Document of
The World Bank

Report No: 32564

IMPLEMENTATION COMPLETION REPORT
(PPFI-P8160 PPFI-P8161 PPFI-P8162 IDA-27540)

ON A

CREDIT

IN THE AMOUNT OF US$79.66 MILLION

TO THE REPUBLIC OF

COTE D'IVOIRE

FOR A

PRIVATE SECTOR ENERGY PROJECT

June 27, 2005

Energy Group
Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective June 10, 2005)

Currency Unit	=	CFA Franc
1 CFA Franc	=	US$ 0.0019
US$ 1	=	CFA Franc 553

FISCAL YEAR

January 1 December 31

ABBREVIATIONS AND ACRONYMS

AfD	*Agence Française de Développement* (French Agency for Development)
ANARE	*Autorité Nationale de Régulation du Secteur de l'Electricité* (National Power Regulatory Authority)
BOAD	*Banque Ouest Africaine de Développement* (West African Development Bank)
BOOT	Build-Own-Operate-Transfer
CAA	*Caisse Autonome d'Amortissemens* (Debt Management Unit)
CIE	*Compangnie Ivoirienne d'Electricité* (Private Ivorian Electric Company)
CIPREL	*Compagnie Ivoirienne de Production d'Electricité* (Private IPP)
DCGTx	*Direction et Contrôle des Grands Travaux* (Department for Public Works)
EDF	*Electricité de France* (France Electricity Company)
EECI	*Energie Electrique de Côte d'Ivoire* (Public Power Utility)
EGT	European Gas Turbines (Gas Turbines Supplier)
ESAL	Energy Sector Adjustment Loan
FCFA	*Franc de la Communauté Financière d'Afrique* (National currency)
FNEE	*Fonds National de l'Energie Electrique* (National Electricity Fund)
GESTOCI	*Société de Gestion des Stocks Pétroliers de Côte d'Ivoire* (National storage Co. for Hydrocarbon products).
GPE	*Groupe Projet Energie* (Project Implementation Unit)
GORCI	Government of the Republic of Côte d'Ivoire
GT	Gas Turbines
HFO	Heavy Fuel Oil
ICB	International Competitive Bidding
IDA	International Deveopment Association
IPP	Independent Power Producer
ISO	International Standards Organization
LPG	Liquid Petroleum Gas
LSDP	Letter of Sector Development Policy
PETROCI	*Société Nationale d'Opérations Pétrolières de la Côte d'Ivoire* (National Petroleum Company)
PPF	Project Preparation Facility
PRG	Partial Risk Guarantee
RCI	Republic of Côte d'Ivoire
SAUR	*Société d'Aménagement Urbain et Rural* (Private French Company)
SIR	*Société Ivoirienne de Raffinage* (National Refinery)
SOGEPE	Société de Gestion du Patrimoine du Secteur de l'Electricité (Holding Company for Sector Assets)

SOPIE	*Société d'Opération Ivoirienne d'Electricité* (National Company for Electric Operations)
S/S	Substation
TAG	*Turbines à Gaz* (Gas Turbines)
T&D	Transmission and Distribution

WEIGHTS ANS MEASURES

1 hectare (ha)	2.47 acres
1 cubic meter (m3)	35.31 cubic feet
1 kilovolt (kV)	1000 volts
1 kilowatt hour (kWh)	1000 watt-hours
1 Megawatt (MW)	1000 kilowatts
1 Gigawatt-hour (GWh)	1 million kilowatt-hours
1 mcf	1 thousand cubic feet
1 bcf	1 billion cubic feet
1 bpd	1 barrel per day
1 barrel (bbl)	0.17 cubic meters
1 Ton of Oil Equivalent (TOE)	about 7 bbl of crude oil

Vice President:	Gobind T. Nankani
Country Director	Mamadou Dia
Sector Manager	Yusupha B. Crookes
Task Team Leader/Task Manager:	Said R. Mikhail

COTE D'IVOIRE
PRIVATE SECTOR ENERGY PROJECT

CONTENTS

Project ID: P001184	*Project Name:* PRIVATE SECTOR ENERGY PROJECT
Team Leader: Said R. Mikhail	*TL Unit:* AFTEG
ICR Type: Core ICR	*Report Date: June 27, 2005*

1. Project Data

Name: PRIVATE SECTOR ENERGY PROJECT
L/C/TF Number: PPFI-P8160; PPFI-P8161; PPFI-P8162; IDA-27540
Country/Department: COTE D'IVOIRE
Region: Africa Regional Office
Sector/subsector: Power (90%); Central government administration (10%)
Theme: Regulation and competition policy (P); Pollution management and environmental health (P); Climate change (S)

KEY DATES		*Original*	*Revised/Actual*
PCD:	05/01/1990	*Effective:*	10/10/1995	04/19/1996
Appraisal:	12/16/1994	*MTR:*	02/08/1999	02/08/1999
Approval:	06/28/1995	*Closing:*	12/31/1999	09/30/2004

Borrower/Implementing Agency: REPUBLIC OF COTE D'IVOIRE/GROUPE PROJET ENERGIE (GPE)
Other Partners:

STAFF	Current	At Appraisal
Vice President:	Gobind T. Nankani	Edward V.K. Jaycox
Country Director:	Mamadou Dia	Olivier Lafourcade
Sector Manager:	Yusupha B. Crookes	Mary Oakes Smith
Team Leader at ICR:	Said R. Mikhail	Said R. Mikhail
ICR Primary Author:	Achilles Adamantiades; Said R. Mikhail	

2. Principal Performance Ratings

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HL=Highly Likely, L=Likely, UN=Unlikely, HUN=Highly Unlikely, HU=Highly Unsatisfactory, H=High, SU=Substantial, M=Modest, N=Negligible)

Outcome: S
Sustainability: UN
Institutional Development Impact: M
Bank Performance: S
Borrower Performance: S

	QAG (if available)	ICR
Quality at Entry:		S
Project at Risk at Any Time:	Yes	

3. Assessment of Development Objective and Design, and of Quality at Entry

3.1 Original Objective:

3.1.1 The original objectives of the project were to: (a) continue the restructuring of power sector institutions begun under the "Energy Sector Adjustment Loan" (ESAL), particularly an appropriate regulatory framework and strengthened institutional capabilities, thus enabling the development of competitive and expanded private sector participation; (b) improve power supply reliability, reduce environmental impacts and reduce the cost of electricity by supporting efficient gas-fired capacity using indigenous natural gas developed under a private sector "Build-Own-Operate-Transfer" (BOOT) arrangement; and (c) enhance operational reliability and efficiency through reinforcement and improvements of the transmission system.

3.2 Revised Objective:

3.2.1 There has been no change in project objectives although political events have thwarted the country's pace of reform and undermined the effort toward financial viability of the power sector. Hence, the emphasis of Bank activities in the latter years of the project has been toward institutional strengthening and financial rehabilitation. It must be noted that the project's objectives remain relevant to current Government priorities and the Bank's country assistance strategy.

3.3 Original Components:

The project consisted of the following components:

3.3.1 **Component A: Institutional Development Component (US$ 8.31 million)**. This Component consisted of three sub-components as follows:

(i) The Power Sector Management Study covered: (aa) distribution of sector responsibilities; (bb) development of a power sector regulatory framework; (cc) assessment of manpower planning and training requirements; and (dd) implementation proposals.

(ii) The Power System Investment, Operations, and Pricing Study covered: (aa) preparation of a load forecast (including scope for demand management); (bb) development of a least-cost system expansion (generation, transmission, distribution, loss reduction); and (cc) a tariff study (including revaluation of major fixed assets and pricing formulas).

(iii) Measures to Encourage Further Sector Privatization covered: (aa) development of standard "Independent Power Producer" (IPP) bid documents; and (bb) a study to determine the cost of energy from the Vridi steam thermal units and their future role in the power generation in the Republic of Côte d'Ivoire (RCI).

(iv) Hydrocarbon Sector Studies would cover: (aa) hydrocarbon production and distribution system planning; and (bb) butane utilization and implementation arrangements.

3.3.2 **Component B: Generation Expansion Component (US$ 50.00 million).** This Component comprised supply and erection of one or two identical simple-cycle gas turbines of capacity between approximately 75 MW and 105 MW at ISO conditions. The gas turbines would constitute Phase II of the CIPREL power plant, located at Vridi. The plant layout for the gas turbines would be designed such that a heat-recovery boiler could be added at a later stage in order to operate the units as a combined-cycle plant at higher efficiency. Engineering and construction supervision was also part of the project.

3.3.3 **Component C: Power System Reinforcement Component (US$ 21.05 million).** This Component included extension of the 90-kV substation at Vridi to accommodate the CIPREL power plant capacity expansion; reinforcement of the transmission system around Abidjan in order to improve system reliability in case of loss of the 225-kV transmission line, including for this purpose: extending the 90-kV transmission system between Treichville and Plateau substations (comprising two circuits of 90-kV cables of about four kilometers each and associated substation equipment), and tapping the 90-kV transmission line between Bia Sud and Ayame at the Riviera substation; rebuilding the Treichville 90/15-kV substation; and replacement of some 60 kilometers of 15-kV paper-insulated cables.

3.4 Revised Components:

3.4.1 Because some savings were obtained, mainly in Component B of the project, as will be discussed later (para. 5.2.1), some reallocation of funds was contemplated toward the latter years of the project. However, because of the suspension of disbursements imposed by IDA, eventually, the components and scope of the project were not changed during implementation and the amount of savings of approximately US$ 10.0 million was cancelled.

3.4.2 Annex 2 presents, in more detail, the original cost estimates and actual costs to completion of the components of the Project.

3.5 Quality at Entry:

3.5.1 The design of the Project was based on a number of studies and reviews undertaken in the framework of Phase I of the CIPREL project. The first was the Policy Framework Paper, issued on 16 February 1995 and the second, the Environmental Impact Assessment (EIA) study undertaken by CIPREL on the foxtrot BOOT project which was later replaced by the CIPREL I project (3 turbines, 33 MW each) and the CIPREL Phase II. A full-scope EIA was necessary because the project was placed in Category A although no mention of project categorization is mentioned in the SAR. An amendment to the original EIA study was performed to reflect the change in scope. The Project Team asserts that an Environmental Mitigation Plan (EMP) was prepared and implemented although, again, it is not mentioned in the SAR and documentation on it could not be located. In terms of institutional arrangements, and given the track record of the Ivorian authorities in the context of their management contract with the private sector entity, CIE, the project was based on an institutional framework that was on the right path toward reform. However, the practice to require the putting in place of a dedicated Project Implementation Unit (PIU) to implement the project, which is often followed by the Bank, was not followed and as a result, the implementation suffered (more on this in Section 5.3). In sum, in spite of the above-mentioned deficiencies, it is concluded that quality at entry was satisfactory.

4. Achievement of Objective and Outputs

4.1 Outcome/achievement of objective:

4.1.1 The main objective of the project was that of assisting the Government in formulating a policy and institutional framework to facilitate the efficient and sustainable development of the energy sector. Parallel to that was the strengthening of institutional capabilities in order to enable the development of competitive and expanded private sector participation. This objective was partially achieved with the implementation of the Power Sector Management Study recommendations (para. 3.3.1 (i) (aa) & (bb)) under Component A of the Project. For the power sector, the Component comprised sector reorganization, with the abolition of EECI (Energie Electrique de Côte d'Ivoire, the State-owned Power Utility prior to 1999), a methodology of adjusting the average tariffs to long-run marginal costs, and design and installation of a legal and regulatory framework. Component A intended also to support a study on the legal and regulatory framework for the petroleum sector, and marketing and pricing of petroleum products, especially propane. Following the conclusion of the Sector Management Study, on 30 June 1997, discussions were held with Government authorities in March 1998, after which the Government approved a new sector structure comprising mainly of SOGEPE (Société de Gestion du Patrimoine du Secteur de l'Electricité - a state company, with responsibility to manage the power sector assets on behalf of the state), SOPIE (Société d'Operations Ivoirienne d'Electricité – another state company that plans, organizes and implements, on behalf of the state, major upgrade and development of the electricity sector), and finally, ANARE (Autorité Nationale de Régulation). At the same time, a system of tariff adjustments was adopted to allow tariffs to: (i) reflect the costs of generation, transmission and distribution, (ii) ensure viability of the sector entities; and (iii) allow for the accumulation of funds necessary for system expansion.

4.1.2 With regard to private sector participation, which the project was established to encourage, it must be noted that the CIPREL Phase-I project was already in place and its very existence contributed to the timely and satisfactory completion and operation of CIPREL Phase-II. Furthermore, the additional power generation project Azito, financed by IFC through a loan to the private sector with IDA partial risk guarantee, was implemented satisfactorily and provided an additional capacity of 300 MW. Although the conditions for private sector participation had been initiated prior to the project, it is safe to aver that the

institutional Component of the project did contribute to the strengthening of favorable conditions for such participation as the Azito project demonstrates.

4.1.3 Although the sector was experiencing marked improvements as outlined above, the country as a whole underwent a traumatic upheaval with the *coup d' état* of December 1999 and the subsequent political events. As a result of these difficulties, the Bank, in the period under review, twice suspended disbursements (October 2000 to January 2002 and June 2004 to present) because of arrears to the Bank. It is, therefore, natural that the effects of the reform movement, albeit successful in their main thrust, were severely hampered under the circumstances which, of course, extended far beyond the reach of the sector.

4.1.4 As a result of the political turmoil, it would appear likely that investor perception of risk was severely affected. This is even the more regrettable because the country was in a leading position in terms of introducing economic reforms and market institutions in all of Africa. However, the positive outcome is confirmed by the present perceptions and future prospects in the sector. Because the operation of the sector was entrusted to the private sector company CIE, including the authority to make collections and impose cut-off penalties for nonpayment, authorization to retain its own (CIE's) expenses and agreed fees, and make payments to IPPs for contracted (take-or-pay) power, and to gas suppliers on a priority basis, investors have maintained their confidence in the health of the sector to the point that they would be ready for additional investments. With this perspective in mind, it is safe to state that the outcome of the reform has been satisfactory (see also para. 4.5.1).

4.1.5 In the petroleum sub-sector, the project aimed at creating a legal and regulatory framework and to allow competition and optimal resource utilization in light of Government plan to privatize two of the sector companies, SIR and GESTOCI. In this respect, nothing much was accomplished as the privatization plans for the sector were placed in the back burner. Clearly, the project, with its emphasis on power, did not include any levers to allow the Bank to exert substantial influence in this sector. This study and its implementation would have been more effective if included in a petroleum-sector operation. More details are given in Section 4.2.

4.1.6 The second objective**,** to improve power supply reliability, reduce environmental impacts, and reduce the cost of electricity, was accomplished more than adequately under the Generation Expansion Component of the Project. Details are presented in paras 4.2.3 and 4.2.4.

4.1.7 The third objective, namely to enhance operational reliability and efficiency of transmission, was accomplished under the Power System Reinforcement Component, Part C of the Project. Details are discussed under Section 4.2.

4.2 Outputs by components:

4.2.1 The outputs of Part A, Institutional Development, are the studies supported by this Part and the adoption of their results and recommendations.

a. The first part of the Power Sector Management Study (sub-component (i)), was focused on the new structure of sector entities. The contract award was granted, in September 1996, to consultants Ashurst Morris-Crisp who associated themselves with consultants NERA-London and ESB-Dublin. The study was submitted on time, in March 1997, and after review and comment, in final form, on 30 June 1997. Following a discussion among Consultants, World Bank, and Government, the recommendations of the study were approved, on 16 December 1998. Three new sector entities were created, SOGEPE, SOPIE, and ANARE in lieu of the old ones. Based on this outcome, substantial work remained to be done on the realization of the proposed restructuring plan, profiling of the staff, and recruitment of the reformed entities. NERA alone was given this task for a follow-up study which was submitted in final form on 31 March 1999. Recruitment of management and staff for the new companies was launched on 15 of June 1999. A further follow-up study for the sector structure at the end of the CIE concession agreement was awarded to NERA and was concluded at the end of June 2004. The outcome of the restructuring presents a mixed picture. By all accounts, including views of practically all sector players in the field, nothing much changed from the old structure as the old organization of EECI was broken up

into three companies which continue to be and act like state entities in all respects. The major accomplishment in this regards was the breakup of a monolithic and unresponsive organization which had become a state within a state and whose power was impossible for anyone to challenge effectively. The private sector states that the three new entities are more responsive to its needs and are more likely to be a reasonable interlocutor, while at the same time it complains that overlapping functions and lack of clear lines of responsibility cause much delay and aggravation in the operation of the sector. The creation of a Regulatory Authority was, of course, overdue and the importance of its creation cannot be overemphasized. However, its independence has not been established as it can only act as advisor to the Government on issues of tariffs, not as an independent authority taking decisions on its own. In addition, a regulator needs enforcement capability which is at present lacking. On the positive side, it must be mentioned that the Regulatory Authority includes representatives of consumers, who can thus be heard at the highest level of government. In conclusion, the restructuring has only taken its first step and has a long way to go before it becomes real, effective, and credible. The NERA study, completed in June 2004, has drawn lessons from the past sector reorganization, and has addressed the weaknesses of the past sector set-up.

b. The Technical, Accounting and Financial Audit of the sector was deemed a necessary part of Component A because it was viewed as a prerequisite to the transition to the new structure with transparency. This study was awarded to consultants Arthur Anderson-France, which started execution on 15 March 1998. In January 1999, the Groupe Projet Energie (GPE), the local committee in charge of project implementation, expressed dissatisfaction with the performance of Arthur Anderson. A preliminary report was submitted, in October 1999, and a committee of the new sector entities was formed to review and comment on it by end June 2000, and later a final report was submitted with a software for asset management. Hydro-Quebec had been retained to perform the technical aspect of the audit, but GPE expressed the opinion that it contained large gaps and the Bank mission expressed concern. It appears, from the record, that the output under this sub-component was not performed in a satisfactory manner.

c. The Power System Investment Operations and Pricing Study, which formed sub-component (ii) of Component A, encompassed four studies (generation and T&D investments; the Soubré project; the Vridi old-unit rehabilitation; and a tariff study. The first was a Demand Forecast and Master Plan for Generation and T&D equipment investments. A Master Plan for the Distribution Network of Abidjan was planned under this subcomponent. The study was completed and accepted by the government; it can be the basis of future plans for investments in this sub-sector.

d. A second study was to focus on the Soubré Dam and its potential contribution to the electricity system of Côte d'Ivoire. Several delays in launching the study were experienced and finally, on 16 April 1999, the contract was awarded to Coyne et Bellier-France, which undertook to submit the results by end December 2000. The study was completed and the results were accepted by the borrower as a basis for an investment project in that location, pending financing.

e. A Master Plan for Rural Electrification is an important part of sub-component (ii) of the project, as this activity carries strong political overtones and entails potentially large costs. The invitation to present offers was issued on 6 March 1997. Consultant Tractebel was awarded the contract and work started on 22 September 1997. The preliminary report was submitted in September 1998 (after several months of delay) and a final was sent to the Bank on 15 June 1999. Although the products of the study form the basis for planning of rural electrification plans by SOPIE and appear to have been useful in many ways, the borrower is partially satisfied with the results of the study as it did not take into account all possible options such as the use of renewable energy resources, which, it must be said, were not part of the scope of work of the Consultant.

f. Finally, a Tariff Study was planned under sub-component (ii) of Component A. The study was initially planned for launching in March 1998 but was delayed and a contract was signed on 20 September 1999 with Hydro-Quebec International and SNC-Lavalin with the objective of completing it in 8 months. Work on the contract started in May 2000 with a draft due in July 2000 and a final report in November 2000. Delays marred the completion of this study (due to the sociopolitical situation) and its

final results, which recommended a tariff increase, were rejected by the borrower, who stated his intention to re-launch the study with new terms of reference that better match his needs.

g. Under sub-component (iii) of Component A, the main study was the development of Standard Bidding Documents (SBD) to be used in activities of sector privatization. The invitation for offers for this work was issued on 3 June 1996 and, on 1 August 1996, a contract was awarded to K&M Engineering. The contract experienced serious delays but a final draft, following discussions with Government and other sector persons, was submitted in January 1999. This piece of work, not provided in time for Azito, will serve well the Government in infrastructure projects involving the private sector.

h. At project initiation and SAR, there was an intention to conduct a study of generation costs at the old steam units of the Vridi power plant. At some point in time, the original supplier of the units "Babcock & Wilcox" was offered the old units at a nominal price (US$ 1) to take over and operate them but the offer was declined. It became progressively clear that the old units were too cumbersome and dirty to operate, and environmentally unviable, and were thus abandoned by the contracted operator, CIE; the question of calculating its costs became moot. Hence, no such study was conducted.

i. The last sub-component (iv), of Component A, was dedicated to hydrocarbon sector studies. The project's priorities were clearly not in this sector and, hence, delays were experienced in the studies' initiation. The only studies that had anything to do with the sector were actually to service the power sector. Such were (i) a program of standardization and calibration of natural gas meters, coupled with necessary training, to ensure reliable readings of gas fed to the gas turbine plants, and (ii) a study estimating the gas reserves of the country, which was aimed at providing assurance to the IPPs as to the adequacy of gas supply for the duration of their contracts. The contract for the calibration of gas meters, including extensive training of operator staff in Côte d'Ivoire and overseas, was signed on 1 August 1998 to "Cete Apave Sud" and work was launched immediately afterward, on 20 August 1998. This study and training produced a much-needed output and was successfully completed.

j. Sub-component (iv) also supported a petroleum sector study comprising (a) developing the legal and regulatory framework for the petroleum sector and (b) working out a hydrocarbon sector strategy and butane utilization. This study was deemed necessary especially in view of the Government's intention to privatize two of its main petroleum companies, the refinery SIR and, GESTOCI. The second part of the study was aimed at developing an LPG industry for domestic consumption and export. The study was awarded to "Coudert Frères", paired with "Booz, Allen, and Hamilton" and was scheduled for completion by September 2000. The study hardly got off the ground and did not produce any results (see also para. 4.1.5). The difficulties in the conduct of the studies of this subsector were compounded by the split of the portfolios of power and hydrocarbons into two ministries, the split lasting until 1999 when the ministries were reunited.

4.2.2 One of the important objectives of the studies, as they were to be accepted and implemented by the Government, was the encouragement of the private sector to enter. It was during the course of the project under the present review that the Azito power generation project (300 MW of gas turbines to be later upgraded by the addition of a 150-MW of a steam cycle) was designed, financed and implemented by the private sector with the financial assistance of IFC and IDA partial risk guarantee. This was the second IPP to be established in Côte d'Ivoire. The supply-and-erect contract was awarded to ABB in June 1997 and was completed in January 1999, with IFC and Private Banks financing and an IDA PRG. It must be concluded that the project under review was instrumental in providing the necessary momentum for Azito by providing (i) the demand forecast which showed the need for additional power, and (ii) the information on the security of natural gas supply for Azito operations in the short and medium term. Also, the facts that: (i) CIPREL revenues increased after the commissioning of CIPREL-II, and (ii) payments to CIPREL have continued regularly despite the financial difficulties of the Government, must have been important encouragement for further participation of the private sector in the country.

4.2.3 The Generation Expansion, Component B**,** was concluded in an exceptionally satisfactory manner. Invitations to bid were issued on May 15, 1995 but rebidding was decided which took place on October 15, 1995. The contract (signed on May 9, 1996) was awarded to European Gas Turbines (EGT)

which won the bidding contest at a price considerably lower than estimated at appraisal, owing to keen competition among bidders and the rapid developments in the technology. The actual price for gas turbines of US$ 38.24 million equivalent was 21% lower than the SAR estimated cost of US$ 48.22 million equivalent and, at this price, the turbines acquired had an actual capacity of 135 MW, ISO conditions and 110 MW site conditions, as compared with an SAR planned capacity of between 75 and 105 MW, also ISO conditions. The actual capacity was thus 50% higher than the average of the expected range at appraisal. The lower cost of the gas turbine combined with higher-than-expected efficiency (10,100 vs. an expected 12,000 BTU/kWh) allowed for a reduction in the contract price of electricity of CPREL-II from 12.2 to 10.5 FCFA/kWh.

4.2.4 Furthermore, implementation of this Component was not too far off from the SAR planned date. Although the SAR projected turbine start in December 1996, the EGT contract, because of delays in contracting, required a start in February 1997. The actual record shows that the Certificate of Completion was issued on June 14, 1997 and the Operational Certificate (or the Government's Certificate of Compliance) on February 5, 1998. Completion of turbine installation was accomplished just 13 months from contract signing while operational acceptance was performed 21 months from contract date. This performance is considered highly satisfactory. This Component fulfilled the objective of increasing the supply of reliable additional power to the Ivorian system or, alternatively, facilitated the retirement (in 2000) of the old steam units at Vridi (with a nominal capacity of about 214 MW). Since its commissioning, the gas turbine of CIPREL II has been operating well, under full capacity, and with a high availability factor.

4.2.5 The Power System Reinforcement component, Component C of the Project, representing about 26.5% of total project cost, was also accomplished, fulfilling the objectives stated at appraisal. However, its implementation was more bumpy than that of Component B. Originally, it comprised four sub-components: (a) extension of a 90-kV line; (b) tapping an existing 90-kV transmission line; (c) rebuilding the Treichville substation; and (d) replacing about 6 km of paper-insulated cables. The first part to be bid was item (d); the invitation to bid was issued on March 25, 1996, and the contract with the winning bidder, "Pirelli Câbles", was signed on July 3, 1996. First delivery of cables took place in September 1996. Other contracts experienced delays and miscellaneous other problems, including cost over-runs, delays in obtaining Administration signatures, shortage or lack of counterpart funds to cover customs duties, and difficulties in obtaining approval for payments in local currency.

4.2.6 The implementation of the various subcomponents under Component C, was conducted by GPE. At SAR, the component was to have been completed by mid-July 1999. However, with delays experienced, project closing kept being postponed from the original closing date of end of 1999, through five extensions to 2004. The delays in this Component were caused in part because attention was shifted to the new power station at Azito, which caused some reconsideration of transmission system configuration and moved some works under the latter project from the original project considered in the SAR. It is also fair to say that the suspension of Bank disbursements, October 2000 to January 2002 and again in June 2004 to the present as well as the unrest in the country, contributed to the delays suffered by this component. Aside from the delays that have been observed and were caused by reasons discussed above, the intended outcome of this component, namely the strengthening of the transmission system, with emphasis on the rings around the Abidjan region, was accomplished, rendering the system more reliable. Detailed figures of network and substation outages in the years 1999 to 2004, provided in the Borrower's section 9 of this Report (sub-section III-3-3), clearly indicate that substantial improvement in the reliability of the high-voltage network has been brought about.

4.2.7 In order to assist the Borrower in properly designing and implementing the components of this Part C of the project, a consultancy was included in the component's scope. After the invitation-to-offer was issued, on May 25, 1996, and after receipt of submissions, a contract was awarded to SNC-Lavalin on September 10, 1996. From reports received in the field, and from the actual record of this component, it appears that the performance of this consultant was problematic.

4.3 Net Present Value/Economic rate of return:

4.3.1 In conducting the economic analysis, which was calculated for the entire system and compared

figures with and without the proposed investment, including CIPREL-I and II, the SAR had made the following main assumptions (for details, see also Annex 3):

Installed Capacity of CIPREL-II:	90 MW
Plant Availability:	77%
Electricity consumption growth:	5% /yr
Exports:	60 GWh/yr
Economic Cost of gas: (eq. to US$ 5.20/bbl of oil)	US$ 0.87/mcf of gas = US$ 0.87/MMBtu = US$ 0.83 /GJ.

Incremental benefits = (Incremental Sales) x (US$ 0.048 /kWh) which is the netback cost at the point of generation starting with an average tariff of US$ 0.106/kWh and subtracting the cost of T&D estimated at US$ 0.058 /kWh. On the basis of these and other assumptions, the EIRR was estimated at 34%.

4.3.2 In performing an ex-post economic analysis, the following assumptions were made: incremental benefits were calculated as (i) the actual record of output of the CIPREL-II plant (with a capacity of 111 MW instead of 90 MW at site conditions, averaged over the years of record to derive the projection over the remaining years of the 20-year period; and (ii) a reduction of energy-not-served of about 1% of total forecast demand, owing to the improvements of the transmission system, multiplied by the same value of energy-not-served used in the SAR, namely, US$ 0.37/kWh. The assumption of a 1% reduction in energy-not-served is a conservative one as in similar projects, the benefit of such investments is taken as several percent of total electricity demand. Demand forecast was derived from the recorded level of 5,620 GWh in 2004 with a growth rate of 2% - a conservative assumption - over the rest of the period, including exports. Future sales of CIPREL to the grid may be even higher than contracted owing to the demand for imports by neighboring countries, but this was not taken into account in the analysis. Tariffs were reduced by 7% in 1997 and raised by 10% in 2002. For simplicity, the same netback for the value of generation used in the SAR was used in the ex-post analysis, namely a value of US$ 0.048/kWh. It must be noted that current average tariffs are at the level of FCFA 58/kWh or US$ 0.105/kWh compared to US$ 0.106/kWh assumed at SAR. On the cost side, first, the investment costs were entered as the disbursement record indicates, including the investment in all three components of the project. Second, operating costs of the CIPREL-II plant were entered on the basis of figures supplied by CIPREL for 2004 and assumed constant over the period of the project. These costs include an item of heavy maintenance which was assumed to take place every 5 years and hence the cost was divided by 5 to derive annual costs. An amount of US$ 1 million was added annually to the O&M expenses to account for unforeseen circumstances. Third, the cost of fuel was estimated from actual consumption figures supplied by CIPREL; when actual figures were not available, reasonable estimates and extrapolations were made. Notice that in the SAR, the economic cost of fuel was assumed on the basis of the existing fuel contract and of market projections at a level of US$ 0.87 per MMBtu as compared with much higher fuel costs actually experienced (up to about US$5.14 /MMBtu in April 2005). The additional benefit from the reduction of sulfur and nitrogen oxides, resulting from the retirement of the old steam units operating on HFO, was not taken into account. Also, the analysis did not account for the additional incremental benefits (up to 50% additional kWh's produced without any additional expenditure of fuel) that will accrue when a combined-cycle operation is added to CIPREL II, as has been the intention from the inception of the project. These facts make the assumptions used in the analysis highly conservative. The ex-post economic analysis indicates an EIRR of 48% (tables in Annex 3); it is clear that the higher EIRR is due to the fact that the incremental benefits of the project are larger and capital costs lower than estimated at SAR despite the increase in gas price.

4.4 Financial rate of return:

4.4.1 The SAR performed a financial analysis of CIPREL, the company that would receive the onlent funds of the Credit in order to establish its credit worthiness. The analysis estimated that the company would have a financial rate of return of 15.8% with both CIPREL I and CIPREL II in its assets. A new analysis was not performed for the ICR but as the company produces more electricity (higher capacity of CIPREL II than originally estimated) and the cost of turbine acquisition was lower by 21%. The ex-post financial rate of return of the company should be higher.

4.5 Institutional development impact:

4.5.1 Starting in 1990, and under the provisions of the ESAL, the Government awarded a management contract (of a type called "Affermage" - the first in Africa) to Companie Ivoirienne d'Electricité (CIE) - to operate the country's power assets. Côte d'Ivoire was the first country in all of Africa to introduce an IPP, the CIPREL IPP power project, while also embarking on a restructuring of EECI, splitting off the regulatory function and setting a tariff methodology to ensure the financial health of the sector. The studies financed under the project (Component A) led to recommendations of sector restructuring which were accepted by the Government and put into practice with the formation of the new power sector entities, SOGEPE, SOPIE, and ANARE, as discussed in detail in para 4.1.1. Under a decree, issued by the Government in 1998, IPPs have *pari-passu* rights to revenues generated in the electricity sector to cover the amounts due them under their respective concession contracts. The private sector manager, CIE, was given the authority to conduct the physical and financial management of the sector, most importantly, to ensure an adequate level of collections and make payments to IPPs for power delivered and gas suppliers. This step, although not constituting a real restructuring, set the stage for further reforms. The follow-up study by NERA made more detailed recommendations for a more complete and effective restructuring but these have yet to be put into practice. Based on the above discussion, and balancing the limited degree of reform accomplished thus far with the further steps being considered at this time, it is judged that the institutional development impact has been modest.

4.5.2 The operational performance of the new entities cannot be fully evaluated because the sociopolitical unrest and associated warfare in the country after December 1999 has taken its toll and has stunted the favorable impacts of the reform as the country went into economic decline and relations with donors were damaged or severed. It must also be noted that consumption in the northern part of the country, that is occupied by the opposition to the Government (about 15% of total), has not been billed but the flow of power has not stopped nonetheless. In reality, the new entities continue to operate as government entities, often with overlapping jurisdictions and without the necessary legal background and actual institutional strength that would enable them to operate as corporatized entities with the ability to make investment decisions and borrow in the market. The best that can be said about the achievements of the restructuring is that, once the EECI was abolished and new entities were created, follow-up steps that are yet to be taken but are being actively considered by the Government, will move the sector further onto the path of full and real reform.

4.5.3 In the petroleum sub-sector, the intervention of the project does not seem to have had any substantial effect. The state is in control of the sector with concessions given to several foreign companies to explore and produce oil and gas. Gas prices have been indexed to petroleum prices (West Texas Intermediate) and the indexing has been applied without fail in the market. However, the introduction of a sound and transparent legal and regulatory framework is of paramount importance as the Government recognizes. Such a development is being contemplated by the Government.

4.5.4 An extensive program of training of staff of restructured energy entities has produced new cadres who will propagate the reform spirit in the country in the future and who will be in a better position to manage the restructured entities with efficiency, transparency, and professional standards.

5. Major Factors Affecting Implementation and Outcome

5.1 Factors outside the control of government or implementing agency:

5.1.1 It is an undisputed fact that the political upheaval and the ensuing hostilities had a major negative effect on project implementation, especially on the completion of a number of studies and of the Power System Reinforcement component. This is so not only because of the lack of IDA financing, due to the suspension of disbursements, but also because the focus of attention of local agents was deflected from the project. The security risks in the country affected also the frequency of visits by Bank staff to provide supervision and advice on critical aspects of the project. It is a matter of contention whether these political and military events can be considered as being under the control of the Government; certainly not of the implementing agency. If the peace process were more effective and timely, a return to normalcy could have taken place at an early stage. As it is at this moment,

agreements signed between the political antagonists, namely the central Government and the rebels, have yet to take effect on the ground and the northern and north-western territories are not under Government control. As of June 2005, the country remains in non-accrual status, with disbursements suspended.

5.1.2 A few of the studies were not completed on time or in a satisfactory manner (for example, the Technical, Accounting and Financial Audit). Their delay may have caused a ripple effect on other studies or restructuring actions that depended on it. It is fair to say that these difficulties were, to some extent, outside the control of the Government. The Implementing Agency made efforts to correct the deficiencies and re-launch the studies.

5.1.3 Gas prices, which are pegged to the international price of crude (West Texas Intermediate-WTI), and to the extent they affect the financial viability of power entities, are outside the control of the Government. The agreed tariff formula includes the effect of fuel price changes but, under the current sociopolitical conditions of the country, these changes have not yet taken effect.

5.2 Factors generally subject to government control:

5.2.1 One result of the two suspensions was that a restructuring of the project to allow the savings gained from the lower bid price of the gas turbines to be spent on other needed investments, such as additional studies and training and T&D System upgrades, was not realized. If the Government had complied with the requirements throughout the project's time span and had not requested a total of five project extensions to September 2004, this reallocation would have been possible and the project would have had the benefit of the full amount of the Credit, with a resulting larger impact on the electricity sector.

5.2.2 The delays experienced with implementation of the Power system reinforcement were the result of loss of focus by Government agencies in charge with implementing component C of the project and of the relative ineffectiveness of the Implementing Agency which was originally called "Group Projet Energie" (GPE) and later (1999), redefined with new composition, as Coordination Cell. The loss of focus was caused by (i) the internal political turmoil and violent strife in the country by end 1999, but also by (ii) shifting attention to the Azito project - completed in 1999 - (with a substantial capacity addition of 300 MW), which also affected some investment plans originally envisioned in the SAR. This shift in focus could have been avoided by assigning the necessary personnel to each component and sub-component and by having in place a more effective implementation group, such as a dedicated PIU.

5.2.3 Tariff adjustments were made twice in the period of the project, a tariff reduction in 1997 and a tariff increase in 2002. The 1997 adjustment was made when the cost of the turbines was lower than estimated by about US$ 10 million but mostly, according to local persons, in order to counterbalance an increase in water tariffs that had been introduced at about the same time. The only tariff increase was a 10% increase in 2002. The Government did not remit part of the VAT tax to the sector as had been agreed and government agencies were in serious payment arrears for electricity consumption. The Bank missions made representations to the Government to take appropriate measures for the stability of the sector, which the Government was slow to adopt mainly for political reasons and in light of the internal strife. As a result, the financial long term stability and viability of the sector could be jeopardized.

5.3 Factors generally subject to implementing agency control:

5.3.1 The implementing entity (GPE - see also para. 5.2.2) was an inter governmental committee formed by Government Order (arrêté). In the case of Component B, CIPREL, acting under contract, managed the implementation of the component but the final administration of the process was in the hands of GPE. Whereas the Bank has often utilized a Project Implementation Unit (PIU), with the proper skill mix and adequate compensation, to be installed by the borrower to ensure efficient and dedicated management of the project on a full-time basis, a Committee was instituted in this case. The record of GPE performance is mixed. It seems that many of the dysfunctions and problems encountered in the execution of the project originated in the management style of this body. It is not reasonable to expect

that a committee made up of persons from various government bodies (some of which may have had different approaches or even conflicts among themselves, as was reported to the ICR mission) and headed by the "Directeur de Cabinet" of the Minister, could perform efficiently the tasks normally expected from the PIU.

5.3.2 Component B was essentially implemented by CIPREL but under GPE oversight. A complaint was filed by CIPREL that the contract with the gas turbine supplier had left some gaps that needed to be filled later (through a contract rider) through negotiations that caused aggravation between CIPREL and the successful bidder because of contractual delays (rebidding), the completion of this component was delayed by six months as compared with the SAR date. This difficulty must be attributed to CIPREL, which prepared the bid documents and the contract. The Implementing Agency should have exercised caution to ensure that bidding documents with the necessary provisions and clarifications on the disputed items were used and that the contract documents included all the necessary clauses. Overall, the delay in Component B, which was not significant, can be viewed as within the control of CIPREL.

5.3.3 Due to the already mentioned delays and suspensions by IDA, the disbursement of the Credit lagged significantly behind SAR figures (Annex 2). By the time of the mid-term review (1998), only about 40 % of Credit proceeds and about 50% of the planned amounts had been disbursed. By end of 1999, the original closing date, the disbursement was about 60 %. The Bank communicated a request for disbursements acceleration and actually extended the period for disbursements after the closing date for eligible expenditures made before the Closing Date. After repeated Closing Date extensions (see Section 7.2.7), the Credit was closed at the end of September 2004, leaving a saving of about US$ 10 million, which were cancelled.

5.3.4 The Implementing Agency for Component C, System Reinforcement, was the Groupe Projet Energie (GPE). Delays were experienced partly because of consultants' nonperformance, which may in turn have been due to nonpayment of fees owing to the suspension and repatriation of expatriates, due to the civil unrest, and partly owing to GPE lack of vigorous action. Timely action to redress the problem, fully within the Implementing Agency's control, was not taken.

5.4 Costs and financing:

5.4.1 The table below summarizes the original cost estimate by Component, and the cost, in US$ equivalent, at the completion of the Project.

Table 5-1: Project Costs at SAR and at Closing

	US$	
Description	**At Appraisal**	**At Closing**
CIPREL Phase 2	48.30	35.81
Engineering Services	1.70	2.09
Transmission Component	21.05	23.78
Equipment and Vehicles	0.65	0.31
Consultant Services and Training	7.66	9.12
Contingencies	4.77	
IDC	2.16	
Total	**86.29**	**71.11**

5.4.2 The original estimated cost of the project was US$ 79.60 million, excluding contingencies and interest during construction. If these amounts are added, the total costs to be financed, was expected to be US$ 86.29 million. Of these, IDA undertook to finance US$ 79.66 million or about 95% of the total cost of the project, while the Government undertook to finance the remaining 5%. There were no other financiers except IDA and the Government. Considerable savings were obtained by securing the supply of the gas turbines at a price that was lower by about 21% compared with the SAR estimate. Toward the latter years of project implementation, there have been attempts by the Government supported by the Bank missions, to revise the project components to enable the Government to utilize the savings in

procuring additional studies and equipment for transmission system upgrading. However, owing to the difficulties stemming from civil war and the suspension of disbursement by IDA, the plan for reallocation of Credit proceeds did not materialize. As seen in the Table above, there were about US$ 9.97 million of savings which were eventually cancelled.

5.4.3 The fact that IDA covered practically all foreign costs and was the sole financier aside from the Government, simplified the financing of the project and the disbursement of funds.

6. Sustainability

6.1 Rationale for sustainability rating:

6.1.1 The reform of the power sector – as explained and in Section 4.2.1(a) - was an important step towards ensuring the sustainability of power sector operations. The step taken in 1990 by contracting the private sector company CIE to manage the sector was a crucial event bringing about rational operation and ensuring payments to IPPs that continued even through the socio-political events. The CIE contract prepared the ground for further private sector involvement as was later shown with CIPREL-I, CIPREL-II and Azito. However, questions relating to the resolution of the socio-political conflict and the unclear prospects for the future structure of the sector cast a shadow of uncertainty on the sustainability of the reforms.

6.1.2 The Independent Regulator has a large role to play in the financial sustainability of the sector. The role of the Regulator will be the more important, offering reassurance to private sector entities, the more he is independent, capable, and objective; this is not yet the case but its creation was a move in the right direction.

6.1.3 The introduction of natural gas as the dominant fuel for power generation is a double-edged sword. On one hand, the superior environmental performance of gas turbines and their higher efficiency when operated in combined cycle, which has yet to be realized, ensure low air emissions per kWh generated, including lower emissions of greenhouse gases. This aspect ensures sustainability from an environmental point of view. On the other hand, the true generation cost of gas turbines depends strongly on the cost of natural gas. If the price of gas is included in the calculation of tariffs, as the agreed formula requires, and if this price is indexed to oil or to the international gas market, the resulting tariff would be higher than the current tariffs, as the tariff study recommended. Currently, and given the political situation, in order to avoid tariff hikes and to allow payments to IPPs to continue uninterrupted, the Government foregoes receipt of payment for its own portion of the gas used by the generators, thus providing a subsidy to the sector, which would not be in balance otherwise.

6.1.4 In combined-cycle operation, with a much better heat rate of about 7,350 GJ/kWh (as compared to a single-cycle heat rate of 10,200 GJ/kWh, at best), the fuel cost component of the kWh as a function of gas price would be lower by as much as 40%. Movement toward this goal would enhance long-term affordability of the gas-generated power and hence sustainability of the project's results.

6.1.5 Training has long been recognized as one of the best ways to ensure sustainability. Extensive training was included in project design as an item of most sub-components. Such training took place in matters of technology (for example operation and maintenance of gas turbines and T&D systems) as well as in financial and managerial aspects (relevant documentation was provided to the ICR mission).

6.1.6 In light of this, CIPREL feels confident in continuing its production and sales to the power sector and does not view the future with apprehension. In contrast, CIE, being in the last months of its management contract with the state (ending on 31 October 2005) feels somewhat uneasy regarding the new arrangements which are currently under negotiation. They have stated, with justification, that its absence from the power sector (if such were to happen) would make the private investors in power generation very uneasy.

6.1.7 There are uncertainties regarding the sustainability of the sector and the project, mainly referring to the future of the political reconciliation and normalization effort as well as the future actions of the

Government with respect to sector reforms. Taking into account all the factors discussed in this section 6.1, the sustainability of the project and the sector is considered Unlikely.

6.2 Transition arrangement to regular operations:
The restructuring of the sector has been partial and incomplete. The follow-up NERA study provides guidelines and recommendations for a more effective restructuring. The Government is now considering further actions in the sector based on this study.

7. Bank and Borrower Performance

Bank
7.1 Lending:
7.1.1 During the months of project preparation and appraisal, the Bank's team worked well with local authorities to prepare the components of the project. The Bank's Standard Bidding Documents were given to the implementing agent and provisions for the invitation to bid were made in the first three months of 1995, the invitation being launched in March 1995. In visits prior to Board approval, the Bank's missions discussed and agreed with the Government and the implementing agent the components of the project. A Letter of Sector Development Policy was agreed and was finalized during negotiations as was a mechanism for tariff adjustment to be adopted. Terms of Reference for a number of studies planned under the Credit had been prepared and agreed. Some studies did not attract the same attention at project preparation because it was thought that (i) time was available during implementation and (ii) they may have been dependent on the outcome of the first studies. The cost estimates for the project's components were also checked against international prices for similar projects. It so happened that the cost of the gas turbine was overestimated but the substantially lower cost of the winning bid can be attributed to the keen competition among suppliers and the rapid development of the field.

7.1.2 Although the SAR makes no mention of environmental category, environmental concerns were present during the preparation and appraisal period, as evinced in other project documents, and a request was made to CIPREL to provide data on the likely impacts, with emphasis on air emissions and noise levels. The Environmental Impact Assessment (EIA) study, originally conducted for the integrated Foxtrot project (comprising gas wells plus a power station) was used, supplemented by a study by CIPREL focusing on changes in project scope. Specifically for CIPREL II, the substitution of one GT operating on natural gas for the steam units (2x32 + 2x75 MW nominal) operating on heavy fuel oil, which were to be retired, as they actually were in 2000, would obviously reduce dramatically the emission of pollutants in the air. However, the text of the SAR does not make adequate mention of pollutants, especially nitrogen emissions, although such emissions are a major concern in gas turbines. The more detailed Annex 4-8 of the SAR does mention nitrogen oxides but in a cursory and inadequate manner. Specific requirements for technical measures to reduce nitrogen oxides should have been mentioned and the obligation to comply with limits set by local and international standards and/or Bank guidelines should have been stated. In actuality, the winning bidder did make the necessary undertakings in terms of environmental issues, including emission levels; nevertheless, the almost total absence of discussion of environmental issues in the SAR constitutes a serious deficiency. Training was included as an integral part of the project's components.

7.1.3 The Bank, in its desire to support the private sector involvement, but constrained to lend to the public sector, used an innovative approach by lending to the Government which on-lent the proceeds of the Credit to the private investor at market conditions. The scheme proved successful as shown primarily by the under-cost and basically on-time implementation of the generation enhancement component of the project. The SAR did not include a section on risk as it was prepared on the older template. The risks of the country going into non-accrual status were not identified at the time of project appraisal and Board approval.

7.1.4 The lending by IDA is characterized by a few deficiencies, namely in (i) lack of adequate emphasis on environmental issues in the SAR; (ii) absence of documentation on the Environmental Mitigation Plan (EMP); and (iii) the design of the project's implementation arrangements. However, on

balance, it is judged as satisfactory.

7.2 Supervision:

7.2.1 The SAR includes a detailed plan, agreed with the Borrower, for supervision of the project by Bank staff. It provided for two supervision missions in 1995, the year of project Board approval, and three missions annually thereafter. The actual record shows that missions were not as frequent as planned (Annex 4): there was no supervision mission in 1995, one in 1996, one in 1997, one in 1998, and two in 1999, the year of original project closing. The time lapsed between supervision missions was at times more than twelve months. The supervision teams were at times composed of the necessary number of persons with an appropriate skill mix and assisted the Borrower and Implementing Agency by providing needed consultation on implementation aspects, but at other times only one member constituted the supervision mission. Clearly, the normal practice of about two supervision missions per year was not adhered to; this is attributed by the Team Leader to budget constraints. Progress reporting was more or less in line with Bank's requirements but the project files indicate that not all supervision missions resulted in the filing of a Project Status Report (PSR). There exist PSRs for the missions of Jan-Feb 1999, Oct 1999, June 2000, and one dated December 20, 2001 not obviously linked to a supervision mission.

7.2.2 The dialogue of the Bank with the Government on sector reform and governance issues during Supervision missions was constant and, for the most part, successful. This is reflected accurately in the Aide Memoirs, BTOs, and PSRs. The missions have tracked implementation quite closely, particularly the installation of the 111-MW gas turbine, which was the main component of the project. However, in some other respects, the supervision missions and their respective documentation show deficiencies.

7.2.3 Environmental issues are hardly mentioned at all in supervision documents although the project includes a generation component which is Category A. Even when environment is mentioned, in a couple of occasions, the focus is on relocation of people and impact of the transmission pylons. Nowhere can one read anything about emission levels (particularly of nitrogen oxides that can be a real problem in gas turbines if not properly taken care of), environmental monitoring, evidence of compliance with local and Bank standards, and the like. Similarly, the issue of noise from the turbine is ignored in supervision reports. In one occasion (mission of 21 Jan to 3 Feb 1999), and while considering the reallocation of Credit savings, the mission decided to include an environmental study but it was for the Azito plant which was not part of the present project and again it was focused on relocation and not on emissions and noise. The ICR mission found that environmental reports were prepared by an independent firm for CIPREL once a year and were communicated to a local team of the Ministry of the Environment which did not perform independent measurements. No continuous monitoring is done at the CIPREL plant but the figures of the once-a-year measurements are in compliance with standards. The tracking of environmental performance by supervision missions is judged unsatisfactory. On the training side, the supervision mission documents mention that substantial actions have been taken and up to 30 persons were trained in the country and abroad, not counting the persons trained on the gas turbine of CIPREL.

7.2.4 Component C, for system reinforcement and upgrade, lagged behind in completion, as shown in the successive mission reports. It appears that the pressure by supervision missions was not enough to induce the Implementing Agency to speed up completion of this component. Of course, the suspension of disbursements, contributed to the delays.

7.2.5 Supervision documents throughout the supervision period show a risk assessment of N (negligible) in almost all categories of risk. In hindsight, one might say that a more realistic assessment of risk could have been made. One could argue that, before the end of 1999, no one could foresee the events of the civil war that were to follow. Just before the *coup d'état*, in October 1999, the PSR gives a satisfactory rating to all Project Performance Ratings despite the fact that the Government and the implementing agents were in serious arrears and delays respectively and the sector experienced serious financial problems. For example, disbursement was 60% of Credit amount at the end of the original closing date. Similarly, risk rating seems to have been rather optimistic, given the circumstances on the ground. In the supervision report of the June-2000 mission, the summary risk is rated M (moderate) while other detailed risks were rated N (negligible) at a time of serious troubles in the country and the looming

suspension of disbursements.

7.2.6 It must be emphasized that, following the suspension of disbursements, repeated missions tried to assist the country to exit from the non-accrual status to allow the resumption of disbursement. In July 2001, a special IMF/Bank mission, agreed an Action Plan to be put into effect.

7.2.7 Because of the delays experienced, the Government requested, and the Bank agreed to, five consecutive project extensions, as follows: the first, to December 31, 2000; the second, to January 31, 2002; the third, to March 31, 2003; the fourth, to September 30, 2003 and the final extension, to September 30, 2004. Although this is beyond the number of extensions that the Bank normally may agree to grant, in this case, the effect of the suspensions and the civil unrest were recognized in granting extensions. Based on the above observations, the performance of the Bank during supervision is judged unsatisfactory.

7.3 Overall Bank performance:

7.3.1 In view of the mixed picture cited above, but taking into account the satisfactory preparation and the overall quality of the project, the overall performance of the Bank is considered satisfactory (Annex 6).

Borrower

7.4 Preparation:

7.4.1 The Borrower was assisted by consultants employed under an IDA PPF to undertake several technical and policy-related studies in preparation for the project. The studies included a feasibility study for the CIPREL II project, the Environmental Impact Assessment study by CIPREL, and terms of reference for the consultants who were to perform the various studies.

7.4.2 The Government had already started on the reform path with the first IPP in Africa and the "*Affermage*" contract given to CIE; both actions were crowned by success. During project preparation, the reform issues were discussed and broad acceptance of the Bank's views by the Government was obtained; a mutually agreed Letter of Sector Development Policy was successfully negotiated. The need for studies to underpin future action of the reform movement in the energy sector was agreed to. The evident need for power, given not only the domestic load growth but also the demand from neighboring countries (Ghana, Togo, Benin, Burkina Faso, and Mali) had convinced the Government that capacity additions were badly needed. The initially considered capacity addition of 66 MW was quickly abandoned in favor of a capacity of between 75 and 105 MW, which proved to be a winning choice as the cost of the bid for the 135-MW turbine came well under estimate. In addition, local authorities were well aware of the constraints of the transmission system, especially around the Abidjan region, and of the needs to evacuate the additional power. Antiquated equipment that was underperforming and unreliable had been identified, leading to the identification of component C of the project. The collaboration of local authorities, assisted also by the experienced private contractor CIE, was successfully obtained. Based on this experience, the Government's performance during preparation is rated satisfactory

7.5 Government implementation performance:

7.5.1 Credit effectiveness was delayed by about six month because the Subsidiary Loan Agreement between Government and CIPREL was delayed owing to the re-bidding of the gas turbine supply contract, which was outside the control of Government. The performance of the Government in project implementation is divided into two periods: (a) the Government from project initiation to December 1999 and (b) the Government that was installed after the *coup d'état.* Acceptance of sector reform was strong in the pre-Dec-99 Government and continued by the Government that succeeded it, showing that the reform idea had reached maturity in broad sections of the Ivorian society. The reform was unfinished as the old dominant organization of EECI was abolished, to be replaced by three new entities, which, however, continued to act in all practical sense, as Government departments. During this period (prior to Dec. 99), Government maintained its long term vision for the sector and the power needs to maintain the growth of the economy, as well as the electricity needs of the neighboring countries. In January 1999 a second IPP power plant of 300 MW (AZITO) was commissioned. This was the first power plant in Africa

to be financed by commercial banks with an IDA PRG. The difficulties recorded in the supervision reports are mainly in relation to financial performance, including arrears in payments to the electricity sector by Government agencies, and absence of, or delayed, or inadequate audits. The mechanism for payment of administration bills "*par douzième*" was interrupted in June 1997; in March 98, inadequacies are mentioned in accounting by FNEE; the Government is in arrears in its obligations to FNEE; documents necessary for financial accounting were not produced by CAA. In February 1998, recruitment of a qualified accountant for sector management was not done and updating of the tariff formula was not in place. In October 1999, the Bank protested that arrangements for audits for 1999 were delayed. The PSRs indicate that most covenants were complied with but some were not.

7.5.2 For the period after the coup d'état of December 1999, the sector was facing problems that were not expected. The country was split in half as a result of an army mutiny, and the northern half of the country was not accessible, from the power sector point of view, to CIE- the sector operator. In addition, the national electrical load which was experiencing a double-digit growth rate, stagnated with growth slowed down to almost zero in some years; and as a result, the quantity of energy contracted with the IPPs, under a take-or-pay contracts, was over and above the sector demand. During this period also, the oil price started to climb, and the Ivoirian gas, which is indexed to the West Texan Internediate (WTI) price, also increased. Faced with this dilemma, the Government called on the two IPP's, the power sector operator CIE, and the three oil companies producing and supplying the gas to the power sector, to discuss in an amicable way, a financial assistance from these private entities, either by renegotiating some of the contract terms or by asking them to forego some of their fees for later payments. The result of these efforts was negative as all private partners used their own financial obligations as an excuse for being unable to help. And as if this was not enough, Ghana, which was importing considerable amouns of energy from Côte d'Ivoire, was in arrears to the sector, at times as much as US$ 50 million. In the face of these problems (not to mention other severe problems related to the mutiny and the civil war), Government performance was remarkable and beyond expectations, as explained in more detail below:

a) Supply to the North. While the opposition to the government was occupying the North, staff from the power utility could not visit that part of the country to read the meters, present bills or collect. Despite this, power has never stopped flowing to that region. This represents a revenue loss of about 15% to the sector.

b) Supply to Burkina Faso. While the political environment between Côte d'Ivoire and Burkina Faso was at time clouded, electricity has never stopped flowing North to Burkina to supply Bobo-Dioulasso, the second largest city in the country.

c) Supply to Ghana. Despite the lack of timely payments to the Ivorian Power Sector for energy consumed by Ghana and the GORCI's interference at times to remind the Ghanaians for the amount due, GORCI never attempted to disconnect Ghana, which would have had also implications on the supply to Togo and Benin.

d) Payments to the IPP's. Government has made every effort to ensure that the two IPP's were paid on time, despite that the Take-or-Pay quantity of energy exceeded at times the system's demand. Nonpayment by the Government to Azito, would have triggered the IDA PRG with all its negative consequences for Côte d'Ivoire, Africa, and the emerging countries.

e) Payment to CIE(the Operator). CIE, having control of all the revenues of the sector (as the entity collecting customer bills), was never challenged by Government, even at the time of civil unrest or war.

f) Payment to the Gas Suppliers. Despite the facts that (i) gas prices increased at an unexpected rapid rate, as they were indexed contractually to the price of West Texan Intermediate oil; (ii) the gas is indigenous; (iii) a "Force Majeure" case could have been invoked; and (iv) the existing gas contracts were negotiated by the previous Government, the Government never attempted to force any changes to the on-going arrangements with the oil companies and payments for the gas were always made on time.

7.5.3 Contract prices had been agreed for CIPREL-II at 12.2 FCFA/kWh but the lower price of the gas turbine bid along with higher-than-expected efficiency of the gas turbine allowed the contract price to be lowered to 10.5 FCFA/kWh (see para. 4.2.3). The formula for tariff adjustment was submitted to the Bank on 18 April 1996 and the Government proceeded to lower tariffs for 1995-96 by an average of 7%. Corrections were made for tariffs in 1996-97. In 2002, tariffs were raised by an average of 10%. The Government, however, contributed to the financial problems of sector entities by not remitting the agreed portion of the VAT, and nonpayment of bills by Government departments, which are actions impeding transparent accounting.

7.5.4 Because of arrears of Côte d'Ivoire to the Bank, IDA suspended disbursements from 31 October 2000 to January 2002. The Government took swift action after the Referendum of August 2000, to start addressing the problems of the power sector. In July 2001, after a series of meetings with the utilities and the Bank corrective action was taken, that led to the lifting of the suspension in January 2002. However, at the end of that year, a mutiny erupted splitting the country into two warring camps and launching a destructive civil war. As a consequence, the problems of the economy and the sector seemed to reoccur and the Government could not, once more, meet its financial obligations to the Bank. Consequently, a second suspension was put in place, in June 2004, still in effect, with obvious negative impacts on the remaining components of the project, mainly the transmission system upgrading and a few uncompleted studies. This second suspension also frustrated the efforts of the staff to revise the scope of the project's components to allow for the use of the savings obtained from component B.

7.5.5 It is clear that the Government's record of performance is mixed with respect to the project. On one hand, there are laudable aspects, such as the acceptance of sector reforms, albeit unfinished, putting the restructured entities into place, and the judicious management of the sector at a time of crisis. Similarly, the Government is to be given credit for foregoing payment by the sector to it for its share of the cost of gas in favor of payments to private sector producers. On the other hand, there are a number of instances of inadequate response to the Bank's requests: inability to energize adequately the personnel of the GPE for timely implementation, nonpayment by Government departments, and failure to meet financial obligations to the sector and the Bank. On balance, and based on the Government's commitment and the indisputable fact that the sector performed well in times of difficulty, the Borrower's overall performance during the project is rated satisfactory.

7.6 Implementing Agency:

7.6.1 The implementing agency for the project was GPE, a group of Government officials. For component B, CIPREL acted, under contract, as the executing agency under the general oversight of GPE. CIPREL is an experienced entity, including persons from overseas organizations (Bouyges and EdF). They applied their expertise with efficiency and the required speed to bring about timely implementation of component B. The bidding process was eminently successful as it resulted in a larger turbine at a lower cost than originally estimated. Supervision of installation, testing and commissioning took place albeit with a few minor problems, and the ensuing need for a contract rider. Delays were minor and not critical for the system.

7.6.2 In 2004, CIPREL had to cope with a major technical problem as the windings of the Alsthom alternator sustained major damage necessitating almost complete replacement. This caused an outage of three months, but even with this major setback, CIPREL was able to supply the contracted amount of power to the grid. Backed by the French EdF, CIPREL was able to show that the damage was a manufacturing defect and to persuade the manufacturer to carry 70% of the cost of repair even though the machine was out of warranty. The performance of CIPREL, as contractor executing component B under GPE's oversight, is judged satisfactory.

7.6.3 As far as GPE is concerned, it is noted that, although the professional skills of the group were adequate for the task at hand, the management of components A and C of the project seems to have been weak. The weaknesses include inability to induce the consultants to start their work on time, laxity in supervising consultant performance and in enforcing work schedules, and delays in reviewing the results of the studies and sending them to the Bank in a timely manner for their review and further action

(see also paras. 3.5.1 and 5.3.1). The disbursement of the Credit (Annex 8) lagged far behind schedule even before the sociopolitical events that started in 1999. Progress reports were sent to the Bank more or less regularly but without any analysis of problem causes and how to address them. Also, the laggard performance of disbursement brought the project into the events following December 1999 and led to the failure to fully utilize the Credit proceeds. Based mainly on the delays experienced in Components A and C, and the failure to keep the pace of disbursements, the performance of the Implementing Agency is rated unsatisfactory.

7.7 Overall Borrower performance:

The overall performance of the Borrower, as discussed in Section 7.4 (satisfactory), 7.5 (satisfactory), and 7.6 (unsatisfactory), is, therefore, rated satisfactory (Annex 6).

8. Lessons Learned

Risk Perception and the Role of Public-Private Partnerships

8.1 A number of lessons have been derived from the experience of the project and, it is hoped, will be learned by both the Bank and its Borrowers. First, is the financing of a private-sector project through the intermediation of Government. Available private financing for projects in Africa is very limited, even for countries with reasonable economic performance because of the perception of high risk. IDA presence in project financing through the Government and on-lending to the private sector was crucial in making a project of the private sector a reality. Such schemes, based on a public-private partnership, are developing as a *sine-qua-non* for encouraging investments in countries where the perception of risk is high.

8.2 Political and security conditions were rated N (negligible risk) at appraisal but reality proved otherwise. The ensuing instability and hostilities have provided a rude test to the private sector's confidence. In spite of the security problems and of the general upheaval, the private sector maintained its confidence in the sector because payments to IPPs continued during this period. This was due primarily to the presence of the private sector manager, CIE, which had an irrevocable mandate by the Government to collect and make payments; this has minimized the adverse perception of business risk by IPPs. The lesson to be learned here is that a strong commitment by the Government to keep the private sector whole even at great sacrifice to itself, can carry the day under the most adverse circumstances and can mitigate the perception of risk which would, otherwise, be forbiddingly high. The model used in this project should be used in future project design.

8.3 Another important lesson is the recognition that, for projects involving substantial resource risk, a public-private partnership approach may be necessary to ensure successful implementation. Even as the country has in recent years discovered substantial resources of natural gas and petroleum, the reliable supply of fuel on a long-term basis is essential for secure power plant operation. Furthermore, the pass-through arrangements for gas provide additional comfort to private sector producers because they do not have to deal with the uncertainty of collecting adequate prices for the electricity produced as the prices of fuel escalate, although the sector as a whole must, eventually, internalize fuel cost increases and pass them on to the consumers.

Project Design and Operation

8.4 A Phase-II capacity of 66 MW, which was originally considered, would have required additional units to be contracted for immediately after the commissioning of this phase, in order to meet expected load. This would have had a negative financial impact on the sector and the economy. Contracting for larger units ensures sizeable economies of scale, provided the system demand warrants it.

8.5 The experience of the alternator damage (para. 7.6.2) is an instructive one. Such technical setbacks cannot be excluded even with the best manufacturers and the best operators of the technology. Technical backup by a major utility, such as EdF, is instrumental in proving the causes of the outage and to minimize the cost to the owner, operator, and the grid. Suitable preparations for such eventualities

must be part of project preparation and O&M provisions.

8.6 The International Competitive Bidding (ICB) method using the Bank's Standard Bidding Documents (SBD) had a substantial cost-reducing impact on the cost of Phase II, and consequently on the price of energy from CIPREL. This demonstrates also that the private sector, when it operates in a noncompetitive manner, could convey high hidden costs to the borrower. On the other hand, difficulties arose between CIPREL and the supplier (EGT) regarding spare parts and other contract details to the point at which a mediator was needed for the two opposing parties to reach dispute resolution. Furthermore, the terms of the Completion Certificate were not clear to the point that CIPREL maintained that it could not be certain that the plant would conform to technical specifications. The lesson to be drawn from this experience is that bid documents should include adequate detail on the list of needed spare parts, and the contract should include clarifications to as many technical points as have the potential to lead to a dispute.

Institutional Aspects

8.7 As the Government is engaged in negotiations regarding the regime that will prevail after the termination of the present CIE contract, the issue has come as to the appropriateness of the "affermage" type of contract. This type distinguishes between regular maintenance and major plant upgrades but this split often leads to disputes between the parties as to the boundaries of the two classes of maintenance and as to who should bear the cost of the investment. This issue should attract attention by the Bank and perhaps, lead to: (i) expert mediation so that the parties can reach a mutually satisfying agreement; (ii) advice as to the advisability of the "affermage" type of contract; or, alternatively, (iii) to a better delineation of respective obligations.

8.8 The experience with the creation of the sector regulator (ANARE) indicates that the expectation of a truly independent regulator in a country with weak institutions and an strong central government defensive of its presumed powers and prerogatives is unrealistic. Clearly, the regulator provides advice to the Government on the tariff issue but, as this is not his only task, can act as a mediator in many other respects in a beneficial manner as was the case of the quality of gas provided by the private gas producers to CIPREL. Also, it can provide a place for civil society organizations to be heard in a structured forum and thus have an input to the process of determining tariffs, quality of service, and other needs of the consumer. An incremental approach to the establishment of the Independent Regulator seems to be more realistic and effective. Strengthening through training and other measures of capacity building, such as computers, software, regional partnerships, seminars and the like can contribute to the gradual upgrading and eventual independence of the Regulator.

9. Partner Comments

(a) Borrower/implementing agency:

9.1 Introduction

9.1.1 In July 11, 1995, the IDA Board approved a loan of SDR 50.6 million (equiv. to approx. US$ 80 million) to the Republic of Côte d'Ivoire to finance a Private Sector Energy Project. The Credit became effective on April 19, 1996.

9.1.2 The Closing Date for the credit was initially on December 31, 1999 but, owing to socio-political events in Côte d'Ivoire, the Closing Date was repeatedly extended to December 31, 2000, January 31, 2002, March 31, 2003, September 30, 2003, and to September 30, 2004, its final Closing Date.

9.1.3 Project implementation was undertaken by the Groupe Projet Energie (GPE) which was created by Government Order on January 15, 1995. The GPE was composed of representatives from the Ministry of Mines and the "Energie Electrique de Cote d'Ivoire" (EECI), the "Direction et Controle das Grands Travaux" (DCGTx), the "Societé Nationale d'Operations Petrolieres" (PETROCI), and the Consultants KANGA and Associates, which were providing consultancy to the Government. Following the restructuring of the institutional framework of the electricity sector, in December 1998, the GPE was

replaced by the Coordination Cell for the Private Sector Energy Project; this Cell was created on December 13, 1999 and comprised representatives of the new entities, SOGEPE and SOPIE, as well as of the Ministry of Mines and Energy.

9.1.4 This Section 9 of the Implementation Completion Report (ICR) presents a summary of the views of the Borrower on the objectives, results, outcomes and impacts of project as well as the difficulties and deficiencies of the project. The complete report of the Borrower, prepared in French, is given in Annex 8.

9.2 Project Objectives and Components

9.2.1 The original objectives of the project were to: (a) continue the restructuring of the power sector in order to permit an expanded private sector participation, through competition, as well as the putting in place of an appropriate regulatory framework and strengthened of institutional capabilities; (b) improve power supply reliability, reduce environmental impacts and reduce the cost of electricity by supporting efficient gas-fired capacity using indigenous natural gas developed under a private sector BOOT arrangement; and (c) enhance operational reliability and efficiency through reinforcement and improvements of the transmission system.

Project Components

9.2.2 Component A: Institutional Development. This Component encompassed the following studies:

(i) Power Sector Management Study, including the following aspects: restructuring of sector responsibilities; creation of a regulatory agency; planning of human resources and training needs; and proposals for implementation of the studies' recommendations.

(ii) Power System Investment, Operations and Pricing Study, including the following elements: demand forecast, including the possibility of demand-side management; development of a least-cost development program (generation, transmission, distribution, and loss reduction); and tariff study, including revaluation of assets and a tariff adjustment formula.

(iii) Measures to encourage the privatization of the electricity sector, including the following: standard bidding documents for private power producers (IPP); and a study to determine the future role of the steam thermal units at Vridi.

(iv) Studies in the petroleum sub-sector, including the following elements: planning for the petroleum products production and distribution; and utilization of butane.

9.2.3 Component B: Generation Expansion Component. This Component encompassed the following elements :

(i) Supply and erection of one or two identical simple-cycle gas turbines of capacity between approximately 75 MW and 105 MW at ISO conditions. The gas turbines would constitute Phase II of the CIPREL power plant; and

(ii) Engineering, construction management, and supervision of the installation works for the plant.

9.2.4 Component C: Power System Reinforcement Component. These supplementary investments encompassed:

(i) Extension of the 90 kV S/S at Vridi to evacuate the increased capacity brought about by Component B (CIPREL II);

(ii) Reinforcement of the transmission system around Abidjan, including: the extension of the 90-kV T.L. between Treichville and Plateau S/S, with two underground 90 kV cables, four km each; tapping the 90 kV transmission line between Bia Sud and Ayame at the Riviera substation and extension of the S/S ;

and rebuilding the Treichville 90/15 kV S/S ; and

(iii) Replacement of some 60 kilometers of 15 kV paper-insulated cables.

9.3 Results and Impacts of the Project

9.3.1 Component A: Institutional Development

(i) Power Sector Management Study. Two studies were conducted under this item:

(a) The first study was conducted by Ashurst Morris Crisp (AMC) in 1996 and 1997 at a cost of US$ 954,443. The objective of the study was to present an analysis of the existing institutional framework, recommend a new regulatory framework, and describe the roles, responsibilities, and authority of the new entities. The study was completed in September 1998 and the decision to proceed with the restructuring was taken on December 16, 1998.

(b) The second study was to address the balance of the needed reforms and to propose a new framework. It was conducted by the National Economic Research Associates (NERA) in 2003 and 2004, at a cost of US $ 302,274. Its objectives were to make a review of the structure put in place in December 1999, take stock of its implementation, and propose an institutional framework for the medium term (up to 2005), year at which the current contract with CIE expires, and the long term (after 2005). The Government is now in the process of examining the restructuring of the sector after the expiration of the CIE contract on the basis of the recommendations made in this study. This restructuring will take place without the Bank's support on account of the closing of the Credit.

(ii) Power System Investment, Operations, and Pricing Study. The following studies were done under this item :

(a1) Master Plan for Generation and Transmission. The study was awarded to Hydro Québec International and SNC-Lavalin at a cost of Can$ 877,000 to be executed in 8 months. The performance of the consultants has been satisfactory. Training of Ivorian staff was performed with the software, and all the software was delivered. The study started in 2000 and the final report was delivered to SOPIE in December 2001. The study suffered delays because the personnel of the Consultant were not available owing to the suspension of disbursement by IDA. Whereas the software for demand forecast and network simulation are operable, the portable computers are out of operation because of serious breakdowns.

(a2) Master Plan for Rural Electrification (MPRE). The study was performed by Tractebel Energy Engineering from September 1997 to June 1999, at a cost of Belgian Francs 33,157,915. All the computer equipment, software, and data were transferred to Ivorian staff and training on the software was performed. Tractebel has satisfied all its contractual obligations. However, certain difficulties were encountered in this study. As SOPIE, the new entity in charge of RE, took possession of computers and software, it encountered serious difficulties in putting them in operation as the equipment was found defective or missing, files were not recoverable or not usable, the software needed updating, files needed conversion, and problems with the entry of the year 2000 were present. SOPIE has attempted to correct these problems in contact with Tractebel but the high cost quoted did not permit the Bank to allow financing of the cost from the Credit.

(a3) Master Plan of Urban Distribution. This study was to establish a plan for the distribution networks in the main cities of Côte d'Ivoire with a horizon of the year 2015. The invitation to bid was issued, on June 27, 2000, to a short list of consultants. Following bid evaluation, the contract was awarded to EPS. However, the dissolution of EPS made the execution of the study impossible. After Credit closure, the sector decided to undertake this study on its own given its importance to the sector.

(a4) Study for the Feasibility of the Soubré Dam. The study was undertaken by Coyne et Bellier at a cost of FCFA 321,000,000. The study was conducted successfully and has highlighted the advantages of this project, including the lowest cost of production among all hydro projects in Côte d'Ivoire (18.5

FCFA/kWh). The project is estimated to have an internal rate of return of 20%.

(b1) Technical, accounting, and financial audit of the sector (in the framework of the tariff study). Arthur Andersen was awarded this study at a cost of French Francs 3,546,000. The results of the study were: establishment of a sector asset inventory; analysis of the state of the assets and an evaluation of their remaining life; an accounting valuation of the sector assets; and the design of software for the management of the sector's real estate assets.

(b2) The tariff study was awarded to SNC LAVALIN in July 2003, at a cost of Can$ 398,940. The objectives of the study were to: propose measures, including an adjustment formula that would contribute to the sector financial equilibrium starting in 2004, and propose a tariff structure reflecting financial cost. At the end of Phase I, the Consultant recommended a tariff increase of between 15.7 to 19 billion FCFA (i.e., on average about 7.6 to 10%). Regarding Phase II, when the final report was transmitted in July 2004, the Ivorian side decided to repudiate the contract for non attainment of the assigned objectives.

(iii) Measures for the encouragement of Private Sector entry into the electricity sector.

(a) Preparation of Bidding Documents for Independent Power Producers (IPP). On the basis of a short list, the Consultant K&M Engineering was selected for this study. The study was initiated in August 1996 with duration of ten weeks and at a cost of US$ 275,094. The documents were turned over to the State in both hard and soft form. Although the final product was delivered, the study encountered some difficulties, including long delays (from the initial plan of ten (10) weeks, the project took more than one year) and translation problems. Because of the delays in preparing, reviewing and revising the documents, it was not possible to use them for the Azito project.

(b) A study for the future role of the thermal (steam) units at Vridi. This study was not carried out as the specific character of the tasks did not enable us to retain the Consultant even on a direct-contract basis. These units were retired from service in January 2000 and were decommissioned in November 2002.

(iv) Petroleum sector studies. The two studies originally planned in this category, namely, the strategic planning of the production and distribution system of petroleum products and on butane utilization, were not realized. Instead, the Government elected to undertake the following studies:

(a) Study for the Standardization and Calibration of natural gas meters on the pipelines feeding the electricity sector. The objectives of this study were to establish a quality control procedure for the continuous monitoring by the State of the meters operated by the gas producers. This work performed technical audits at the metering stations, and resulted in recommendations to establish transparency and fairness in the measuring process for all parties concerned. Training of staff was performed and relevant software was validated for the entire chain from sensor to computer. Difficulties were encountered in this work as the original duration of one year was extended to two, owing to the demobilization of the working team (belonging to GSO, working under subcontract to CETE Apave), with no replacement taking over the work.

(b) Assessment of the Natural Gas Reserves of Côte d'Ivoire. A contract was awarded on August 9, 1999 to Gaffney Cline, at a cost of US $ 40,030. The study was completed at the end of May 1999 providing assurances that the natural gas reserves of the country are adequate to supply fuel to the electricity sector for the life of CIPREL and AZITO.

(c) Study for the Legal and Regulatory Framework of the Petroleum Sector. This study was planned in the frame of privatization of the petroleum companies SIR and GESTOCI. The contract was awarded to Consultants Coudert Frères – Booz, Allen & Hamilton, at a cost of US$ 399,880. The study did not even start owing to the suspension of disbursements.

9.3.2 Component B: Generation Expansion Component

(i) CIPREL Phase II – Production Unit. Following an International Competitive Bidding process, the

contract for the supply and erection was awarded to European Gas Turbines (EGT), on February 16, 1996, at a cost of FRF 141,757,000 plus FCFA 2,269,676,000, with a timeframe of fourteen months. An amendment to the contract enabled the Purchaser to modify the control system and to include a list of spare parts and safety components. Phase II of the CIPREL plant consists of one EGT gas turbine with a nominal capacity of 110 MW, operating on natural gas but also capable of using Heavy Vacuum Oil (HVO) as a backup fuel. The Certificate of Compliance was issued on February 5, 1998.

(ii) Engineering and Management Services**.** A contract for Engineering and Management Services was signed with CIPREL on February 9, 1996, at a cost of FCFA 1 billion, for the execution of Phase II of CIPREL.

The ICB, performed under World Bank procedures, produced economies of about US$ 10 million compared to the estimate in the Credit Agreement. Also, the Take-or-Pay contract has been fulfilled entirely by the two parties, allowing the CIPREL turbines to produce, since commissioning of Phase II, 51% of the thermal production or 31% of total production of electricity.

9.3.3 Component C: Power System Reinforcement Component

(i) Organization of works. The investments under Component C were managed by the GPE, assisted by EECI and the DCGTx (later named BNETD), and later SOPIE, after the abolition of EECI in 1998. A consultant, SNC Lavalin Int., was hired to prepare the technical studies, organize procurement, evaluate the offers and supervise the installation. These activities were coordinated with CIE (the contracted operator of the system), which was associated with all the phases of the project, particularly design and supervision. The enterprises that were awarded the contracts are: SPIE Enertrans, the Group of ALSTOM-ETDE-SIDELAF-SETAO, PUROIL S.A, and PIRELLI.

(ii) Procurement**.** The items in Component C were implemented through a total of six (6) contracts of which four (4) are described in this report: GPE004, GPE005, GPE006 and GPE015, as follows:

(a) GPE004: contract SNC-Lavalin Int., of Sept .96 and Dec. 98 : Technical assistance for the management of the supplemental investments in the transmission network of Abidjan.

(b) GPE 005: contract SPIE Enertrans, of August 18, 1998: Construction of the Treichville S/S, underground 90 kV connections between Treichville-Plateau, and extension of the Plateau S/S. Schedule of 18 months.

(c) GPE 006: contract to Group ALSTOM/ETDE/SIDELAF/SETAO, of September 15, 1998 : Extension of the Riviera 90-kV S/S, including the tapping of the 90-kV line Bia-Sud Grand-Bassam, reinforcement of the 90-kV S/S at Vridi, and the addition of transformer bays at the Bia-Sud S/S and Abobo; schedule of 18 months.

(d) GPE 015: contract to PUROIL, of October 31, 2000: Supply of two (2) transformers 225/90 kW, of 70 MVA each. Contract became effective on July 15, 2002 and had a schedule of 36 weeks.

The total cost of these procurement actions was the equivalent of FCFA 11,982,406,306. Details are given in the full Report by the Borrower, shown in the Annex 8.

(iii) Actual completion performance of Component C

(a) Procurement GPE 004 was completed earlier than planned, in July 2001.

(b) Procurement GPE 005 was completed in January 12, 2001.

(c) Procurement GPE 006 was partially completed on June 25, 2001. On December 31, 2001, the works on the 90-kV line and the Vridi installations were completed and placed in service. In the other three sites (Riviera, Abobo, and Bia Sud) the equipment was installed and partially placed in service while waiting delivery of the telecommand and telecommunications equipment, which was delivered on October 18, 2004. This procurement was the object of litigation regarding this latter equipment. The Arbitrator engaged by the Contractor in February 2002 rendered his decision on October 7, 2002. However, the Contractor refused to comply with the Arbitrator's decisions and did not resume his work until April 2004, invoking, until the last minute, the socio-political crisis in Côte d'Ivoire.

(d) Procurement GPE 0015 was terminated in January 17, 2004.

(iv) Impacts of Component C. The results expected from the project were to be measured, on one hand, in terms of the quality of service in the Abidjan network and, on the other, in terms of the availability factor of the installed equipment. The evaluation of these results is to be established by the system operator (CIE) according to his own methods of periodic technical evaluation. It has not been possible to obtain the totality of the technical data from CIE within the time period for the present report, but in their absence, we are able to assess the results of the project from a series of tables provided by CIE (see Annex 8 for details). Briefly, the number of 90-kV transformer accidental disconnections was reduced from 258 in the year 2000 to 186 in 2004, or a reduction of 41%. Similarly, the number of accidental disconnections of the High-Voltage line departures at Treichville was reduced from 179 in 1999 to 76 in 2004, or a reduction of 58%. All the data point to an improvement of the reliability of the high-voltage transmission system.

(v) Difficulties encountered with Component C. The principal difficulties with this Component are enumerated briefly in this Section. They were connected mainly with repeated delays, cost over-runs, various claims by the contractors, etc. More specifically:

(a) The difficulties were connected with the socio-political events of the period 1999-2004.

(b) Lack of adequate organization of the Consultant SNC Lavalin, specifically in the process of bidding documents, and in the execution of procurement actions, resulted in many claims by the suppliers; and negligence was also shown in producing regular progress reports.

(c) Long delays in obtaining the signature of documents by the Administration.

(d) Inadequate allocation in the State budget to pay the necessary taxes and duties by comparison to the funds made available by the lender and to the progress of the work. This resulted in (i) numerous blockages of goods at the customs office, causing slow-downs in the installation works; (ii) buildup of arrears in payments of customs duties and of VAT to the contractors; (iii) numerous claims by the contractors for storage fees and for breaking of deadlines; (iv) payment of significant interest penalties; and (v) the extension of the date of completion.

(e) Delays in disbursements owing to the SIGFIP procedure, having consequences as in (d) above.

(f) An apparent problem existed, not yet totally clarified, that caused frequent rejections by the Bank of requests for payments in local currency, eligible for payment by the IDA Credit and regularly transmitted to the Bank. Certain amounts in this category had not been paid at the time of Credit closure.

(vi) Deficiencies with Component C

(a) The failure to realize the last segment of the « Eastern » loop of Abidjan, the 225-kV

Vridi-Riviera-Abobo line constitutes a serious handicap in the operation, security and reliability of the electricity supply to the city of Abidjan. Thou it was not a component of the project, the State has just completed the last part of this segment, the line Vridi-Riviera. Sources of financing are being sought to complete the mentioned loop with the tapping of the 225-kV Ghana-Côte d'Ivoire line at the Riviera S/S.

(b) With this last piece of work, the short-term reinforcement of the high-voltage network around Abidjan ought to be completed, notwithstanding the fact that substantial additional power injections are needed in many parts of the city, notably in Yopougon, Marcory-Koumassi, and Djibi.

9.3.4 Training

The Credit supported an important set of actions for capacity building in two directions:

(a) Training programs for local counterparts performed by the consultants appointed to perform the studies. These training programs concentrated on planning, tariff studies, and project management. This training was designed to familiarize the local staff with the tools used in the studies and to allow them to utilize the models on their own in updating the studies.

(b) Specific technical training at specialized training centers, in light of the institutional reforms and of the implementation of the BOOT project at CIPREL. In this context, 33 persons have taken training courses overseas, at a cost of approx. FCFA 200 million, with emphasis on the following areas: economic and financial regulation, financial analysis, institutional reforms, energy policy, and project management. The majority of these persons are still practicing in the electricity sector in entities such as SOPIE, SOGEPE, and ANARE. An Annex of the full report gives details of the training program.

9.4 Difficulties and Deficiencies

9.4.1 Project implementation. In 1995, the DCGTx disputed the authority of EECI to be the supervisor of the electric power sector investment projects. It is for this reason that the Government decided to entrust the implementation of the project to an ad hoc group that included members from both organizations and was presided over by a member of the cabinet of the Minister of Mines and Energy. This arrangement allowed the implementation of the project with satisfactory results, especially as concerns components B and C.

9.4.2 Following the 1999 restructuring of the sector, it did not seem appropriate to keep an ad hoc group in charge of the project, in view of the newly defined responsibilities of the new entities in the sector. It became necessary for the Credit Agreement to be amended to account for the new structures and the abolition of EECI. In addition, the departure from the sector of most of the staff of GPE that occurred in 1999 caused a strong perturbation in the affairs of project implementation, especially in accounting and financial matters. The ideal solution would have been to imbed the implementation unit entirely in an existing structure rather than create an ad hoc group of permanent employees who are remunerated directly from the project.

9.4.3 As regards the execution of the project's components and subcomponents, it would appear that, with the exception of the studies for the petroleum sector, all the objectives stated in the Credit Agreement have been accomplished. These include almost all the planned studies, Phase II of the CIPREL plant, the reinforcement of the transmission system in the region of Abidjan, and emphasis on new sector activities such as regulation, financial analysis, and the like.

9.5 The Performance of Consultants

9.5.1 As stated above, the majority of the planned studies were executed successfully. With the exception of the Tariff Study, executed by SNC Lavalin, no other claims were made by GPE on the performance of the consultants. It must, however, be noted that, since the socio-political crisis that erupted in 2002, the interest of external consultants to work on our studies has been severely affected. Two invitations to make proposals concerning the strategic planning and the technical and financial audit

had to be voided because of no response to our invitation.

9.6 The Performance of the Bank

9.6.1 Regarding the performance of the World Bank, we must say that we benefited from the support of the Task Manager as well as from the good services of the Bank Office in Abidjan, particularly on the matter of disbursements and procurement, even during the difficult periods that Côte d'Ivoire had to go through since September of 2002.

9.6.2 Progress in project implementation suffered from (i) the suspension of disbursements, which, thus, delayed certain studies and the execution of Component C; and (ii) the closing of the Credit in September 2004, at which time, about US$ 10 million remained undisbursed. This amount could have been utilized to finance an environmental component for Azito as well as certain additional improvements to the transmission network. Unfortunately, the reallocation of the funds could not be done in time.

(b) Cofinanciers:
No cofinanciers existed beside IDA.

(c) Other partners (NGOs/private sector):
The ICR mission to Cote d'Ivoire met with the President of the Consumers Union, who is also a member of the Regulatory Authority (ANARE). His comments were reflected in the main body of the Bank's observations.

10. Additional Information

10.1 English translation of the Borrower's comments on the ICR:

We have examined the ICR for the above Credit, and we have the following comments:

a. We do not agree with the Bank's evaluation of the performance of the GPE (the Implementation Unit). In effect, GPE consisted of the best professionals in the sector coming from EECI, DCGTx, and the Ministry of Energy. While they were not dedicated fully to GPE, they have devoted all the time needed to carry-out GPE's work. In the case of Cote d'Ivoire, we do not believe that it was necessary to have people working fulltime for the Project Implementation Unit. We believe that GPE's performance was Satisfactory.

b. The Bank, by accepting several extensions to the closing date of the Credit, has allowed the project to meet all of its original objectives. However, the Borrower regret that due to many constrains imposed by the Bank, he was not able to use the US$ 10 million saving from Component B of the Project, to finance necessary investments in the Transmission System.

Signed On Behalf of the Minister of State for Mines and Energy,

The Deputy Minister.

10.2 Borrower's comments on the ICR in French:

23-06-2005 07:24 DE PANASONIC A 0012024735123 P.01/01

MINISTERE D'ETAT, MINISTERE DES MINES ET DE L'ENERGIE

CABINET

Tél. : (225) 20-21-50-03/20-21-15-96
Fax : (225) 20-21-53-20
BP V 50 ABIDJAN

N° 0465 /MME/CAB

REPUBLIQUE DE COTE D'IVOIRE
Union –Discipline -Travail

Abidjan, le 23 JUIN 2005

LE MINISTRE D'ETAT
à
Monsieur Said MIKHAIL
Banque Mondiale
WASHINGTON

R2005-004
6/23/05

P001184

Objet : Commentaires du Gouvernement sur le rapport d'achèvement (ICR) du crédit 2754-IVC

Monsieur,

Nous avons examiné le rapport d'achèvement (ICR) pour le crédit 2754-IVC. Ce document appelle de notre part les commentaires suivants :

1. D'une manière générale, nous ne sommes pas d'accord sur l'appréciation des performances du « Groupe Projet Energie » (GPE). En effet le GPE était composé des meilleurs experts du secteur de l'électricité provenant de l'EECI, de la DCGTx et du ministère de l'énergie. Certes, ces experts n'ont pas travaillé à plein temps au sein du GPE, mais ils y ont consacré tout le temps nécessaire. Dans le cas de la Côte d'Ivoire, nous estimons qu'il n'était pas nécessaire d'avoir du personnel à plein temps au sein de l'unité de mise en œuvre du projet. C'est la raison pour laquelle nous jugeons la performance du GPE globalement satisfaisante.

2. La Banque, en acceptant plusieurs prorogations du crédit, a permis d'atteindre la quasi totalité des objectifs initiaux du projet. Cependant, l'Emprunteur regrette que les nombreuses contraintes imposées par la Banque ne lui aient pas permis d'utiliser l'économie de dix millions de dollars réalisée sur la Composante B pour entreprendre des investissements nécessaires sur le réseau de transport.

Nous vous prions d'agréer, **Monsieur**, l'expression de notre considération distinguée.

P/Ministre d'Etat et par délégation
Le Directeur de Cabinet

François KADIO-MOROKRO

Copie à SOGEPE

TOTAL PAGE(S) 01

Annex 1. Key Performance Indicators/Log Frame Matrix

Outcome / Impact Indicators:

Indicator/Matrix	Projected in last PSR[1]	Actual/Latest Estimate
1. Continue the restructuring of power sector institutions begun under the ESAL, particularly an appropriate regulatory framework and strengthened institutional capabilities, thus enabling the development of competitive and expanded private sector participation.	a) Complete the institutional framework study before December 1996; b) Put in place the recommandations of the institutional framework study before 1999; c) Conduct various other sector studies to be completed before June 1999.	Completed. a) The final Report of the Institutional Framework Study was approved in final form on 30 June 1997. b) Following discussions among World Bank and Government agencies, the recommandations of the study were approved by Government in December 1998, with the abolition of the existing structures and the creation of three new sector entities (ANARE, SOPIE, and SOGEPE). c) Various other studies were also completed, as follows: 1. Standard bidding documents for independent power producers (IPP) were completed in March 1997; 2. The Master Plan for Rural Electrification was completed in January 1999; 3. An accounting, financial, and technical audit of the sector was completed in March 1999, although the study was mostly unsatisfactory; 4. The Master Plan for the Production, and transmission of electricity was completed in December 2001; 5. The study of the development of the Soubré Dam was completed in August 2002, but further action was deferred in view of the suspension of disbursements in March 2001; 6. Technical assisistance for the calibration of natural gas meters was achieved in September 2000; and 7. The tariff study was completed in although the Gvoernment did not accept all tis findings and recommendations.
2. Improve power supply reliability, reduce environmental impacts and reduce the cost of electricity by supporting efficient gas-fired capacity using indigenous natural gas developed under a private sector BOOT arrangement.	a) Construction of gas-turbine unit (single cycle) with a capacity of between 75 and 105 MW (ISO); b) Commissioning of the new unit for commercial operation not later than end of December 1996; c) Ensure a significant reduction of the price of the kWh (excluding the gas component) for the entire CIPEL plant (Phase I and II).	Completed. a) The procurement process for a Gas Turbine for Phase II of CIPREL resulted in the installation of a machine of 135 MW (ISO) and about 110 MW at site conditions, owing to the use of the Bank's standard bidding documents and the process of International Competitive Bidding (ICB), at a cost of US$ 33.8 mill. Compared to an estimated cost of US$ 42.7 mill., a savings of US$ 8.9 mill.; b) The certificate of completion for CIPREL Phase II was accomplished on 14 June 1997, which is five and one half months later than foreseen in the SAR; the Government's certificate of Compliance was issued on 5 February 1998. c) The lower cost of procurement of the GT, enabled the government to lower the price paid to CIPREL from 12,20 FCFA/kWh to 11,57 FCFA/kWh, a reduction of about 5%.

3. Enhance operational reliability and efficiency through reinforcement and improvements of the transmission system.	a) Acquérir et faire poser 57 km de câble MT souterrain à Abidjan avant mars 1999; b) Réaliser les extensions des postes de Vridi, d'Abobo, de Bia-sud et de Riviéra avant septembre 1997; c) Reconstruire le poste de treichville et construire une double liaison 90 kV entre les postes de Treichville et du Plateau avant mars 1998.	Retail tariffs were lowered by 7%. Completed. a) Replacement of underground cables were installed in June 1999. The number of disruptions on the 90/16.5 kV transformers was reduced from 316 in 1999 to 186 in 2004; b) Substation extensions were completed in October 1999. The number of annual network disruptions of all causes went from 179 in 1999 to 76 in 2004; c) The Treichville substation and the two underground cables of 90 kV were placed in service in March 1999. The number of annual network disruptions, total or partial, in the Treichville and Plateau substations went from 21 in 1999 to 13 in 2004.

Output Indicators:

Indicator/Matrix	Projected in last PSR[1]	Actual/Latest Estimate

[1] End of project

Annex 2. Project Costs and Financing

Project Cost by Component (in US$ million equivalent)

Component	Appraisal Estimate US$ million	Actual/Latest Estimate US$ million	Percentage of Appraisal
A. Institutional Development	8.31	9.43	113
B. Generation Expansion	50.00	37.90	76
C. Power System Reinforcement	21.05	23.78	113
Total Baseline Cost	79.36	71.11	
Physical Contingencies	2.90		
Price Contingencies	1.87		
Total Project Costs	84.13	71.11	
Interest during construction	2.16		
Total Financing Required	86.29	71.11	

Project Costs by Procurement Arrangements (Appraisal Estimate) (US$ million equivalent)

Expenditure Category	Procurement Method[1] ICB	NCB	Other[2]	N.B.F.	Total Cost
1. Works	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
2. Goods	0.00 (0.00)	0.00 (0.00)	0.65 (0.65)	0.59 (0.00)	1.24 (0.65)
3. Services Supply and Erection	70.28 (67.90)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	70.28 (67.90)
4. Services	0.00 (0.00)	0.00 (0.00)	9.45 (7.95)	0.00 (0.00)	9.45 (7.95)
5. Training	0.00 (0.00)	0.00 (0.00)	1.16 (1.16)	0.00 (0.00)	1.16 (1.16)
6. Refunding of PPF & IDC	0.00 (0.00)	0.00 (0.00)	4.16 (2.00)	0.00 (0.00)	4.16 (2.00)
Total	70.28 (67.90)	0.00 (0.00)	15.42 (11.76)	0.59 (0.00)	86.29 (79.66)

Project Costs by Procurement Arrangements (Actual/Latest Estimate) (US$ million equivalent)

Expenditure Category	Procurement Method[1] ICB	NCB	Other[2]	N.B.F.	Total Cost
1. Works	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
2. Goods	0.00 (0.00)	0.00 (0.00)	0.31 (0.31)	0.00 (0.00)	0.31 (0.31)
3. Services Supply and Erection	61.68 (56.25)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	61.68 (56.25)
4. Services	0.00	0.00	9.12	0.00	9.12

	(0.00)	(0.00)	(9.12)	(0.00)	(9.12)
5. Training	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
6. Refunding of PPF & IDC	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Total	61.68 (56.25)	0.00 (0.00)	9.43 (9.43)	0.00 (0.00)	71.11 (65.68)

[1/] Figures in parenthesis are the amounts to be financed by the Bank Loan. All costs include contingencies.

[2/] Includes civil works and goods to be procured through national shopping, consulting services, services of contracted staff of the project management office, training, technical assistance services, and incremental operating costs related to (i) managing the project, and (ii) re-lending project funds to local government units.

Project Financing by Component (in US$ million equivalent)

Component	Appraisal Estimate			Actual/Latest Estimate			Percentage of Appraisal		
	Bank	Govt.	CoF.	Bank	Govt.	CoF.	Bank	Govt.	CoF.
Power Plant	50.00	0.00		37.93	0.00		75.9	0.0	
Goods and Works	20.25	2.96		18.32	5.43		90.5	183.4	
Consulting Services	8.25	1.50		9.03	0.00		109.5	0.0	
Training	1.16	0.00		0.40			34.5	0.0	
Interest During Construction		2.16						0.0	
TOTAL	79.66	6.62		65.68	5.43		82.5	82.0	

Annex 3. Economic Costs and Benefits

Economic Analysis in the SAR

The ICR performs an ex-post economic analysis to take into account actual quantities that were not known at appraisal and to check the assumptions used in order to derive a more realistic evaluation of the economic rate of return of the investment. In conducting the economic analysis, the SAR had made the following main assumptions:

Installed Capacity of CIPREL-II:	90 MW
Plant Availability:	77%
Electricity consumption growth:	5% /yr
Exports:	60 GWh/yr
Economic Cost of gas: (eq. to US$ 5.20/bbl of oil)	US$ 0.87/mcf of gas = US$ 0.87/MMBtu = US$ 0.83 /GJ.

Incremental benefits were calculated as the product of incremental sales multiplied by the economic value of the kilowatt-hour. This latter was calculated as a netback value from the average tariff at the time of appraisal, taken as US$ 0.106/kWh, reduced by the cost of transmission and distribution, estimated at US$ 0.058/kWh. This calculation yields a value of US$ 0.048/kWh. The benefits formula at SAR was therefore as follows:

Incremental Benefits = (Incremental Sales) x (US$ 0.048/kWh).

In the cost columns, the SAR analysis used (i) the investment costs over the years, (ii) the incremental operating costs of the generating plant, and (iii) the incremental fuel costs based on a price of US$ 0.87 /MMBtu, equivalent to a price of oil of US$ 5.20/bbl. The discount rate was assumed at 10% and the period of the analysis 20 years. On the basis of these ssumptions, the EIRR was estimated at 34%.

Ex-Post (ICR) Economic Analysis

The Ex-Post economic analysis performed in the ICR used the following assumptions:

(a) incremental benefits were calculated based on:

(i) the actual record of output of the CIPREL-II plant (with a capacity at site conditions of 111 MW instead of a capacity of 90 MW at ISO conditions), averaged over the years of record to derive the projection over the remaining years of the 20-year period;

(ii) a reduction of energy-not-served of about 1% of total forecast demand, owing to the improvements of the transmission system, multiplied by the same value of energy-not-served used in the SAR, namely, US$ 0.37/kWh. The assumption of a 1% reduction in energy-not-served is a conservative one as, in similar projects, the benefit of such investments are taken as several percent of total electricity demand. Forecast demand was derived starting from the actual recorded level of 5,620 GWh in 2004, using a growth rate of 2% over the rest of the period, including exports; this is a conservative figure compared with a 5% demand growth assumed at appraisal. Future sales of CIPREL to the grid may actually be higher owing to the demand for imports by neighboring countries and the capacity of the plant to exceed its contracted energy, if needed, collecting a bonus for surplus production. This was not taken into account in the analysis;

(iii) tariffs eaqual to the level used at SAR. Tariffs were reduced by 7% in 1997 and raised by 10% in 2002. For simplicity, the same netback for the value of generation used in the SAR was used in the ex-post analysis, namely a value of US$ 0.048/kWh. It must be noted that current average tariffs are at the level of FCFA 58/kWh or US$ 0.105/kWh compared to US$ 0.106/kWh assumed at SAR. No future increases in tariffs were assumed.

(b) incremental costs were calculated based on:

(i) the investment costs as derived from the actual disbursement record, including the investment in all three components of the project (A, B, and C);

(ii) the operating costs of the CIPREL II plant based on figures supplied by CIPREL for 2004 and assumed constant over the period of the project. These costs cover both CIPREL I and II and were divided by two for the share of CIPREL II. They also include an item of heavy maintenance, which was assumed to take place every 5 years and hence the cost was divided by 5 to derive annual costs. An additional amount of US$ 1 million per yer was added to account for unforeseen circumstances;

(iii) the cost of fuel, estimated on the basis of actual figures supplied by CIPREL. When actual figures were not available, reasonable estimates and extrapolations were made. Notice that in the SAR, the economic cost of fuel was assumed on the basis of the then existing fuel contract and of market projections at a level of US$ 0.87 per MMBtu as compared with the much higher fuel costs actually experienced (reaching about US$ 5.14 /MMBtu in April 2005).

It is clear that, the incremental benefits of the project are larger and incremental costs lower than estimated at SAR with the exception of fuel cost which has become higher. Also to be noted is that the analysis did not account for the environmental benefits from speeding up the retirement of four old steam units (4x25 MW nominal) operating on heavy fuel oil, which has produced considerable reduction in sulfur and nitrogen oxide emissions. The above discussion shows that the calculation of economic rate of return is a conservative one. The ex-post economic analysis indicates an EIRR of 48% on the basis of conservative assumptions (see Table below).

Assumptions and Calcultations for the Ex-Post Economic Analysis

		CIPREL-II	AZITO
Capacity	MW	110.00	300.00
Plant factor		0.77	0.88
Annual generation at guaranteed equiv. avail factor	GWh	**741.97**	2,302.13
Gas calorific value	Btu/cubic ft	1,000.00	1,000.00
Heat rate (assuming single cycle)	Btu/kWh	10,100.00	12,205.00
Required Gas Volume/yr	Bcf (10^9 cf)	7.49	28.10
Contract period	years	19.00	20.00
Total volume of gas needed over contract period	Bcf	142.38	561.95

Generation and gas consumption history	1997	1998	1999	2000	2001	2002	2003	2004	2005	Average
Ratio of GT8 to (GT5+6+7+8)		0.53	0.53	0.53						
Planned generation (GWh)	384.21	768.42	768.42	768.42	744.00	742.00	789.00	792.00	767.47	767.47
Generation demanded and supplied (GWh)	405.79	811.58	818.42	718.42	738.64	774.20	691.02	664.96	745.32	745.32
Gas consumption (million Nm3)	130.71	261.41	263.62	231.41	241.63	253.93	258.90	217.23	243.48	246.88
Gas price US$/MMBtu	1.00	1.36	1.70	1.99	2.35	2.53	2.98	3.66	4.88	
Gas price US$Nm3	0.035	0.048	0.060	0.070	0.083	0.089	0.105	0.129	0.172	
Cost of fuel, US$ mill.	4.615	12.553	15.824	16.219	20.050	22.685	27.242	28.035	41.955	
Specific Gas Consumption Nm3/kWh-gross		0.325	0.325	0.325						
Ration of Energy supplied to energy - gross		0.99	0.99	0.99						
Plant factor of CIPREL I		0.94								
Ratio of capacities of CIPREL I to CIPREL II		0.90								

Economic Analysis

Year of project	Calender Yr	Electr. Demand, GWh	Investmt Cost-componen t A, US$ mill.	Investmt Cost-component B, US$ mill.	Investmt Cost-componen t C	Operating cost-component B	Fuel cost-Compone nt B	Total Costs	Benefit-Component B, GWh	Assumed Average Tariffs, US$/kWh	Value of Benefit-Comp. B, US$ mill.	Value of Benefit-Componen t C, US$ mill.	Total Benefits, US$ mill.	Net Benefits, US$ mill.
	1996	2,400		5.75				5.75						-5.75
1	1997	2,417	0.20	19		3.19	4.62	27.01	384.21	0.048	18.44		18.44	-8.57
2	1998	2,540	0.50	14.25		6.38	12.55	33.69	811.58	0.048	38.96		38.96	5.27
3	1999	2,670	0.98	2.8	0.50	6.38	15.82	26.49	818.42	0.048	39.28		39.28	12.80
4	2000	2,800	1.00		8.10	6.38	16.22	31.70	718.42	0.048	34.48		34.48	2.78
5	2001	3,500	1.50		5.10	6.38	20.05	33.03	738.64	0.048	35.45		35.45	2.42
6	2002	4,000			1.45	6.38	22.68	30.52	774.20	0.048	37.16	14.80	51.96	21.44
7	2003	4,500	1.50		2.00	6.38	27.24	37.13	691.02	0.048	33.17	16.65	49.82	12.69
8	2004	**5,620**	0.11		4.70	6.38	28.04	39.23	664.96	0.048	31.92	20.79	52.71	13.48
9	2005	5,732	0.10		0.16	6.38	41.96	48.60	745.32	0.048	35.78	21.21	56.99	8.39
10	2006	5,847				6.38	41.96	48.34	745.32	0.048	35.78	21.63	57.41	9.07
11	2007	5,964				6.38	41.96	48.34	745.32	0.048	35.78	22.07	57.84	9.50
12	2008	6,083				6.38	41.96	48.34	745.32	0.048	35.78	22.51	58.28	9.94
13	2009	6,205				6.38	41.96	48.34	745.32	0.048	35.78	22.96	58.73	10.39
14	2010	6,329				6.38	41.96	48.34	745.32	0.048	35.78	23.42	59.19	10.85
15	2011	6,456				6.38	41.96	48.34	745.32	0.048	35.78	23.89	59.66	11.32
16	2012	6,585				6.38	41.96	48.34	745.32	0.048	35.78	24.36	60.14	11.80
17	2013	6,716				6.38	41.96	48.34	745.32	0.048	35.78	24.85	60.63	12.29
18	2014	6,851				6.38	41.96	48.34	745.32	0.048	35.78	25.35	61.12	12.78
19	2015	6,988				6.38	41.96	48.34	745.32	0.048	35.78	25.85	61.63	13.29
20	2016	7,128				6.38	41.96	48.34	745.32	0.048	35.78	26.37	62.15	13.81
			5.89	41.80	22.01									48%
Assumptions					69.70									

Average sales of electricity	745.3202	GWh/yr
Average consumption of gas	246.8753	Mill. Nm3
Actual retail tariffs	58	FCFA/kWh
Exchange rate as of late May 2005	552	FCFA/US$
Actual tariffs, same as at SAR	0.105	US$/kWh
Fractionof tariff for generation, as at SAR	0.048	US$/kWh
Value of electricity not served, same as at SAR	0.37	US$/kWh
Electricy demand growth rate, 2004-2016	0.02	

Benefit of Part C: % of demand would be removed from the energy not served, starting in yr 2000.	0.01	
Annual O&M Costs of CIPREL-based on 2004 figures	4.98	€ mill.
Exchange rate, as of beginning June 2005.	0.78	€/US$
O&M Costs of CIPREL	6.38	US$ mill.

Annex 4. Bank Inputs

(a) Missions:

Stage of Project Cycle	No. of Persons and Specialty (e.g. 2 Economists, 1 FMS, etc.)		Performance Rating	
Month/Year	Count	Specialty	Implementation Progress	Development Objective
Identification/Preparation				
07/05/1991				
Appraisal/Negotiation				
12/16/1994		Energy Economist, Power Engineer, Economist, Petroleum Specialist,		
Supervision				
05/17/1996	*2*	ENERY ECONOMIST (1); POWER ENGINEER (1)	S	S
02/26/1997	*3*	FINANCIAL ANALYST (1); TASK MANAGER/ENGINEER (1); ECONOMIST (1)	S	S
02/03/1999	*3*	TASK TEAM LEADER (1); ECONOMIST (1); OPERATIONS ANALYST (1)	S	HS
10/20/1999	*3*	MISSION LEADER (1); ECONOMIST (1); OPERATIONS ANALYST (1)	S	HS
06/21/2000	*5*	SENIOR POWER ENGINEER (1); ECONOMIST (1); OPERATIONS ANALYST (1); TEAM ASSISTANT (1); CONSULTANT (1)	S	HS
04/13/2001	*1*	SENIOR POWER ENGINEER (1)	U	U
02/18/2002	*1*	TEAM LEADER (1)	S	S
06/25/2003	*1*	TASK TEAM LEADER (1)	U	S

(b) Staff:

Stage of Project Cycle	Actual/Latest Estimate	
	No. Staff weeks	US$ ('000)
Identification/Preparation		
Appraisal/Negotiation	96.2	262,900
Supervision	154.56	557,592
Total	257.76	850,260

Annex 5. Ratings for Achievement of Objectives/Outputs of Components

(H=High, SU=Substantial, M=Modest, N=Negligible, NA=Not Applicable)

	Rating				
☐ *Macro policies*	○ *H*	○ *SU*	○ *M*	○ *N*	● *NA*
☐ *Sector Policies*	○ *H*	● *SU*	○ *M*	○ *N*	○ *NA*
☐ *Physical*	● *H*	○ *SU*	○ *M*	○ *N*	○ *NA*
☐ *Financial*	○ *H*	○ *SU*	○ *M*	● *N*	○ *NA*
☐ *Institutional Development*	○ *H*	○ *SU*	● *M*	○ *N*	○ *NA*
☐ *Environmental*	● *H*	○ *SU*	○ *M*	○ *N*	○ *NA*
Social					
☐ *Poverty Reduction*	○ *H*	○ *SU*	○ *M*	○ *N*	● *NA*
☐ *Gender*	○ *H*	○ *SU*	○ *M*	○ *N*	● *NA*
☐ *Other (Please specify)*	○ *H*	○ *SU*	○ *M*	○ *N*	○ *NA*
☐ *Private sector development*	○ *H*	● *SU*	○ *M*	○ *N*	○ *NA*
☐ *Public sector management*	○ *H*	○ *SU*	○ *M*	○ *N*	● *NA*
☐ *Other (Please specify)*	○ *H*	○ *SU*	○ *M*	○ *N*	○ *NA*

Annex 6. Ratings of Bank and Borrower Performance

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HU=Highly Unsatisfactory)

6.1 Bank performance	*Rating*			
☐ *Lending*	○ *HS*	● *S*	○ *U*	○ *HU*
☐ *Supervision*	○ *HS*	○ *S*	● *U*	○ *HU*
☐ *Overall*	○ *HS*	● *S*	○ *U*	○ *HU*

6.2 Borrower performance	*Rating*			
☐ *Preparation*	○ *HS*	● *S*	○ *U*	○ *HU*
☐ *Government implementation performance*	○ *HS*	● *S*	○ *U*	○ *HU*
☐ *Implementation agency performance*	○ *HS*	○ *S*	● *U*	○ *HU*
☐ *Overall*	○ *HS*	● *S*	○ *U*	○ *HU*

Annex 7. List of Supporting Documents

The following documents used in the preparation of the ICR are available at the AFTEG project files:

1) Staff Appraisal Report No. 12774-IVC: Private Sector Energy Project, June 6, 1995

2) Policy Framework Paper, issued by the Bank in 16 February 1995

3) Environmental Assessment Analysis Reports – Foxtrot BOOT-Report E0033. Prepared by Soil and Water Ltd. in association with EKONO Corporation. October 1992.

4) Etude d' Impact sur l'Environnement. By CIPREL on CIPREL I and II. October 1994.

5) OED Review of Private Sector Development in Energy, Côte d' Ivoire Country Case Study. August 2004.

6) Ciprel-Contrôle des Rejets Atmospheriques. By Bureau Veritas, Decembre 2004.

7) CIPREL-Parametres d' Exploitation, 2001-2004.

8) CIPREL – Rapport de Mesure de Nivaux Sonores. By Bureau Veritas, 6 October 2004.

9) Réserve naturelle de gas et potential de réserve. Côte d' Ivoire. By Gaffney, Cline & Associates, May 1999.

10) World Bank, Back-to-Office reports and Project Status Reports. 1995 to 2004.

Additional Annex 8. Contribution of the Borrower to the ICR

I - Introduction

Le 11 Juillet 1995, l'Association Internationale pour le Développement (IDA) a accordé à l'Etat de Côte d'Ivoire un prêt d'un montant de 50,6 Millions de DTS soit environ 80 Millions de Dollars Etats-Unis pour financer le Projet Energie Secteur Privé. La mise en vigueur de crédit est intervenue le 19 avril 1996.

La date limite d'utilisation des fonds du crédit initialement fixée au 31 décembre 1999 a subi l'influence des délais contractuels des projets et des troubles sociopolitiques en Côte d'Ivoire. En conséquence, la date de clôture du Crédit a successivement été prorogée au 31 décembre 2000, 31 janvier 2002, 31 mars 2003, 30 septembre 2003 et enfin 30 septembre 2004, date de clôture définitive.

Le suivi du projet a été assuré par le Groupe Projet Energie (GPE), créé par l'arrêté n°028 du 15 Janvier 1995. Le GPE était composé de représentants du Ministère des Mines et de l'Energie, de l'Energie Electrique de Côte d'Ivoire (EECI), de la Direction et Contrôle des Grands Travaux (DCGTx), de la Société Nationale d'Opérations Pétrolières (PETROCI) et du Cabinet KANGA et Associés, Conseil du Gouvernement. Après la restructuration du cadre institutionnel du secteur de l'électricité, survenue en Décembre 1998, le GPE a été remplacé par la Cellule de Coordination du Projet Energie Secteur Privé, créée le 13 décembre 1999.

Le présent rapport d'achèvement expose les objectifs, les résultats, les impacts, les difficultés et les insuffisances du projet.

II - Objectifs du Projet

A - Rappel des objectifs

Ce projet visait les objectifs suivants :

- Poursuivre la restructuration du secteur de l'électricité de façon à permettre, en particulier, l'accroissement de la participation du secteur privé par le développement de la concurrence, ainsi que la mise en place d'un cadre réglementaire approprié et le renforcement des capacités ;

- Améliorer la fiabilité des approvisionnements en électricité, réduire les effets négatifs sur l'environnement et réduire le coût de l'électricité par la construction d'une centrale électrique fonctionnant au gaz naturel ivoirien dans le cadre d'un schéma BOOT (Build, Own, Operate and Transfer) avec le secteur privé ;

- Accroître l'efficacité de l'exploitation du système électrique par l'amélioration du réseau de transport .

B - Composantes du Projet

Compte tenu des objectifs visés et conformément à l'Accord de Crédit, les trois composantes du projet sont les suivantes :

1. Composante A : Développement Institutionnel

i) Etude sur la gestion du -secteur de l'électricité, incluant notamment les aspects ci-après :
- Examen de la répartition des responsabilités au sein du secteur ;
- Développement de la réglementation du secteur;
- Planification des ressources humaines et besoins de formation ;
- Propositions pour la mise en œuvre des recommandations des études.

ii) Etude sur les investissements, l'exploitation et la tarification de l'électricité, incluant les éléments ci-après :

- Prévision de la charge, y compris les possibilités de gestion de la demande ;
- Développement du réseau moindre coût (production, transport, distribution, réduction des pertes) ;
- Etude de la tarification (y compris la réévaluation des principales immobilisations et une formule d'ajustement des tarifs de l'électricité).

iii) Mise au point de mesures pour encourager la privatisation du secteur de l'électricité :

- Préparation de documents types d'appel d'offres applicables à un producteur indépendant d'électricité (IPP) ;
- Etude pour déterminer le rôle futur des groupes thermiques à vapeur de Vridi .

iv) Sous-secteur des hydrocarbures :

- Planification du système de production et de distribution des hydrocarbures ;
- Utilisation du butane et modalités de mise en œuvre.

2. Composante B **:** Développement des Moyens de Production

Le développement des moyens de production concerne :

i) La fourniture et l'installation d'une nouvelle capacité de production composée d'une ou de deux turbines à gaz identiques en cycle simple d'une puissance totale d'environ 75 à 105 MW aux conditions ISO. Cette nouvelle capacité de production constituera l'Etape 2 de la centrale CIPREL ;

ii) L'ingénierie et la maîtrise d'œuvre pour la supervision des études techniques et la réalisation des travaux de construction de l'Etape 2 de la centrale CIPREL.

3. Composante C : Investissements complémentaires sur le réseau de transport et en câbles de distribution

Les investissements complémentaires comprennent :

i) L'extension du poste 90 kilovolts de Vridi à la suite de l'accroissement de la capacité de production de la centrale électrique mentionnée dans la Composante B du projet.;

ii) Le renforcement du réseau de transport autour d'Abidjan incluant :

- L'extension du réseau 90 kilovolts entre les postes de Treichville et Plateau (comprenant deux circuits de câbles 90 kilovolts, d'environ 4 km chacun, et le matériel de poste connexe);
- Le passage en coupure au poste de Riviera de la ligne de transport 90 kilovolts entre Bia Sud et Ayamé, et l'extension dudit poste;
- La reconstruction du poste de 90/15 kilovolts de Treichville;

iii) Le remplacement d'environ 60 km de câbles 15 kilovolts (câbles isolés au papier imprégné);

III - <u>Résultats et Impacts du Projet</u>

A - <u>Composante A</u>

1. <u>Etude sur la gestion du secteur de l'électricité</u>

Deux études ont été financées par la Banque dans le cadre de la restructuration du secteur de

l'électricité:

- Etude sur l'organisation et la gestion du secteur de l'électricité en Côte d'Ivoire réalisée par Ashurst Morris Crisp (AMC) en 1996 et 1997 pour un montant de 954 443 Dollars des Etats-Unis ;

- Bilan des réformes et proposition d'un nouveau cadre, réalisée par National Economic Research Associates (NERA) en 2003 et 2004, pour un montant de 302 274 $US.

a) Etude Ashurst Morris Crisp (AMC)

i) Objectifs

- Présenter une analyse du cadre institutionnel existant,
- Recommander un cadre institutionnel et un système de régulation et de contrôle du secteur,
- Décrire les rôles, les responsabilités et l'autorité des nouvelles structures et institutions.

ii) Résultats

Cette étude s'est achevée en Septembre 1998, à la fin de la phase de recrutement du personnel essentiel de l'Anaré, de la SOGEPE et de la SOPIE, les trois nouvelles structures issues de la réforme du secteur de l'électricité décidée le 16 Décembre 1998.

b) Etude NERA

i) Objectifs

- Etablir une revue du cadre institutionnel mis en place en 1999,
- Faire un bilan de sa mise en œuvre,
- Proposer un cadre institutionnel pour le moyen terme (horizon 2005) et le long terme (après 2005).

ii) Résultats

Le Gouvernement prépare actuellement la restructuration du secteur de l'électricité après la fin de la concession CIE sur la base des recommandations de cette étude.
Cette restructuration s'effectuera sans l'appui de la Banque, en raison de la clôture du crédit.

2. Etude sur les investissements, l'exploitation et la tarification de l'électricité

a) Prévision de la charge et Développement du réseau au moindre coût

a.1 - Plan Directeur Production - Transport

i) Résultats

- A la suite d'un appel d'offres international, le marché a été attribué au Groupement Hydro Québec International - SNC-Lavalin pour un coût 877 000 Dollars Canadiens et pour une durée d'exécution de 8 mois.

- Les prestations demandées au Consultant ont été correctement exécutées. Les homologues ivoiriens ont effectivement participé aux travaux tant au Canada qu'en Côte d'Ivoire. Ils ont été formés chacun en ce qui le concerne à la conception du modèle de prévision de la demande et à l'utilisation des logiciels acquis pour les simulations de fonctionnement de réseau d'ouvrages de production et de transport. Le matériel informatique et les logiciels ont été totalement livrés.

- L'étude a démarré effectivement en 2000 et le rapport définitif a été remis à la SOPIE en décembre 2001. Le déroulement a connu un retard sensible en raison des indisponibilités du personnel du Consultant occasionnées par les suspensions de décaissements.

ii) Exploitation des résultats de l'étude

- Les logiciels de prévision de demande et de simulations de réseaux acquis font partie de l'ensemble des outils utilisés par la SOPIE pour la révision périodique du plan d'investissement pluriannuel. Quant au matériel informatique, plusieurs ordinateurs sont encore fonctionnels. Cependant, les ordinateurs portables sont pour la plupart hors usage suite à des pannes importantes.

- Au niveau de la planification, les conclusions de l'étude servent de guide à la SOPIE. Mais vu le niveau élevé des investissements recensés dans les plans d'investissement face aux ressources financières limitées du secteur de l'électricité, le choix des projets tient compte du niveau de sécurisation et de qualité requis pour le réseau ivoirien.

- Les résultats de cette étude constituent un document de référence pour le développement du système électrique ivoirien malgré le manque de ressources financières pour la mise en œuvre des investissements recommandés.

a.2 - Plan Directeur d'Electrification Rurale (PDER)

i) Résultats

- L'ensemble des travaux réalisés, sur la période de septembre 1997 à juin 1999, dans le cadre de l'étude du PDER a fait l'objet du rapport final transmis par Tractebel Energy Engineering le 29 juin 1999. Le montant des prestations s'est élevé à 33 157 915 Francs Belges.

- Tractebel a transféré également au GPE le matériel informatique, les logiciels et les bases de données ayant servi à établir les volets du PDER. Par ailleurs, une équipe d'agents homologues a été formée par Tractebel pour la gestion continue et la mise à jour du PDER.

- Tractebel a satisfait aux obligations contractuelles qui lui incombaient dans le cadre ce projet.

ii) Exploitation des résultats de l'étude

- Les acquis du projet sont constitués d'un plan directeur d'électrification rurale et d'un ensemble d'équipements et de logiciels informatiques destinés à la gestion et à la mise à jour dudit plan. Au terme de cette étude, le secteur de l'électricité dispose d'un plan directeur des investissements jusqu'à l'horizon 2020 composé d'un ensemble de 140 projets d'électrification **par raccordement au réseau**, concernant au total 2 175 localités et charges agro-industrielles.

- L'élaboration des programmes d'électrification rurale actuels s'est appuyée sur le PDER.

- En outre, les bases de données développées lors de l'étude de Tractebel contribuent aujourd'hui à la mise en œuvre par la SOPIE d'un Système d'Information Géographique sur l'Electrification Rurale en Côte d'Ivoire (SIG-ER). En effet, ce SIG intègre en particulier les réseaux électriques projetés par l'étude ainsi que les différents projets d'électrification composant le PDER. Cet outil d'aide à la décision et à la planification de l'électrification rurale conçu par la SOPIE sur la base des acquis du PDER est en voie de devenir un standard au sein de l'UPDEA (Union des Pays Producteurs et Distributeurs d'Energie Electrique d'Afrique).

iii) Difficultés rencontrées

- Au terme de sa dernière mission de présentation à Abidjan en février 1999, Tractebel a remis en vrac au Ministère chargé de l'Energie le matériel et les logiciels informatiques ayant servi à établir les volets du PDER. Il est à noter que cette époque coïncide avec la période de mise en place des 3 nouvelles structures issues de la restructuration du secteur ivoirien de l'électricité intervenue en décembre 1998.

- Ces équipements ont ensuite été remis en 2000 à la SOPIE qui, depuis cette restructuration, a en

charge la planification des projets de développement, en particulier de l'électrification rurale. La SOPIE a tenté sans succès la remise en route des équipements informatiques et des logiciels reçus. Elle s'est trouvée confrontée aux difficultés suivantes:

- équipements défectueux ou manquants;
- fichiers introuvables ou non utilisables;
- nécessité de remise à jour de versions anciennes de logiciels et de conversion de fichiers;
- problèmes liés au passage de l'an 2000.

- Dans l'optique de préserver les acquis du PDER, la SOPIE a entamé à partir du mois de juin 2000 une procédure d'entente directe avec Tractebel pour la remise en route des outils informatiques du PDER et à la formation au personnel désigné à cet effet. Le montant élevé de l'offre de Tractebel, n'a pu permettre à la Banque de financer cette remise en route.

a.3 - Plan Directeur de Distribution Urbaine

Cette Etude devait permettre l'établissement d'un Plan Directeur du réseau de Distribution Urbaine dans les principales villes de la Côte d'Ivoire à l'horizon 2015.

La consultation restreinte a été lancée le 27 Juin 2000, aux consultants EDF International, Hydro-Québec International, Europe Power System (EPS) ainsi que Tractebel. Les offres sont en cours d'analyse. Le rapport final sera disponible à fin Août 2002.
Après évaluation, le contrat a été octroyé à EPS. Toutefois, la mise en liquidation d'EPS n'a pas permis l'exécution de l'étude qui devait être soumise à un nouvel appel d'offres. Cet appel d'offres n'a pas pu être organisé à temps.

Après la clôture du crédit, le secteur de l'électricité a décidé de reprendre cette étude sur ses fonds propres, en raison de l'acuité des problèmes de restructuration des réseaux urbains dans les grandes villes de la Côte d'Ivoire en particulier à Abidjan.

a.4 - Actualisation de l'étude de faisabilité du barrage de Soubré

Cette étude a été réalisée par Coyne et Bellier pour un montant total de 321 000 000 F CFA.

i) <u>Résultats</u>

Cette étude a mis en lumière l'importance et l' intérêt de ce projet pour les raisons suivantes :

- Le barrage hydroélectrique de Soubré représente 64% de la capacité de production du parc hydraulique existant ;

- Le dernier dimensionnement du projet a minimisé l'impact environnemental du barrage en préservant tous les sites protégés, en conservant la capacité de production agricole de la zone concernée et en réduisant les déplacements de population ;

- Le coût du kilowattheure produit du projet de barrage de Soubré (18,5 F CFA/kWh) est le plus faible de tous les projets hydroélectriques connus en Côte d'Ivoire ;

- Le coût total de construction de l'aménagement (barrage et équipements) est inférieur à 170 milliards. Ce coût qui est très inférieur aux chiffres avancés par le passé (400 milliards), incite à envisager la réalisation du projet ;

- Le taux de rentabilité interne du projet est de 20%.

b) Etude de la tarification (y compris la réévaluation des principales immobilisations et formule

d'ajustement des tarifs de l'électricité).

b1 - Audit Technique, Comptable et Financier du Secteur

Arthur Andersen a été adjudicataire de cet audit, pour un montant de 3 546 000 Francs Français.

i) Résultats

- Etablissement d'un registre détaillé d'inventaire du secteur;
- Analyse de l'état des actifs et l'évaluation de leur de vie résiduelle;
- Valorisation extra comptable de l'ensemble des actifs du secteur;
- Conception d'un logiciel de gestion des immobilisations

ii) Exploitation des Résultats

- En raison de son caractère extra comptable, la valorisation des actifs du secteur de l'électricité n'a pas pu être utilisée;

b2 - Etude tarifaire

L'étude tarifaire du secteur de l'électricité a été confiée à SNC LAVALIN en juillet 2003, pour un montant de 398 940 Dollars Canadiens.

i) Objectifs

- Proposer toutes les mesures, y compris l'ajustement tarifaire, pouvant concourir à l'équilibre financier du secteur de l'électricité dès 2004 (Phase I);

- Proposer une structure tarifaire pour la facturation aux consommateurs tout en reflétant la structure des coûts et en respectant le principe de péréquation (Phase II).

ii) Résultats

- En conclusion de la Phase I de l'étude, le consultant fait remarquer qu'une hausse tarifaire de 15,7 à 19 milliards F CFA (soit en moyenne entre 7,6% et 10%) est indispensable dès 2004 ;

En ce qui concerne la Phase II, le projet de rapport final de l'étude tarifaire du secteur de l'électricité transmis début juillet 2004 ayant été jugé insuffisant par le comité de pilotage, la Partie Ivoirienne a décidé de résilier le contrat pour non atteinte des objectifs assignés au consultant SNC LAVALIN.

3. Mise au point de mesures pour encourager la privatisation du secteur de l'électricité

a) Préparation de documents types d'appel d'offres applicables à un producteur indépendant d'électricité (IPP)

i). Résultats

- Sélectionné à l'issue d'une consultation restreinte, le cabinet d'ingénieurs-conseils K&M Engineering a réalisé le dossier type d'appel d'offres. Il est à noter que K&M a également conseillé le gouvernement ivoirien dans la mise en œuvre du projet Azito.
- L'étude a débuté en août 1996 avec une durée prévisionnelle de dix (10) semaines.
- Le coût de l'étude a été de 275 094 dollars des Etats-Unis.
- A l'issue de l'étude, les dossiers d'appel d'offres et les projets de contrat ont été remis à l'Etat sur support papier et sous forme de fichiers informatiques

ii). Impacts

Si l'objectif de réaliser un dossier type d'appel d'offres pour IPP a été atteint, il faut reconnaître que l'exécution du projet a rencontré d'énormes difficultés :

- les délais n'ont pas été tenus. Le projet qui était prévu pour dix (10) semaines a duré en réalité plus d'un an ;
- des problèmes de traduction des documents de l'Anglais au Français ;
- le dossier type d'appel d'offres qui était supposé être utilisé pour le projet Azito n'a pas pu l'être compte tenu des retards pris dans la confection du document.

b) Etude pour déterminer le rôle futur des groupes thermiques à vapeur de Vridi

- Cette étude n'a pu être effectuée. Le caractère spécifique des prestations demandées ne nous a pas permis de retenir un consultant même par une procédure de gré à gré.
- Ces turbines ont été retirées de l'exploitation en janvier 2000, pour être déclassées le 27 novembre 2002.

4. Sous-secteur des hydrocarbures

Les deux études prévues dans l'Accord de Crédit sur la planification du système de production et de distribution des hydrocarbures ainsi que sur l'utilisation du butane, n'ont pu être réalisées.

Concernant ce chapitre, le Gouvernement a préféré entreprendre les études suivantes :

- Une étude visant à s'assurer de la qualité de l'étalonnage et du calibrage du dispositif de comptage du gaz naturel alimentant le secteur de l'électricité, de façon à réduire les coûts de cette fourniture de gaz.
- Une évaluation des réserves de gaz naturel de la Côte d'Ivoire
- Une étude du cadre légal et réglementaire du secteur pétrolier

a) Etude visant à s'assurer de la qualité de l'étalonnage et du calibrage du dispositif de comptage du gaz naturel alimentant le secteur de l'électricité

Les principaux objectifs visés par cette étude étaient :

- De contrôler le fonctionnement des instruments de comptage du gaz naturel livré au secteur électrique ;
- De définir une procédure qualité de suivi et de contrôle par l'Etat de l'étalonnage et du calibrage du dispositif de comptage effectués par les opérateurs gaziers.

i) Résultats

- Dès les premières semaines de la mission, la seule unité de comptage d'alors, exploitée par UMIC, a été auditée techniquement. Cet audit a été élargi en 1999 à l'unité de comptage de Ocean Energy à Azito et à ceux d'Apache à Vridi et à Azito. Cet audit a donné lieu à des recommandations.
- Un ensemble de procédures ont été élaborées afin d'assurer la transparence et l'équité des opérations de comptage au bénéfice de l'ensemble des parties.
- Par ailleurs, une équipe d'experts ivoiriens a suivi un programme de formations en métrologie et en qualité.
- En outre, le secteur de l'électricité a acquis un programme informatique de calcul permettant la vérification de la chaîne complète de comptage de gaz naturel, allant des capteurs aux calculateurs.

ii) Difficultés et insuffisances

Initialement prévu pour durer une (1) année, le projet s'est étendu sur plus de deux (2) ans suite à la démobilisation de l'équipe du Consultant CETE Apave dont le sous-traitant GSO avait affecté les experts, qui travaillaient sur le projet, à d'autres fonctions sans les remplacer dans l'équipe projet.

b) Evaluation des Réserves de Gaz naturel de la Côte d'Ivoire

- Un contrat a été octroyé le 09/08/99 à Gaffney Cline pour un montant de 40 030 Dollars US pour établir une estimation des réserves de gaz naturel de la Côte d'Ivoire.

- Cette étude est achevée depuis fin mai 1999. Elle a permis d'assurer que les réserves de gaz en Côte d'Ivoire permettaient d'assurer l'approvisionnement du secteur de l'électricité.

c) Etude du cadre légal et réglementaire du secteur pétrolier

- Cette étude se situe dans le cadre de la privatisation de la SIR et de la GESTOCI. Elle vise à recommander un cadre institutionnel garantissant une meilleure maîtrise des contrôles administratifs, techniques, de sécurité et de protection de l'environnement.
- Le contrat a été octroyé à l'association Coudert Frères – Booz, Allen & Hamilton pour un montant de 399 880 USD. Cette étude n'a pu être démarrée, en raison d'une suspension de décaissement qui a empêché le paiement de l'avance au démarrage.

B- Composante B : Développement des Moyens de Production

1. Centrale Electrique CIPREL Etape 2

A l'issue d'un appel d'offres international ouvert, le marché a été attribué à European Gas Turbines (EGT) le 16 Février 1996, pour un montant total de 141 757 000 Francs Français et 2 269 676 000 Francs CFA, avec un délai d'exécution de quatorze mois et demi pour la Réception Opérationnelle.

Un avenant à ce contrat a permis de modifier le système de contrôle commande, ainsi que pour constituer un stock de pièces de rechange et de sécurité.

L'Etape 2 de la Centrale CIPREL est constituée d'une turbine EGT d'une puissance nominale de 110 MW alimentée au gaz naturel et pouvant utiliser également du HVO comme combustible de secours.

Le visa de conformité a été délivré le 5 février 1998.

2. Services d'Ingénierie

Un Contrat de Maîtrise d'œuvre et d'Ingénierie a été signé le 9 Février 1996 avec la CIPREL pour un montant d'un Milliard F CFA pour les études techniques ainsi que le contrôle des travaux de l'Etape 2 de la centrale de CIPREL.

3. Impact

L'Etape 2 de la centrale CIPREL a été financée par un prêt de l'IDA rétrocédé à la CIPREL selon une convention de financement dont les principales conditions sont les suivantes :

- Taux d'intérêt annuel : 8%
- Durée du prêt : 17 ans, dont cinq ans de différé

L'appel d'offres international réalisé dans les conditions de la Banque a permis de générer une économie d'environ 10 millions Dollars US par rapport au montant inscrit dans l'Accord de Crédit.

Par ailleurs, le contrat de take or pay a été entièrement rempli par la Partie Ivoirienne et la CIPREL, permettant ainsi aux turbines de la CIPREL d'assurer en moyenne 51% de la production thermique et 31 % de la production totale, depuis la mise en service de l'Etape 2 en Juin 1997.

C - Composante C: Investissements Complémentaires

1. Objectifs

L'objectif essentiel visé par la composante C du projet consiste à : *accroître la fiabilité et la qualité de l'exploitation par le renforcement et l'amélioration du réseau de transport de l'électricité.*

Cet objectif se traduit par les actions suivantes :

- assurer en toute sécurité le transit des énergies produites à Abidjan, particulièrement à Vridi ;
- fiabiliser l'alimentation électrique de la ville d'Abidjan en réalisant un bouclage des lignes 90 kV et 225 kV ;

2. Résultats

a) Description

- la réhabilitation et le renforcement du poste extérieur 90 kV de la centrale de Vridi, afin de répondre à l'accroissement de la capacité de production ;
- le renforcement du réseau de transport autour d'Abidjan incluant :

- la création d'une double liaison souterraine 90 kV de 2,3 km entre les postes de Treichville et du Plateau et l'extension du poste du Plateau,
- la reconstruction du poste 90/15 kV de Treichville, sur le même site ;
- le passage en coupure au poste 90 kV de la Riviéra de la ligne 90 kV existante Ayamé-Bia Sud, et l'extension du poste de la Riviera,

- la création d'une quatrième travée transformateur 90/15 kV, 36 MVA, au poste de Bia-Sud ;
- la création d'une troisième travée transformateur 90/15 kV, 36 MVA, au poste d'Abobo ;
- la fourniture et la livraison de deux (02) transformateurs 225/90 kV, de 70 MVA chacun;
- le remplacement d'environ 60 kilomètres de vieux câbles souterrains 15 kV isolés au papier imprégné;
- l'intégration de la centrale électrique CIPREL au dispatching d'Abidjan;

b) Organisation des travaux

Les investissements complémentaires de renforcement et d'extension du réseau de transport ont été mis en œuvre par le Groupe Projet Energie (GPE), assisté de :

- l'EECI, et la DCGTX. (devenue BNETD), puis la SOPIE, après la liquidation de l'EECI et la réorganisation du secteur de l'électricité en 1998 ;
- du consultant canadien SNC Lavalin Int., pour la préparation des études techniques, l'établissement des dossiers d'appel d'offres et des marchés,

l'évaluation des offres, ainsi que la supervision des travaux.

Tous les travaux et prestations ont fait l'objet d'une coordination appropriée avec la CIE, qui a été associée à toutes les phases du projet, notamment la conception et la supervision des travaux.

Les entreprises contractantes sont les suivantes :

- SPIE Enertrans
- Groupement d'entreprises ALSTOM-ETDE-SIDELAF-SETAO,
- PUROIL S.A,
- PIRELLI.

c) Description des marchés

La composante C a fait l'objet de six (6) marchés.

Toutefois, le présent rapport ne décrit que les quatre (4) marchés suivants : GPE004, GPE005, GPE006

et GPE015.

c1 - Contrats

Sept .96 et déc. 98: marché GPE004 - contrat SNC-Lavalin Int.
Assistance technique dans la mise en oeuvre des investissements complémentaires relatifs au réseau de transport d'énergie électrique de la ville d'Abidjan ;

18 août 1998: marché GPE 005 – contrat SPIE Enertrans
Construction du poste de Treichville, des liaisons souterraines 90 kV Treichville_Plateau et de l'extension du poste 90 kV du plateau. Délais 18 mois ;

15 septembre 1998: marché GPE 006 - contrat Groupement d'Entreprises ALSTOM/ ETDE/ SIDELAF/ SETAO
Extension du poste 90 kV de Riviéra comprenant l'entrée en coupure de la ligne 90 kV Bia_Sud Grand_Bassam, le renforcement du poste 90 kV de Vridi, les additions de travée transformateur 90/15 kV aux postes de Bia_Sud et d'Abobo. Délais 18 mois ;

31octobre 2000: marché GPE 015 – contrat PUROIL S.A.
Fourniture de deux (2) transformateurs 225/90 kV 70 MVA. Mise en vigueur du contrat le 15 juillet 2002 pour une durée de 36 semaines. Ces transformateurs sont destinés à remplacer ceux prélevés sur le réseau électrique et installés en urgence aux postes de Vridi et d'Abobo.

Ensemble des marchés GPE 004, GPE 005, GPE 006, GPE 015

Marché	**COUT INITIAL**	**AVENANTS**	**SURCOUTS**	**COUT REVISE**
$ CAN	1 217 869	588 288	0	1 806 157
FRF	80 589 473	2 816 659	3 801 269	87 207 401
CFA	1 724 089 918	21 823 635	203 578 373	1 949 491 926
CHF	1 040 365	0	0	1 040 365
Total CFA équiv	**10 746 364 778**	**562 336 255**	**583 705 273**	**11 892 406 306**

1FRF = 100 FCFA 1$CAN = 440 FCFA 1CHF = 410,880028 FCFA

c2 - Achèvement des projets

- Le marché GPE 004 s'est prématurément achevé en juillet 2001.
- Le marché GPE 005 est terminé depuis le 12 janvier 2001.
- Le marché GPE 006 a été partiellement achevé le 25 juin 2001. Au 31 décembre 2001, les travaux de ligne 90 kV et les installations du site de Vridi étaient achevés et en exploitation. Sur les trois (03) autres sites de Riviéra, d'Abobo, et de Bia Sud les équipements à courant fort étaient installés et provisoirement mis en service en attente des équipements de téléconduite et de télécommunications, réceptionnés le 18 octobre 2004.
- Le marché GPE006 a fait l'objet à partir de septembre 2001 de litiges portant sur l'installation des équipements de téléconduite et de télécommunications. Le conciliateur saisi par le contractant en février 2002 a rendu sa décision le 07 octobre 2002. Toutefois, le contractant n'a accepté d'appliquer les décisions du conciliateur et de reprendre les travaux qu'au mois d'avril 2004, invoquant à la dernière minute la situation de crise sociopolitique en Côte d'Ivoire.
- Le marché GPE 015 est terminé depuis le 17 janvier 2004.

3. Impact

Les résultats attendus du projet après la mise en service des ouvrages sont mesurés par :

- d'une part, la qualité de service observée sur le réseau d'Abidjan ;
- d'autre part, le taux de disponibilité des équipements installés.

L'évaluation des résultats est établie par l'exploitant suivant une périodicité propre à ses méthodes de gestion technique, mais au moins une fois à la fin de chaque exercice.

La mise à disposition de l'ensemble des données par la CIE n'a pu être faite dans les délais d'édition du présent rapport. A défaut, nous mesurerons les résultats du projet par les informations des tableaux ci-dessous fournies par la CIE :

Ensemble du réseau: Evolution du nombre de déclenchements des lignes 90kV

	1999	2000	2001	2002	2003	2004
Nombre Déclenchements	350	292	256	378	342	307
Variation (%)		**-17%**	**-12%**	**48%**	**-10%**	**-10%**
Ens. Période	**-12%**					

Ensemble du réseau: Evolution du nombre de déclenchements des Transformateurs 90/16,5 kV

	1999	2000	2001	2002	2003	2004
Nombre Déclenchements	316	258	195	190	158	186
Variation (%)		**-18%**	**-24%**	**-3%**	**-17%**	**18%**
Ens. Période	**-41%**					

Poste de Treichville: Evolution du nombre de déclenchements des Départs HTA

	1999	2000	2001	2002	2003	2004
Nombre Déclenchements	179	60	83	69	45	76
Variation (%)		**-66%**	**38%**	**-17%**	**-35%**	**69%**
Ens. Période	**-58%**					

Poste de Treichville: Evolution du nombre de déclenchements des transformateurs 90/16,5 kV

	1999	2000	2001	2002	2003	2004
Nombre Déclenchements	21	13	9	2	5	13
Variation (%)		**-38%**	**-31%**	**-78%**	**150%**	**160%**
Ens. Période	**-38%**					

4. Difficultés rencontrées dans l'exécution de la composante C

Les principales difficultés rencontrées au cours de l'exécution du projet sont énumérées ci-après. Elles ont été à l'origine de nombreux dépassements de délais et d'importants surcoûts financiers (réclamations financières des entrepreneurs, intérêts moratoires, frais de magasinage, frais de gestion du projet, etc.). Il s'agit principalement de :

i) troubles et crises sociopolitiques en Côte d'Ivoire pendant toute la durée de vie du projet de 1999 à 2004.

ii) organisation non efficiente du Consultant SNC Lavalin dans les domaines suivants :

- organisation et circuit pour l'approbation des plans et documents d'exécution non efficients ; à

l'origine de plusieurs plaintes et réclamations des contractants;

- défaillance dans le suivi et la production régulière des rapports périodiques;

iii) délais de signature des marchés par l'Administration trop longs;

iv) allocations budgétaires annuelles du Trésor ivoirien pour la couverture des taxes insuffisantes par rapport aux fonds disponibles auprès des bailleurs de fonds et par rapport à l'avancement réel des projets, ce qui a eu pour conséquences :

- de nombreux blocages de fournitures en douanes ayant occasionné des ralentissements voire des arrêts de chantier ;
- d'importants arriérés de paiement des frais de douanes et de la TVA aux contractants ;
- de nombreuses réclamations financières demandées par les contractants pour les frais de magasinage et les extensions de délais ;
- le paiement d'importants intérêts moratoires;
- l'allongement des délais de réalisation.

v) retards dans les décaissements dus à la procédure SIGFIP, ayant eu pour conséquences :

- de nombreux ralentissements voire des arrêts de chantier ;
- de nombreuses réclamations financières demandées par les contractants pour des extensions de délais ;
- le paiement d'importants intérêts moratoires ;
- l'allongement des délais de réalisation.

vi) Un problème non encore totalement élucidé a entraîné de fréquents rejets par la Banque d'une partie des montants facturés en monnaie locale, éligibles au crédit IDA et régulièrement transmis à la Banque. Certains de ces montants n'ont pas été payés jusqu'à la clôture du crédit.

5. Insuffisances

- La non réalisation du dernier tronçon de la ceinture « Est » d'Abidjan, la ligne 225 kV Vridi-Riviera-Abobo, constitue à n'en point douter un sérieux handicap pour l'exploitabilité, la sécurité et la fiabilité de l'alimentation électrique de la ville d'Abidjan. Aussi, la Côte d'Ivoire vient-elle d'achever en 2004 la construction de la première tranche de ce tronçon, la ligne 225 kV Vridi-Riviera. Une recherche de financement est en cours pour achever ladite ceinture avec l'entrée en coupure au poste de Riviéra de la ligne 225 kV Ghana-Côte d'Ivoire.
- Avec le dernier ouvrage susmentionné devrait s'achever véritablement le renforcement à court terme du réseau à haute tension d'Abidjan, nonobstant le fait que d'importants besoins d'injection supplémentaire d'énergie se font sentir dans plusieurs quartiers et communes d'Abidjan, notamment Yopougon, Marcory – Koumassi, Djibi.

D - Formation

Le Crédit a financé un important volet de renforcement de capacités, sous deux angles majeurs :

1) Formation d'homologues par les Consultants chargés de réaliser les études, en particulier dans les domaines suivants:

- Planification des moyens de production, de transport et d'électrification rurale
- Etude tarifaire
- Maîtrise d'œuvre

Cette formation est destinée à familiariser les homologues avec les outils utilisés et à leur permettre de poursuivre l'utilisation des modèles et de mettre à jour les études ;

2) Formation spécifique dans des firmes spécialisées et dans des centres de formation.

Dans ce cadre, 33 personnes ont ainsi suivi des cours de formation à l'extérieur de la Côte d'Ivoire, pour un montant avoisinant 200 Millions F CFA, avec un accent particulier sur les domaines suivants :

- Régulation économique et financière
- Analyse financière
- Réforme Institutionnel

- Politique de l'Energie
- Gestion de Projets

La très grande majorité de ces agents exercent encore dans le secteur de l'électricité, à la SOPIE, la SOGEPE et à l'Anaré.

En Annexe, le détail de ces formations.

IV- Difficultés et Insuffisances du Projet

A - Exécution du Projet

1. Suivi du Projet

Le suivi du projet a été assuré par le Groupe Projet Energie (GPE), créé par l'arrêté n°028 du 15 Janvier 1995.Le GPE était composé de représentants du Ministère des Mines et de l'Energie, de l'Energie Electrique de Côte d'Ivoire (EECI), de la Direction et Contrôle des Grands Travaux (DCGTx), de la Société Nationale d'Opérations Pétrolières (PETROCI) et du Cabinet KANGA et Associés, Conseil du Gouvernement.

Après la restructuration du cadre institutionnel du secteur de l'électricité, survenue en Décembre 1998, le GPE a été remplacé par la Cellule de Coordination du Projet Energie Secteur Prié, créée le 13 décembre 1999, composée des représentants de la SOGEPE, de la SOPIE, ainsi que du cabinet du Ministre des Mines et de l'Energie.

En 1995, la DCGTx disputait à l'EECI la maîtrise d'œuvre des investissements du secteur de l'électricité. C'est la raison fondamentale du choix du Gouvernement de confier le suivi du projet à un groupe ad hoc composé entre autres des représentants de chacune de ces deux structures et présidée par un membre du Cabinet du Ministre des Mines et de l'Energie. Cette option a permis de conduire le projet avec des résultats satisfaisants en ce qui concerne en particulier les composantes B et C. La coordination du projet a été correctement assurée par les présidents successifs, grâce à la circulation des informations, à la tenue de réunions périodiques, au suivi de l'exécution des activités par des personnes ressources nommément désignées et qui rendaient compte directement au Président du GPE.

Après la restructuration du secteur survenue en 1999, les responsabilités étant clairement définies dans le secteur, le choix de conserver un groupe ad hoc pour le projet n'a pas semblé pertinent. L'Accord de Crédit aurait dû être amendé pour tenir compte de la mise en place effective des nouvelles structures (SOGEPE, SOPIE, Anaré) et de la liquidation de l'EECI, du FNEE, ainsi que de la participation moindre du BNETD aux activités du secteur de l'électricité. Par ailleurs, le départ du secteur de la plupart des membres du GPE en 1999 a fortement perturbé le suivi du projet, en particulier pour les aspects comptables et financiers.

La solution idéale consiste à loger directement un projet dans une entité structurée plutôt que de créer un groupe ad hoc. Même la proposition de recruter des employés permanents rémunérés directement par le projet ne suffit pas pour garantir la pérennité des résultats du projet.

2. Exécution du Projet

En se référant au chapitre III du présent rapport d'achèvement, il apparaît qu'excepté pour le sous-secteur hydrocarbures,
l'ensemble des objectifs fixés dans l'Accord de Crédit a été atteint.

En particulier :

- La presque totalité des études prévues ont été menées;
- l'Etape 2 de la Centrale CIPREL a été mise en service à la grande satisfaction du Gouvernement ;

- Les travaux de renforcement du réseau de transport dans la Ville d'Abidjan ont été mis en service. ;
- Les renforcements de capacités ont pu s'opérer, avec un accent sur les nouveaux métiers du secteur (régulation, analyse financière etc).

D - Performance des Bureaux d'études

Comme indiqué au point A, la plupart des études prévues dans le Projet ont été réalisées avec succès. En dehors de l'étude tarifaire, exécutée par SNC Lavalin, aucune réclamation n'a été émise par le GPE sur les prestations des consultants.

Il faut toutefois remarquer que la crise sociopolitique que connaît le Côte d'Ivoire depuis septembre 2002 a fortement réduit
l'intérêt pour les consultants extérieurs de participer à nos consultations. Deux appels d'offres concernant la planification stratégique et l'audit technique et financier ont dû être annulés, faute de réponse à nos demandes de propositions.

E - Performance de la Banque

En ce qui concerne les performances de la Banque, nous avons bénéficié de l'appui constant du Task Manager, ainsi que des services du bureau résident de la Banque à Abidjan, en particulier pour les décaissements et les passations de marché, même pendant les périodes difficiles que la Côte d'Ivoire a traversées depuis septembre 2002.

L'avancement du projet a été pénalisé par :

- Les suspensions de décaissements qui ont ralenti l'exécution de certaines études et des travaux de la composante C ;

- La clôture du crédit en septembre 2004, alors qu'environ 10 Millions de dollars US étaient encore disponibles. Ce montant aurait pu servir à financer une composante environnementale liée au projet Azito, ainsi que des travaux au niveau réseau de transport. Malheureusement la réallocation des fonds du crédit n'a pu être effectuée à temps.

Annexe "Formation" **SYNTHESE DES FORMATIONS FINANCEES PAR IDA**

Nom & Prenoms	Structure	Dates des formations	Lieux	Thèmes	Montants décaissés
TANOE Bilé	EECI	1996	Washingon CEFED	Participation du secteur privé au développement du secteur électrique	
AYE Luc	DCGTx	1996	Washingon CEFED	Participation du secteur privé au développement du secteur électrique	
KOUAME Honoré	EECI	1996	Washingon IP3 et CEFED	Participation du secteur privé au développement du secteur électrique	3,650,000
ONEZOU Toussaint	Ministère de l'Energie	1996	Washingon IP3 et CEFED	Participation du secteur privé au développement du secteur électrique	3,650,000
KOUADIO Nestor	SOPIE	1996	Dakar, CESAG		2,361,375
NAGO Lucas	Ministère de l'Energie	1997	Montréal, HEC		12,521,730
Jacques CHEVALIER	Anaré	Du 24 au 31 Oct 1999	LONDRES	Reform and Regulation of	5,665,700
			Adam Smith Inst,	the Electricity Sector	
Yao N'Dri Bertin	Anaré	Du 04 au 20 Déc 1999	WASHINGTON	Management Strategies and	5,912,150
			IP3	Financing Technics for the	
				Public Private Infrast,	
KROU Henri Pepin	Anaré	Du 07 au 22 Janv 2000	GAINESVILLE	The seventh International	4,743,733
			Univers,de Floride	Training Program on Utility	
				Regulation and Strategy	
SORO Napian	Anaré	Du 28 Janv au 26 Fev 2000	GRENOBLE	Formation sur les marchés	5,257,500
			IEPE	Internationaux et Politique	
				de l'Energie	
ELLAINGANH Solange	Anaré	Du 25 Fév au 20 Mars 2000	GRENOBLE	Reformes Institutionnelles	2,941,750
			IEPE	et Gestion des Industries	
				Electriques	
Jacques CHEVALIER	Anaré	Du 03 au 22 Mars 2000	WASHINGTON	Analyse Financière des	9,553,262
			IP3	Infrastructures et tarification	
ETTY Edmond	Anaré	Du 03 au 22 Mars 2000	WASHINGTON	Formation sur les Infrastruc-	6,234,596
			IP3	tures financières et analyse	
				des "tarifs rate setting"	
BAILLY Etienne	Anaré	Du 17 Mars au 04 Avril 2000	WASHINGTON	Regulating Electric Utilities	5,781,221
			IP3	and Energy Network	
KOUADIO Jean Bonin	Anaré	Du 20 Mai au 03 Juin 2000	WASHINGTON	Partners Projects:Concession	6,827,583
			IP3	law, designingthe security	
				package and negotiating Contrats	
AKA Francis Kétiboah	Anaré	Du 07 au 25 Juin 2000	GAINESVILLE	Utility Regulation & Strategiy & the	5,710,667
			Univers,de Floride	English & Economics Review	
IRIE BI Youan	SOGEPE	Du 26 Juin au 21Juil 2000	MONTREAL	Gestion budgetaire et financière des	9,021,600
			Setym International	organisations & des projets	
Nom & Prenoms		**Dates des formations**	**Lieux**	**Thèmes des Formations**	**Montants décaissés**
CISSE Kader	SOGEPE	Du 31Juil au 25 Août 2000	MONTREAL		9,293,600
			Setym International		
LOUA ZOMI	Direction de l'Energie	Du 19 au 30 Mai 2000	MONTREAL	Forum mondial sur la regulation	3,314,480
			IEPF	de l'Energie	
KOUAME Bruce	SOGEPE	Du 17 Mai au 05 Juin 2000	ISRAEL (Tivon)	Cours International sur la gestion de	3,625,120
			Gallile College	Projets	
BOUEDY JC	SOGEPE	Du 19 Fév au 05 Mars 2000	WASHINGTON	Managing BOOT/BOT Centers	7,728,500
BOUEDY JC & ETTY Edmond	SOGEPE	Du 03 au 13 Juin 2000	LONDRES	Projets finance risk analysis	14,216,917
KALOU Sylvie et DJE	SOGEPE	Du 09 au 22 Oct 2000	PARIS	Documentaliste,organisez et	5,009,417
		Du 30 Nov au 12 Déc 2000	PARIS	optimisez votre fonction	
KOUADIO Nestor	SOPIE	Du 17 au 24 Juin 2000	PARIS	Stratégies et Techniques d'achat-	2,800,450
			Eurofutur	Approvisionnements	
KOUAME N'Guessan	SOPIE	Du 06 au 10 Nov 2000	PARIS	Stratégies et Techniques d'achat-	2,380,450
			Eurofutur	Approvisionnements	
AHOUSSOU Yves	SOPIE	Du 25 Sept au 20 Oct 2000	MONTREAL	Planification,contrôle et intranet de	
			Setym International	gestion de projet	
YAO BI Jean Luc	SOPIE	Du 26 Juin au 25 Août 2000	MONTREAL	Planification,contrôle et intranet de	19,084,579
			Setym International	gestion de projet	
SIDIBE Gabriel	SOGEPE	Du 26 Février au 16 Mars 2001	France	Réformes institutionnelles et	5,941,000
SAMASSI Youssouf	Direction de l'Energie	Du 19 au 25 Mai 2002	Canada (Montréal)	gestion des industries électriques	
KOIDJANE Francis	Ministère Energie	Du 19 au 25 Mai 2002	Canada (Montréal)	Cours sur la réglémentation	18,031,700
AKA Francis Kétiboah	Anaré	Du 19 au 25 Mai 2002	Canada (Montréal)	économique et financière	
YAO BI Jean Luc	SOPIE	Du 19 au 25 Mai 2002	Canada (Montréal)	Cours sur la réglémentation	

Annexe "Décaissement"

Credit 2754 - IVC 79.66

Disbursement (US $ millions)

Period Ending	Appraisal Estimate	Actual Amount	Act. as % of appraisal	Act as % of Crédit
Dec 96	40.00	7.28	18.19	9.13
Dec 97	49.57	28.01	56.50	35.16
Dec 98	62.71	41.03	65.43	51.51
Déc 99	71.32	43.95	61.63	55.18
Déc 00		50.71		63.66
Déc 01		51.24		64.32
Déc 02		56.16		70.50
Déc 03		64.81		81.35
Déc 04		68.24		85.66