

GHANA

ACHIEVING PUBLIC BENEFITS BY DEFAULT

Ishmael Edjekumhene
Navroz K. Dubash¹

INTRODUCTION

As with many other countries in the developing world, the slow shift from public to private control in Ghana's electricity sector is part of a wider move toward a market economy in the aftermath of a decade of economic turmoil. In contrast to many of the other cases in this study, Ghana has a relatively small electricity sector, consisting mainly of two large public corporations. Reform in Ghana has posed both institutional and technical challenges. Of particular concern is expanding the population's access to electricity. The World Bank has historically played a dominant role in the Ghanaian electricity sector, and has been instrumental in the reform process. But the government of Ghana (GOG) has been firm in seizing ownership of its reform program and independently directing the course of reforms. For a profile of the electricity sector in Ghana see Box 7.1.

BACKGROUND

State-Owned Enterprises Control the Commanding Heights

From the date of its independence in 1957 until the late 1980s, Ghana pursued a state-led economic development strategy. Central to this vision was the creation of strong state enterprises to develop infrastructure and public services. In the post-colonial vision of development, which Ghana shared at the time, this strategy of publicly provided services formed the backbone of an industrializing nation.

BOX 7.1 | PROFILE OF THE ELECTRICITY SECTOR IN GHANA

Population (2001)¹ : 18.5 million

Population with access to electricity (2000)² :
Total: 40% Rural: 17% Urban: 77%

Installed electricity generation capacity (2001)³
Total: 1.6 gigawatts (0.05% of total world capacity)

Thermal: 35%

Hydro: 65%

Nuclear: 0

Geothermal and Other: 0

CO₂ emissions from electricity and heat as a share of national emissions (1999)⁴: 23%

Notes:

1. Ghana Statistical Service, 2002. "2000 Population Census Report". Accra.

2. Ministry of Energy, 2001. "Energy for Poverty Alleviation and Economic Growth: Policy Framework, Programmes and Projects". November, 2001. Accra.

3. www.eia.doe.gov/pub/international/eiapdf/to6_04.pdf (February 6, 2002).

4. Computed by WRI using International Energy Agency (IEA) data. IEA, 2001. *CO₂ Emissions from Fossil Fuel Combustion*. Paris: OECD.

By the early 1980s, state-owned enterprises in Ghana had turned in a poor financial performance for several consecutive years. The resultant losses were financed through borrowing or taxes, which imposed a debt burden and a misallocation of resources (Edjekumhene, 2000). In 1982, state-owned enterprises racked up operating deficits amounting to over 3 percent of GDP, an amount almost as large as total spending on education, health, social security, and welfare (Berenschot and Bosboom, 1995).

The problem was worsened by external shocks. A downturn in the world price of cocoa—Ghana’s major export—combined with lax fiscal and monetary policies led to a prolonged period of crisis accompanied by severe inflation. Between 1980 and 1983, GDP declined by 17 percent and export earnings by over 53 percent, while external debt rose by 17 percent (Kapur et al., 1991).

This crisis led the government to negotiate an “Economic Recovery Program” with the Bretton Woods institutions in 1983, which subsequently evolved into a more complete structural adjustment program in 1986. The adjustment program implemented state retrenchment, a floating exchange rate, price liberalization, and privatization of state-owned enterprises (Partiff, 1995). As a large and economically significant sector, the electricity sector was high on the list for attention (Opam and Turkson, 2000).

THE PATH TOWARD REFORM: THE PRE-REFORM STRUCTURE AND DIAGNOSIS OF PROBLEMS

In keeping with the conventional wisdom prior to the 1990s, Ghana’s electricity sector has long been organized around public utilities. The Volta River Authority (VRA) generates almost all of Ghana’s electricity through two large hydroelectric projects and two recently installed thermal power plants. VRA is also responsible for the transmission grid. The Electricity Company of Ghana (ECG) is the primary distribution utility. The sector is governed by the Ministry of Energy (formerly the Ministry of Mines

and Energy, or MOME), which has responsibility for policymaking and coordination. In addition, a State Enterprises Commission was established in 1987 to develop performance contracts for state-owned enterprises, including VRA and ECG.

By 1993, only 24 percent of the population was served by electricity.

However, these institutions have failed to ensure widespread access to electricity. By 1993, only 24 percent of the population was served by electricity (World Bank, 1993a). In 1989, the government instituted a National Electrification Scheme aimed at expanding access to the entire population by 2020. This ambitious goal remains a critical part of government policy in the sector.

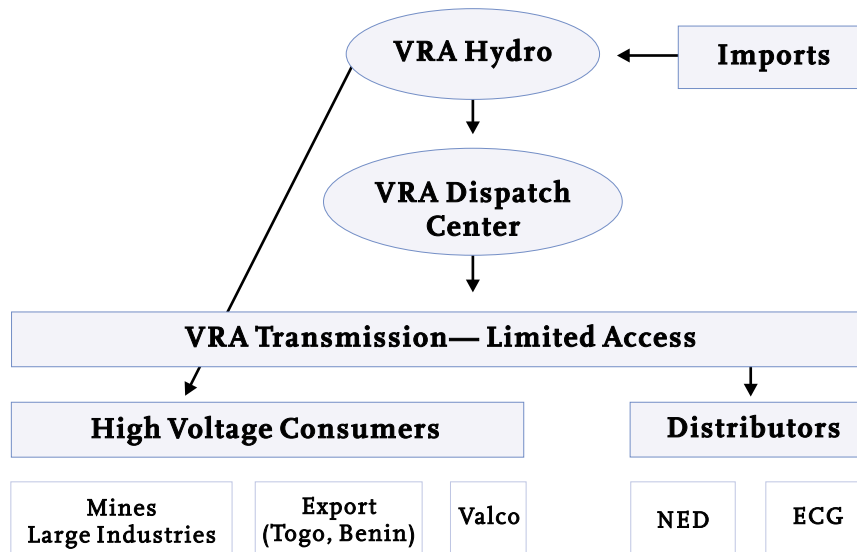
Throughout its history, the electricity sector in Ghana has received considerable financial support from international donors, led by the World Bank. The World Bank provided almost half the external loan component for the country’s first hydroelectric dam and substantial portions of subsequent projects. Between 1961 and 1995, the World Bank conducted eight lending operations aimed at the power sector. The institution has been the single most important financier and a critical catalyst of additional international public support for technology development, institutional development, and management reform. In particular, the World Bank has been central in building VRA and ECG—the two institutional building blocks of the sector. Understanding the genesis of problems in the sector requires delving into the past record of each of these institutions. An overview of the pre-reform sector is provided in Figure 7.1.

Volta River Authority: The Favored Child

With the personal and strong support of then-President Nkrumah, VRA was established in 1961. It

FIGURE 7.1

PRE-REFORM STRUCTURE OF THE ELECTRICITY SECTOR IN GHANA



Source: Opam and Turkson, 2000.

was inspired by the example of the Tennessee Valley Authority in the United States. VRA, with a total capacity of 1,072 megawatts through most of the 1980s and 90s, has operated as a public monopoly in generation based on two large hydroelectric projects. It controls the bulk power sales market and has a monopoly in transmission services (World Bank, 1993a). It has also been the monopoly supplier of electricity to the distribution company, the Electricity Corporation of Ghana. The central role of VRA, and the conditions of its creation, has shaped recent reform efforts in several significant ways.

The government created VRA as an independent entity with separate governance and legal structures. This caused both management complications and political resentments (Brew-Hammond, 1994). These arrangements, critics have argued, crippled the force of the Electricity Act—passed around the same time as the creation of VRA—and the authority of what was then the Electricity Department under the

Ministry of Public Works, later the Ministry of Mines and Energy.²

VRA was run for a long time as an economic enclave, insulated from problems that have beset other parts of the economy. When VRA was established in 1961 with an initial capacity of 588 megawatts (Brew-Hammond, 1994), total demand in Ghana was barely 100 megawatts. To absorb the surplus electricity, VRA agreed to supply electricity to industrial consumers, prominent among them the privately owned Volta Aluminum Company (VALCO). As recently as 1991, VALCO consumed 59 percent of Ghana’s total power supply (Opam and Turkson, 2000).³ In later years, VRA’s customer base expanded to include additional industrial consumers such as mines, and exports of electricity to neighboring countries such as Côte d’Ivoire, Togo, and Benin.⁴ As a result, VRA received a large share—estimated in 1990 at 70 percent—of its revenues in foreign exchange. This insulated VRA from the

effects of the periodic and dramatic currency devaluations of the 1980s and 1990s (World Bank, 1990).

VRA has won plaudits for its strong financial track record from external actors such as the World Bank, which described it as “a relatively well-run public utility with few institutional and financial problems” (World Bank, 1995, p. 2). Yet, critics contend that its privileged status as an enclave, which allowed it to sell predominantly to wealthy industries that pay in foreign exchange, is a large part of the explanation for its relative success.⁵ Indeed, with its emphasis on commercial profitability, VRA had little incentive to extend its transmission network to serve the Ghanaian people, who are both less lucrative and more difficult customers to serve than giant industrial consumers. If VRA has been successful, contend the critics, it is because success has been defined in terms of commercial viability rather than contribution to development goals.

VRA had little incentive to serve the Ghanaian people, who are less lucrative customers than giant industrial consumers.

Backed by support from external donors, VRA’s role continued to grow. In 1987, its mandate was amended to include distribution of electricity in the northern zone of the country through establishment of a Northern Electricity Department (NED) within VRA. Moreover, VRA was envisioned as playing a central role in promoting opportunities for regional cooperation in power development and exchange in West Africa (World Bank, 1990).

Electricity Company of Ghana: The Step-Child

The Electricity Company of Ghana (ECG), established as the Electricity Corporation of Ghana by a government decree in 1967, was intended to be the main distribution entity in Ghana. ECG was charged with the bulk purchase of electricity from VRA for

distribution to all categories of consumers, with the exception of VALCO and other large industrial consumers supplied directly by VRA.

The establishment decree required ECG to conduct its operations on a commercial basis. However, ECG has lurched from crisis to crisis through the 1980s and early 1990s, defying several efforts to set it on the right footing. Following the broader economic crisis of the 1980s, the situation was worsened. As losses mounted, ECG developed a negative total equity, a high debt-to-equity ratio, and a heavy debt-service burden (World Bank, 1993a).

Several efforts to improve this situation—including a twinning arrangement with an Irish utility, a World Bank-supported project to restructure financially, and the discipline of performance contracts—have not met with success. A central barrier to ECG’s viability is a tariff structure that is too low to ensure its financial health (Opam and Turkson, 2000). In particular, tariffs have not kept pace with currency depreciation, which raises ECG’s costs in loan interest and exchange rate fluctuation charges. Attempts to change and revise upward the tariff structure have been unable to deal with the fundamental problem—the Government of Ghana was hard pressed to politically sustain tariff hikes when electricity service was both unreliable and of low quality.

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Most recently, the World Bank included a substantial component of institutional strengthening in its National Electrification Project. In the words of the project document, “VRA has been a relatively autonomous, financially viable, and well-run entity; attention is now focused upon bringing ECG to a similar standard” (World Bank, 1993a, p. 5). The loan agreement required the government to agree to a self-adjusting tariff formula to guarantee a minimum

rate of return on assets. Even more significant, ECG was required to create a separate Directorate of Customer Services for ECG, to be operated by Electricité de France under a performance-based management contract (World Bank, 1993a, p. 7). This approach partially mirrored one recently adopted in neighboring Côte d'Ivoire, and was also an indication of an emerging World Bank policy formalized in 1993 to encourage importation of services in the energy sector (World Bank, 1993b). (See Box 7.2.)

The Government of Ghana was hard pressed to politically sustain tariff hikes when electricity service was both unreliable and of low quality.

Even as these efforts were put in place, ECG was already slated for conversion to a public liability company as part of a commitment made to the World Bank under the 1980s structural adjustment program. Notably, VRA was not included on this list, since it was not perceived as an underperforming enterprise (Opam and Turkson, 2000). By the mid-1990s, the future of ECG was already in doubt.

The Seeds of Reform

This thumbnail sketch of Ghana's electricity sector suggests several issues that have both forced and shaped reforms in the sector. The role of VRA is a source of contention. To some, VRA is the saving grace of the sector. To others, its enclave nature, which allows it to maintain financial viability, is an obstacle to a sensibly integrated sector. ECG's struggles to maintain financial viability, and the difficulty of doing so when confronted by declining real tariffs (adjusted for depreciation), have left it in a bind. By the early 1990s, the World Bank's growing preference for the importation of services and an expansion of private sector engagement threatened to undermine support for ECG. And the situation was further complicated by broader efforts by the Government of Ghana to restructure the economy in

keeping with the structural adjustment policies of the 1980s. Collectively, these features of the sector were the seeds of reform.

The need for change was brought into focus by a set of three circumstances that developed through the 1980s, two of which were internal and one external to Ghana. First, since the country relied on hydropower for 95 percent of its capacity, a severe drought in 1982-83 (and again in 1993) led to a severe electricity shortfall. By 1984, generation had reached 36 percent of its pre-drought 1982 levels, and only recovered to pre-drought levels in 1989 (Opam and Turkson, 2000). Adjustment to these lower levels of generation was compounded by VRA contracts to supply its industrial users, notably VALCO.⁶

Second, between 1985 and 1993, domestic demand for electricity rose at a substantial 10.8 percent per year, increasing to 15 percent between 1993 and 1995 (Ministry of Mines and Energy, 1996). Growth in demand was caused by an increase in economic growth following the economic crisis of the early 1980s, as well as the requirements of the National Electrification Scheme. By 1994, the flow of electricity sales to Côte d'Ivoire had been reversed, as Ghana became a buyer rather than a seller of electricity. The country was thus caught between growing demand and shrinking supply.

To address the shortfall, the government needed to urgently raise funds for new generation capacity to meet contractual obligations to VALCO, export demands to neighboring Togo and Benin, and to service the current and expanding projected needs of its own consumers. The government also needed funds to improve existing transmission and distribution infrastructure.

Third, and perhaps most important, the traditional source of financing for the power sector was drying up. In 1993, a new World Bank policy of "commitment lending" required sectoral reform as a precondition to further loans. The Bank said that it would not finance VRA's expansion program for a thermal power project at Takoradi without basic structural reforms.

CÔTE D'IVOIRE: PRIVATE SECTOR PARTICIPATION IN ELECTRICITY PROVISION

Between 1960 and 1977, Côte d'Ivoire experienced vigorous growth, fiscal and macroeconomic stability, and independence from foreign aid. However, in the late 1970s and early 1980s, a decline in coffee and cocoa commodity prices led to a severe economic recession. In response, the government of Côte d'Ivoire turned to the Bretton Woods institutions to help stabilize its economy and fund economic recovery.

In the electricity sector, external oil price rises combined with drought produced a crisis in 1983-84. The state-owned electricity company, *Energie Electrique de la Côte d'Ivoire* (EECI), was buying oil on the international market for thermal generation to make up for the loss of hydroelectric generation. As a result, the state-owned utility's financial situation became precarious. IMF and World Bank loans, a general economic recovery in the mid to late 1980s, and most important, the discovery and exploitation of oil resources off the coast of Côte d'Ivoire allowed EECI to regain financial stability by the mid-1980s.

In 1990, a shift in power from the ailing President Houphouët-Boigny to a reform-oriented caretaker prime minister, Alassane Dramane Ouattara, led to closer coordination with the Bretton Woods institutions. The new leadership devalued the currency, reformed the public investment bank, and launched a privatization program that included the electricity sector. Unlike many other developing country utilities, EECI boasted good technical operation, low system losses, and a high (90 percent) rate of bill collection, except from government agencies. Nonetheless, in August 1990 the government decided to invite in the private sector, and by November 1990, EECI's transmission and distribution assets were effectively transferred to the private operator *Compagnie Ivoirienne d'Electricité* (CIE).

Almost simultaneously, the government approved a contract with an independent power producer (IPP) to build and operate a thermal power plant. Approval of this plant was, in part, motivated by

In sum, the growing electricity shortfall ensured that the broader structural problems in the sector could no longer be ignored. However, the World Bank policy of "commitment lending" was the proximate cause that forced action. This view was widely held among GOG officials involved in designing the reforms. As one senior official engaged in the reform succinctly put it, "if the World Bank had given us money, no one would have talked about reform."⁷

CONSTRUCTING A REFORMED ELECTRICITY SECTOR

That various actors relevant to Ghana's electricity sector had come together on the need for reforms did not mean that they all agreed on the direction of those reforms. They actually differed considerably on

the scope of the reforms and the vision of a post-reform sector. In this section, we examine how the views espoused in the debate by the World Bank, VRA, and the government combined to shape reforms. The chronology of the reform process is laid out in Box 7.3.

Contrasting Views on Reform

The World Bank's thinking during this period is encapsulated in a review of lending for electricity in sub-Saharan Africa that was written by its Operations Evaluation Department after the 1993 World Bank policy was put in place (Covarrubias, 1996). The review argues against the unbundling of the sector—as was carried out in Chile and the United Kingdom—due to the small size of the power sector in

short-term political interest—to avoid electricity shortages in the run-up to elections. Significantly, in a major concession to investors, the government decided to provide fuel to new IPPs at no cost.

No regulatory reforms preceded privatization, but there was a subsequent flurry of regulatory activity. A number of new institutions were set up, including bodies to supervise EECI, address financial issues, address engineering issues, develop a national policy for electricity, and promote rural electrification. There was a simultaneous reshuffling of responsibilities, often with overlapping jurisdictions. As a result, regulation, planning, and policymaking within the sector became increasingly duplicative and unclear. As one observer noted, “each private operator can literally pick the government body with which it is comfortable in order to solve its problem with the lowest possible risk.”

As a result of the existing confusion, a new round of reforms is in the cards that will aim to reorganize

the system from a vertically integrated monopoly to an unbundled system. However, the government is locked into the existing agreement with CIE, which expires in 2005 and poses problems for any future reform.

Sources:

- Brew-Hammond, Abeeku. 1997. “Ghana and its CCGT.” *Financial Times Energy Economist*. September 197 191/13.
- Berg, Elliot, Patrick Guillaumont, Jacky Amprou, and Jacques Pegatienan. 1999. “Côte D’Ivoire.” In *Aid and Reform in Africa*. Edited by Shantayanan Devarajan, David R. Dollar, and Torgny Holmgren. Washington, D.C.: World Bank. Online at: <http://www.worldbank.org/research/aid/africa/cotedivoire.pdf> (May 30, 2002).
- N’Guessan, Etienne K. 2000. “Privatization of the Power Sector in Côte d’Ivoire.” In *Power Sector Reform in Africa*. Edited by John K. Turkson. London: MacMillan Press.
- World Bank. *African Gas Initiative: Main Report (Volume 1)*. Energy Sector Management Assistance Programme. ESM 240. February 2001.

most sub-Saharan countries and the inadequate and weak regulatory frameworks in place. Instead, the report recommends maintaining a dominant generator, with selective reliance on independent power producers (IPPs) as an interim measure until conditions are ripe for competitive markets. The single most forceful recommendation is to focus on distribution reform as the source of problems related to cost recovery and service delivery. Here, pointing to the Côte d’Ivoire example (*see Box 7.2*), the report suggests the use of management contracts—potentially extending to outright distribution concessions—which would make concessionaires responsible for ongoing investments. It also urges the introduction of transparent regulation, noting that nonenforceable performance contracts have proved largely unsuccessful; suggests consideration of decentralized community-based distribution; and

favors reform of purchase tariffs. Finally, the review notes the political challenges in shifting away from a public monopoly model and recognizes the central importance of “borrower ownership” of a reform process.⁸

The country was caught between growing demand and shrinking supply.

These ideas were put to the test in negotiations between the World Bank’s International Development Association (IDA) and MOME over a credit for the Takoradi thermal power plant. While not specifying a particular reform model, the World Bank conveyed a desire to maintain VRA as an intact

CHRONOLOGY OF ELECTRICITY SECTOR REFORM IN GHANA

- January 1994 GOG issued a Strategic Framework for Power Sector Development Policy.
- March 1994 Ministry of Mines and Energy (MOME) engages a consultant (SYNEX of Santiago, Chile) to study the opportunities for restructuring the power sector.
- June 1994 SYNEX submits report, which proposes a new power market for the country.
- June 1994 Preparation of a sector policy letter by the MOME, which laid out sector objectives, institutional guidelines, and regulatory principles.
- September 1994 Establishment of the Power Sector Reform Committee (PSRC) by the MOME to coordinate the design and implementation of reforms.
- January 1995 World Bank approval of a loan for a thermal power project at Takoradi, with a condition for establishment of a committee on power sector reform.
- Mid-1995 Formation of two Task Forces by PSRC:
Task Force I on operational technicalities of the reform program, particularly pricing and commercial organization of the power market;
Task Force II on the legal implications of the proposals for the reform.
- August 1996 Stakeholders' workshop to discuss proposals from the Task Forces.
- September 1996 Formation of Review Task Forces on distribution and customer service to address specific issues emerging from the stakeholders' workshop.
- February 1997 Electricity Company of Ghana registered as a limited liability company to take over the assets and operation of the Electricity Corporation of Ghana.
- April 1997 PSRC submits a summary report to the government.
- May 1997 Establishment of Power Sector Reform Implementation Secretariat to coordinate implementation of the recommendations contained in the report.
- October 1997 Enactment of the Public Utilities Regulatory Commission Act, 1997 (Act 538), which establishes Public Utilities Regulatory Commission (PURC).
- December 1997 Enactment of Energy Commission Act, 1997 (Act 541), which established the Energy Commission.
- September 1998 PURC approves tariff increase for all categories of consumers.
- July 2000 MOME submits draft Electricity Regulation to Parliament for approval.

generation entity, to supplement generation capacity with IPPs, and focus on reform of ECG.⁹ In the subsequent phrasing of the loan document, the World Bank stated that “the most appropriate role for the private sector at this time is through participation in a performance-based management contract for the proposed thermal power project” (World Bank, 1995, p. 7). A condition for the loan was that the GOG

establish a committee on power sector reform with agreed-upon terms of reference, and that this committee issue recommendations for the sector within a specified time. Also included in the loan agreement for the Takoradi power plant was a component for support of VRA’s institutional development, suggesting that VRA would remain an intact public entity for some time to come.

The World Bank policy of “commitment lending” was the proximate cause that forced action.

Perhaps surprisingly, the GOG proposed a considerably more far-reaching set of reforms. Having agreed with the World Bank, in principle, on the need to reform the sector, the Minister of Mines and Energy, and the Minister of Finance prepared a letter to the World Bank in 1994 laying out a “Strategic Framework for Ghana Power Sector Development Policy.” This document signaled that “the Government will be introducing some fundamental reforms to establish the conditions in the electricity sector for greater operation efficiency and competition, private sector participation, and the development of an arm’s length approach to Government regulation of power sector entities” (Peprah and Botchwey, 1994). As the summary in Box 7.4 suggests, the document promised far-reaching change in the sector, including the introduction of competition and a focus on limiting sovereign guarantees.

The choice of a consulting firm from Chile was significant, since Chile was among the first countries to introduce a market approach in electricity.

Moreover, the GOG took the unusual step of hiring its own consultant independently from the World Bank—SYNEX Consulting Engineers from Chile—to flesh out its reform ideas. As the World Bank report states, “MOME took the initiative of developing a comprehensive new policy framework” (World Bank, 1995). Specifically, the GOG charged SYNEX with evaluating the key issues and examining the options for applying a market-oriented approach in the sector. The choice of a consulting firm from Chile was significant, since Chile was among the first countries to introduce a market approach in electricity. A Chilean firm could be expected to advocate a

BOX 7.4 | **SUMMARY OF STRATEGIC FRAMEWORK FOR POWER SECTOR DEVELOPMENT POLICY**

Long-term strategic goals

- assure reliable, economically efficient, and equitable supply of electricity to meet the country’s growing needs for socio-economic development;
- serve as a basis for creating attractive, marketable assets; and
- develop an efficient mix of commercially viable public and private sector utilities.

Policy objectives

- increase management accountability in the existing public utilities;
- move the power sector away from the existing monopolistic structure toward a more decentralized structure that would expose the public utilities to competition in both generation and distribution;
- encourage private sector investment through the establishment of IPP schemes and the provision of an “open access” grid to facilitate direct sales by IPPs to consumers;
- reduce the extent to which the government is called upon to provide sovereign guarantees; and
- establish a transparent regulatory framework to enable competition in the sector.

Sources:

Ministry of Mines and Energy. 1994. “Strategic Framework for Power Sector Development Policy.” Accra, Ghana

Peprah, Kwame, and Kwesi Botchwey. 1994. “Strategic Framework for Power Sector Development Policy.” Letter to Joanne Salop. World Bank. (March 23).

similar approach for Ghana—an approach the World Bank review had explicitly rejected as premature for sub-Saharan Africa.

Based on this study, the GOG established a Power Sector Reform Committee (PSRC) to work out the design and implementation of reforms. The PSRC consisted of eight members drawn from MOME, VRA, ECG, and the private sector. It organized its work around two task forces, on the pricing and commercial organization of the electricity market, and the legal implications of the reform proposals. The results of the task forces were reviewed at a workshop in August 1996. Participants at the workshop included business representatives from Ghana and abroad; large industrial consumers such as VALCO, the World Bank, and other donor agencies; and a range of resource persons, including representatives of utilities from the United States and Côte d'Ivoire. Three additional task forces on a grid code, electricity distribution, and customer service were added to respond to issues raised during the workshop (Opam and Turkson, 2000).

The Architecture of the Post-Reform Sector¹⁰

The PSRC submitted a final report to the GOG in April 1997, with substantial recommendations to transform the electricity sector in Ghana. These recommendations were adopted by the Cabinet, which created an implementation secretariat to proceed with reforming the sector. The vision of the transformed sector is described below under the general categories of generation, transmission, distribution, market coordination, and regulatory reforms and shown in Figure 7.2.

Generation

Electricity generation was opened up to generators other than VRA. It was not recommended that VRA itself be privatized, but that VRA, as with other utilities, be re-organized into “strategic business units” as part of a broader effort to improve management

accountability. The core business of hydro generation was left untouched. The PSRC also recommended recapitalization through public-private partnerships. Generators can sell power directly to large consumers in wholesale markets. Hence, each generator had three options: to trade power to other generators, to large consumers directly, or to distribution companies, who would then serve final consumers.

Transmission

The transmission system was to be unbundled from VRA and established as a separate publicly owned national grid company on an open access or nondiscriminatory basis. Large consumers were to be given access to the transmission network to participate in the wholesale market.

Distribution

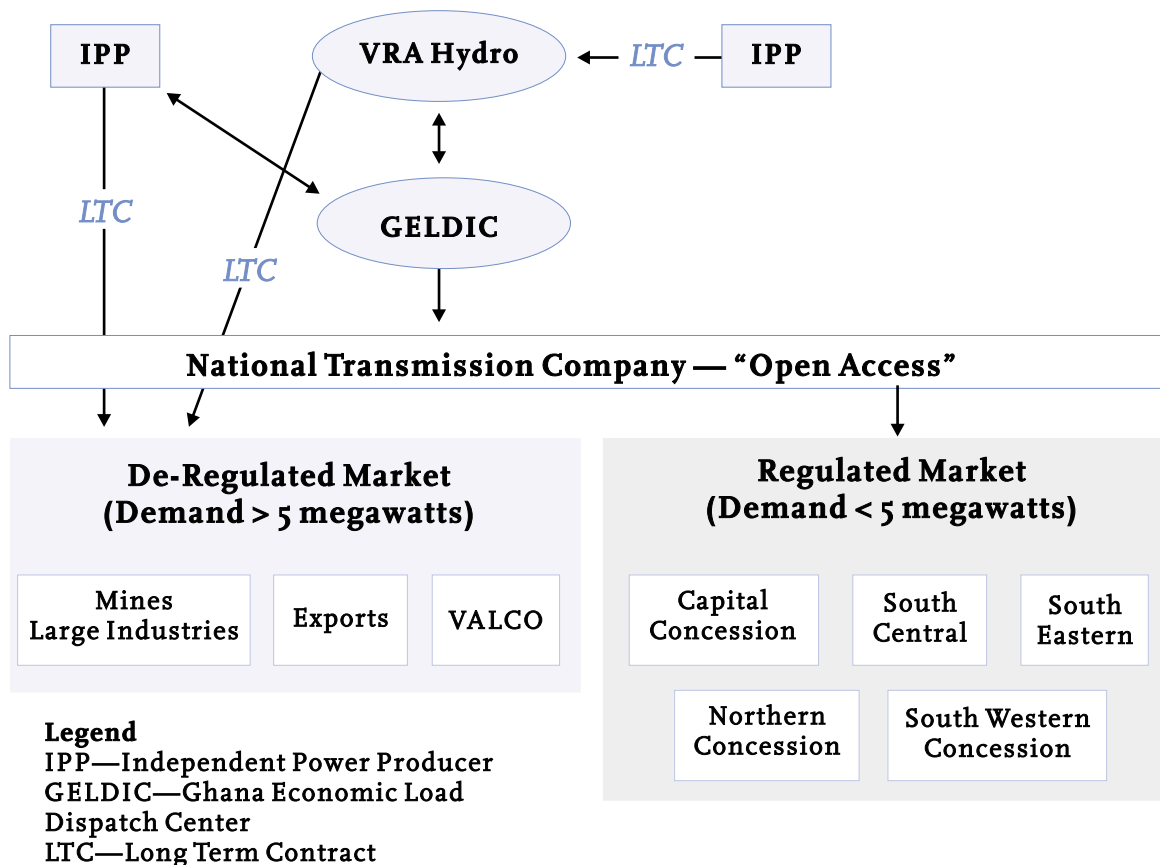
The PSRC recommended the establishment of both a deregulated wholesale market for consumers with demand larger than 5 megawatts and a regulated market for smaller consumers. Large consumers were to contract directly with generators. For consumers smaller than 5 megawatts, the country was divided into five distribution zones. Four of these were based on areas formerly served by ECG, and one was based on the regions served by NED. ECG was subsequently transformed into a limited liability company with autonomous distribution concessions. NED was to be unbundled from VRA to serve as a separate distribution concession. These concessions would eventually be privatized.

Market Coordination

A new Ghana Economic Load Dispatch Centre (GELDIC) would be given authority over coordination and dispatch in the system. Essentially, GELDIC would be responsible for ensuring that physical and financial transactions were coordinated in a manner that ensured the system's reliability, in keeping with the principle of minimum operation cost.

FIGURE 7.2

PROPOSED ELECTRICITY MARKET STRUCTURE IN GHANA



Regulatory Framework

Perhaps most crucially, the PSRC recommended far-reaching regulatory reforms. The cabinet accepted the PSRC recommendation for an independent regulatory body, but implemented this recommendation through a two-tier framework. First, in keeping with the PSRC, they established a Public Utilities Regulatory Commission (PURC) in 1997. Second, they also established an Energy Commission, whose functions include providing advisory services to the MOME. While independent of the Ministry, the commission is also subject to direction by the minister as necessary to ensure the public interest—

a provision based on a constitutional requirement that key sectors should be supervised by a technical commission.

The PURC was given authority over tariff setting, and, in a critical departure from past practice, was independent of oversight from the MOME or Parliament. This was perceived as central to the reform process. PSRC recommended that tariffs be set based on established formulas for generation, transmission, and distribution. The Energy Commission was given responsibility for licensing and development of rules for the technical operation of the sector.¹¹

In sum, the PSRC, drawing on the SYNEX report, advocated the rapid expansion of market principles such as unbundling VRA's generation capability from transmission and distribution, allowing open access to the transmission grid, enabling any generator to directly sell electricity to large consumers through long-term contracts, and establishing a spot market for electricity. To a substantial extent, the final reform package reflects a GOG desire for more substantial reforms based on the Chilean model rather than the limited reform implicitly suggested by the World Bank's review.

Government of Ghana “Ownership” of Reforms

That the recommendations put forward by SYNEX did shape the contours of the reform are made clear by the legal consultants hired by the PSRC, who state “proposals of the Committee are largely predicated on the system of reforms that have been implemented in Chile and Peru, and to a lesser extent in Norway and the United Kingdom” (LaBouef, Lamb, Greene, and MacRae, 1996). What explains the GOG's insistence on, and—through the use of SYNEX—development of an independent path in the electricity sector? In brief, it stems both from disenchantment with the past legacy of the sector, and a concern over how best to integrate the private sector in the future.

With regard to the past, the reform architects were motivated to more fully integrate VRA into the sector as a whole. The reformers held to the view that VRA's historically privileged position had worked against fully utilizing the benefits of cheap hydro to provide broader public benefits, particularly to serve the population rather than to serve well-paying industrial consumers. Reform afforded an opportunity to remedy this situation.

Moreover, the GOG was concerned with how best to establish a market when the sector was dominated by a single large hydropower producer. Since Chile had attempted to solve a similar problem in its own reform efforts by creating a power pool based on cost

of generation, the GOG decided to hire a Chilean consulting firm, SYNEX, with expertise on this approach.¹² It was anticipated that such an arrangement would provide opportunities for the system to use power from IPPs, and limit the extent to which the hydropower reservoir was drawn down.¹³

In addition, the GOG was wary of future arrangements with IPPs that potentially exposed the government to bearing risk through provision of sovereign guarantees. A more completely restructured sector would enable the government to require private investors to bear more complete responsibility for their revenues through, for example, long-term contracts for electricity sales. As one reformer put it, “the GOG did not want to be saddled with contingent liabilities.”¹⁴ Separating VRA into “strategic business units” and requiring competition among generators was part of this vision.

Reformers point out that the process was formulated and designed by Ghanaians.

A somewhat skeptical view of the direction of reforms pursued under World Bank direction in neighboring Côte d'Ivoire was undoubtedly influential in the GOG's view of reforms. (*See Box 7.2.*) To Ghanaians, the Côte d'Ivoire experience suggested the dangers of relying on IPPs, and concerns over inviting in the private sector without clear governance arrangements. Instead of arrangements that appeared to bestow undue authority and influence on the private sector, Ghanaian reforms sought a vision of the future that married the strengths of existing public sector entities with participation as appropriate by the private sector (Opam and Turkson, 2000, p. 64).

However, this vision was by no means unanimously accepted in Ghana, and was strongly rejected by VRA. VRA executives harshly criticized the reform model as “blind copying” of the Chilean approach that was inappropriate to Ghana's circumstances. Since distribution and not generation is the biggest

problem, they argued, why unbundle VRA? Instead, the focus should have been on tariff reform, which “has been a major bane to private investors.”¹⁵ Moreover, they note that a weakened VRA will be less able to perform a leadership role in development of a proposed West Africa Power Pool. However, VRA lost this battle and the MOME view prevailed.

Both sets of arguments have merit. The experience of IPPs in Asia, and the unhappy marriage of public and private sectors in Côte d’Ivoire justify caution toward an approach that invites the private sector into a country before a well-functioning market system has been established. On the other hand, the small size of the Ghanaian power sector and its weak regulatory institutions do not instill confidence that it will be able to replicate a Chilean model. That the GOG made a choice for bold reform, even at the risk of over-reaching, may have been dictated at least in part by the historical tensions over VRA’s privileged status in the sector.

An additional factor may have been a sense of national pride that rejected the view that Ghana was not yet capable of developing a sophisticated market structure. Indeed, the reforms were characterized by a high degree of government “ownership.” While the GOG did make use of foreign consultants, reformers are at pains to point out the extent to which the process was formulated and designed by Ghanaians.¹⁶ For example, to build capacity at home, Ghanaian officials went on study tours to other countries to understand the options available to them. In addition, a Ghanaian national employed at the World Bank, who subsequently worked on deputation in Ghana on the reform process, played a central role in helping Ghanaian officials develop contacts and in providing expert feedback.¹⁷

This ownership over the process was limited to government officials. There is no evidence of engagement with civil society groups, either to solicit opinions, advice, or even to share information. Some academics did serve on task forces related to the PSRC, but their role is unclear, and they did not serve as a conduit to broader constituencies. The deliberations of the PSRC were not available to the authors in the course of conducting this study.

PUBLIC BENEFITS IN THE PLANNING AND IMPLEMENTATION OF ELECTRICITY SECTOR REFORMS

Did GOG ownership over reforms translate to attention to public benefits? This section examines how social concerns of access to electricity, environmental issues embedded in the reforms, and the politically sensitive tariff issue were addressed in the reform process, and with what effects.

The Social Benefits of Access to Electricity

The GOG has stated that providing the entire population with access to electricity is a long-term development priority for Ghana. In 1989, it established a National Electrification Scheme (NES) to achieve this goal by the year 2020. To what extent was this policy objective integrated into the planning of the reforms, and will the reform process work toward achieving this goal?

Reform and expansion of access were perceived as two separate and unconnected components for development of the sector.

For much of the early reform period, policies to promote universal access to electricity services proceeded on a parallel track to reform efforts. The NES pre-dates the reform efforts by over five years, and put in place a two-tier scheme for electrification. First, all district capitals (110 in total) were connected to the grid as part of a “District Capital Electrification Project.” Next, under the “Self-Help Electrification Project” (SHEP), communities within 20 kilometers from the grid were invited to propose electrification projects on the condition that they procured their low-voltage poles and ensured that at least 30 percent of the households in the community were wired (Ministry of Mines and Energy, 1996; 2000). The electrification efforts were supported by a range of multilateral and bilateral development assistance

organizations, led by the World Bank through the National Electrification Project initiated in 1993.

The articulated goals of the reform efforts from 1994 to 1997 do not highlight providing access to electricity. Instead, the GOG strategic framework emphasizes the need for a “reliable, efficient, and equitable supply of electricity” that serves as a basis for creating marketable assets for Ghanaian and foreign investors, ultimately leading to development of commercially viable public and private utilities (Peprah and Botchwey, 1994). However, it does not connect increasing supply to increasing access, nor is access discussed further in the details of the document. In the only mention of these issues during the reform design process, one of the reform consultants did discuss the difficulties of persuading private investors to invest in expanding distribution. The reasons given were the relatively open-ended financial obligations involved, the volatility of electricity prices, and the likelihood of politicization and hence unpredictability of distribution efforts. Based on this analysis, the consultants recommended considering municipal or cooperative-based distribution systems (LaBouef, Lamb, Greene, and MacRae, 1996, p. 28). However, this proposal did not appear to have received further consideration.

Within World Bank documents, reforms are seen as parallel and separate from electrification efforts. The World Bank project document for the Takoradi thermal power plant does note the GOG’s commitment to extend electricity to most of its population through the National Electrification Scheme (World Bank 1993a; 1995). However, the document does not describe how reform efforts would be integrated with the World Bank-financed National Electrification Project (a sub-component of the NES) approved only two years earlier in 1993. This shortcoming suggests that the two efforts, reform and expansion of access, were perceived as two separate and unconnected components for development of the sector. It is noteworthy that the emphasis in the pre-1993 World Bank strategy document for the electricity sector on increasing access to electricity was removed in the new strategy of 1993, which emphasized market reform and private sector involvement. Had the pre-

1993 strategy been in effect during preparation of reform efforts, World Bank task managers would almost certainly have had to report on the impacts of reform on access. Without an explicit requirement to do so, the 1995 loan document was silent on the question.

Similarly, the reform process managed through the PSRC did not explicitly reconcile the two-tier structure of electrification efforts established in 1989 with the proposed five distribution concessions created by the reforms. Instead, there was a vague expectation that electrification efforts would be “dove-tailed with reforms at a later date.”¹⁸ One observer close to the process argues that social concerns such as access to electricity have received only lip service that has not been matched by action.¹⁹

A subsequent Statement of Power Sector Development Policy from the GOG in 1999, which is intended to reiterate its commitment to reforms, is far more explicit about the connection between the reform and efforts at expanding access. The document invokes the government’s Vision 2020 plan, which aims at full electrification and reiterates that “the overall goal of the GOG is to ensure that Ghanaians have universal access to electricity” (Ministry of Mines and Energy, 1999). Moreover, the document states that “...to ensure that the GOG’s goal for universal access to electricity can be cost effectively pursued even after the privatization of the distribution utilities, a two-tier structure will be introduced alongside the establishment of the proposed distribution areas.”

Under this approach, within each concession, the first tier under the NES, comprised of district capitals, would be classified as “commercial electricity zones” in which distribution licensees would have an obligation to provide service on demand. The second tier of smaller communities would be classified as “SHEP electrification zones,” where it is not feasible to require an obligation to serve, but where licensees would provide services under operations and maintenance contracts on behalf of the GOG. Over time, the government hopes to increase the private sector’s role in delivery of

distribution and retail service, thereby freeing public sector resources to support expansion of coverage in SHEP areas (Ministry of Mines and Energy, 1999, p. 8). The GOG also proposed establishing a “National Electrification Fund Board” with responsibility for mobilizing funds from domestic sources (such as levies), donors, and the private sector.

The belated attempt to integrate efforts to expand access and broader structural reforms may well have both created obstacles and missed opportunities. Obstacles include the challenge of integrating a private-sector-led vision of distribution concessions based on privatizing of existing assets with a continuing effort to deploy public assets in electrification efforts. Moreover, by separating publicly funded grid extension from the rest of the reform program, the GOG may have lost an opportunity to complement its electrification program by creatively harnessing private sector capabilities to serve rural areas through off-grid distributed technologies. Yet, at the time there were few examples that Ghana could draw on of public efforts to support expansion of access by facilitating private sector entry. In recent years, efforts by Chile, Morocco (see Box 2.6 in Chapter 2), and Argentina (see Chapter 3) have shown the way toward expansion of access that is not entirely reliant on public grid expansion.

Promoting Environmental Benefits through Reform

The introduction of private sector actors and market competition held considerable potential to shift the environmental profile of the electricity sector in Ghana. Was this connection between sector reform and environment recognized and internalized in reform dialogue, planning, and implementation?

A review of reform documentation shows little or no explicit attention to environmental considerations in reform processes. The GOG’s strategic framework does not recognize reform as an opportunity to provide incentives for a more environmentally sustainable electricity sector, with the exception of attention to energy efficiency (Peprah and Botchwey

1994, p. 13). Moreover, environmental issues were not discussed during PSRC deliberations.²⁰ Indeed, written and verbal accounts of the process suggest that environmental impact was viewed only in a damage limitation context. PSRC members assumed that environmental outcomes would be tackled by the appropriate regulatory body, such as Ghana’s Environmental Protection Agency.²¹ In another example, the World Bank’s 1995 loan document only examines environmental questions related to siting of the proposed Takoradi power plant and related questions of obtaining permits (World Bank, 1995). Moreover, the terms of reference agreed to by the World Bank and the GOG for the PSRC makes no mention of integrating environmental objectives into the mandate of the Committee (World Bank, 1995, Annex 3.2). Finally, no civil society organizations emerged to break this silence on environmental concerns.

A significant exception to the general lack of focus on environmental factors is an explicit commitment by the GOG to promote energy efficiency and conservation as part of reform efforts. (See Box 7.5.) Ghana has a history of promoting energy efficiency going back to 1985, when an energy fund was established to promote efficiency (and renewable energy sources) as a means of coping with drought-induced shortages. The medium-term plan issued for Ghana’s “Vision 2020” highlights increased conservation and promotion of demand side management as an objective for the sector (Government of Ghana, 1997). Moreover, tariff increases have heightened interest in conservation among industrial and

BOX 7.5 | POTENTIAL CONSUMER SAVINGS FROM ENERGY EFFICIENCY

Refrigerator Standards – \$50 million
A/C standards – \$8 million
Lighting standards – \$6 million

Source: Lawrence Berkeley National Laboratory. 1999. “Ghana Residential Energy Use and Appliance Ownership Survey.” Berkeley, CA.

commercial consumers (Peprah and Botchwey, 1994). It is significant that energy efficiency measures also provide political benefits by buffering the impact of tariff increases, thereby making them more palatable. Existing studies suggest the potential cost savings are considerable. Perhaps for this reason, the GOG requested that a demand side management (DSM) component be included in the 1995 IDA credit for the Takoradi project.²²

In partnership with the Ghanaian “Private Enterprises Foundation,” the GOG established an “Energy Foundation” in 1997 to promote sustainable development of energy resources; educate consumers; advocate policies for sustainable development and enhanced customer service; strengthen private sector efforts at energy efficiency and renewable energy; and undertake related research and development (Energy Foundation, 1999). To date, the Energy Foundation has had some success, convincing industry in particular of the viability of an energy efficiency strategy. For example, by 1999 the Energy Foundation had installed capacitors in more than 100 industrial, commercial, and public organizations, freeing about 20 megavolt amperes of reactive power into the national grid. The foundation has also embarked on a sustained public education campaign to raise consumer awareness about the benefits of energy efficiency. A survey conducted by the Energy Foundation revealed that the program has been quite effective, with about 57 percent of the population attributing savings made in their electricity bills to the Energy Foundation’s campaigns (Energy Foundation, 1999).

A second exception to the general lack of attention to environmental concerns was the provision for an Embedded Generation Facility (EGF).²³ An EGF was defined as a power generation facility with capacity of less than 50 megawatts, and whose output is distributed and retailed locally without use of the high voltage transmission grid (Electricity Regulation, 2000). During the electricity crisis of 1998, however, the EGF became for a time a vehicle for rapid introduction of small-scale diesel generators to meet the supply shortfall. According to the GOG’s Statement of Power Sector Development Policy released in

1999, promoting the development of renewables was a key reform objective and the EGF was the vehicle for this objective.

Reform documentation shows little or no explicit attention to environmental considerations in reform processes.

For at least two reasons, the EGF has come to be seen by both energy practitioners in Ghana and by donors as a potential tool for promoting of renewable energy technologies, particularly wind and solar. First, by creating a legal space for private generation and sale of electricity on a small scale, the EGF will open a door to all small-scale generation technologies in Ghana. Second, the EGF will provide a further boost to renewable energy technologies through rate-setting guidelines. Specifically, the PURC will be required to set EGF bulk tariffs based on avoided costs plus the transmission service charges saved by generating electricity close to the end user. Consequently, renewable technologies are likely to be favored by distribution licensees as a cheaper alternative to meeting their service obligations than relying on centrally generated electricity. Building on this opportunity, the Danish bilateral donor agency, DANIDA, has funded a Renewable Energy Development Project to identify and remove further barriers to the promotion of renewable energy technologies in Ghana. The Danish government is also funding development of a Strategic National Energy Plan as part of a broader program of bilateral cooperation on energy policy (DANIDA, 1999).

Energy efficiency measures also provide political benefits by buffering the impact of tariff increases.

In the long run, the scope to proactively address environmental concerns within a broader policy and planning authority rests with the Energy Commis-

sion, which was established in the course of reforms. There is some early indication that, just as cheap hydropower is currently used to subsidize more expensive thermal power, in the future the benefits of cheap hydro may be used to promote renewable energy technologies.²⁴ This proposed approach is an indicator that the commission is open to a range of ideas for future planning in the sector.

Tariff Setting and Good Governance

Tariff setting has long been a controversial issue in Ghana's electricity sector. Tariffs keeping pace with costs is an important component of financial viability for the electricity sector. On the other hand, high tariffs impose a considerable burden, particularly if they apply to poorer sections of the population. The resultant discontent is also politically dangerous for governments. The GOG's reluctance to consistently raise tariffs to keep up with costs was one of the contentious issues in negotiations over the Takoradi loan.²⁵ A detailed tariff formula was eventually negotiated with the GOG and included by the Bank as a condition for the loan.

The political dangers of tariff increases were alarmingly displayed in May 1997, prior to implementation of the PSRC recommendations, when the Ministry of Mines and Energy attempted to raise tariffs by approximately 300 percent in order to meet World Bank conditions. The tariff increase led to a national uproar. The president personally intervened to roll back the increase, and summoned Parliament from its recess to approve the then-pending draft legislation to establish an independent regulatory agency. The PURC became law shortly thereafter, in October 1997.

Interestingly, the PURC managed to successfully pass an equivalently large 300 percent increase during 1998 without arousing nearly the same degree of popular discontent. PURC staffers have attributed this success to their concerted public outreach and dialogue—including workshops, public forums, and media campaigns—prior to raising tariffs.²⁶ According to staff, central to their argument

was persuading the population that the tariff hikes would be used responsibly, for purposes such as increasing access to electricity for the rural population. While this campaign may well be part of the story, electricity sector officials also widely recognize that a new power crisis caused by yet another drought in 1997 was also instrumental in convincing the population of the need for sacrifice in the long-term interest of the sector (Peel, 1998).

Despite these efforts, battles over tariffs continue. The tariffs for the dominant residential consumers are still not close to economic levels (even after the May 2001 tariff increment averaging about 95 percent for all categories of end user),²⁷ and the benefits of increased tariffs are normally eroded by devaluation of the national currency. Consequently, the debate continues over whether tariffs should be determined entirely based on the financial viability of the utilities, and hence by technical and economic criteria, or whether some measure of social impacts should also be considered. In its comments, the World Bank has stressed the need to ensure that the PURC is governed by rules that ensure not only consumer rights, but also those of suppliers (Tomlinson, 1997). For its part, the PURC has felt itself under pressure to raise tariffs, notably from the VRA and from international donor agencies, but it has resisted on the grounds that utilities have made insufficient efforts to increase their efficiency, reduce losses, and improve quality of service.²⁸ The commission has decided, through a “transitional plan,” to ultimately achieve economic tariffs within a three-year period for all categories of consumers. (*See Box 7.6.*) The PURC's objective, among other things, is to introduce some amount of gradualism in the attainment of economic electricity rates to minimize the impact of tariff increments on all classes of customers (PURC, 2000).

The PURC arguably has “endeavored to steer a middle course,” recognizing that its decisions “cannot realistically be insulated from the macro-economic, as well as the socioeconomic environment of the country” (Opam, 1999). To ensure that it steers this course correctly, the PURC has attempted to incorporate several principles of good governance

BOX 7.6**PURC'S TRANSITIONAL PLAN
(2000-2002)**

The transitional period has been defined by the Public Utilities Regulatory Commission (PURC) as the period from 2000 until the end of 2002, when it is expected that natural gas will be available for power generation in Ghana via the West African Gas Pipeline Project (although many expect the project will only be completed in 2004-5). 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 a natural gas-fired thermal plant regime. The 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 burdens 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 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 improvements and other cost-reduction measures that the utilities should adapt.

Source: Public Utilities Regulatory Commission. 2000. "Ghana's Energy Pricing." Paper presented at 5th Kumasi International College on Energy conference, Kumasi, Ghana, March 27-April 2.

in its structure and functioning. These include institutional representation of industry, labor, and domestic consumers on the Commission; transparent guidelines for tariff setting; publication of tariff decisions; and mechanisms for public hearings and representation before the PURC (Opam, 1999). Early indications suggest that these mechanisms are functioning well.

CONCLUSION

Ghana was forced to consider reforming its sector by a combination of demand shortfall—in part due to drought—and the drying up of its traditional source of financing, the World Bank. There is little doubt that the World Bank was instrumental in urging the government to seriously consider a program of reform. All sides are agreed that without the threat of a cut-off of World Bank funds, the government would not have undertaken substantial reforms.

However, in designing the program, the government forged its own path, and one quite distinct from World Bank recommendations. Instead of pursuing limited reforms and relying on management contracts to improve performance, the government embraced far-reaching reform, perhaps to more completely integrate the giant VRA into the sector.

Did government ownership translate to an emphasis on a public benefits agenda? Certainly, part of the motivation for integrating VRA into the sector was to spread the benefits of VRA's cheap hydropower more broadly through the population. But given the slow pace of the reform, whether the public will benefit from this approach is as yet undetermined. While the government had a long-term commitment to expand access to electricity, for much of the reform process access and reform proceeded on parallel tracks. In its support for both reforms and for electrification programs, the World Bank also pursued both as separate projects. Only in 1999 did the government make explicit attempts to relate access to the reform process.

On the environmental front, the government has proactively pursued energy efficiency measures, partly because it enables them to blunt the effect of tariff increases. With funding from the Energy Fund during the late 1980s and the more recent assistance of donor agencies, particularly the Danish government, it has also pursued an active program of promoting small-scale renewable energy sources. Indeed, the promotion of renewable energy by private developers has been made possible mainly by the reform program's initiative in creating a legal space of private generation and sale of electricity.

The Energy Foundation has convinced industry of the viability of an energy efficiency strategy.

Despite these advances, electricity sector reform in Ghana has proceeded slowly, in no small part because of the difficulties of making decisions that would impact harshly on the general populace. At root is a problem of tariffs that are low when viewed through the eyes of utilities or investors seeking to recover their costs, but very high when viewed through the eyes of Ghanaian consumers. The tariff problem is worsened by periodic devaluations of the currency. Indeed, the Ghanaian problem with tariffs in a climate of macroeconomic uncertainty may be a nearly intractable obstacle to applying a profit-making model to a sector in a poor country.

NOTES

1. The authors wish to acknowledge the considerable contribution of Abeeku Brew-Hammond and Martin Bawa Amadu to this chapter, which draws on Ishmael Edjekumhene, Martin Bawa Amada, and Abeeku Brew-Hammond, "Power Sector Reform in Ghana: The Untold Story," unpublished paper submitted to the World Resources Institute. February 2001, available at <http://www.wri.org/governance/iffepowercases.html>.

2. Interview with World Bank official, September 22, 2000. All interviews for this chapter were conducted on a not-for-attribution basis. Consequently, interviewees are identified only by their institutional affiliation.
3. VALCO's consumption decreased to 39 percent of generation by the late 1990s due to diminished hydro capacity following a drought season. By 1996, industrial consumers accounted for 68 percent of sales, the residential sector 26 percent, and commercial consumers 5-6 percent (Opam and Turkson, 2000).
4. Since 1994, power flows have reversed, with Ghana importing power from Côte d'Ivoire (Opam and Turkson, 2000).
5. Interview with former power sector official, September 22, 2000.
6. VRA had a contractual agreement with VALCO to supply the latter with not less than 2,760 gigawatt-hour of power annually. VALCO suffered a 95 percent cut in supply during the 1982-83 drought (Brew-Hammond, 1994). An attempt by VRA to curtail power supply to VALCO during the 1994 crisis resulted in the latter taking VRA to court for breach of contract (Daily Graphic, 1994). In February 2002, VALCO took the GOG to court because the latter asked it to shut down two of its pot lines. The GOG said this would enable the system to have a reserve capacity of 150 megawatt. The court ordered the parties to negotiate a compromise, which led to the shutting down of only one pot line instead of two. The GOG negotiating team has also indicated that VALCO should be prepared to pay higher tariffs. Currently VALCO pays 1.7 cents per kilowatt-hour compared to 3.99 cents per kilowatt-hour paid by residential consumers. (Daily Graphic, 2002a; 2002b).
7. Interview with senior GOG official, December 6, 2000.
8. While this was a majority view at the time, it was by no means the only view within the Bank. Indeed, there were other voices from within, as we discuss later, that were in favor of a more comprehensive market-based reform.
9. This impression is based on interviews with members of the Power Sector Reform Committee (PSRC), December 6, 2000, and January 11, 2001.
10. This description is drawn from Opam and Turkson (2000).

11. For example, generation tariffs for the regulated market were set on the basis of short run marginal cost. Distribution tariffs would be based on long run marginal cost and distribution value added, the latter computed using an average reference level to provide an incentive for efficiency improvements.
12. Personal communication with World Bank staff, March 21, 2002.
13. Large swings in reservoir levels brought environmental problems and difficulties for the communities that lived along the reservoir.
14. Personal communication with World Bank staff, January 2000.
15. Interview with VRA official, September 12, 2000.
16. Interview with members of the PSRC, September 13, 2000, and September 15, 2000.
17. Interview with PSRC member, December 6, 2000.
18. Interview with PSRC member, December 6, 2000.
19. Interview with member of the Energy Commission, September 14, 2000.
20. Interview with PSRC member, September 13, 2000.
21. Interview with PSRC member, September 13, 2000.
22. The World Bank provided an IDA credit of \$4 million toward a total cost of \$8.5 million for this component (World Bank, 1995).
23. The Energy Commission Act of 1997 mandated the preparation of electricity regulations, which were prepared in 2000. These regulations explicitly mention the EGF.
24. Interview with member of the PSRC, September 15, 2000.
25. Interview with reform official, September 22, 2000.
26. Interview with PURC member, December 6, 2000, and reform official, September 22, 2000.
27. Currently, residential consumers pay 3.99 cents per kilowatt-hour as opposed to the indicative economic rate of 7.43 cents per kilowatt-hour. Meanwhile, in their proposal for review of tariffs submitted to the PURC in March 2001, the utilities asked for 10.05 cents per kilowatt-hour.
28. Interview with PURC member, September 15, 2000.

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