energy expenditure through the efficient use and conservation of energy.

Unlike social issues, environment issues were not explicitly raised; either by the government or civil society. However Act 541 and Act 490 provide adequate safeguards against negative environment impacts of reform, such as pollution. Two other reform outcomes –EGF and DSM – have positive environmental consequences but they were not included specifically for environmental purposes; environmental benefits rather became a spin-off. The EGF for instance was introduced to allow for diesel power generation during the 1997-98 power crisis but was later seen as a means by which renewables could be incorporated in the reform process. In the case of the DSM program the motive was to free tied-up power for development.

On governance, the regulatory bodies have been set up as independent bodies that are required by law to carry out their duties in a transparent manner, free from government controls and interferences. It was the government's concern for the fact that the independence of the regulatory body responsible for tariffs setting could be compromised that led to Cabinet's decision to opt for two regulatory bodies instead of one proposed by the PSRC. So far both the PURC and EC have conducted their duties in a transparent manner, which seem to suggest good governance.

The World Bank is the main and perhaps the only international financial institution with direct involvment in the reform process. It was at the Bank insistence that the whole reform process was initiated. However as soon as the GOG agreed on reform, it assumed total control over the design of the process when it refused to follow the Bank's prescriptions. Thus while the GOG accepted the Bank's "diagnosis" of the problems of the sector, it disagreed with its "prescriptions". The Bank's role was

subsequently reduced to a "reviewer" of the process; just to ensuring that the process proceeds in line with its principles of power sector reforms. Other bilateral agencies came in after the process has already taken shape. USDOE, through the USAID, for instance is providing technical assistance to the Energy Foundation under the EDMP while DANIDA is funding the development of a Strategic National Energy Plan (SNEP) and a National Renewable Energy Strategy (NRES). The NRES is basically targeted at identifying and removing barriers to renewable energy technologies in Ghana, thereby ensuring commercialization. DfID is also reported to have been providing limited support to the PURC. There are however hints that the GOG's decision to privatize the distribution network, especially those in the SHEP zone, has been resisted by the countries who have been funding the NES. They are alleged to have said that they will not allow their investments, funded by their taxpayers' money to be sold into private hands.[71]

5.2 Concluding Remarks

It may be too early in the day to fully assess the reform process currently being implemented in Ghana. On the whole however, it appears Ghana's reform process has been meticulously designed. The process appears to have catered for all eventualities with the setting up of the two regulatory bodies, the PURC and the EC (supported by EPA). However, the critical test for the process will be how tariffs are going to be adjusted upwards to economic levels and still remain affordable considering the fact that even at current levels, both domestic and residential consumers are complaining because the wherewithal to pay is non existent. Even at prevailing tariffs, many ECG customers are defaulting in paying their bills. As economic tariffs are gradually phased-in by 2003, the default rate is likely to increase unless a number of innovative measures, well-designed tariff structures with in-built cross-subsidization schemes, are implemented.

[71] Not-for attribution interview with World Bank official, October 31, 2000)

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APPENDIX 1 Pre-Reform Structure of Power Sector in Ghana.

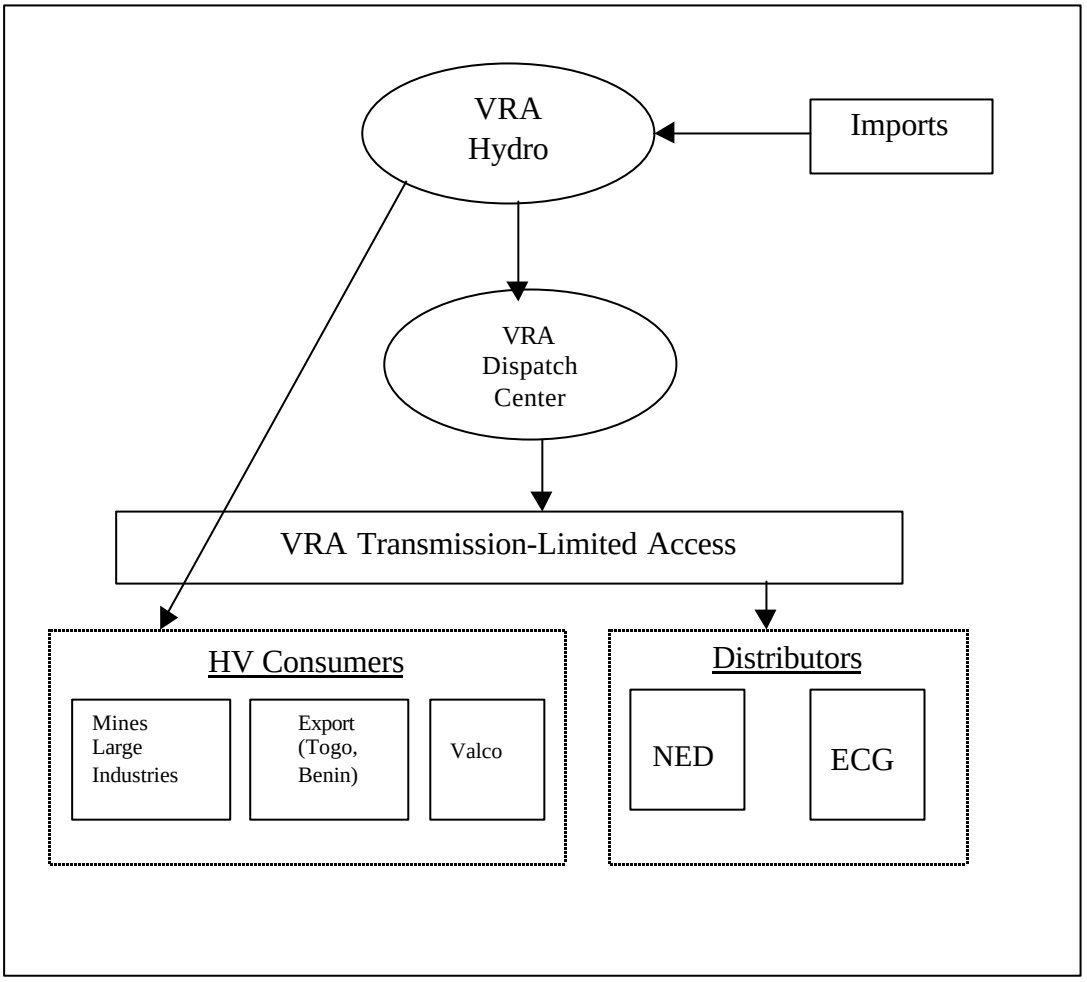


Figure 1 Pre-Reform Power Sector Structure

Source: Opam and Turkson, 2000

APPENDIX 2 External Loans and Grants to VRA and ECG

Appendix 2.1 Long-Term External Loans VRA for Major Generation and Related Projects

Source	1962 Akosombo 1	1969 Akosombo 2	1977 Kpong	1990 Akosombo Retrofit
The World Bank -IBRD	47.0	6.0	39.0	-
The World Bank -IDA	-	-	-	14.9
US Government -AID	27.0	-	-	-
US Government -Exim Bank	10.0	-	-	-
UK Government - ECGD	14.0	-	-	-
Canadian Gov't - CIDA	-	5.8	32.2	-
Saudi Fund For Development	-	-	34.2	-
Kuwait Fund	-	-	46.6	-
Arab Bank for Eco. Dev't of Africa	-	-	10.0	-
OPEC Fund	-	3.7	-	-
European Dev't Fund	-	-	10.3	28.8
European Investment Fund	-	-	11.7	-
African Development Bank	-	-	-	-
TOTAL	98.0	11.8	185.7	43.7

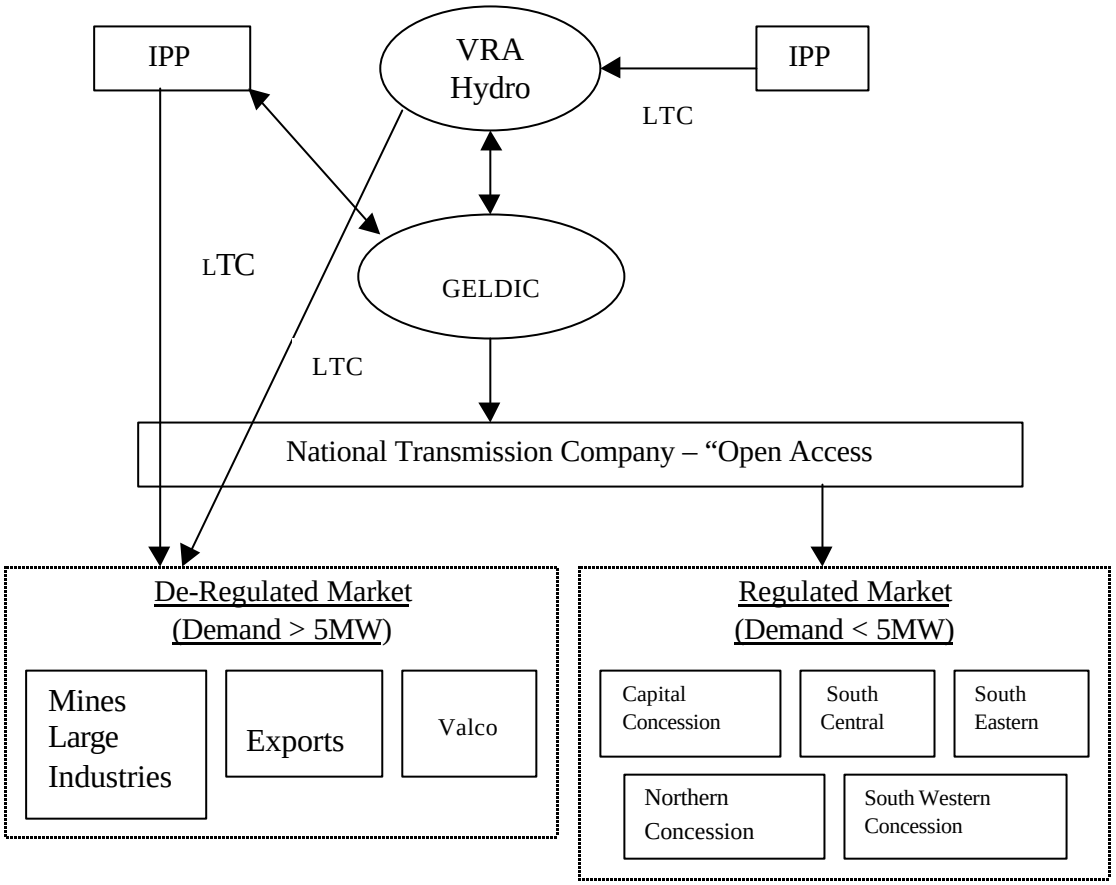
Source: Brew-Hammond, 1994

Appendix 2.2 Loans and Grants to ECG during the ERP (since 1985)

	Amount, US$ million		
Source	**1985**	**1988**	**1989**
IDA Loan	31.5	-	40.0
Indian Government Loan	1.2	-	2.9
Austrian Government Loan	-	-	15.0
German Government Loan	-	0.6	-
Commonwealth Dev't Corp. Loan	-	-	15.0
French (CCCE) Loan	-	-	15.0
UK (EDGD) Loan	-	-	13.6
UK (ODA) Grant	-	-	9.8
Japanese Government Grant	-	-	6.0
TOTAL	33.0	0.6	117.3

Source: Brew-Hammond,1994

APPENDIX 3 Proposed Electricity Market Structure



Legend

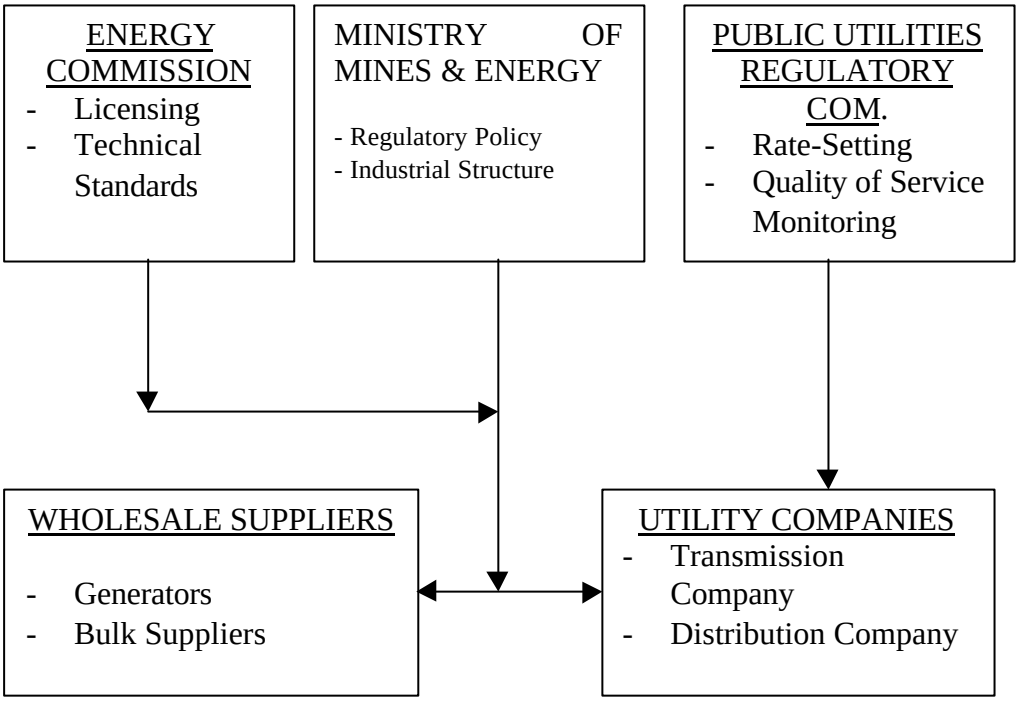
IPP- Independent Power Producer

GELDIC – Ghana Economic Load Dispatch Center

LTC – Long Term Contract

Source: Opam and Turkson, 2000.

APPENDIX 4 New Regulatory Structure



Source: Opam, 1999

Figure 3 New Regulatory Structure, Institutions and Responsibilities