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PERFORMANCE AUDIT REPORT

GHANA

FIFTH POWER PROJECT  
(CREDIT 2061-GH)

June 29, 1999

*Operations Evaluation Department  
Sector and Thematic Evaluations Group*

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## Currency Equivalents (annual averages)

*Currency Unit = Cedi (¢)*

1989	US\$1	=	¢270
1990	US\$1	=	¢326
1991	US\$1	=	¢368
1992	US\$1	=	¢437
1993	US\$1	=	¢649
1994	US\$1	=	¢957
1995	US\$1	=	¢1200
1996	US\$1	=	¢1637
1997	US\$1	=	¢2050
1998	US\$1	=	¢2325

## Abbreviations and Acronyms

AFD	Agence Francaise de Développement
CSD	Customer Services Department
ECG	Electricity Company of Ghana
EDF	Electricité de France
ESBI	Electricity Supply Board of Ireland
GOG	Government of Ghana
GWSC	Ghana Water & Sewerage Corporation
ICR	Implementation Completion Report
NEP	National Electrification Project
PSRC	Power Sector Reform Committee
PURC	Public Utilities Regulatory Commission
SAR	Staff Appraisal Report
VRA	Volta River Authority

## Fiscal Year

Government: January 1 - December 31

Director-General, Operations Evaluation	:	Mr. Robert Picciotto
Director, Operations Evaluation Department	:	Ms. Elizabeth McAllister
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June 29, 1999

**MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT**

**SUBJECT: Performance Audit Report on Ghana  
Fifth Power Project (Credit 2061–GH)**

Attached is the Performance Audit Report prepared by the Operations Evaluation Department on the above project, for which a credit of SDR 30.3 million was approved in FY90 and closed in December 1996 three years behind the schedule. Cofinancing of US\$49 million equivalent was provided by the Agence Francaise de Développement and the Commonwealth Development Corporation.

The main objective of the Fifth Power Project was to continue the ongoing sector policy reforms started under the preceding Power System Rehabilitation Project in order to help establish the Electricity Company of Ghana (ECG) as a commercially-oriented entity capable of delivering a reliable and economic supply of electricity to its customers. The project entailed financial and management restructuring and strengthening of ECG, performance contracting with GOG, staff training, and substantial technical assistance. The 'hardware' component consisted of diverse electricity subtransmission and distribution equipment and works, vehicles, tools, spare parts and office equipment.

The physical components of the project were completed satisfactorily, but over eight rather than five years. The project assisted ECG in meeting electricity demand from both existing as well as new consumers which was 50% higher than the appraisal forecast. However, there was no progress in ECG's financial performance due to insufficient and delayed tariff increases at a time of high inflation and currency devaluation, poor revenue collections high non-technical losses and large payment arrears by SOEs and other public bodies.

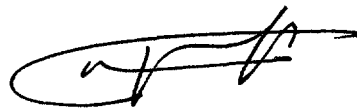
The project outcome is rated as marginally unsatisfactory (satisfactory in the ICR), given the lack of achievement of financial objectives: in only two out of the last seven years was the rate of return covenant met and ECG's cumulative losses of the past four years have exceeded US\$ 70 million. The audit assesses the institutional development impact of the project to have been modest (negligible in the ICR). Both the ICR and this audit consider sustainability of the project to be uncertain, given persisting weak sector finances. Bank performance is rated as unsatisfactory (satisfactory in the ICR) because the project design did not include specific customer management improvements essential to reduce unrecorded consumption and because the Bank was too reluctant to exercise remedies in the face of GOG's prolonged and significant non-compliance with critical financial covenants. Borrower performance is rated as unsatisfactory (as in the ICR) because GOG refused to implement tariff increases during a three-year period of hyperinflation, causing large financial losses to the sector entities and obliging itself to bear the high cost of the subsequent financial restructuring.

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The main lessons learned from this project are:

- It is unrealistic to expect quick results in improving the commercial performance of most developing country power utilities;
- Government-power utility performance contracts are ineffective in improving utility performance;
- Performance-linked management contracts have a better chance of producing the desired results than traditional, risk-free TA arrangements; and
- Independent regulators for tariff setting are highly desirable because they depoliticize difficult decisions, while rendering them transparent and objective.

Attachment

A handwritten signature in black ink, consisting of a large, stylized initial 'A' followed by several loops and a long horizontal stroke extending to the right.

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This report was prepared by Sunil Mathrani (Consultant) who audited the project in March 1999 and reviewed by Alain Barbu (Task Manager). Mr. William Hurlbut edited the report. Ms. Soon-Won Pak provided administrative support.



## Ratings and Responsibilities

### Principal Ratings

	<i>ICR</i>	<i>Audit</i>
Outcome	Satisfactory	Marginally satisfactory
Sustainability	Uncertain	Uncertain
Institutional Development	Negligible	Modest
Borrower Performance	Satisfactory	Unsatisfactory
Bank Performance	Satisfactory	Unsatisfactory

### Key Staff Responsible

	<i>Task Manager</i>	<i>Division Chief</i>	<i>Country Director</i>
Appraisal	B. Davis	S. Aiyer	C. Koch-Weser
Completion	M. Segal	M. Oakes-Smith	S. Michailof





## **Preface**

This is the Performance Audit Report (PAR) on the Ghana Fifth Power Project (Cr. 2061-GH) for which IDA approved a credit of SDR 30.3 million in August 1989 to the Republic of Ghana. The credit closed in December 1996, three years behind schedule.

This report is based on a review of the Implementation Completion Report (ICR) prepared by the Africa Region and issued on June 19, 1997, the Staff Appraisal Report (SAR), loan documents, and project files, and on discussions with Bank staff. An OED mission visited Ghana in March 1999 for discussions with the government and ECG. Their cooperation and assistance is gratefully acknowledged.

Following standard OED procedures, this draft PAR was sent to the borrower for comments, but none were received.

## 1. Background

1.1 The Bank has been heavily involved in the Ghanaian power sector since the mid-1980s. Six IDA credits amounting to about US\$310 million were approved between 1985 and 1995. Two projects accounting for over 60 percent of the IDA financing were for generation, while rehabilitation and extension of the transmission and distribution systems were addressed by the other four projects. Ghana presently has two electricity utilities, the Electricity Company of Ghana (ECG), which is the distribution company in southern Ghana, while the Volta River Authority (VRA) is responsible for power generation throughout Ghana. The latter also exports power to neighboring countries and distributes power in northern Ghana. Both utilities are entirely state-owned. Power generation is overwhelmingly based on hydroelectricity, with an installed capacity of about 1,300 MW, of which 1,072 MW (82 percent) is hydro.<sup>1</sup> Drought conditions in 1997-98 led to a shortfall in available capacity and the resulting loadshedding had to be alleviated by recourse to 100 MW of emergency, barge-mounted oil-fired plants under contract with foreign private firms.

1.2 Rehabilitation of the ECG's electricity distribution system began in the mid-1980s as part of Ghana's overall economic recovery program. The Power System Rehabilitation Project (Cr. 1628) had succeeded in reversing the deterioration in the distribution system and had improved the quality of service. By 1989, when the Fifth Power Project, the subject of this audit, was approved, attention had shifted from the most urgent interventions needed to arrest decline, to a more thorough power distribution system rehabilitation and expansion needed to meet demand growth arising from the macroeconomic recovery. Annual GDP growth in the second half of the 1980s had averaged 5 percent and was expected to continue at this pace during the 1990s, with the demand for electricity increasing at an even faster rate. Given the under-investment in electricity sub-transmission and distribution by ECG since the late 1970s, there was a risk that electricity would become a constraint on economic growth.

## 2. Objectives and Description

2.1 The main objective of the project was to continue the ongoing sector policy reforms started under the preceding Power System Rehabilitation Project in order to help establish ECG as a commercially oriented entity capable of delivering a reliable and economic supply of electricity to its customers. In addition, the project was to help the government develop a comprehensive long-term sector development strategy and electrification program. In order to meet these objectives, the project had three main components: ECG's institutional development focusing on its commercialization, its 1989-93 capital expenditure program (US\$118 million) and the formulation of a sector development strategy through a study of long-term system expansion needs.

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1. A further 130 MW of thermal capacity is expected to be in service by mid-1999.

2.2 The institutional development component comprised financial and management restructuring and strengthening, performance contracting with GOG, staff training, and substantial technical assistance. The “hardware” component consisted of diverse electricity subtransmission and distribution equipment and works, vehicles, tools, spare parts and office equipment. A long-term system subtransmission and distribution master plan study made up the third project component.

2.3 The project was thus a fairly standard electricity distribution, rehabilitation and expansion project, similar to many others financed by the Bank all over sub-Saharan Africa in the 1980s, with a heavy reliance on technical assistance from a foreign power utility. Such projects sought improved performance by public enterprises through the preparation of corporate plans and performance contracts containing quantitative indicators.

2.4 The PAR for the previous project<sup>2</sup> describes the lack of progress in improving ECG’s commercial operations by the resident TA team, which would also have been apparent at the time of appraisal of Power 5. The SAR recognized the weaknesses in ECG’s billing system, metering and revenue management. These were optimistically expected to be resolved by ECG during the project implementation period, with energy losses and the debtors/sales ratio to be halved by 1992. Yet the project design did not include essential customer management improvements such as a survey to reconcile the outdated customer records with the actual situation on the ground, identification of the number of unmetered connections and their regularization, and the preparation of network maps.<sup>3</sup>

### 3. Project Implementation and Results

3.1 The project was implemented over eight years instead of five, but at only slightly higher cost (US\$124 million, instead of US\$118 million). A significant part of the delay was due to initial bureaucratic difficulties linked to the cofinancing arrangements and cross-effectiveness conditions with the Agence Francaise de Développement (AFD) and the Commonwealth Development Corporation. The project enabled ECG to meet electricity demand from both existing as well as new consumers.<sup>4</sup> However, in 1995 ECG’s sales were 50 percent above the appraisal forecast. Overall sales growth during the 1989-97 period was about 10 percent annually, almost *double* the rate projected at appraisal. ECG’s contribution to the ICR points out that due to the inability to foresee the extent of suppressed demand, many substations were fully loaded or even overloaded as soon as they were commissioned and that ideally more of the project’s funds should have been devoted to subtransmission reinforcement.

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2. Report No. 13211, June 1994.

3. The necessary surveys covering almost 430,000 premises were finally completed in 1996, but not as part of this project. They revealed that 10 percent of premises were without account numbers and 17 percent lacked meters. 12 percent of connections had meters in poor condition or were out of order.

4. Three years later, when the subsequent project was appraised, the load forecast was only raised to 6 percent, even though the growth in the preceding four years had averaged 9 percent.

3.2 ECG's investment program averaged over US\$30 million annually from 1990-97, significantly higher than anticipated at the start of Power 5, and made possible in large part by the subsequent Bank project, the National Electrification Project (NEP, Cr. 2467-GH), approved in 1993 and now approaching closure. As a result of these two projects, ECG was able to increase the number of consumers from 305,000 in 1990 to nearly 650,000 in 1998. Since average consumption per consumer has increased only slightly, the increase in sales has come overwhelmingly from connecting up new consumers. However, due to a decline in its investment program for the coming 2-3 years, it is once again facing the prospect of system bottlenecks and overloading because demand continues to rise, despite recent sharp tariff increases.

3.3 At the time of the Power 5 appraisal, ECG was overstaffed in low-skill areas, lacked a manpower and staff development program and training activities were ad hoc. Considerable efforts were made under the project to reduce overstaffing and systematize training and these have had a positive impact. A staff reduction program carried out at the beginning of the project dealt with part of the surplus labor problem, and in four years ECG had shed 800 staff. It has contracted out meter reading and bill delivery to the private sector and no longer employs meter readers. ECG's present staff of about 4,000 is only slightly higher than at the time of appraisal, but since then it has more than doubled the number of customers it serves.

3.4 However, there was no progress in ECG's financial performance due to insufficient and delayed tariff increases at a time of high inflation and currency devaluation, poor revenue collections, high non-technical losses and large payment arrears by SOEs and other public bodies (paras. 4.10-4.12). In the commercial area, the project financed the introduction of a new, monthly billing system, a major program of meter replacement and installation in unmetered premises to reduce losses, but these were slow to be implemented and the results remained far below expectations (paras. 4.7-4.8).

3.5 The Bank was consistently too optimistic regarding the reduction of energy losses. The SAR for Power 5 anticipated a reduction in energy losses from 22 percent in 1987 to 10 percent by 1993. But by the time of the NEP appraisal in 1992 the losses were still 20 percent, and were projected to decline to 14 percent by 1996. In reality, the energy losses in the early 1990s are now believed to have been under-recorded. The "true" level of losses in 1993 was probably 23-24 percent, which was then reduced to 20 percent by 1998.

### **The Institutional Development of ECG and the Impact of Long-term Technical Assistance**

3.6 Since the mid-1980s, ECG has received a substantial amount of technical assistance (costing over US\$20 million), in a wide variety of operational areas, from the Electricity Supply Board of Ireland (ESBI). Although this was significantly less than under the previous project,<sup>5</sup> when ESBI staff actually occupied managerial posts in ECG, in the early years of Power 5, ESBI was heavily involved in both direct project management as well as in operational matters. Subsequently, assistance from ESBI was progressively phased out in all areas, except for the Engineering Department, where two resident expatriates are assisting with the final phase of NEP, but in a troubleshooting rather than managerial role.

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5. Cr. 1628-GH (1985).

3.7 ESBI's contribution to Power 5 was both necessary and useful. It played a very substantial role in project implementation and was able to impose higher work standards than ECG would have been able to on its own. The business opportunities arising from the project and the supervisory role played by ESBI has also had a positive impact on the quality of work done by Ghanaian contractors. Assistance from ESBI in engineering design and construction supervision could probably have been phased out sooner, but this may not have found favor with Bank staff or ECG top management at that time, because of the additional workload on ECG staff and the risk of additional delay to project implementation.

3.8 ESBI's contribution to capacity building in ECG was more limited, but useful nevertheless. Measures to strengthen ECG internally were introduced with assistance from ESBI, including vehicles and materials management systems, procurement procedures and a new billing system. These are likely to have a lasting positive impact on the organization, even though the turnover in ECG's own staff means that the skills acquired by counterparts has to some degree been dispersed to other parts of the organization, or worse, lost to the outside. The present drying up of ECG's pipeline of new projects and uncertainty about the future institutional reorganization/breakup of the company has also increased the pace of engineering staff departures.

3.9 The results, in the judgment of the audit, have been significantly better than those achieved with long-term TA in other countries, despite the considerable expense incurred by ECG on TA from ESBI since 1986. The big improvement in the quantity and quality of power supply, as well as the rapid expansion in the number of ECG's customers, could not have been achieved without this external assistance. Unfortunately, these gains were not matched by improved commercial and financial performance. The audit concurs with the finding of the PAR for the previous project, which noted that ESBI was least effective in improving ECG's commercial performance. This was one of the reasons ECG decided to try an new approach to TA in tackling its commercial problems (paras. 4.1-4.5).

## **4. Key Issues**

### **ECG's Commercial Performance**

4.1 In 1992, three years after Power 5 had been approved, it was apparent that little progress was being made in ECG's commercial performance. This is unsurprising, given that the focus of ECG and the TA personnel from ESBI was on implementing the physical components of the project. Meanwhile, a new, larger electricity distribution project was under preparation in the Bank, the National Electrification Project (NEP), whose implementation overlapped with this project during 1993-96. As part of the NEP, Bank staff needed to demonstrate willingness by GOG to bring in some private sector participation and to undertake a more comprehensive attempt at tackling ECG's commercial problems, given the lack of results under the ongoing Power 5 project. A new managing director had been appointed to ECG at this time, and he was also keen to make his mark on the commercial side of the business. Conveniently, Electricité de France was looking for business opportunities in Ghana and French bilateral aid was available to cofinance the NEP. As a result of all these factors, under the NEP it was agreed that ECG would

delegate its commercial operations (i.e., metering, billing and collections) to a private party under a performance-based management contract.

4.2 Although outside the scope of the Power 5 project, ECG's experience with the contract is examined in this audit because it was an innovative arrangement, both for ECG and Ghanaian SOEs generally. There are also few examples of it in other countries. The experience illustrates the limits to efficiency gains that can be attained without a full transfer of management control, as well as revealing some of the hidden pitfalls in this type of contract.

4.3 ECG made a four-year contract with EDF/SAUR in mid-1994 which was financed by a loan from AFD (France). The latter also provided resources to equip the new Customer Service Department (CSD) set up by EDF/SAUR, with office equipment, tools, vehicles and essential supplies.<sup>6</sup> Since no competitive bidding took place in the selection process, the contract negotiations were arduous and lengthy. The Bank provided ECG with funding for the services of an independent adviser to assist it in concluding the contract, which eventually linked only 20 percent of EDF/SAUR's remuneration to the results obtained. Unsurprisingly, the contract has been criticized for both these aspects.

4.4 EDF/SAUR committed themselves to reducing non-technical losses by 3 percent in three years and to reduce the debtors/sales ratio for private consumers by 70 days (i.e., by 35 percent) by the end of the contract. It was expected that the incremental revenues raised would exceed the cost of the remuneration of the private contractor. This was the principal reason for the decision by AFD to finance the contract with a loan to ECG on commercial terms.<sup>7</sup> However, it turned out to be impossible to make the arrangement self-financing for two major reasons: GOG's failure to increase tariffs and the much greater than expected devaluation of the Cedi,<sup>8</sup> which dramatically increased the cost of the contract with EDF/SAUR in local currency terms. The final cost of the contract (which was not renewed) was US\$8 million, on top of which about US\$4 million was invested in equipment and materials for CSD. If average tariffs had risen as forecast to over US¢10/kWh by 1997, the arrangement could have paid for itself, but at US¢2/kWh, this was clearly impossible.

4.5 The initial two years of the contract were devoted to the groundwork necessary to set up the CSD from scratch; carrying out a consumer census, setting up reliable and timely data collection systems, establishing procedures, training staff, were all essentially institutional development rather than money-making activities. Improved commercial results were thus slow to appear. The task faced by EDF/SAUR was complicated by their lack of control over a critical element, the new billing system, for which ECG already had a contract with ESBI, under the Power 5 project. The new monthly billing system was progressively introduced nationwide between late 1993 and early 1998, an inordinately long period, given that the SAR envisaged an 18-month implementation period. ESBI was not formally linked to the performance contract with EDF/SAUR and had limited interest in devoting extra resources to expediting implementation of the new billing system. In addition, the unexpected decision of GOG in 1995 to transfer a

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6. The bulk of the consumer meters and vehicles for CSD were financed by IDA.

7. Eight percent rate of interest and a 10-year repayment period.

8. When NEP was appraised in 1992 the projected exchange rate for 1997 was US\$1 = 576 Cedis; the actual rate turned out to be \$1 = 2050 Cedis. The projected 1997 average tariff was 62 Cedis/kWh, while the actual tariff turned out to be only 44 Cedis/kWh.

substantial number of state organizations from the clearinghouse payments system (para. 4.12) to direct payment of their own electricity bills, added many poor payers to the list of clients CSD was responsible for.

4.6 On the other hand, the work of EDF/SAUR was made easier by availability of the AFD loan for equipping CSD; as a result they did not have to depend on ECG's central procurement services for all their needs. Non-performing CSD staff could be removed as many did not have permanent contracts and those that did could be transferred to the rest of ECG. It is rare to be able to deal with labor issues so easily. Finally, it is easier to collect revenue and reduce arrears when tariffs are low and declining in real terms. The task has become much harder for CSD since the end of the contract, due to the very large tariff increases introduced in 1998.

4.7 Contractual ambiguities relating to the measurement of performance made the arrangement controversial and an objective evaluation difficult. For example, there was disagreement over whether the reduction in losses was to be measured cumulatively or just annually and whether the improvements in the collections ratio were to be annual averages or just point-to-point comparisons. The contract was based on a reduction of total losses from 20 percent to 17 percent, but due to VRA transformer saturation, which was not revealed till 1996, the initial 1994 value is now estimated to have been 23-24 percent.

4.8 The audit mission found that by the end of the contract, significant improvements had been achieved in billings and collections, but that there was less success in reducing non-technical losses (Annex B). Equally significantly, and particularly when compared to all the previous efforts (both with and without the use of foreign TA) since 1986, there was substantial institutional development of ECG's commercial operations as a result of this management contract. Creation of CSD and the operational experience with it has made ECG a more customer-focused organization – customer service centers were set up and customer relations officers appointed for the first time.

4.9 The sustainability of this “experiment” depends upon retaining and motivating trained and uncorrupt staff, ensuring that they are properly equipped to do their work and preserving the private sector corporate culture/work ethic, which in turn depends upon a high degree of management commitment and autonomy. It is difficult to envisage this in the present Ghanaian public sector, where ECG is subject to GOG pay policy and management is exposed to many external social and political pressures to not disconnect influential consumers. Hence, the best way of preserving the institutional development achieved in the area of customer management would be to privatize ECG as soon as possible.

### **ECG's Finances**

4.10 The last PAR of power projects in Ghana five years ago observed that GOG electricity tariff policy has been conducted on a stop/go basis since the mid-1980s, with increases granted only in response to pressure from the Bank and/or the financial plight of the utilities. This observation remained valid till very recently. Tariff increases always lagged behind inflation and there was no sustained progress in closing the gap between the level of tariffs and the LRMC of power supply. This pattern continued till 1998. In 1992, as part of the conditions for the NEP, GOG committed itself to moving tariffs up to the level of LRMC by 1996. But by 1995, GOG had moved away from using LRMC as a benchmark for tariff setting, preferring to use a target rate of return on net fixed assets, which was the basis of the Bank's financial covenants with both

ECG and VRA. In practice, both approaches led to broadly similar results. However, between January 1995 and February 1998 there were no increases in electricity tariffs, despite high inflation and currency depreciation. During the same period the Ghanaian consumer price index increased by 248 percent.

4.11 In 1997 tariff increases were introduced and then revoked two months later, following political unrest. The finances of ECG in particular suffered greatly as a result. Unlike VRA it has no foreign currency revenues but does have significant foreign currency expenditures. ECG has made losses in 6 out of the 10 years from 1989 to 1998. Its financial position declined sharply from 1995 onwards, due to GOG's inaction on tariff increases, and its losses peaked at US\$25 million in 1997. The cumulative losses of the past four years exceed US\$70 million, a very substantial amount when compared to its total equity of about US\$110 million. ECG's inability to collect revenues it was owed, particularly from public bodies, led to the buildup of very large arrears in its own payments to VRA for bulk power purchases. These had reached Cedis 53 billion (US\$26 million) by end-1997. All in all, in only two years (1993 and 1994) of the 1990-97 project implementation period has ECG been in compliance with the Bank's rate of return covenant.

4.12 Yet in order to prevent a recurrence of mutual indebtedness among VRA, ECG, GWSC and GOG for power consumption and debt service during the 1980s, GOG set up a monthly clearing mechanism for payments in 1989. This cross-debts clearing system was part of the Power 5 project and initially functioned well, but broke down in 1992 due to GOG's inability to make its payments to the clearinghouse on time. As part of the effectiveness conditions for the NEP, the GOG arrears were cleared in early 1994, but the system ran into difficulty again in 1995, when GOG unexpectedly shed its responsibility for payment of the electricity consumption of many public organizations. This was a time of high inflation in Ghana and due to underbudgeting, these organizations failed to pay ECG directly. Combined with the effects of a frozen electricity tariff, ECG's cash flow became inadequate and its arrears to the clearinghouse began to mount rapidly. By end-1997, ECG owed GOG Cedis 62 billion (US\$30 million) in debt service payments, on top of its arrears to VRA. These amounts were clearly beyond the ability of ECG to settle, and another financial recovery plan had to be devised for the power sector (para. 4.13). The clearinghouse payment system proved unsustainable and has now largely been abandoned.

4.13 In a repeat of measures taken in 1988 as part of the conditions necessary for the Bank's lending operations, GOG was again obliged in 1998 to convert ECG's debt service arrears into equity, take over ECG's debt to VRA and grant a two-year deferral of debt service (over Cedis 200 billion) due under SLAs for IDA credits on-lent to both ECG and VRA. A two-year waiver of the IDA rate of return covenants was also accepted by the Bank.

4.14 It is far from certain that there are now adequate measures in place to prevent a repetition of debt write-offs in the future. ECG is now obliged to pay about 75 percent of its total revenue collections into an escrow account set up to ensure payment first to the private, emergency power producers<sup>9</sup> and thereafter to VRA. However, at the time of the audit mission in March 1999, ECG's collection ratio was only about 76 percent of billings and its arrears to VRA were

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9. These had to be brought in to mitigate the effects of loadshedding resulting from the shortfall in hydro generation caused by the 1997-98 drought.



accumulating afresh. This remains the Achilles' heel of the whole power sector. GOG expects to be able to retire the ECG debt to VRA through the sale of sector assets, but that is not likely to occur in the short-term. VRA may have little choice but to recover its dues through withholding debt service payments to GOG.

### **Tariff Setting**

4.15 Following the 1997 tariff fiasco,<sup>10</sup> GOG decided to set up an autonomous Public Utilities Regulatory Commission (PURC) empowered to authorize tariff increases for both electricity and water. This was a major step forward for the sector in both institutional and financial terms. The PURC comprises eight part-time commissioners and a full-time executive secretary assisted by a small technical staff. Its mandate includes monitoring of performance, investigations into service quality and the promotion of competition among public utilities. The Bank assisted with funding for some of its start-up expenses via the 1995 Thermal Power Project.<sup>11</sup> The PURC appears to have the potential to alter the historical stop/go pattern of disruptive tariff increases. The initial working experience of the PURC since it started operating about a year ago is encouraging. There is a widespread consensus that "depoliticizing" the tariff-setting process by putting the decisions in the hands of a technocratic, autonomous body is in the interest of the three concerned groups: consumers, the industry and the government. For the first time in Ghana, the decisions to raise tariffs in 1998 took place after open hearings at which ECG and VRA were required to present their cases to the public. Despite the magnitude of the increases granted to the power utilities, there was no public unrest. GOG has respected the autonomy of PURC so far, although this autonomy would be further strengthened if PURC could finance itself through a levy on the utilities it regulates, rather than depending on budgetary allocations from the Ministry of Finance. Delinking the salaries of its staff from GOG pay scales would also reinforce its autonomy and enable it to attract and retain the skills it requires for maximum credibility.

4.16 PURC granted two very substantial increases (85 percent followed by nearly 130 percent) in electricity tariffs during 1998, which have sharply raised the average tariff in both nominal and real terms. In 1999, ECG's average revenue will be about US¢7/kWh, a level which has probably never been attained before,<sup>12</sup> but which is still insufficient for it to meet all its financial obligations and earn the 8 percent rate of return on assets required under its loan covenants with the Bank.<sup>13</sup> The main reason for this is the growing share of thermal power in the generation mix, and the high cost<sup>14</sup> of the emergency power supply contracts.

### **Staff Remuneration**

4.17 Government pay scales have long handicapped ECG in its ability to recruit and retain qualified staff. Attempts to improve remuneration during the past decade were stymied by ECG's

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10. Which even required ECG to issue refunds to customers since bills reflecting the new tariffs had already been sent out.

11. Cr. 2682-GH (1995).

12. Not since 1984, and probably unlikely before that, given Ghana's overwhelmingly hydro-based generation system since the mid-1960s. By way of comparison the average tariff in Cote d'Ivoire is US¢9/kwh.

13. The next tariff adjustment is due in January 2000 and is expected to provide ECG with an adequate return on investments.

14. US¢ 8-10/kWh.

weak financial position. Pay increases were delayed<sup>15</sup> and barely kept up with past inflation. The issue was highlighted in the NEP, under which a consultant was to have been hired to review the remuneration policies for both power utilities, but no action was taken. Proposals by EDF/SAUR to introduce performance-related bonuses for commercial staff were not accepted by ECG's top management out of concern for equity with other employees. Anecdotal evidence gathered by the audit mission suggests that the gap between ECG and private sector salaries has widened in recent years. Recently announced improvements in the provident fund (which bring it into line with VRA) and in non-salary benefits such as housing and car loan schemes will help mitigate the salary gap, but broadly speaking the difficulty of retaining trained, skilled staff remains as great as ever.

### **Corporate Planning and Performance Contracts with the Government**

4.18 ECG developed its first five-year corporate business plan in 1988 as part of the preparation for this project. The corporate plan formed the basis for a performance contract with GOG that became a condition of credit effectiveness. Since then ECG has prepared regular corporate plans, and the annual performance contracting process with GOG has been formalized. Responsibility for monitoring lies with the State Enterprises Commission. Some of the key performance indicators are given in Annex B.

4.19 The performance contract was to be subject to an annual tripartite (ECG/GOG/Bank) review during the project period, but this does not appear to have taken place. Nor does the ICR review the experience with performance contracting during the project. This judgment of this audit is that ECG's poor commercial and financial results during the project period clearly indicate the limitations of performance contracting as a tool for improving corporate performance. The necessary data is often unreliable and targets based on it are often unrealistic or undemanding. Most crucially, if the undertakings essential to meet agreed targets are not observed by any of the parties to the performance contract, the whole process loses most of its credibility.

4.20 Conscious of the need to underpin the performance contract with reliable and timely data, Power 5 included a study for a computerized management information system. However, due to a major delay in carrying out the study, the GOG plan to restructure ECG along regional lines (para.5.2) was announced before a decision to proceed with the MIS proposals had been made. Consequently, the proposals were shelved, pending the institutional reorganization of the sector, although ECG clearly needed an MIS many years ago.

## **5. Power Sector Institutional Reforms**

5.1 In mid-1994, GOG issued a statement of power sector development policy outlining its vision of the strategic framework for the future development of the sector. This statement of sectoral policy measures underpinned the negotiations of the Thermal Power Project. In order to

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15. In 1997 pay rises to staff were even revoked when the tariff increase was canceled.

flesh out the institutional changes needed to facilitate private participation in the sector, GOG set up the Power Sector Reform Committee (PSRC) under the chairmanship of a former energy minister. The Thermal Power Project provided financing to help the PSRC employ the services of specialized foreign consultants as required, but the bulk of its work was done in-house. The Bank was not closely involved in the deliberations of PSRC and its consultants.

5.2 In mid-1996, the PSRC proposed four sets of measures to (a) rationalize power market transactions, (b) reorganize the power utilities into business units to improve transparency, (c) institutionalize the “rules of the game” in a tiered regulatory framework, and (d) mobilize private funds to recapitalize the “business units.” It recommended unbundling of generation, transmission and distribution, but not large-scale privatization of the existing entities. Five geographically-based distribution concessions were proposed, in which private investors would be invited to take 30 percent stakes. It favored the retention of a scaled-down VRA as a state-owned hydro power producer and transmission company which would offer open access to other power generators. A single regulatory body for all energy sector entities was also proposed. These proposals were presented and discussed at a workshop in which the Bank also participated. However, Bank staff indicated that the Bank’s contribution to the sector reform process was less than they had wished because GOG kept the Bank at arm’s length during the time the PSRC was carrying out its work.

5.3 Permitting the establishment of independent power producers, allowing open access to the transmission grid, the creation of an independent sector regulator and the entry of private capital in electricity distribution were formally approved by Cabinet and adopted as GOG policy in late 1996. The PSRC was wound up in early 1997 after preparing draft legislation<sup>16</sup> on the regulatory framework for Parliament. Task forces made up of ministry, ECG and VRA staff were then entrusted with the job of preparing detailed action plans for the implementation phase.

5.4 In late 1997, GOG decided to separate tariff regulation from licensing and technical performance, contrary to the recommendation of the PSRC. It set up the PURC to deal solely with electricity and water tariffs. An Energy Commission was created to license and enforce standards for the wholesale supply, transmission and distribution of electricity, petroleum products and natural gas. It is yet to become fully operational. Both bodies rely on the Ministry of Finance for budgetary allocations to cover their operating costs.

5.5 Since then, work on the details of unbundling electricity distribution has proceeded much more slowly, partly because there is no longer a strong oversight body (like a successor to PSRC) to steer the process. An asset revaluation study for ECG has yet to begin, even though this is an essential input to any unbundling and subsequent divestiture. On the other hand, GOG has given assurances to the Bank and IMF that it will offer ECG for sale by June 2000, which will be hard to meet unless the pace accelerates.

5.6 The audit mission was unable to obtain a clear picture of GOG’s intentions for the institutional reform of ECG. There now appears to be a preference for the sale of a minority stake in ECG as a single company, combined with an offering of shares to the public on the local stock market. It is unclear if this reflects a concern that there would be little interest in acquiring stakes

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16. The Bank was not given an opportunity to comment on the PURC legislation until it had been passed by Parliament.

in regional companies, or whether it is felt that this is the best way to maximize revenues from the divestiture of assets and/or minimize GOG subsidies to rural electrification.<sup>17</sup>

5.7 Meanwhile, the preoccupation with ECG's long-term future since mid-1996 has distracted attention from the more immediate problems it faces. Worse, the expectation that privatization is "imminent" has been used as a reason for deferring investment decisions and has made planning within the organization nearly impossible. Experience in other countries indicates that even with a concerted effort and the full commitment of all parties, the effective transfer to private control of part of the distribution system will take at least two years to achieve from the time such a decision is made. In the interim, ECG is faced with rapid demand growth and no financial resources to undertake investment in network reinforcement. This will inevitably lead to overloading and a decline in service quality, which in turn may make privatization more problematic.

### **Prospects for Attracting Private Investment in Electricity Distribution**

5.8 The degree of private investor interest in distribution companies *outside* dense urban areas in southern Ghana is likely to be limited. Over 40 percent of ECG's customers are in the Accra-Tema belt, which is the most attractive potential market for private investors. Foreign utilities interested in this area have already made unsolicited proposals to GOG. Experience with VRA's Northern Electricity Department, which still makes operating losses 10 years after it was set up, is an indication of the difficulty that GOG will face in divesting distribution assets unless they comprise a large and balanced mix of consumers. On the other hand, if GOG intends to preserve ECG in its present unified form, it is highly unlikely that any private investor would be willing to take a *minority* share in the company.

5.9 Macroeconomic factors are likely to discourage foreign investors; Cedi convertibility is not guaranteed, while the risks of high local inflation and currency depreciation are high. On the other hand, although GOG's record on tariff policy is not good, the PURC could prove to be a credible safeguard against the erosion of tariffs by inflation. The overall economic prospects for Ghana are good, demand for electricity remains strong, despite large tariff increases, and there is clearly much potential to expand the market further.

### **Bank Performance**

5.10 Bank performance in supervision of the technical aspects of project implementation was satisfactory. However, the Bank's unwillingness to exercise remedies in the face of GOG failure to authorize tariff increases (and of the related significant non-compliance by ECG with its rate of return covenant) for several years is striking, given the leverage which the Bank's large power portfolio should have provided. Although there is evidence that the issue of power sector finances was raised on several occasions by Bank management during the critical 1996-97 period, this concern was not reflected in supervision ratings which remained satisfactory throughout this time. The Bank's reluctance to even downgrade portfolio ratings –let alone suspend disbursements– appears to have been based primarily on grounds of country relations. The Region pointed out that it was also due in part to: (i) the Bank's willingness to give the

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17. These would be necessary because GOG remains committed to a uniform national tariff schedule for electricity.

benefit of the doubt to the country's new economic team<sup>18</sup>; and (ii) the priority given by Bank management in its energy sector dialogue to resolving the issue of the Tano project and its potential macro-economic impact.<sup>19</sup> In retrospect, this optimism was not justified given GOG's poor track record on tariff adjustments since the mid-1980s (para. 4.10) and may even have undermined the Bank's credibility in the eyes of GOG and sector entities. Indeed only after the Bank downgraded the portfolio and formally notified GOG of possible suspension of disbursements in early 1998, were significant tariff increases finally implemented (para. 4.16). *For these reasons, overall Bank performance is rated as unsatisfactory.*

5.11 Recent Bank policy in the sector has been more cognizant of the need to find durable solutions to the problems that have plagued sector finances over the past decade. Such solutions are also essential to any credible privatization of sector entities and to new lending by the Bank. Credit extensions were granted in response to GOG's financial recovery package (para. 4.13) as an indicator of Bank willingness to assist GOG in its attempt to come to grips with sector finances. However, the recovery package does not address the fundamental problem of ECG's weaknesses in revenue collection and energy losses. Any future Bank project would need to contain credible solutions to these thorny issues.

### **Borrower Performance**

5.12 The audit agrees with the ICR's view that ECG's overall performance was satisfactory. However, unlike the ICR, *this audit considers GOG's performance to have been unsatisfactory*, principally due to its failure to permit tariff increases (and to enable ECG to comply with financial covenants) during a three-year period characterized by hyperinflation. This inaction on the part of GOG undid the progress made in restoring ECG's finances at the beginning of the project. It led to large financial losses by both ECG and VRA,<sup>20</sup> together exceeding US\$50 million in both 1997 and 1998. The subsequent financial restructuring package for ECG alone cost GOG about US\$60 m in debt-equity conversions.

### **Overall Assessment**

5.13 The SAR (para.1.18) stated the ultimate project objective as being "a financially viable, well-managed sector, whose institutions enjoy a high degree of autonomy and are capable of delivering a reliable and economic supply of electricity." Ten years later, Ghana is still far from achieving this objective. Nevertheless, the project contributed to the institutional strengthening of ECG, to improving the electricity distribution system in Ghana and the availability of power. *The project's institutional development impact is rated as modest*, rather than negligible as indicated by the ICR. However, this audit shares the ICR assessment that *the sustainability of these improvements is uncertain*. The overall *project outcome is rated as marginally unsatisfactory* because of the non-achievement of its financial objectives.

5.14 In the judgment of this audit and in the light of experience in the sector, the package of measures agreed with the Bank in 1998 to restore viability to sector finances (paras. 4.13-4.14)

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18. A new Minister of Finance had been appointed a few months earlier

19. The Ghana National Petroleum Corporation (GNPC)'s proposal to invest several hundred million dollars of public funds into the Tano gas development project was of great concern to both the IMF and the Bank.

20. For the first time in 13 years.

are unlikely to be sustainable because the fundamental problem of ECG's revenue collections has not been addressed. Furthermore, the present lack of clarity in GOG's sector reform policy does not provide a credible basis for attracting the private sector to invest in electricity distribution. Yet the commercial functions of retail electricity distribution need to be privatized quickly in order to preserve the gains from the four-year contract with EDF/SAUR and also to ensure the solvency of the many IPP and cogeneration schemes currently under consideration. Without solid arrangements to collect electricity sales revenues from both private, retail and state-owned bodies, GOG will end up bearing a disproportionate share of the financial risks of these private generation projects.

5.15 GOG has been subsidizing electricity consumers for too long and they have benefited disproportionately from concessionary financing from aid donors who have tacitly accepted this misallocation of scarce resources. GOG has had to meet the cost of its financial mismanagement of the sector through the various debt conversions and write-offs over the past decade. Continuing along this road will be much more costly in future because the incremental electricity demand is now met from thermal, rather than hydro plants and because payment arrangements to private parties are much more demanding than Ghanaian public sector bodies have been accustomed to in the past.

## 6. Lessons

6.1 The main lessons learned from the project are:

- In certain environments, long-term technical assistance can be effective in its impact. However, long-term technical assistance carried on for too long runs the risk of substituting for local efforts (para. 3.7).
- It is unrealistic to expect quick results in improving the commercial performance of most developing country power utilities. Achieving a reduction in non-technical losses is a slow and painstaking process that depends on many factors, including thorough groundwork like house-to-house surveys and meter inspections of tens of thousands of consumers (paras. 2.4 and 4.5).
- Experience under this project confirms that Government-power utility performance contracts are ineffective in improving utility performance (para. 4.19).
- Performance-linked management contracts have a better chance of producing the desired results than traditional, risk-free TA arrangements. They may be a useful half-way stage to full privatization because they are quicker to put in place and are not subject to the political opposition generated by asset sales.
- The proportion of the private contractor's remuneration in a management contract that can be linked to results depends on the risk element in the contract. Risks are high if contractors have little control over matters crucial for performance such as billing and staffing (para. 4.5).

- Independent regulators for tariff setting are highly desirable because they depoliticize difficult decisions, while rendering them transparent and objective. If their autonomy is respected, they gain the confidence of all concerned parties. Regulatory experience in the initial years is likely to have a significant impact on the success of subsequent utility privatizations (para. 4.15).

## Basic Data Sheet

### FIFTH POWER PROJECT (CREDIT 2061-GH)

#### Key Project Data (amounts in US\$ million)

	Appraisal estimate	Actual or current estimate	Actual as % of appraisal estimate
Total project costs	125	143	114%
Loan amount	40	43	108%
Cofinancing	58	49	84%
Cancellation	--	--	--
Date physical components completed	6/93	12/96	--
Economic rate of return	20%	28%	140%

#### Cumulative Estimated and Actual Disbursements

	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97
Appraisal estimate (US\$M)	4.5	16.1	27.3	45.8	40.0	40.0	40.0	40.0
Actual (US\$M)	2.7	8.3	14.7	20.2	25.9	32.2	39.8	42.8*
Actual as % of appraisal	60	51	54	44	44	81	99	107*

Date of final disbursement: April 1997

#### Notes:

\*Disbursements were slightly higher than the original amount because of exchange rate movements between the US\$ and the SDR, the original currency of the credit.

All US\$ figures rounded to the nearest hundred thousand US\$.

All percentage figures rounded to the nearest one percent.

Source: Bank MIS and Bank Staff estimates.

#### Project Dates

	Original	Actual
Identification	January 1988	January 1988
Preparation	June 1988	June 1988
Appraisal	July 1988	July 1988
Negotiations	October 1988	March 3, 1989
Board approval	October 1988	August 29, 1989
Signing	November 1988	September 26, 1989
Effectiveness	November 1988	January 9, 1990
Project completion	June 1993	December 1996
Closing date	December 31, 1993	December 31, 1996



## Staff Inputs (staff weeks)

	<i>Planned</i>	<i>Actual</i>
Preparation to appraisal	n.a.	34.5
Appraisal	n.a.	23.1
Negotiations through Board approval	n.a.	6.4
Supervision	n.a.	120.9
Completion	n.a.	6.0
Total		190.9

Source: Bank MIS data and Bank Staff estimates.

## Mission Data

	<i>Date (month/year)</i>	<i>No. of persons</i>	<i>Staff days in field</i>	<i>Specializations represented<sup>b</sup></i>	<i>Performance Rating<sup>c</sup></i>	<i>Types of problems<sup>d</sup></i>
Through appraisal	4/7/88	4	36	PE, FA, EC, AA	--	--
Appraisal through Board approval	9/88	1	5	FA	--	--
	6-7/89	1	23	FA	--	--
Supervision	6-7/90	1	36	PE	1	--
	12/90	4	15	EC, PE, FA	2	F
	2-3/92	2	14	FA, PE	2	F
	10/93	3	13	EC, FA, PE	2	C
	3/95	2	13	FA, PE	2	F
	2/96	2	10	FA, 2PE	S	C, F, M
	7/96	3	11	EC, FA, PE	S	C, F
Completion <sup>a</sup>	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

a. There was no completion mission for the project; however completion reporting was arranged and agreed with the borrower and implementing agency during and between the last two supervision missions.

b. EC=Economist; FA=Financial Analyst; PE= Power Engineer; AA=Administrative Assistant.

c. 1=no significant problems; 2=moderate problems; 3=major problems; S=satisfactory.

d. C=Covenant Compliance; F=Financial; M=Project Management.

## Other Project Data

<i>Borrower/Executing Agency:</i>			
<i>FOLLOW-ON OPERATIONS</i>			
<i>Operation</i>	<i>Credit/Loan no.</i>	<i>Amount (US\$ million)</i>	<i>Board date</i>
Sixth Power Project	Cr. 2109	20	1990
National Electrification Project	Ln. 2467	80	1993
Thermal Power Project	Ln. 2682	175	1995

## ECG: Key Performance Indicators

	1989	1993	1997
Sales (in GWh)	1203	1832	2652
Max. demand (MW)	312	401	536
No. of consumers	286,000	375,000	585,000
No. of staff <sup>a</sup>	3190	2933	3374
Energy losses ( %) <sup>b</sup>	18 (20? Chk A/rpt)	25	22
Sales/employee (000s kWh)	377	625	786
Consumers/employee	90	128	173
Debtors/sales (%) <sup>c</sup>	43	54	34
Collections/sales for pvt. Customers (%)		80	101
Average revenue (UScents/kWh)			
Net Profit/(loss)	1	18	(25)
Rate of return on assets (%)	?	?	?

### Notes:

- the 1997 figure excludes about 400 temporary/fixed term staff recruited for the Customer Services Department, which did not exist prior to 1994.
- the 1993 figure is an estimate since it was discovered several years later that VRA was underbilling ECG due to underrecording by its bulk supply meters. The figure based on VRA's billing is 21 percent. The figure for 1989 may also be understated for the same reason.
- For private consumers only