

**AFRICAN DEVELOPMENT BANK GROUP**



**BENIN/TOGO : COMMUNAUTE ELECTRIQUE DU BENIN  
(CEB) ENERGY PRODUCTION DISPATCHING AND  
TRANSPORT PROJECT**

**Project Performance Evaluation Report (PPER)**

**OPERATIONS EVALUATION DEPARTMENT  
(OPEV)**

**18 December 2002**

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## **EXCHANGE RATE AND ABBREVIATIONS**

Currency	Appraisal (2 <sup>nd</sup> Quarter 1987)	PCR (4 <sup>th</sup> Quarter 1998)	PPER (4 <sup>th</sup> Quarter 2002)
UA / CFA Franc	357. 2325	803.499	879.947

### **UNITS OF MEASUREMENT**

1 GW	=	Gigawatt	=	1000 MW
1 GWh	=	Gigawatt-hour	=	1000 MWh
1 kV	=	Kilovolt	=	1000 volts (V)
1 kVA	=	Kilovolt-Ampere	=	1000 VA
1 kW	=	Kilowatt	=	1000 watts (W)
1 kWh	=	Kilowatt hour	=	1000 Wh
1 MVA	=	Megavolt-ampere	=	1000 KVA
1 MW	=	Megawatt	=	1000KW
1 MWh	=	Megawatt hour	=	1000 kWh
1 TOE	=	Ton of Oil Equivalent	=	0.427 TJ

### **ACRONYMS AND ABBREVIATIONS**

ADB	African Development Bank
ADF	African Development Fund
BOO	Build Operate and Own
BOT	Build Operate and Transfer
CAT	Cash flow After Taxation
CEB	Communauté électrique du Bénin
CEET	Compagnie d'énergie électrique du Togo [Togo Electricity Company]
CIMAO	Cimenteries de l'Afrique de l'Ouest
CTL	Centrale thermique de Lomé [Lome Thermal Generating Station]
GDP	Gross Domestic Product
HT	High Tension
IRR	Internal Rate of Return
LC	Local Currency
LT	Low Tension
MT	Medium tension
OTP	Office togolais des phosphates [Togo Phosphates Agency]
SBEE	Société béninoise d'électricité et d'eau [Benin Electricity and Water Company]
SCO	Société de cimenterie d'Onigbolo [Onigbolo Cement Company]
TAG	Gas Turbine
TO	Turnover
VRA	Volta River Authority
WACEM	West African Cement

**FISCAL YEAR**  
1 January – 31 December

**Ratings Summary**

N°	Indicators	Ratings (1 to 4)		PPER Comments
		PCR	PPER	
1	Relevance and entry quality	N.S.	3.00	Satisfactory. A feasibility study accompanied the request. The project falls within the framework of the Bank and countries' development programs.
2	Effectiveness (attainment of objectives and results)	N.S.	3.26	Satisfactory. The objective of natural resources development within a regional framework was attained.
3	Effectiveness	N.S.	4.00	Highly satisfactory. The project return was confirmed.
4	Impact on institutional development (ID)	N.S.	2.85	Inadequate. The CEB financial restructuring was not carried out; absence of technology transfer.
5	Sustainability	N.S.	3.00	Satisfactory. The supply of spare parts is guaranteed. The technical staff are well trained and the internal mobility minimal.
6.	Overall performance	N.S.	3.22	Satisfactory
7.	Borrowers' performance	N.S.	2.16	Inadequate. The borrowers were hardly noticeable during the project cycle.
8.	Bank's performance	N.S.	3.00	Satisfactory. The Bank participated right from project inception and accompanied the process throughout various phases of the project cycle.

## Preface

1. This Project Performance Evaluation Report (PPER) concerns the *Communauté électrique du Bénin's* (CEB) Electric Energy Production Dispatching and Transport Project.
2. Benin and Togo initiated the project within the framework of concerted action to reduce their dependence on Ghana for electricity.
3. The Bank prepared the project appraisal report (BENB-TOGB/TEEE/87/01) in 1987 with a loan of UA 6.77 million, while the CEB participated to the tune of UA 1.87 million, i.e. in proportions of about 80% and 20%, respectively.
4. The completion report (ADF/BD/IF/99/257) was prepared in November 1999. It addressed the project's impact on development and the performance of the executing agency and the Bank.
5. The decision to evaluate the project performance falls within the province of regional economic integration and cooperation studies under OPEV's three-year program. The aim of the PPER is to shed light on CEB's experiences with regard to managing the interconnected electricity networks.
6. The final version of the PPER takes into account comments and remarks from the CEB and the operational departments concerned.

### PROJECT BASIC DATA

1. Country : Benin/Togo  
 2. Project name : Electricity Production Dispatching and Transport of the *Communauté électrique du Bénin*  
 3. Loan number : F/CEB/BN/TOG/EL/87/1  
 4. Borrower : Government of the Republic of Benin  
 Government of the Republic of Togo  
 5. Beneficiary : *Communauté électrique du Bénin* (CEB)  
 6. Executing agency : CEB

#### A. Loan

	Estimate At Appraisal	Actual on Completion
1 Amount (in UA million)	7.46	6.77
2 Approval date	August 1987	19 August 1987
3 Signature date	N. S.	26 February 1988
4 Date of effectiveness	25 August 1988	2 January 1992

#### B. Project Data

##### 1. Financing Plan (in UA million)

Sources	Estimate at Appraisal			Actual			Gap	Gap in %
	For. Exc.	Loc. Cur.	Total	For. Exc.	Loc. Cur.	Total		
ADF	7.46	-	7.46	6.77	0	6.77	-0.69	-9.25
CEB	-	0.84	0.84	0	1.87	1.87	1.03	122.62
Total	7.46	0.84	8.30	6.77	1.87	8.64	0.34	4.10

2. Date of first disbursement: Estimate: 1988      Actual: 26 May 1992  
 3. Date of final disbursement: Estimate: 1991      Actual: 9 June 1998

#### C. Implementation Performance Indicators

	UA million	%	LC million	%
Overrun/Cost estimate	-0.69	-9.25	1.03	122.6
Delay/Advance vis-à-vis the schedule	+27 months	100%		
Delay in entry into force	40 months			
Delay in first disbursement	36 months			
Number of extensions of deadline of final disbursement	1			
Project status	Completed			

## D. Missions

	Periods	Number of Persons	Composition	Man/Weeks
Appraisal	April 1987	2	1 Electrical engineer 1 Financial analyst	4
Supervision	07.02 to 19.02 1995	1	1 Electrical engineer	2
	15.07 to 30.07 1997	1	1 Electrical engineer	2
	01.05 to 08.05 1998	1	1 Electrical engineer	1
Audit	18.06 to 02.07 1995	2	2 Auditors	4
Completion	07.12 to 17.12 1998	2	1 Electrical engineer 1 Financial analyst	2
Evaluation	30/09 to 13/10/2002	1	1 Evaluation expert	2
<b>Total</b>		<b>10</b>		<b>17</b>

## E. Project Disbursement Schedule (in UA thousand)

Source of Finance		YEARS											TOTAL
		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Appraisal Estimate	ADF	2462	1641	2462	895								7460
	CEB	277	185	277	101								840
	TOTAL	2739	1826	2739	996	0	0	0	0	0	0	0	8300
	%	33	22	33	12	0	0	0	0	0	0	0	100
Actual	ADF	-	-	-	-	666	224	1593	2832	0	930	525	6770
	CEB	-	-	-	-	56	20	22	308	800	34	630	1870
	TOTAL	-	-	-	-	722	244	1615	3140	800	964	1155	8640
	%	-	-	-	-	8	3	19	36	9	11	13	100

Source: Bank completion report

## BENIN

## Projects Financed by the Bank by Sector and Lending Instrument as at 11/07/2002

(Amount in UA)

SECTOR	Instrument	Operations		Status			
		No.	Amount Approved	Completed		Active/Effective	
				No.	Amount Approved	No.	Amount Approved
Agriculture and Rural Development	PL	12	101,073,123	5	28,696,823	7	72,376,300
	<b>Total</b>	<b>12</b>	<b>101,073,123</b>	<b>5</b>	<b>28,696,823</b>	<b>7</b>	<b>72,376,300</b>
Industries, Mines and Mining	PL	1	1,544,000			1	1,544,000
	<b>Total</b>	<b>1</b>	<b>1,544,000</b>			<b>1</b>	<b>1,544,000</b>
Transport	PL	11	78,279,182	9	62,279,182	2	16,000,000
	TA	3	1,731,577	3	1,731,577	0	0
	GA	2	1,971,578	1	1,381,578	1	590,000
	<b>Total</b>	<b>16</b>	<b>81,982,337</b>	<b>13</b>	<b>65,392,337</b>	<b>3</b>	<b>16,590,000</b>
Water and Sanitation	GA	1	1,289,473			1	1,289,473
	<b>Total</b>	<b>1</b>	<b>1,289,473</b>			<b>1</b>	<b>1,289,473</b>
Energy	PL	5	21,589,468	4	16,789,468	1	4,800,000
	GA	1	700,000			1	700,000
	<b>Total</b>	<b>6</b>	<b>22,289,468</b>	<b>4</b>	<b>16,789,468</b>	<b>2</b>	<b>5,500,000</b>
Communication	PL	3	24,647,356	3	24,647,356	0	0
	GA	1	690,789	1	690,789	0	0
	<b>Total</b>	<b>4</b>	<b>25,338,145</b>	<b>4</b>	<b>25,338,145</b>	<b>0</b>	<b>0</b>
Finance	LC	2	3,500,000	2	3,500,000	0	0
	<b>Total</b>	<b>2</b>	<b>3,500,000</b>	<b>2</b>	<b>3,500,000</b>	<b>0</b>	<b>0</b>
Social	PL	9	72,031,821	4	35,451,301	5	36,580,520
	TI	1	676,052	1	676,052	0	0
	TA	1	419,079	1	419,079	0	0
	GI	1	2,000,000			1	2,000,000
	GA	1	2,785,261	1	2,785,261	0	0
	<b>Total</b>	<b>13</b>	<b>77,912,213</b>	<b>7</b>	<b>39,331,693</b>	<b>6</b>	<b>38,580,520</b>
Multisector	PL	1	3,592,103	1	3,592,103	0	0
	SL	2	24,868,404	2	24,868,404	0	0
	TA	1	691,710	1	691,710	0	0
	GA	1	1,085,000	1	1,085,000	0	0
	<b>Total</b>	<b>5</b>	<b>30,237,217</b>	<b>5</b>	<b>30,237,217</b>	<b>0</b>	<b>0</b>
Total	PL	42	302,757,053	26	171,456,233	16	131,300,820
	LC	2	3,500,000	2	3,500,000	0	0
	SL	2	24,868,404	2	24,868,404	0	0
	TI	1	676,052	1	676,052	0	0
	TA	5	2,842,366	5	2,842,366	0	0
	GI	1	2,000,000			1	2,000,000
	GA	7	8,522,101	4	5,942,628	3	2,579,473
	<b>Total</b>	<b>60</b>	<b>345,165,976</b>	<b>40</b>	<b>209,285,683</b>	<b>20</b>	<b>135,880,293</b>

Source: OPEV SAP Extracts

**TOGO**  
**Projects Financed by the Bank by Sector and Lending Instrument as at 11/07/2002**

(Amount in UA)

SECTOR	Instrument	Operations		Status			
		No.	Amount Approved	Completed		Active/Effective	
				No.	Amount Approved	No.	Amount Approved
Agriculture and Rural Development	PL	3	29,150,000			3	29,150,000
	<b>Total</b>	<b>3</b>	<b>29,150,000</b>			<b>3</b>	<b>29,150,000</b>
Industries, Mines and Mining	PL	1	3,810,000			1	3,810,000
	<b>Total</b>	<b>1</b>	<b>3,810,000</b>			<b>1</b>	<b>3,810,000</b>
Transport	PL	6	42,508,930	4	25,328,930	2	17,180,000
	TA	1	230,263	1	230,263	0	0
	<b>Total</b>	<b>7</b>	<b>42,739,193</b>	<b>5</b>	<b>25,559,193</b>	<b>2</b>	<b>17,180,000</b>
Water and Sanitation	GA	1	1,200,000			1	1,200,000
	<b>Total</b>	<b>1</b>	<b>1,200,000</b>			<b>1</b>	<b>1,200,000</b>
Energy	PL	1	2,800,000			1	2,800,000
	<b>Total</b>	<b>1</b>	<b>2,800,000</b>			<b>1</b>	<b>2,800,000</b>
Communication	PL	1	5,526,312	1	5,526,312	0	0
	<b>Total</b>	<b>1</b>	<b>5,526,312</b>	<b>1</b>	<b>5,526,312</b>	<b>0</b>	<b>0</b>
Finance	LC	2	4,850,000	2	4,850,000	0	0
	<b>Total</b>	<b>2</b>	<b>4,850,000</b>	<b>2</b>	<b>4,850,000</b>	<b>0</b>	<b>0</b>
Social	PL	6	42,618,400	3	11,749,996	3	30,868,404
	GA	1	1,000,000			1	1,000,000
	<b>Total</b>	<b>7</b>	<b>43,618,400</b>	<b>3</b>	<b>11,749,996</b>	<b>4</b>	<b>31,868,404</b>
Multisector	SL	3	36,528,930	3	36,528,930	0	0
	GI	1	2,763,156	1	2,763,156	0	0
	<b>Total</b>	<b>4</b>	<b>39,292,086</b>	<b>4</b>	<b>39,292,086</b>	<b>0</b>	<b>0</b>
Total	PL	18	126,413,642	8	42,605,238	10	83,808,404
	LC	2	4,850,000	2	4,850,000	0	0
	SL	3	36,528,930	3	36,528,930	0	0
	TA	1	230,263	1	230,263	0	0
	GI	1	2,763,156	1	2,763,156	0	0
	GA	2	2,200,000			2	2,200,000
	<b>Total</b>	<b>27</b>	<b>172,985,991</b>	<b>15</b>	<b>86,977,587</b>	<b>12</b>	<b>86,008,404</b>

**Source:** OPEV – Date extracted from SAP

**Nomenclature of Lending Instruments Used**

- PL :** Project loan  
**LC :** Line of credit  
**SI :** Sectoral investment or rehabilitation loan  
**SL :** Structural adjustment loan  
**SA :** Sectoral adjustment loan  
**TI :** Institution building and rehabilitation loan  
**TA :** Project cycle loan  
**GI :** Institution building and rehabilitation grant  
**GA :** Project cycle grant

## **EVALUATION SUMMARY**

### **1. THE PROJECT**

1.1. The Electricity Production Dispatching and Transport Project was designed to manage energy transport within the transmission network and production facilities of the *Communauté Electrique du Bénin* (CEB), an inter-state agency jointly owned by the Republics of Benin and Togo. Its achievements include a transmission center with a central computerized system, its software and peripherals, 7 associated computer systems located in various stations, strengthening of an existing communications system and training of staff responsible for running and maintaining the new facilities. The CEB signed a fifteen-year contract with the system installer.

1.2. It took the Borrowers and the executing agency nearly nine years (from loan signature in February 1988 to the provisional handover of facilities in December 1996) to implement the project, whereas the appraisal report foresaw the commissioning of facilities in October 1990. The Governments took four years to fulfill conditions for loan effectiveness. To facilitate project implementation, the Fund had to suspend certain loan conditions. Moreover, the contracting firm exceeded the initial implementation schedule by two and a half years.

1.3. Total project cost net of taxes and customs duty estimated at appraisal at UA 8.3 million rose to UA 8.64 million on completion, i.e. an increase of 4.10%. The ADF loan which covered the foreign exchange expenditures amounted to UA 6.77 million against an estimate of UA 7.46 million (i.e. a 90.75% implementation rate). The local currency portion covered by the CEB increased by more than 122% (UA 1.87 million compared with UA 0.84 million) due to additional services provided by the consulting engineer in the wake of the drawn out implementation phase and the change in the CFA Franc parity.

### **2. THE EVALUATION**

2.1. The evaluation was conducted in October 2002 by an OPEV Department field mission and subsequent to the completion report (ADF/BD/IF/99/257) of 10/11/99. The evaluation involved three phases: (i) information gathering at Bank headquarters; (ii) a data collection mission, site visits to Togo and Benin and discussions with the CEB; and (iii) analysis of information with a view to preparation of the PPER.

2.2. The approach sought to compare the pre- and post-project situation. The point of view of the final beneficiaries (SBEE and Togo Electricité) was obtained. The retrospective matrix of the logical framework drawn up shows the performance indicators and risks related to the project implementation.

### **3. CONCLUSIONS AND EVALUATION RATINGS**

3.1. The project's set objectives are in accord with both countries' economic and social development plan and in harmony with the Bank's guidelines with regard to promoting the use of renewable energy sources and its regional integration mission.

3.2 Given the four-year time overrun, the implementation performance is rated as unsatisfactory. Difficulties that the Borrowers encountered to fulfill conditions precedent to first disbursement and other conditions, the delay on the part of the consultant to select an installer and the late delivery of equipment all impacted negatively on the project.

3.3 The delay notwithstanding, the policy objectives were attained. The CEB through its new tool is able to flexibly manage VRA, SBEE and Togo Electricité energy movements. Thanks to the project, the CEB can draw energy from the VRA, its own Nangbeto dam, stations run by national electricity companies and Cote d'Ivoire via that country's interconnection with Ghana. The eventual interconnection of NEPA (Nigeria) networks with those of the CEB would permit energy transport between the five countries namely Nigeria, Benin, Togo, Ghana and Cote d'Ivoire. Nigeria's interconnection with Niger is an added latent opportunity to expand the scope of the dispatching facility. Therefore, the project met its set objectives.

3.4 CEB's financial situation remains fragile. The loan conditionalities indicated that measures would be taken to correct the trend. On project completion, the situation had not improved. The provisions under the Daho-Togo electricity code with regard to reviewing the tariff of electricity sold have yet to be enforced. The recovery timeframe, which should have averaged two billing months, reached an astronomical twenty-two (22) months in 1997.

3.5 The project does not generate its own production. Nonetheless, on completion and assuming the energy loss in a no-project scenario, operating security and an annual 3% increase in energy sale from 1999 to 2011 led to a calculation of the internal economic rate of return of 14.4% at appraisal, 16% on completion and 17% at evaluation.

3.6 At the institutional front, the performance is rated unsatisfactory. Indeed, CEB statutes have not been modified nor has it been allocated equity capital. The CEB continues to operate as a State entity in a global context marked by the privatization and liberalization of electricity production.

3.7 The project's social impact is not directly perceptible since the CEB only supplies major customers. SBEE and Togo Electricité are in a better position to state what advancements have been made in connection with the reduction of income disparities between men and women, lightening of domestic chores, increase of the enrolment rate, reduction of illiteracy, increase in the number of persons with access to electricity, etc.

3.8 The sustainability of project of achievements is guaranteed thanks to well-trained staff, a maintenance contract between the installer and the CEB, and the availability of resources for procuring spares. Overall project performance is rated as satisfactory in view of the positive operation of facilities and the Bank's performance.

## **4. LESSONS AND RECOMMENDATIONS**

### **4.1 Lessons**

The following lessons are drawn from the project:

- (i) The applicability of loan conditions is a risk that should be taken into account during appraisal and loan negotiations.
- (ii) When institutional or financial problems are encountered during the implementation phase, it is necessary to match the adequacy of the supervision team (its composition) with the problems to solve.

### **4.2 Recommendations**

To Governments:

- (iii) The Governments of Togo and Benin should adopt a common electricity code for both countries.
- (iv) The CEB should put together equity capital and, if possible, open it to private national and foreign investors.

To the CEB:

- (v) Oversee the work of the committee that will be set up to manage the SCO rentals, with a view to the SCO's classification among preferential creditors.
- (vi) Contact the Autonomous Sinking Fund (Caisse autonome d'amortissement) to study other possibilities to have the borrower (Government of Benin) compensate SCO debts and maturities on the CEB borrowing, similar to the CEET's experience with the Togolese Ministry of Finance.
- (vii) Expand dispatching hardware and software to cover new facilities. Thus, the establishment of all new stations will be subject to budgetary allocation to match the dispatching capacity with electricity production and transport resources.
- (viii) Re-work the organization chart towards the separation of management control and audit functions.
- (ix) Include the rehabilitation of sub-stations as part of its investment program.

To the Bank:

- (x) Review the general conditions concerning the keeping of separate accounts for Bank funds.

- (xi) In future, regularly forward disbursement statements and status of reimbursements to loan beneficiaries to enable them to update their accounting records.
- (xii) Plan for private sector participation in CEB operations.

## **5. RETROACTION**

The full PPER has been forwarded to the CEB for comments. Lessons and sound practices from the experience will provide the basis for future interconnection projects. The PPER will also serve as foundation for thematic and special studies, of which the study on the contribution of infrastructure projects to regional economic integration.

The matrix of recommendations and follow-up actions is given in Annex 1.

## **1. THE PROJECT**

### **1.1 National and Sectoral Economic Context**

1.1.1 During the preliminary studies, practically all electricity sub-sector activities were in the hands of the CEB, the SBEE and the CEET (which later became Togo Electricité). The CEB procured electricity from the VRA in Ghana while the SBEE and the CEET oversaw distribution in Benin and Togo, respectively. As most developing countries, the economy in both countries is characterized by the dominant rural sector (33 to 47% of the GDP), followed by the civil service and other services (31 to 37% of the GDP). The energy sector (electricity sub-sector) accounted for barely 2%. The bulk of the supply came from Ghana.

1.1.2 Both countries prepared energy demand projections for the 1987 to 1996 period based, among other things, on annual average consumptions per capita of 45 kWh for Benin and 109 kWh for Togo. The authorities in both countries adopted an approach aimed at: (i) reducing their energy dependence on other nations by drawing an inventory of, prospecting and exploiting national energy resources, especially hydrocarbons and water; and (ii) significantly increasing the contribution of the sector to the two countries' economic and social development.

1.1.3 On average Togo consumes 500 000 TOE of energy yearly in the form of biomass (60%), petroleum (34%) and electricity (6%). Benin absorbs an average of nearly 2 million TOE of energy per annum derived from biomass (87%), petroleum (11%) and electricity (1%). The *Communauté Electrique du Bénin* (CEB, agency belonging to the two countries) sourced practically all (85%) of both countries' electricity needs from Ghana and shared it among distribution companies and major consumers. Both countries have always sought to reduce their single-source energy dependence. Thus, the CEB was vested with the mission of producing electricity.

1.1.4 Since starting operations in Togo in 1972, the Bank has funded the Lome Electrification Project for UA 2.8 million. It commenced operations in Benin in the same year and since then has financed six electricity projects for a total of UA 22.28 million. These projects helped to electrify the coastal zone, a cement factory and nine district headquarters. Furthermore, the Bank participated to the tune of UA 15.3 million in funding two multinational electricity projects (the Nangbeto Hydroelectric Project with an installed capacity of 64 MW and the CEB Electricity Production Dispatching and Transport Project) with both countries as beneficiaries.

1.1.5 In March 1987, both countries requested ADF support to fund the dispatching project. The project itself was appraised in April 1987. Loan negotiations were held on 7 August 1987 and ADF approval came on 19 August 1987. This project performance evaluation report was prepared using data and documents available at the Bank and the CEB, in addition to discussions and interviews conducted with project partners in the course of the October 2002 mission to Togo and Benin.

### **1.2 Project Design**

1.2.1 The CEB bought electricity from the Volta River Authority (VRA) – a Ghana electricity producer and manager of the Akossombo Dam – for onward sale to distribution

companies and major consumers in Togo and Benin. To meet the needs of its customers, the CEB operated two 161 kV transport lines from Ghana which chain-linked the Lome, Mome Hagou and Cotonou stations. The three stations transformed the energy to 15 kV and 20 kV for delivery to customers.

1.2.2 In order to reduce its dependence on the VRA and against the background of increasing demand, the CEB undertook to extend its transport network. It initiated action to add other transport lines and stations to its network. To develop its own production, it built the Nangbeto hydroelectric station which was commissioned in 1988. Within the complex operations context, it was considered timely to set up a dispatching center (single decision and centralized command center) since it would have been difficult to coordinate various components of the system in the absence of a center with an overall view of the production park and the related network.

1.2.3 Following the CEB request to the Bank, the latter obtained necessary funds from Belgian authorities to conduct the dispatching project studies. The Bank approved the study conclusions on 12 April 1987. The studies demonstrated the technical and economic benefits to the CEB of a dispatching center and defined its functions. Generally, the study recommended the establishment of a switching center equipped with a central computer system at CEB headquarters and extension of the existing communication network between the stations to link the switching center. Each station was to have a servo computer system linked to the central system via the communication network.

### **1.3 Evaluation Objectives and Scope (Logical Framework)**

1.3.1 The sectoral objective of the project was to make optimal use of energy production in both countries, on the one hand, and of import from Ghana and any other country, on the other hand.

1.3.2 The project's specific objectives were to:

- i) Increase the security of supply and quality of energy provided to Benin and Togo's distribution networks;
- ii) Ensure the economic management of the park and production units; and
- iii) In real time, prepare the accounting and billing of energy produced and consumed.

1.3.3 At appraisal, the project comprised the following components: (a) computer system; (b) transmission support equipment; (c) telephone and telex equipment; (d) remote control equipment; (e) line adaptation; (f) development of the dispatching center; (g) operating staff training; and (h) engineering and works monitoring.

1.3.4 The appraisal considered key assumptions and risks in connection with: (i) the use and maintenance of the computer system; (ii) premature obsolescence of equipment; (iii) extension of the system to new installations; (iv) non-materialization of savings estimates based on figures drawn from the CEB master plan; and (v) risks related to the financing plan and the institutional framework. The general conditions for the Fund's participation and the special loan conditions emphasized the risks and the need to reduce them. The loan

conditions are reproduced in Annex 4. The retrospective matrix of the logical framework shown in Annex 2 reproduces *in extenso* the specific risks associated with project implementation and sustainability.

## 1.4 Financial Provisions

1.4.1 At appraisal, the cost estimates stood at UA 8.3 million, of which UA 7.46 million in foreign exchange and UA 0.84 million in local currency. These amounts were obtained by increasing the base cost by a coefficient of 1.19 (representing contingencies and inflation). The ADF funded all the foreign exchange cost, i.e. 90% of the total project amount, while the Governments of Benin and Togo financed the local currency cost representing 10% of the total cost (see Table 1 below).

Table 1  
Sources of Finance

Sources	Estimate at Appraisal			Actual			Gap	Gap in %
	For. Exc.	Local Currency	Total	For. Exc.	Local Currency	Total		
ADF	7.46	-	7.46	6.77	0	6.77	-0.69	-9.25
CEB	-	0.84	0.84	0	1.87	1.87	1.03	122.62
Total	7.46	0.84	8.30	6.77	1.87	8.64	0.34	4.10

1.4.2 The Governments of the two countries concerned and the ADF jointly financed the project. Apart from the general ADF conditions, the Governments undertook to fulfill the following precedent conditions: (a) onlend the loan to the CEB, the executing agency and beneficiary, at a rate not exceeding 5% yearly; (b) present to the Fund a plan to recover arrears that the Benin Electricity and Water Corporation (Société béninoise d'électricité et d'eau, SBEE) owed the CEB as compensation for the consumption of the Onigbolo cement company (Société des ciments d'Onigbolo, SCO); (c) present to the Fund a plan to recover arrears that the West African Cement Company (Cimenterie de l'Afrique de l'Ouest, CIMAO) owed the CEB; (d) the two Governments should eventually provide the CEB with equity capital or resources through non-reimbursable contributions. Annex 4 reproduces all the loan conditions.

## 2. THE EVALUATION

### 2.1 Evaluation Methodology and Approach

2.1.1 The methodology adopted comprises three core approaches: (a) data collection/analysis at Bank headquarters and both countries during the mission; (b) preparation of a simple and adequate survey brief drawn from the Bank's practical guides; discussions with the Bank's experts in charge of the project and representatives of the borrowers and the executing agency; (c) visit to the project site.

2.1.2 Data collected at Bank headquarters revealed the inadequacies of supervision missions, procurement difficulties, poor archiving, etc. These difficulties notwithstanding, the available documents namely the appraisal report, the completion report, the audit report, the loan agreement and the correspondence register helped to clarify a number of issues even as

it targeted those services and persons to interview. An analysis of these documents also led to confirmation of the full performance evaluation option on the following bases: (i) the project recorded considerable time overrun (the deadlines of the first and final disbursements were extended); (ii) the dispatching was randomly included among projects for use on a study on the contribution of infrastructure projects in the regional economic integration process; and (iii) being unique, the project might be imitated.

2.1.3 Data collection in Benin and Togo used a survey brief, project annual reports and special documents, visit of the seven dispatching terminal sites in both countries and working session discussions with top CEB managers. Three CEB customers (SBEE, Togo Electricité and the OTP) were also visited in the course of which documents were obtained and working sessions conducted.

2.1.4 The approach used compares the pre- and post-project situation with regard to the CEB and the assessment of such major customers as the SBEE, Togo Electricité and the OTP.

## **2.2 Key Performance Indicators**

2.2.1 During project appraisal, the Bank had not yet introduced the logical framework as an analysis tool. A list of performance indicators, related assumptions and risks had not been drawn up. On completion, the matrix prepared highlighted the following criteria and assumptions: (a) annual 3% increase in electricity consumption; (b) reduction by a factor of five in the power supply restoration time following an interruption; and (c) update of energy movement every ten minutes. The project retrospective evaluation matrix was prepared (see Annex 2).

2.2.2 The dispatching project retrospective evaluation was based on the following five main performance criteria: (1) relevance; (2) effectiveness; (3) efficiency; (4) institutional impact; and (5) sustainability.

## **3. IMPLEMENTATION PERFORMANCE**

### **3.1 Loan Effectiveness, Start-up and Implementation**

#### **Effectiveness**

3.1.1 Approved on 19 August 1987, the loan became effective on 2 January 1992, i.e. 46 months behind the timeframe stipulated in the Fund's general operating conditions.

#### **Respect of Loan Conditions and Provisions**

3.1.2 Details on the conditions are given in Annex 4. The special loan conditions were relevant and realistic. However, the Governments of Benin and Togo encountered enormous difficulties in fulfilling the conditions precedent to first disbursement partly due to reasons concerning the settlement of CIMAO and SCO arrears to the CEB. Given the difficulties that the borrowers faced and at their request, the Bank modified the conditions regarding the arrears owed by the cement companies and suspended the condition concerning the allocation of equity to the CEB. The Bank's reaction and presence at that implementation phase is rated

as satisfactory. Moreover, the borrowers encountered difficulties in fulfilling other loan conditions and provisions. The condition on modification of the CEB statutes within six months from the loan signature date was not fulfilled. As at 30 September 2002, the CEB statutes remained unchanged, a reason being that the authorities would not appreciate the value added that such modifications would engender. The injection of equity capital into the CEB cannot but aggravate the public finances of both countries.

### **Project's Actual Achievements and Major Modifications**

3.1.3 The project started up in March 1992 and was completed in February 1999, four years behind the initial schedule. The implementation phase spanned seven instead of three years. The time overrun is attributable to rather partisan moves and analyses on the part of the consulting engineer with a view to eliminating competitors in favor of the awardee that he had selected, ADF disagreement, interventions from both States and ADF approval of the consultant's analysis report two years behind schedule. The considerable delay had negative consequences on energy movement. Indeed, throughout the period, energy movement was managed manually with the attendant risk of extended reaction time and human error.

3.1.4 The project as approved was not subjected to major modifications in terms of design. Nonetheless, in view of technological advancements, an intranet network with a central computer and backup was set up in place of a servo system. The modification had no negative impact whatsoever on the project nor was it the result of a design error. Rather, it was dictated by the need to adapt the design to the rapidly changing information and communication technology. The modification had a positive impact on the project since it avoided installations that would have rapidly become obsolete.

### **3.2 Respect of Project Costs, Disbursements and Financial Arrangements**

3.2.1 The total project cost net of taxes and customs duty estimated at appraisal at UA 8.3 million rose to UA 8.64 million on completion, i.e. an increase of 4.10%. The ADF loan which covered the foreign exchange expenditures amounted to UA 6.77 million, against an estimate of UA 7.46 million (i.e. a 90.75% implementation rate). The local currency portion covered by the CEB increased by more than 122% (UA 1.87 million compared with UA 0.84 million) due to additional services provided by the consulting engineer in the wake of the drawn out implementation phase and the change in the CFA Franc parity.

3.2.2 The cumulative delays during the implementation phase, combined with the specific technical constraints imposed on the CEB regarding management of energy movements also had a negative financial impact linked to the FCFA devaluation. Indeed, the project should have been completed in January 1991 well before the January 1994 devaluation. The deterioration in the terms of trade following the FCFA devaluation weakened the CEB's financial situation and increased the borrowers' debt service. The project implementation schedule that the Bank drew up on completion is given in Annex 5.

3.2.3 **Disbursement and Reimbursement:** the initial disbursement schedule was not respected since delays were recorded with regard to the loan's entry into force and the award of equipment supply contracts. As immediate consequence, the deadlines of the first and final disbursement were extended at the borrowers' request. The executing agency does not know the actual status of the loan that it is reimbursing. There is need to improve communication between the Bank and the executing agency.

### **3.3 Project Management, Forwarding of Reports, Follow-up and Evaluation**

3.3.1 It was not necessary to set up an implementation unit to manage the project. Indeed, the structure of the CEB (the beneficiary and executing agency) comprises a studies and monitoring department which was assigned the direct responsibility of implementing the project under the supervision of the Managing Director. The department received assistance from a consultant who oversaw the implementation phase and whose responsibilities included: (i) review and approval of engineering studies and other awardee firm dossiers; (ii) works supervision and technical monitoring; (iii) reception tests, factory and site commissioning; (iv) definition of training programs, steering and execution of courses for the supervisory and maintenance staff of the dispatching center.

3.3.2 The executing agency did not forward half-yearly progress reports to the Fund as required under the loan agreement. However, the consulting engineer submitted his progress reports to the Fund. The executing agency did not prepare a project completion report. The Fund conducted an audit of CEB accounts. According to the audit report, the CEB did not respect the provision requiring it to keep separate records on expenditures financed from Fund resources. Hence, the audit that the CEB's external auditors conducted does not specifically focus on the CEB's financial situation but on the firm's overall finances (which is fine even though it does not strictly meet the provisions of the general conditions on Fund operation). Most Bank-financed operations are in a similar situation. The main issue is whether borrowers find the condition inadequate and unfulfillable. If so, a modification of the general conditions and guidelines with regard to project accounts auditing should be initiated.

3.3.3 The executing agency has no follow-up/evaluation system. Consequently, performance indicators were not put together. Throughout the implementation phase, the Bank made its presence felt through reminders, field supervision missions and an account audit mission.

## **4. PERFORMANCE EVALUATION AND RATING**

### **4.1 Relevance of Aims and Objectives, Portfolio Entry Quality**

4.1.1 The CEB Electricity Production Dispatch and Transport Project is in accord with Benin and Togo's priorities. Both countries continue to source electricity supply from outside but have taken concerted action to reduce such dependence by initiating joint projects, of which the Nangbeto Dam (across the Mono River). Since its commissioning, the dam which received support from the World Bank, the ADB and other multilateral and bilateral donors has contributed to reducing that dependence. In anticipation of energy from Nangbeto and confronted with the expected network complexity in subsequent years, the CEB planned to set up a centralized energy transport center. The center (called dispatching) would be charged with coordinating production from various SBEE, Togo Electricité and CEB stations as well as energy from Akossombo (Ghana) and such other countries as Cote d'Ivoire, Nigeria and eventually Niger.

4.1.2 The project was prepared with bilateral assistance through the Bank. The preliminary studies demonstrated its technical, economic and financial viability. The consultant selected according to Bank procedures to conduct the study prepared the feasibility study and the

bidding documents. At portfolio entry, the project quality was satisfactory notwithstanding the absence of performance indicators.

## **4.2 Attainment of Objectives and Project Results: Effectiveness**

### **Project Sectoral Objectives**

4.2.1 The project was designed with a view to optimizing the two countries' energy sources and import from Ghana. The optimization should enable billing based on public asset redistribution. Indeed, energy from the VRA is billed in dollars while CEB consumers pay in CFA Franc. Both countries had to operate a common electricity code and harmonize their electric energy sub-sector control system. The sub-sector has been appropriately regulated to shield it from social turmoil in both countries and vis-à-vis Ghana. The billing study (one of the loan conditions) was conducted in 1998 and updated in 1999 and 2002. Archives show that the study was submitted to the Bank for comments or information. The sectoral objectives were met.

### **Physical Output**

4.2.2 The dispatching project is one of the modern means of managing interconnected networks and does not generate its own production. The evaluation showed that the consumption projections had not materialized. It had been estimated that from 1992, the Adjarala hydroelectric dam and the Lome thermal station would inject nearly 82 GWh yearly into the network. So far, the Adjarala dam is yet to be built and the thermal station has stopped operating. However, the CEB and NEPA network interconnection studies on which were conducted in the eighties has begun to materialize with the project appraised by a Bank team in July 2002. If implemented, the project and its interconnection with the CIE and VRA networks would enable dispatching to fully play its role as a privileged instrument for managing reversible energy movements between Cote d'Ivoire, Ghana, Togo, Benin and Nigeria. In view of the fact that energy in the first four countries mentioned is basically of water origin while Nigeria's is principally thermal, the electricity interconnection once made should shelter the countries concerned from vagaries of the weather and minimize outage.

### **Financial Objectives**

4.2.3 The CEB posted a negative financial performance over the 1993 to 1997 period, corresponding to the project implementation phase. The deterioration is due to non-compliance with agreements reached between Togo and Benin within the context of the Daho-Togo electricity code. Between 1998 and 2001, the CEB's financial performance continued to worsen. Apart from 1999 during which the performance was positive, deficits rose from FCFA 4.7 billion in 2000 to FCFA 11.11 billion in 2001. The billing study (one of the loan conditions) was only conducted in 1998 and updated in 2002. The updated study formed the basis of the new tariff scale introduced in 2002. The liquidation of the CIMAO and the SCO (cement companies) contributed to weakening the CEB's financial situation. Recovery is inadequate (22 months of customer backlog in 1997). Since the dispatching came on stream, the backlog fell from 9 months in 1999 to 5 months in 2001 which is still below the two months recommended by the Bank's billing policy. The financial performance associated with the project's economic return is rated as satisfactory. On completion, the IERR was estimated at 16% compared with 14.4% at appraisal. The evaluation put the IERR at 17%. The working hypothesis during the performance evaluation (see Annex 10) repeats

the key parameters given in the appraisal and completion reports. The project contributed to considerably reducing the network resumption time in case of total supply failure. Resumption time recorded in 1999, 2000 and 2001 remain below 15 minutes.

### **Institutional Development Objectives**

4.2.4 The project loan conditions included an institution building component which required both countries to modify the CEB statutes within six months following signature of the loan agreement. The component aimed at: (a) clearly stating that the CEB was the owner of the infrastructure set up, on the one hand, and the fate of CEB assets in case of dissolution, on the other hand; (b) obliging the two national electricity companies (SBEE and Togo Electricité) to give priority to purchasing CEB production; (c) providing the CEB with equity capital or resources possibly through the non-reimbursable contribution of member States. These provisions did not materialize due to lack of commitment by the two countries' authorities and arbitration to CEB's disadvantage. By its very design, the project should have contributed to strengthening the electricity sub-sectoral institutional framework in both countries. The CEB in its capacity as the executing agency and loan beneficiary should have been able to restructure and equip itself with its own resources and a moral personality. On completion and during evaluation, most of the relevant provisions set forth in the appraisal report were yet to materialize. The project did not have the expected institutional development impact.

### **Social Objectives and Beneficiaries**

4.2.5 The dispatching project combined with other actions taken to reduce Benin and Togo's energy dependence on the outside should lead to an increasingly higher electrification rate. The aim of the project is not to reduce income disparities or protect the underprivileged. The 5% reduction in the probability of energy failure at peak (thus allowing the CEB to optimize its network management) reduces the cost of the energy delivered. In turn, that should lead to the extension of the SBEE and Togo Electricité networks to areas where the poor live. Togo's service rate is estimated at 15% and Benin's at 25%.

4.2.6 The project did not take gender issues into account. Even so, no woman participated in the project's training program. Nonetheless, the prospects of access to electricity offer women the opportunity to develop such petty trades as the production and sale of fruit juice, ice water, indigenous bread, etc. The social tranche of SBEE and Togo Electricité's billing scale should also allow for school electrification, the development of evening courses and any other action to improve enrollment and reduce illiteracy especially among girls. As at 30 September 2002, the executing agency employed 27 women, of which one manager, compared with 265 men. The gender parity is far from attained in this traditionally male-dominated firm.

### **Environmental Objectives**

4.2.7 During project appraisal, environmental considerations were not explicitly taken into account since the Bank had then not introduced the environmental classification of its operations. Given its components (computer hardware, software, training, etc.), the project has no major impact on the environment since the remote sensing and control elements did not generate electro-magnetic pollution any more than the energy transmission and cellular telephony networks, artificial television or meteorological satellites. The project did not

worsen the air quality (no exhaust gases) nor did it provoke noise pollution (the noise level of the insulation disk bypasses is insignificant and not attributable to dispatching).

### **Private Sector Development**

4.2.8 Through its provisions to provide the CEB with equity capital and a distinct corporate personality, the project worked to develop private partnership. The said provisions should, in the long term, create an enabling environment for business development and an increasingly enhanced commercialization of the CEB which could initiate BOT and BOO projects, etc. The CEB holds monopoly over energy transmission in Togo and Benin.

4.2.9 It is worth pointing out that given certain provisions of the loan agreement, the project did not encourage the private sector or the liberalization of the sub-sector. Indeed, obligation imposed on the SBEE and Togo Electricité to source supplies from the CEB in priority (perhaps justifiable then) now appears as an attempt to maintain an increasingly questionable monopoly. The obligation forced on all operators to obtain CEB authorization to install 100 kVA generators and to deliver the energy produced to the CEB (the obligation is contained in both countries' energy code) should be reviewed. A new Benin-Togo electricity code underway should confirm the CEB monopoly of electricity transmission in both countries.

## **4.3 Efficiency**

### **Financial Performance**

4.3.1 CEB's financial situation deteriorated sharply during the project implementation phase and continues to degenerate. The net operating income fell from FCFA 4.15 billion in 1999 to below FCFA 0.33 billion in 2000 and FCFA 7.83 billion in 2001. The tariff provisions set forth in the Daho-Togo electricity code were not applied. Indeed, according to the code, tariffs were automatically due for review every three (3) years. The tariff study requested during the project appraisal and on which would have been based a decision for a possible increase to reverse the fall of return on assets was only conducted and updated in 2002 to support the May 2002 tariff increase.

4.3.2 The SCO (Benin) and the CIMAO (Togo) did not settle their arrears as expected. In addition, Togo Electricité recorded considerable arrears from 1994, of which the highest level stood at FCFA 16.8 billion in 1996. CEB customers in arrears as a percentage of its turnover increased from 54% in 1990 to 182% in 1997, before reversing to 41% in 2001. The customer billing backlog which have averaged two months varied sharply to reach twenty-two (22) months in 1997 (see Annex 6 on the credit trend).

4.3.3 Since the CIMAO liquidation in 1989, arrears payment has been frozen. The report on the liquidation of CIMAO assets and the proposal to share them were only presented to the CEB in 1998. The credit reimbursement plan was initiated with an FCFA 300 million payment, leaving a balance of FCFA 821 million outstanding on the eve of the liquidation. Thanks to the product of the assets transfer to the buyer (WACEM), this dossier was finally closed at end 2000.

4.3.4 The second cement company (SCO) also encountered enormous operating difficulties. It could not withstand the energy crisis that Benin faced in 1998 and had to suspend its production. A management lease contract was signed between Benin's Ministry of Industry

and SMEs and the “Laffarge - Société du Ciment du Bénin” Group to enable the SCO to restart operations. The rent which the Group pays goes, among other things, to reimburse SCO’s arrears to the CEB (amounting to FCFA 4 174 797 928 as at 31/12/01).

4.3.5 Following the Cotonou agreements of 21 and 22 January 1997 concerning the settlement of the CEET’s short and medium-term debt, an arrangement was made between the CEB, Togolese authorities and CEET interim managers pursuant to which the country’s Ministry of Finance accepted to pay maturities on ADB loans (guaranteed by the Government of Togo) on behalf of the CEB on ADB loans, in compensation for CEET debts. Regarding recurrent consumption, the CEET interim management undertook to honor all current consumptions. The outstanding arrears balance amounted to FCFA 12 170 635 177 as at 9/12/98. In 2000, the interim management gave way to a lease called Togo Electricité. The new company reduced the arrears from FCFA 10.51 billion in 2000 to FCFA 3.86 billion in 2001. The working session with Togo Electricité’s managers suggests that the arrears reduction will be pursued. The CEB’s credit situation is shown in Annex 6.

### **Operations**

4.3.6 Although the net income recorded over the 1990-92 period remained positive, the situation deteriorated between 1993 and 1998 with successive losses reaching FCFA 16.33 billion in 1998 compared with 1996 which posted a net profit of FCFA 3.9 billion following correction of provisions. During the 1999-2001 period and in the wake of the commissioning of the dispatching facility, the net income fell from a profit of FCFA 4.15 billion to a loss of FCFA 7.83 billion in 2001. Self-financing followed the same trend as the net income, reaching FCFA 6.7 billion in 1991 only to deteriorate from 1993 to 1997 (negative peak of FCFA 8.9 billion in 1996). Over the 1999-2001 period, self-financing fell from FCFA 6.4 billion to FCFA – 17.4 billion in 2001.

4.3.7 There was no significant rise in energy sales (GWh) over the 1990/92 period. Excluding the 27.2% increase in sales in 1994/95, the quantity of GWh sold stagnated or even dropped in other years. That situation is attributable to various energy crises recorded over the period, especially those connected with the falling level of the Volta River which feeds the Akossombo dam, CEB’s main energy sources. In line with the statutory provisions, the tariffs charged on such quantities of GWh could not be raised. Tariffs were only increased starting 1994 (from FCFA 23/kWh between 1990 to 1993 to FCFA 38 for electricity companies and FCFA 40 for industries). The 1998 performance was no better since drought struck once again, affecting the VRA and the Nangbeto dam from February to May 1998. Both countries (Benin and Togo) suffered considerable economic losses following the fall in electricity production. The energy situation and the freeze in tariff had a serious impact on the operating income, resulting in operating losses throughout the 1990 to 2001 period. In May 2002, the CEB raised tariffs to FCFA 50 for electricity companies and FCFA 54 for industries. In addition, a new code in the works contains provisions that should contribute to rehabilitating CEB’s finances.

4.3.8 Energy purchase followed a trend identical with that of the GWh quantities sold, averaging 50% of total charges from 1990 to 1992, before giving way to financial expenses and allocation to amortization and provisioning which account for 45% and 10% of expenditures, respectively. To meet the production losses from the Akossombo dam (Ghana) and the Nangbeto dam (Togo), the CEB set up two gas turbines (one in Lome, the other in Cotonou). Over the past five years, CEB energy production purchases stand as follows:

**Table 2**  
Energy Purchases and Production  
(GWh)

Year/ Purchase	Purchase			CEB Production			Network Total	Peak (MW)
	VRA	CIE	Total	Nangbeto	TAG	Total		
1997	422.54	262.44	684.98	88.36	0	88.36	773.34	133.7
1998	459.53	0	459.53	172.60	65.92	238.52	698.05	139
1999	325.63	201.65	527.28	198.84	159.79	358.63	885.91	139
2000	391.90	299.82	691.72	198.36	49.57	247.93	939.65	154.81
2001	302.05	577.23	879.28	91.78	62.75	154.53	1033.81	162.56

Sources: CEB Activity Reports/ADB PPER Mission

The above table shows that total energy delivered to the network has increased constantly over the past five years. In 2001 and for the first time ever, more energy was purchased from the CIE than from the VRA. The peak load increased as energy use, from 133.7 MW to 162.56 MW. Network losses have risen in the past two years and stood at 53.86 GWh and 73.63 GWh in 2000 and 2001 (6.8% and 7.69%, in that order). These losses are high, 3 to 4% above the transport network average. There is need to address the situation before it further deteriorates. An audit of CEB's energy operating resources is required. The proportion of non-technical losses is generally negligible for an energy transport company. The CEB's operating account is summarized in Annex 7.

### Human Resources

4.3.9 As at 30 September 2002, CEB staffing stood at 292, of which 32 managers, 115 supervisors and 147 field operatives. The gender balance is far from attained in this traditionally male-dominated firm. However, efforts have been made to increase the number of women in the firm. As at 30 September 2002, the CEB employed 27 women, of which only one manager, compared with 265 men. All staff trained under the project are in place except two who were promoted (one to the position of director). The staff expenses have ranged from 3 to 5% in recent years; the same expenses averaged 5% of the operating charges. Table 3 below gives the CEB staff breakdown for 2002.

#### **Inset 1** **Second Meeting of Managing Directors of Electricity Companies**

Alongside the meeting of the African Electric Energy Producers and Distributors Union, a first meeting was held between the managing directors of Nigelec, the SBEE and NEPA. The second meeting that took place in Cotonou in June 2002 brought together the managing directors of the SBEE, SONABEL (Burkina Faso), Nigelec (Niger), NEPA (Nigeria), CEB (Togo/Benin) with the ONE (Morocco) participating as invitee. The aim of the meeting was to create conditions for the establishment of a framework on which to exchange views on problems relating to the management of electricity companies and share experiences. At the end of the meeting, the following resolutions were issued: 1) the resolution on interconnections; 2) the resolution on the commitment to set up and promote the integration of sub-regional companies within the institutional reform context, 3) the resolution on exchange of managers and inter-firm information. Another resolution recommended the establishment of a deliberation organ and proposed that the subsequent meeting be held in October 2002 in Niamey to which ESKOM (South Africa) would be invited. The CEB participated in all these deliberations.

**Table 3**  
CEB Staffing as at 30/09/2002  
(Number)

Category	Year					
	1991	1995	1998	2002		
				Total	Men	Women
Field	188	203	177	147	134	13
Supervisory	82	101	126	115	103	12
Management	16	14	21	28	26	2
Special	2	2	2	2	2	0
Expatriates	0	0	0	0	0	0
<b>TOTAL</b>	<b>288</b>	<b>320</b>	<b>326</b>	<b>292</b>	<b>265</b>	<b>27</b>

Source: CEB Note/ADB PCR and PPER Missions

4.3.10 Since project appraisal in 1987, the CEB organizational set up has expanded over the years. During the performance evaluation, the operational structure comprised: one managing director and a deputy managing director, a management and audit control department attached to the general directorate, five departments of which three technical (operations, studies and development, supply) and two institutional departments (human resources, finance). Given the essential difference between management control and internal audit, it is necessary to develop the organization chart towards the separation of audit and its attachment to the High Authority. The closure on project completion of several units directly attached to the general directorate goes in the positive direction of enhanced delegation of powers within the firm. The organization chart effective as at 30/09/2002 is reproduced in Annex 8.

### Financial Structure

4.3.11 A review of the last four statements shows that the total fixed assets remained stable over the 1998-2001 period, as was the case during project appraisal and completion (1990 to 1995 period). Following the re-evaluation of fixed assets in the wake of the CFA Franc devaluation, the fixed assets increased by 47% from 1995. Cash in hand rose from FCFA 8.58 million in 1998 to FCFA 66.46 million in 2000, then to FCFA 31.44 million in 2001. The CEB needs to put in place an assets management policy to prevent all capital accumulation-related risks. Long and medium-term debts over the last four financial years remained stable at FCFA 52.23 billion in 1998, FCFA 56.14 billion in 1999, FCFA 52.21 billion in 2000 and FCFA 51.25 billion in 2001. The debt and other major ratios are shown in the table below:

**Table 4**  
CEB Key Ratios

Name	2001	2000	1999	1998
<u>Debt ratio</u>				
Borrowers & debt/stable resources	0.76	0.66	0.62	0.58
Equity capital & res. as./stable resources	0.24	0.34	0.38	0.42
<u>Financing ratio</u>				
Stable resources/net fixed assets	1.11	1.32	1.35	1.22
<u>General liquidity ratio</u>				
Current assets/current liabilities	0.63	1.58	2.23	2.93
<u>Immediate cash flow ratio</u>				
Asset cash flow –(available funds)/current liabilities	0.15	0.25	0.32	0.39
<u>Return ratio</u>				
Economic return (results/net fixed assets)	-0.15	-0.07	0.01	-0.06
Financial return (result/equity & as. res)	-0.53	-0.14	0.01	-0.12

Source: CEB, Annual Activity Reports/ADB Mission Compilation

These ratios show the importance of equity financing compared with debt and allows for an assessment of the firm's financial autonomy. The debt ratios show that since 1998, the equity capital is below debts above one year. The ratios continue to worsen. In 2001, the working capital eroded further than the preceding year even though it remained positive. The short-term solvency ended in 2001. Available cash only covers 15% of the short-term debt. Calculations on the economic return ratio indicate that in 2001, CEB loss stood respectively at 15% and 53% of the net fixed assets and equity capital injected into operations. The statement of CEB's operations over the past four years is shown in Annex 9.

### **Economic Return**

4.3.12 The dispatching project contributed to service quality improvements. Consequently, the financial and economic aspects overlap. Given the non-existence of real financial flows, the IRR is only an economic indicator. Information obtained from the executing agency and various energy distribution companies in Benin and Togo were used in calculating the IERR (17% on a with-project basis), compared with 14.4% during appraisal and 16% on completion. The improvements noted are attributable to: (a) the 2002 increase in tariff; (b) an average increase in sales above 3% except on years with low-water level; (c) an average UA/FCFA conversion rate that increased from FCFA 800 to FCFA 879.947. The assumptions underlying the calculation are given in Annex 10.

4.3.13 The dispatching project integrates into an existing structure and does not generate its own energy. However, projections were made over the reduction of peak power failure estimated at 0.5% and the flexibility of supply at least cost during the appraisal. The reality of

network recovery after a general outage in a pre- and post-project situation helped to identify the product flows thanks to which the CEB would optimize its network management.

### **Economic Performance**

4.3.14 Therefore, the project's economic return calculations were based on the above assumption. During the evaluation, the same assumptions were retained. The products comprised expected gains from energy failure and operating costs following the project's entry into service. The energy failure was estimated at FCFA 185 per kWh, corresponding to the non-proportional cost calculated for Benin and Togo's cement industry. At evaluation, the operating cost gains were estimated at FCFA 23/kWh, i.e. the gap between the operating cost with and without the project.

### **4.4 Impact on Institutional Development**

4.4.1 The project impacted positively on institutional development as follows: (i) the new CEB organizational chart to enhance its operationality; (ii) capacity building to better manage current energy flows from the VRA and expected flows from NEPA; (iii) efforts to recover arrears, etc.

4.4.2 Skills transfer from the consultants to CEB managers have not yet been concretized. It is worth noting that dispatching is a rare and exceptional project. CEB staff were not involved in the preparatory phases and are unable to conduct a dispatching feasibility study.

4.4.3 The borrowers' management quality deteriorated, especially so with Togo which witnessed social upheavals during the project implementation phase. The project did not produce long-term planning capacities but comprised training activities for operating staff at the management and supervisory level. The general ADF operating conditions contributed to strengthening budget control and procedures, as well as internal and external audit rationalization. Preventive maintenance, projected stock and spare parts management became part of CEB management protocols. CEB management remained centralized before and after the project. That notwithstanding, the establishment of the Togo and Benin regional divisions marked a step towards decentralization.

### **4.5 Project Sustainability**

#### **Technical Validity**

4.5.1 In an evolving sector, the technology used is up to date. The technical modifications made during the implementation phase allowed for the installation of reliable equipment, thus minimizing the risk of premature obsolescence. Indeed, the studies initially provided for the installation of a servo system with a central computer and another as passive backup. During

#### **Inset 2**

#### **West African Energy Exchange System Steering Committee**

In view of the successful experiences of the CEB and other regional agencies (e.g. OMVS), a committee of experts was recently set up to work towards the integration of the economies of ECOWAS member states by putting at their disposal reliable electricity in enough quantities and at least cost, and to reflect on the regulatory framework for a West African electricity exchange system. A committee of experts met in Cotonou from 17 to 21 September 2001. A meeting of ministers in charge of energy in ECOWAS was also held in Cotonou to define the scope of the West African energy charter. The steering committee met again in Accra to review ongoing integration studies.

the implementation phase, an intranet system was put in place, breaking functions into vital and non-vital modules with active and/or passive redundancy. The positive impact of that alternative solution proved its mettle during the adaptation of networks to counter the Y2K bug. Indeed, that marked the first time that the installer which has an assistance contract with the CEB was called in. The technology developed is reliable and permits the CEB to manage peak supply failure probabilities. In order to strengthen the project's technical validity, the following actions are suggested:

- Include facilities set up in the wake of the project such as the Avakpa, Bohicon and Atakpame stations, the Lome and Cotonou gas turbine stations (GTS) in the dispatching;
- Motorize the disconnecting switch and extend the control and remote control;
- Extend the dispatching to customer feed circuit breakers in CEB sub-stations;
- Regionalize dispatching in order to manage the networks from Lome or Cotonou (Lome is the central dispatching base).
- Rehabilitate the sub-stations

A feasibility study is needed on these actions.

### **Legal and Regulatory Framework**

4.5.2 The legal and regulatory frameworks were not strengthened as initially planned. The CEB still has no equity capital to guarantee its corporate personality. On that score, the project's sustainability is not guaranteed. During discussions with CEB, its management stated that a new code was being finalized and practical provisions would be taken to enable it to obtain appropriate resources.

### **Ownership by the Beneficiaries**

4.5.3 The national electricity companies and CEB customers have embraced the positive effects of dispatching. Indeed, they are involved in the definition of network restoration protocols in the event of failure, with a view to minimizing or preventing the adverse impact. As in all electricity companies, a priority outage and restoration plan was prepared with the customers, especially the two electricity companies. The maintenance directorate of the Togo Phosphates Agency which the mission visited stated that it was as concerned over delivery and quality as the CEB.

### **Economic Viability**

4.5.4 The project's economic viability is not linked with the prevailing macro-economic and sectoral policies in both countries. The dispatching integrates into the existing 161/69 kV and its economic viability depends on the management of the peak energy failure probability. The project's viability was demonstrated quantitatively and qualitatively at appraisal, on completion and at evaluation. Indeed, manually operated systems interconnecting five countries are no longer designed. Although the dispatching is viable, the same is not true for CEB accounts whose overall return has remained negative as shown on Table 4.

### **Financial Viability**

4.5.5 The project's financial viability equates with its economic return insofar as dispatching does not generate its own income. The amortization policy is adequate. The CEB had its fixed assets revalued to determine its return in line with the Bank's tariff policy. The project's sustainability and CEB's survival depend on the company's recapitalization.

### **Institutional Efficiency**

4.5.6 The institutions set up adequately fulfilled their mission since interconnection to the VRA and the CEB. The directorate of engineering and control which supervised the consultant was reinforced to become an engineering and development unit charged, among other things, with general and prospective studies. The directorate of operations which manages the installations is undergoing full restructuring. The CEB set up a regional directorate in Togo and another in Benin. This decentralization with delegation of authority should lead to enhanced service quality. Set up more than three decades ago, the CEB is an agency owned by Benin and Togo. It produces and purchases energy from Ghana and Cote d'Ivoire. At the regional level, the CEB obtains supply from the CIE and pays a flat transit fee to the VRA for using the latter's network. An energy consumption discount mechanism was set up to the satisfaction of all partners (CIE, VRA, CEB, CEET, SBEE).

### **Environmental Impact**

4.5.7 The dispatching integrates existing facilities and has no specific environmental impact. The energy comes from the VRA, the CIE, Nangbeto dam and the gas turbine stations. The project has no negative impact since dispatching generates no energy.

### **Resistance to Exogenous Factors**

4.5.8 The facilities depend on the terms of exchange since the loan is reimbursable in hard currency and energy from VRA is purchased in US dollars. The product also depends on the socio-political situation in the countries concerned, namely Cote d'Ivoire, Ghana, Togo and Benin.

## **4.6 Regional Economic Integration and Cooperation**

4.6.1 The project fell in line with the Fund's operating priorities. Indeed, the energy sector has always been one of ADF's fields of operation. Moreover, since the project concerns two countries, it is within the framework of the Bank's mission to promote regional economic integration. The VRA and CEB network interconnection (under which the dispatching project is classified) has a positive impact on the environment insofar as it allows for optimum management of Ghana's natural and renewable resources within a regional economic integration framework.

4.6.2 The interconnection of the VRA, SBEE and Togo Electricité existing networks was made in 1973 through the 297 km 161 kV double line transport linking the Akossombo dam to the Lome Aflao and Cotonou Vedoko distribution stations. From 1973 to 1999, the interconnected network recorded the following advancements: (i) construction of the Lome Port thermal station (90 MW); (ii) extension of the Cotonou thermal stations (+ 16 MW); (iii) construction of the Nangbeto hydro-electric station (65 MW); (iv) construction of the VRA

and CIE (Cote d'Ivoire) network interconnection; (v) extension of the VRA network to Northern Togo via a 161 kV line operated as 34.5 kV; (vi) construction of the Takoradi (Ghana) thermal station (550 MW); (vii) installation of two gas turbines of 20 MW each, one in Lome, the other in Cotonou. During the period, the energy demand in both countries increased from 97 GWh to 873 GWh. On average, the CEB covers 90% of the demand.

### **States' Coordination for Interconnection Management**

4.6.3 The VRA-CEB interconnection was subject to an agreement between three States (Benin, Togo and Ghana). The initial agreement spans fifteen years. The States designated the VRA and the CEB to execute the agreement which complies with the provisions of international agreements on inter-state network interconnection. The three States decided that in case of disruption, priority should be given to the inter-connected system. At the level of electricity companies, the coordination resulted in the preparation of a coordinated rescue plan. In the event of a disruption (low rainfall, network failure, etc.) the inter-connected networks are not affected.

4.6.4 Service continuity is another coordination element between the States. Ghana sometimes records outages but with no impact on the interconnection. Indeed, Ghana has had to import energy from Cote d'Ivoire without interrupting its supply to the CEB. Regional solidarity is another element of coordination. Ghana accepted to extend by ten years its agreement to supply the CEB.

4.6.5 Since 1983, Cote d'Ivoire and Ghana's networks have been interconnected. Each partner of the CIE/VRA/CEB interconnected network has a dispatching facility to oversee the networks. To meet growing demand and against the background of VRA limitations, the CEB signed an energy purchase agreement with the CIE and negotiated the right of passage through VRA networks. An agreement was signed and all three networks run an energy pool.

4.6.6 **Future Trends:** the CEB system should evolve within the context of integration of the ECOWAS sub-regional electricity market. The integration will be three-pronged: (i) CEB-NEPA interconnection co-financed by the Bank; (ii) development of the Adjarala dam to function alongside Nangbeto; and (iii) the Northern Benin-Northern Togo interconnection. With two interconnection lines between Nigeria and Niger and programs to link Nigeria's domestic networks, the prospects for an electricity trunk linking Niger, Nigeria, Benin, Togo, Ghana and Cote d'Ivoire would become implementable.

### **CEB's Experience**

4.6.7 Exchange contracts concern energy importation, exportation and transit. In 1988 and 1989, the interconnection enabled the CEB to store its Nangbeto production surplus at Akossombo. According to agreements, 50% of the stored energy was restituted. Without the agreement, the water that made the production possible would have been wasted since electric energy is an essential but perishable item whose production is only dictated by demand. The interconnection with the VRA enabled the two countries to import 90% of their needs between 1973 and 1987. From 1973 to 1997, the interconnection handled 9 250 GWh of transit energy.

4.6.8 Outback localities also benefited from the interconnection. Indeed, Northern Togo received energy from Ghana instead of running small onerous diesel generators. Border towns such as Aflao in Ghana and Hillacondji in Benin receive supplies from the distribution networks of neighboring countries.

4.6.9 The CEB is a member of the Union of African Electricity Producers and Distributors (UPDEA) and shares its experience with members of the union. The UPDEA associates with the European Electricity Producers' Union (UNIPEDA) and participates in the deliberations of the International Electro-technical Commission (IEC).

#### **4.7 Overall Performance Indicator**

4.7.1 The overall project performance is rated as satisfactory with an indicator of 3.22, thanks to the sound project portfolio quality, the sustainable physical output and the good cost/benefit ratio (see Annex 11).

#### **4.8 Borrowers' Performance**

4.8.1 The borrowers' performance is unsatisfactory with a rating of 2.16. Weaknesses noted include: (i) the non-compliance with loan conditions which led to their modification and delay in project implementation; (ii) the non-compliance with the timeframes set forth in the Fund's general operating conditions; (iii) the non-compliance with conditions regarding the submission of progress, audit and completion reports.

4.8.2 During the establishment of the CEB, the borrowers undertook to set up an adequate institutional and regulatory framework for the harmonious management of the sub-sector in both countries. The executing agency fully handled the implementation phase of the dispatching project. To successfully accomplish its mission, the agency was provided beforehand with trained key staff. The application of loan conditions and agreements constituted the weak point that marred borrowers' efforts. There is no follow-up/evaluation system. Reports are not prepared as required. Four years following works completion, there are issues still outstanding with regard to the amendment of certain loan agreements (see Annex 12).

#### **4.9 Bank's Performance**

The Bank performed satisfactorily with a rating of 3.00, thanks to the following considerations:

4.9.1 During identification, the Bank mobilized bilateral funds to conduct the preliminary studies. Following the conclusive results and with official backing of the two countries, the Bank introduced the project into its lending program. During appraisal, the Bank effectively included conditions indispensable for project sustainability.

4.9.2 The Bank closely monitored the procurement of goods and works, especially when the consultant tried to favor a given competitor. The Bank also disbursed promptly; no delay in disbursement was attributable to the Institution. Apart from the recurrent issue of inadequate supervision missions, the Bank participated adequately throughout the implementation phase. The project made no provision for enhancing the capacity of the

borrowers as it did the executing agency. Given the borrowers' difficulty in fulfilling certain loan conditions, the Bank was prompted to modify such conditions. The Bank should improve its contacts with the CEB.

4.9.3 The economic and financial analyses were relevant. Indeed, since the dispatching project generates no energy, it would have been advisable to measure the parameters that could contribute to determining the project's economic and financial return. The technical and institutional analyses as well as the institution building were relevant; the initial implementation and supervision schedule suited the project's specificity. The four-year delay recorded on completion in no way faults the insight behind the initial analysis: the project's physical implementation did not extend beyond the timeframe initially planned. The schedule had only been moved forward in time (see Annex 13).

#### **4.10 Key Factors Affecting Project Performance and Results**

4.10.1 Among factors that can impact on project performance, there are some that are totally beyond the control of borrowers such as the deterioration in the terms of trade that set in following the devaluation of the CFA Franc, the world prices of major commodities as phosphate, cashew nut, coffee, cocoa, copra, oil, the socio-political situation in one of the borrowing countries, characterized by a general strike of nearly 9 months, the poor performance of the consultant, etc.

4.10.2 The public authorities did not release funds to the CEB to set up an equity base. Necessary steps to solve the problem of SCO and CIMAO arrears to the CEB were not taken. Even after project completion, these issues continue to be bottlenecks to CEB finances (CIMAO arrears were finally settled).

4.10.3 The billing study which should have provided a sound basis for any price adjustment was only conducted in 2002. The CEB continues to be managed like a State agency with the inherent bureaucracy. That situation should evolve in the light of global and sub-regional changes in the sub-sector (see Annex 14).

### **5. CONCLUSIONS, LESSONS AND RECOMMENDATIONS**

#### **5.1 Conclusions**

5.1.1 The project provided the CEB with an effective and progressive management tool. It met its objectives and enabled the Bank to contribute to strengthening regional economic integration through an electrical infrastructure linking two States and whose scope is of interest to at least six States.

5.1.2 Furthermore, the project consolidated human resources and produced economic benefits. The IERR was estimated at 17% at evaluation, 16% on completion and 14.4% during appraisal.

## 5.2 Lessons

The following lessons were drawn thanks to the project implementation:

- (i) The applicability of loan conditions is a risk that should be taken into account during project appraisal and loan negotiations.
- (ii) When institutional or financial problems arise during the implementation phase, it is necessary to match the composition of the supervision team against the problems that need resolution.

## 5.3 Recommendations

### To the Governments:

- The Governments of Togo and Benin should adopt a common electricity code for both countries (par. 4.3.7).
- The CEB should be provided equity capital possibly open to local and foreign private investors (par.4.2.8, 4.2.9)

### To the CEB:

- Oversee the work of the committee that will be set up to manage SCO rent resources, with a view to listing it among the preferential creditors (par. 4.3.4);
- Contact the Sinking Fund (Caisse autonome d'amortissement) to consider other possibilities of having the borrower (Government of Benin) to compensate SCO debts and CEB maturities as did the CEET with Togo's Ministry of Finance (par. 4.3.5);
- Extend the dispatching hardware and software to cover new facilities. Thus, all new projects to set up stations should include a budget to match the dispatching capacity against the electricity production and transport resources (par. 4.5.1).
- Develop the organization chart to separate management control from auditing (4.3.10 & Annex 8)
- Include the rehabilitation of sub-stations as part of its investment program (par. 4.5.1)
- Reduce line losses (par. 4.3.8 & Annex 7).

### To the Bank:

- Review the general conditions concerning the keeping of separate accounts for Bank funds (par. 3.3.2)

- In future, regularly forward disbursement statements and the status of reimbursements to loan beneficiaries to enable them to update their accounts (par. 3.2.3).
- Plan for private sector participation in CEB operations (par. 4.2.8, 4.2.9).

**Annex 1**

**BENIN – TOGO : CEB Dispatching Project**

**Matrix of Recommendations and Follow-up Actions**

<b>Recommendations</b>	<b>Actions</b>	<b>Responsibility</b>	<b>Deadline</b>
Provide the CEB with equity capital (par.4.2.8, 4.2.9 and Annex 4)	Invite domestic savings and foreign capital	Governments of Benin and Togo	December 2003
Adopt the new Benin/Togo electricity code (par. 4.3.7)	Submit the code to the Governments of Benin and Togo following adoption of Benin's code	Governments of Benin and Togo	December 2003
Create enabling conditions for the liberalization of the electricity sub-sector (par. 4.2.8, 4.2.9)	Adoption by both countries of the new electricity code as well as an adequate investment code.	Governments	December 2006
Settle the SCO arrears problem (par 4.3.4)	Continue to negotiate with the buyer and the Government of Benin	CEB	June 2003
Rehabilitate sub-stations and obsolete dispatching equipment (par 4.5.1)	Conduct studies to determine the project size and seek financing	CEB	December 2004
Reduce line losses (4.3.8 and Annex 7)	Conduct an energy audit	CEB	June 2003 and periodically
Information on disbursements and reimbursements (par 3.2.3)	Inform the CEB about the remaining maturities, payments received and the loan status	ADB (Disbursement)	Immediate and continuous action

**BENIN – TOGO : CEB Dispatching Project**

**Project Retrospective Matrix**

Hierarchy of Objectives	Objectively Verifiable Indicators			Means of Verification	Major Assumptions/ Risks
	Appraisal	Completion	Evaluation		
1. Sectoral Objective Maximum use of imported and locally produced energy	None	Annual 3% increase in electricity consumption	Annual 3% increase in electricity consumption.	1.1 Activity reports of the CEB, the SBEE, Togo Electricité and the Ministries of Energy of both countries	
2. Specific Objectives 2.1 Coordinate and manage the electricity production park 2.2 Increase the security and quality of electricity supply 2.3 Permit the preparation in real time of energy flow accounting and billing		2.1 5% reduction in energy failure probability 2.2 Reduction of the electricity restoration time after interruption by a factor of 5 2.3 Data on the quality and cost of imported electricity produced by each station and consumed by each client updated in less than ten minutes.	2.1 Reduction by 5% of the energy supply failure probability 2.2 Reduction by a factor of 3 of the electricity supply restoration time following an interruption (15 instead of 45 minutes) 2.3 Data on the quality and cost of imported energy, produced by each station and consumed by each customer updated in under 10 minutes	2.1 CEB annual reports 2.2 CEB quarterly registers 2.3 SBEE annual reports 2.4 Togo Electricité annual reports 2.4 Interview with the SBEE and Togo Electricité 2.5 Field visit.	2.1 Available production tools 2.2 Reliable transmission network 2.3 Good rainfall 2.4 Internal and external mobility of staff trained under the project.
3. Achievements 3.1 A switching center set up 3.2 Stations remotely controlled from the switching center 3.3 Means of communication installed 3.4 Staff trained and motivated	NA	3.1 A switching center operational from February 1999 3.2 Seven stations remotely controlled from the control center 3.3 Seven telephone switchboards and distributors; 25 telephone sets 3.4 Telex link between the CEB and the VRA 3.5 Six fax machines installed 3.6 Twelve communication links set up 3.7 Two engineers, 8 senior technicians and 10 technicians trained	3.1 Visit to the dispatching center 3.2 Remote surveillance in constant operation 3.3 Material and equipment installed/visited 3.4 Managers and supervisory staff trained (total 20) in place, including one promoted	3.1 Consulting engineer's activity report 3.2 Borrower's completion report 3.3 Bank's completion report 3.4 Field mission	3.1 Premature obsolescence of computer and communication equipment 3.2 Equipment standardization 3.3 Mobility and demotivation of staff trained

**BENIN – TOGO : CEB Dispatching Project**

**Project Retrospective Matrix**

Hierarchy of Objectives	Objectively Verifiable Indicators			Means of Verification	Major Assumptions/ Risks
	Appraisal	Completion	Evaluation		
4. Activities	NA	Resources (in UA million)	Resources (in UA million)	4.1 Consultant's activity report	4.1 Availability of CEB funds.
4.1 Bidding		Estimated	Estimated		
4.2 Engineering studies		ADF 7.46	ADF 7.46	4.2 Borrowers' completion report	4.2 Bank's sanction policy
4.3 Construction equipment in the factory		CEB 0.84	CEB 0.84		4.3 Act of God and social conflicts
4.4 Installation of equipment		Total 8.30	Total 8.30	4.3 Provisional and final report	
4.5 Works monitoring and supervision		Actual	Actual	4.4 Bank's completion report	
4.6 Test run		ADF 6.77	ADF 6.77		
4.7 Operation		CEB 1.87	CEB 1.87		
4.8 Provisional reception		Total 8.64	Total 8.64		
4.9 Final reception					

BENIN-TOGO - Energy Production Dispatching and Transport Project

**Benin**  
**COMPARATIVE SOCIO-ECONOMIC INDICATORS**

	Year	Benin	Africa	Developing Countries
<b>Basic Indicators</b>				
Area ('000 Km <sup>2</sup> )		113	30 061	80 976
Total Population (millions)	2001	6.4	811.6	4,940.3
Urban Population (% of Total)	2001	41.9	38.0	40.4
Population Density (per Km <sup>2</sup> )	2001	57.2	27.0	61.0
GNI per Capita (US \$)	2001	430	671	1 250
Labor Force Participation - Total (%)	2000	45.2	43.1	...
Labor Force Participation - Female (%)	2000	42.9	33.8	...
Gender -Related Development Index Value	2000	0.404	0.476	0.634
Human Develop. Index (Rank among 174 countries)	2000	158	n.a.	n.a.
Popul. Living Below \$ 1 a Day (% of Population)	1995	...	45.0	32.2
<b>Demographic Indicators</b>				
Population Growth Rate - Total (%)	2001	2.7	2.4	1.5
Population Growth Rate - Urban (%)	2001	4.9	4.1	2.9
Population < 15 years (%)	2001	46.0	42.4	32.4
Population >= 65 years (%)	2001	2.7	3.3	5.1
Dependency Ratio (%)	2001	94.8	85.5	61.1
Sex Ratio (per 100 female)	2001	96.9	99.4	103.3
Female Population 15-49 years (% of total population)	2001	23.4	23.6	26.9
Life Expectancy at Birth - Total (years)	2001	53.9	52.5	64.5
Life Expectancy at Birth - Female (years)	2001	51.6	53.5	66.3
Crude Birth Rate (per 1,000)	2001	41.4	37.3	23.4
Crude Death Rate (per 1,000)	2001	12.5	14.0	8.4
Infant Mortality Rate (per 1,000)	2001	82.4	79.6	57.6
Child Mortality Rate (per 1,000)	2001	134.8	116.3	79.8
Maternal Mortality Rate (per 100,000)	1998	500	641	491
Total Fertility Rate (per woman)	2001	5.8	5.1	2.8
Women Using Contraception (%)	1996	16.4	...	56.0
<b>Health &amp; Nutrition Indicators</b>				
Physicians (per 100,000 people)	1999	3.4	36.7	78.0
Nurses (per 100,000 people)	1995	20.4	105.8	98.0
Births attended by Trained Health Personnel (%)	1996	60.0	38.0	58.0
Access to Safe Water (% of Population)	2000	63.0	60.4	72.0
Access to Health Services (% of Population)	1999	18.0	61.7	80.0
Access to Sanitation (% of Population)	2000	23.0	60.5	44.0
Percent. of Adults (aged 15-49) Living with HIV/AIDS	2001	3.8	5.7	...
Incidence of Tuberculosis (per 100,000)	2000	43.1	105.4	157.0
Child Immunization Against Tuberculosis (%)	2000	102.0	63.5	82.0
Child Immunization Against Measles (%)	1996	85.0	58.2	79.0
Underweight Children (% of children under 5 years)	1996	29.2	25.9	31.0
Daily Calorie Supply per Capita	1999	2 489	2 408	2 663
Public Expenditure on Health (as % of GDP)	1998	1.6	3.3	1.8
<b>Education Indicators</b>				
Gross Enrolment Ratio (%)				
Primary School - Total	1997	83.0	80.7	100.7
Primary School - Female	1997	64.0	73.4	94.5
Secondary School - Total	1996	18.3	29.3	50.9
Secondary School - Female	1996	10.3	25.7	45.8
Primary School Female Teaching Staff (% of Total)	1998	23.1	40.9	51.0
Adult Illiteracy Rate - Total (%)	2001	58.4	37.7	26.6
Adult Illiteracy Rate - Male (%)	2001	41.7	29.7	19.0
Adult Illiteracy Rate - Female (%)	2001	74.3	46.8	34.2
Percentage of GDP Spent on Education	1998	2.5	3.5	3.9
<b>Environmental Indicators</b>				
Land Use (Arable Land as % of Total Land Area)	1999	15.4	6.0	9.9
Annual Rate of Deforestation (%)	1995	1.2	0.7	0.4
Annual Rate of Reforestation (%)	1990	5.0	4.0	...
Per Capita CO2 Emissions (metric tons)	1997	...	1.1	2.1

Source : Compiled by the Statistics Division from ADB databases; UNAIDS; World Bank Live Database and United Nations Population Division.

Notes: n.a. Not Applicable ; ... Data Not Available.

## Togo

### COMPARATIVE SOCIO-ECONOMIC INDICATORS

	Year	Togo	Africa	Developing Countries
<b>Basic Indicators</b>				
Area ('000 Km²)		57	30 061	80 976
Total Population (millions)	2001	4.7	811.6	4,940.3
Urban Population (% of Total)	2001	34.6	38.0	40.4
Population Density (per Km²)	2001	82.0	27.0	61.0
GNI per Capita (US \$)	2000	300	671	1 250
Labor Force Participation - Total (%)	2000	42.3	43.1	...
Labor Force Participation - Female (%)	2000	33.5	33.8	...
Gender -Related Development Index Value	2000	0.475	0.476	0.634
Human Develop. Index (Rank among 174 countries)	2000	141	n.a.	n.a.
Popul. Living Below \$ 1 a Day (% of Population)	1995	...	45.0	32.2
<b>Demographic Indicators</b>				
Population Growth Rate - Total (%)	2001	2.8	2.4	1.5
Population Growth Rate - Urban (%)	2001	4.6	4.1	2.9
Population < 15 years (%)	2001	44.1	42.4	32.4
Population >= 65 years (%)	2001	3.2	3.3	5.1
Dependency Ratio (%)	2001	89.4	85.5	61.1
Sex Ratio (per 100 female)	2001	97.9	99.4	103.3
Female Population 15-49 years (% of total population)	2001	23.2	23.6	26.9
Life Expectancy at Birth - Total (years)	2001	52.0	52.5	64.5
Life Expectancy at Birth - Female (years)	2001	52.0	53.5	66.3
Crude Birth Rate (per 1,000)	2001	39.1	37.3	23.4
Crude Death Rate (per 1,000)	2001	13.3	14.0	8.4
Infant Mortality Rate (per 1,000)	2001	76.6	79.6	57.6
Child Mortality Rate (per 1,000)	2001	126.8	116.3	79.8
Maternal Mortality Rate (per 100,000)	1998	480	641	491
Total Fertility Rate (per woman)	2001	5.4	5.1	2.8
Women Using Contraception (%)	1998	23.5	...	56.0
<b>Health &amp; Nutrition Indicators</b>				
Physicians (per 100,000 people)	1995	7.9	36.7	78.0
Nurses (per 100,000 people)	1991	32.8	105.8	98.0
Births attended by Trained Health Personnel (%)	1998	51.0	38.0	58.0
Access to Safe Water (% of Population)	2000	54.0	60.4	72.0
Access to Health Services (% of Population)	1992-98	...	61.7	80.0
Access to Sanitation (% of Population)	2000	34.0	60.5	44.0
Percent. of Adults (aged 15-49) Living with HIV/AIDS	2001	6.0	5.7	...
Incidence of Tuberculosis (per 100,000)	2000	31.1	105.4	157.0
Child Immunization Against Tuberculosis (%)	2000	83.0	63.5	82.0
Child Immunization Against Measles (%)	1996	43.0	58.2	79.0
Underweight Children (% of children under 5 years)	1998	25.1	25.9	31.0
Daily Calorie Supply per Capita	1999	2 528	2 408	2 663
Public Expenditure on Health (as % of GDP)	1998	1.3	3.3	1.8
<b>Education Indicators</b>				
Gross Enrolment Ratio (%)				
Primary School - Total	1997	119.0	80.7	100.7
Primary School - Female	1997	101.0	73.4	94.5
Secondary School - Total	1997	29.0	29.3	50.9
Secondary School - Female	1996	14.4	25.7	45.8
Primary School Female Teaching Staff (% of Total)	1998	12.1	40.9	51.0
Adult Illiteracy Rate - Total (%)	2001	41.6	37.7	26.6
Adult Illiteracy Rate - Male (%)	2001	24.6	29.7	19.0
Adult Illiteracy Rate - Female (%)	2001	57.9	46.8	34.2
Percentage of GDP Spent on Education	1998	4.5	3.5	3.9
<b>Environmental Indicators</b>				
Land Use (Arable Land as % of Total Land Area)	1999	40.4	6.0	9.9
Annual Rate of Deforestation (%)	1995	1.4	0.7	0.4
Annual Rate of Reforestation (%)	1990	12.0	4.0	...
Per Capita CO2 Emissions (metric tons)	1997	...	1.1	2.1

Source : Compiled by the Statistics Division from ADB databases; UNAIDS; World Bank Live Database and United Nations Population Division.

Notes: n.a. Not Applicable; ... Data Not Available.

**BENIN – TOGO : CEB Dispatching Project**

**CONDITIONS PRECEDENT TO FIRST DISBURSEMENT AND OTHER  
CONDITIONS**

A. Conditions Precedent to First Disbursement

The National Executive Council of Benin and the Government of Togo shall:

1. Undertake to regularly include in their budget the financial allocations necessary for financing the cost for which they are responsible in accordance with the financing plan;
2. Undertake to find additional source of finance in case of project cost overrun;
3. Show proof of onlending the loan to the CEB at a rate not exceeding 5%, reimbursable over twenty (20) years, including a four-year grace period. The onlending agreement shall be submitted to the Fund for prior approval;
4. Undertake not to use the loan product to pay various duties and taxes on goods and services needed for project implementation.

Furthermore and prior to the first disbursement:

5. The National Executive Council of the People's Republic of Benin shall present to the ADF a plan to recover SBEE arrears to the CEB in connection with consumption by the Onigbolo cement factory;
6. The Government of the Republic of Togo shall present to the ADF a plan to recover CIMAO arrears to the CEB.

B. Other Conditions

Furthermore, the National Executive Council of Benin and the Government of Togo shall:

1. Conduct statutory modifications within six (6) months, aimed at:
  - a) Clearly stating that the CEB is the owner of facilities it sets up, on the one hand, and the fate of CEB assets in the event of dissolution, on the other;
  - b) Obliging the two national electricity companies (CEET and SBEE) to purchase CEB production in priority;
  - c) Providing the CEB with equity capital or resources through non-reimbursable contributions from its member States;
2. Show proof of opening an account into which CEB reimbursements will be paid and the product of which (interest on investment) shall cover exchange risks and equipment renewal (see precedent condition 3);
3. Conduct a tariff study to determine a possible tariff increase in order to arrest the falling return on assets from 1991.



**BENIN – TOGO : CEB Dispatching Project****CEB Credit Trend, 1990 - 2001**  
(FCFA million)

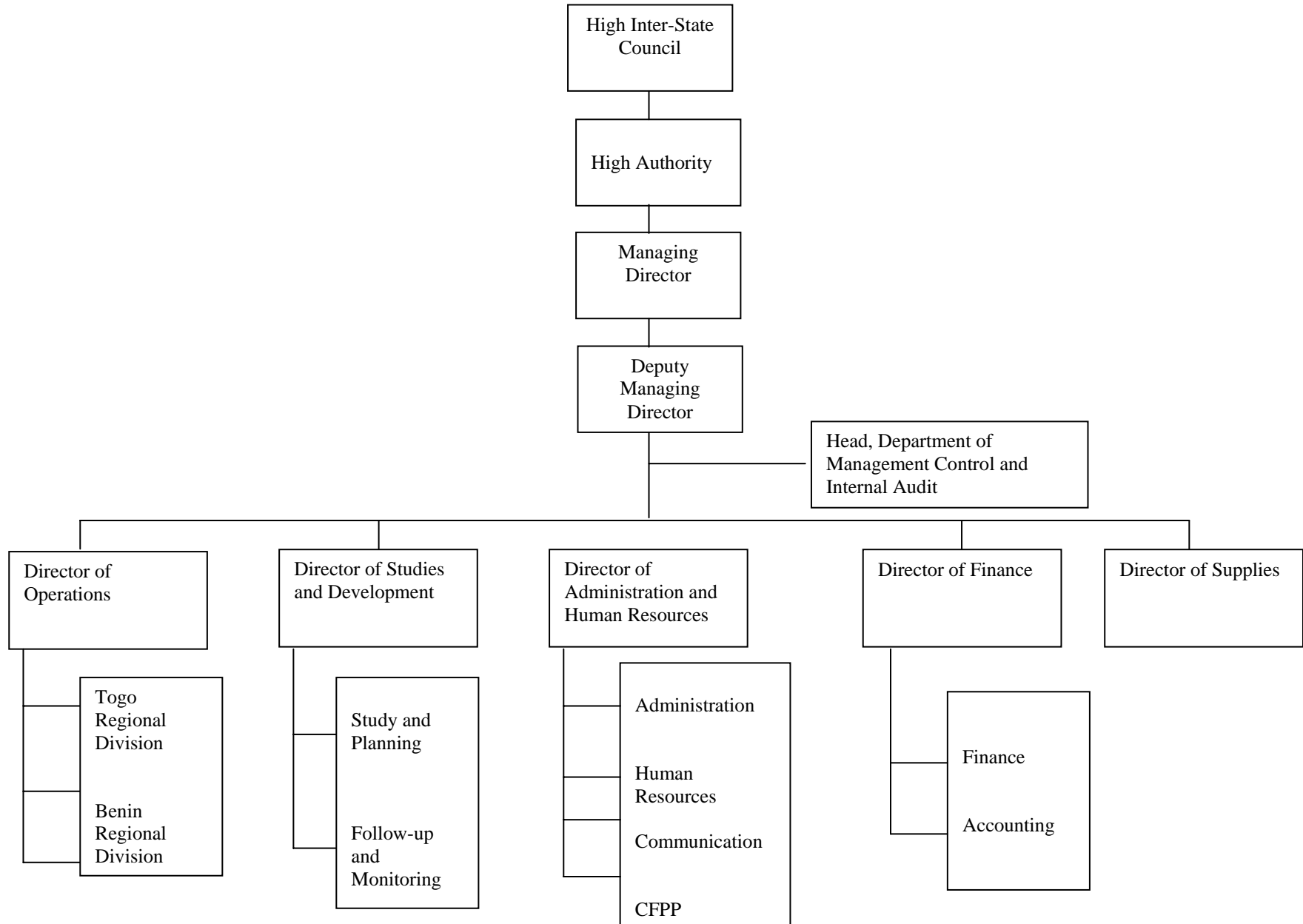
<b>Year</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
1, TOGO												
Togo Electricité	2239	2945	5085	9043	13138	15839	16785	15807	12171	11052	10517	3863
OTP	724	455	1596	1880	1209	1552	1930	1716	933	3081	2817	301
CIMAO	0	865	865	865	865	865	865	821	521	301	301	301
Aflao Denu	70	52	187	100	229	0	22	0	0	0	0	0
WACEM	0	0	0	0	0	0	0	280	289	578	547	613
Total 1	3033	4317	7733	11888	15441	18256	19602	18624	13914	15012	14182	5078
BENIN												
SBEE	939	1396	1239	2033	3124	2713	2123	3202	3343	5361	6648	5341
SCO	2206	2421	2730	3140	3846	4154	4029	4144	3994	4191	4284	4566
Total 2	3145	3817	3969	5173	6970	6867	6152	7346	7337	9552	10932	9907
Grand Total	6178	8134	11702	17061	22411	25123	25754	25970	21251	24564	25114	14985
Variation rate (%)		31,66	43,87	45,80	31,36	12,10	2,51	0,84	-18,17	15,59	2,24	-40,33
Energy sales	11469	12858	14298	12234	20481	25980	26764	14298	20000	32463	33925	36805
Customers/sales (%)	0.54	0.63	0.82	1.39	1.09	0.97	0.96	1.82	1.06	0.76	0.74	0.41
Customersx12/sales (months)	6	8	10	17	13	12	12	22	13	9	9	5

**Source CEB/PCR/ADB Mission**

**BENIN – TOGO : CEB Dispatching Project****General Operating Account (in FCFA Million)**

	Year											
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Energy delivered (GWh)	550	524	596	529	534	679	698	736	698	887	939	1 031
KWh price	21,89	24,53	23,97	23,13	38,30	38,29	38,34	32,26	38,00	38,00	38,00	50,00
Energy sales	11 469	12 858	14 298	12 234	20 481	25 980	26 764	28 174	25 618	32 463	33 925	36 805
Other products	542	667	640	5 684	2 359	9 243	539	1 248	7	52	104	122
TOTAL 1	12 011	13 525	14 938	17 918	22 840	35 223	27 303	29 422	25 625	32 515	34 029	36 927
Energy purchase	6 026	5 415	6 445	5 073	12 326	13 798	15 292	20 611	17 197	16 495	23 155	31 595
Consumables	0	62	53	0	0	0	0	0	0	0	0	0
Staff expenses	578	695	844	885	1 058	1 346	1 108	1 378	1 758	2 189	2 258	2 161
Other charges	592	572	643	653	595	683	1 395	1 363	1 697	1 681	141	3 237
Financial charges	2 225	1 496	1 338	10 186	9 964	19 893	16 405	14 752	17 675	4 450	5 521	4 188
Allocation to amort. & prov.	2 249	2 317	3 538	2 380	2 782	3 987	3 786	3 641	4 862	5 379	5 083	5 384
TOTAL 2	11 670	10 557	12 861	19 177	26 725	39 707	37 986	41 745	43 189	30 194	36 158	46 565
Crude operating income	341	2 968	2 077	-1 259	-3 885	-4 484	-10 683	-12 323	-17 564	2 321	-2 129	-9 638
Non-operating income	1 893	726	374	0	0	0	14 616	12 170	1 234	1 833	1 798	1 805
Net income	2 234	3 694	2 451	-1 259	-3 885	-4 484	3 933	-153	-16 330	4 154	-331	-7 833
Self-financing	2 575	6 662	4 528	-2 518	-7 770	-8 968	-6 750	-12 476	-33 894	6 475	-2 460	-17 471
Trend in turnover (%)		13	10	20	27	54	-22	8	-13	27	5	9
Trend in energy delivered (GWh)		-5	14	-11	1	27	3	5	-5	27	6	10
Energy purchase/total 2 (%)	52	51	50	26	46	35	40	49	40	55	64	68
Staff expenses/ total 2 (%)	5	7	7	5	4	3	3	3	4	7	6	5
Financial charges/total 2 (%)	19	14	10	53	37	50	43	35	41	15	15	9
Allocation to amort. & prov /total 2 (%)	19	22	28	12	10	10	10	9	11	18	14	12

**CEB Organization Chart**



**BENIN – TOGO : CEB Dispatching Project****Balance Sheets (in FCFA)**

	<u>2001</u>	<u>2000</u>	<u>1999</u>	<u>1998</u>
<b><u>FIXED ASSETS</u></b>				
Fixed charges	966 537 987	309 206 102	25 525 451	89 800 268
Net intangible fixed assets	3 772 417 778	3 537 083 528	3 121 174 785	2 621 608 146
Net tangible fixed assets	65 213 216 573	69 413 993 251	73 543 166 813	77 531 950 404
Fixed financial assets	6 675 390 490	21 752 822	18 547 222	18 167 222
<b>TOTAL FIXED ASSETS</b>	<b>76 627 562 828</b>	<b>73 282 035 703</b>	<b>76 708 414 271</b>	<b>80 261 526 040</b>
<b><u>LIQUID ASSETS</u></b>				
Stocks	1 157 272 985	988 224 890	1 019 091 472	962 474 307
Credit and related applications	10 400 901 431	17 824 983 680	16 578 306 450	16 809 320 607
Other credit	781 176 208	480 899 445	1 577 983 051	1 229 719 547
<b>TOTAL LIQUID ASSETS</b>	<b>12 339 350 624</b>	<b>19 294 108 015</b>	<b>19 175 380 973</b>	<b>19 001 514 461</b>
<b><u>CASH FLOW - ASSETS</u></b>				
Outstanding value	400 000 000	572 928 258		
Banks and postal cheques	5 186 672 304	4 974 152 731	5 386 780 958	5 169 670 260
Cash	11 446 018	66 461 523	23 860 841	8 669 366
<b>TOTAL CASH FLOW - ASSETS</b>	<b>5 598 118 322</b>	<b>5 613 542 512</b>	<b>5 410 641 799</b>	<b>5 178 339 626</b>
<b>CONVERSION GAP - ASSETS</b>	<b>11 953 422 207</b>	<b>11 667 103 326</b>	<b>11 207 890 424</b>	<b>8 583 515 876</b>
<b><u>TOTAL ASSETS</u></b>	<b>106 518 453 981</b>	<b>109 856 789 556</b>	<b>112 502 327 467</b>	<b>113 024 896 003</b>
<b><u>LIABILITIES</u></b>				
Capital	50 000 000	50 000 000	50 000 000	50 000 000
Premium and reserves	12 259 884 080	16 972 832 261	16 402 820 771	21 404 230 942
Year's net income	- 11 114 389 053	- 4 712 948 181	570 011 490	5 001 410 171
Other equity resources	19 457 283 509	21 082 952 949	22 874 629 534	24 879 081 288
<b>TOTAL EQUITY &amp; RELATED RES.</b>	<b>20 652 778 536</b>	<b>33 392 837 029</b>	<b>39 897 461 795</b>	<b>41 331 902 059</b>
Borrowing	51 259 457 465	52 219 966 458	53 144 136 265	52 238 342 596
Financial and other debt	5 464 890 712	4 708 860 481	4 584 687 782	4 059 687 960
Provisions	7 465 119 079	6 683 761 620	6 285 368 595	8 583 515 876
<b>TOTAL FIN. DEBT &amp; OTHER RES.</b>	<b>64 189 467 256</b>	<b>63 612 588 559</b>	<b>64 014 192 642</b>	<b>64 881 546 432</b>
<b>STABLE RESOURCES</b>	<b>84 842 245 792</b>	<b>97 005 425 588</b>	<b>103 911 654 437</b>	<b>106 213 448 491</b>
<b>LIQUID LIABILITIES</b>	<b>19 639 600 273</b>	<b>12 163 313 789</b>	<b>8 590 595 237</b>	<b>6 464 323 687</b>
<b>CASH FLOW - LIABILITIES</b>	<b>2 034 640 772</b>	<b>478 593 705</b>		<b>268 023 423</b>
<b>CONVERSION GAP</b>	<b>1 967 144</b>	<b>209 456 474</b>	<b>77 793</b>	<b>79 100 402</b>
<b>TOTAL LIABILITIES</b>	<b>106 518 453 981</b>	<b>109 856 789 556</b>	<b>112 502 327 467</b>	<b>113 024 896 003</b>

## BENIN – TOGO : CEB Dispatching Project

### Calculation of the Economic Rate of Return

#### Working Notes and Assumptions

1. The main aim of the Electricity Production Dispatching and Transport Project is to provide the CEB with a centralized network command center to: (i) coordinate energy production and transport to various sections of the network; (ii) increase supply security and the quality of the energy provided, and above all, manage the production facilities economically.
2. Being a project in support of quality improvement (absence of billed production), the operation does not generate income. It contributes to improving the financial and economic performance of the CEB and companies. Therefore, in the absence of direct financial flows, the internal rate of return calculated is merely an economic indicator.
3. To determine the internal rate of return, the cash flows before financial charges (taking into account the cost of energy before and after the project) were used.

#### Electric Energy Loss without the Project

4. The undistributed units (1 unit = 1 kWh) following failure can be reduced by half thanks to better coordination from the command center. According to the CEB master plan, assuming optimum command, there is a 0.5% probability of failure at peak annual energy consumption.
5. If annual sales amount to 750 000 000 units, the corresponding yearly loss would be: 0.5 % of 750 000 000 = 3 750 000 units. The loss is avoided thanks to the operation of the command center, thus representing a gain.

#### Project Benefits

6. Estimate of the cost of one energy unit failure for domestic subscribers is based on the average hourly salary. The same cost was used for various industrial concerns and companies notwithstanding the fact that the cost is higher with regard to them. The average hourly salary is estimated at FCFA 462 for domestic subscribers. A unit sold by the CEB cost FCFA 40 until 2001 and FCFA 50 thereafter. Various recurrent expenditures for operating the center amount to FCFA 250 000 000. The annual profit accruing from the command center would be:
  - $3\,750\,000 \text{ units} \times (462-50) \text{ FCFA} - 250\,000\,000 \text{ FCFA} = 1\,332\,500\,000 \text{ FCFA}$
7. Since the lifespan of the center is fifteen years from the date of provisional reception at end 1996, the calculation of the IRR covers the 1997 to 2011 period.

#### Quantity of Energy Sold to the CEB

8. The CEB sold 735 589 324 units in 1997. In 1998, it sold only 698 065 227 units following drought which affected the sub-region and disrupted production at dams. In 2001, the CEB sold 958 197 958 kWh. Excluding drought and interconnection with NEPA, the working assumptions for the coming years would be as follows:
  - 3% annual increase from 1999 to 2011.
  - 3% increase in operating expenditure from 2007 to 2011.
9. Based on an average conversion rate of UA 1 = FCFA 800 up to 2000 and FCFA 912 from 2001 to 2011, the internal rate of return from these assumptions would stand at 17%. The calculations are as follows:

**BENIN – TOGO : CEB Dispatching Project**

**Calculation of the Economic Rate of Return**

<u>Year</u>	<u>Investments (UA)</u>	<u>Sales (kWh)</u>	<u>Unit Cost</u>	<u>Charges</u>	<u>Cash Flow</u>
1992	722 000				(722 000)
1993	244 000				(244 000)
1994	1 615 000				(1 615 000)
1995	3 140 000				(3 140 000)
1996	800 000				(800 000)
1997	964 000	735 589 324	422	250 000 000	663 617
1998	1 155 000	698 065 227	422	250 000 000	373 647
1999		846 519 342	422	250 000 000	1 920 195
2000		885 816 990	422	250 000 000	2 023 842
2001		958 197 958	422	250 000 000	1 930 063
2002		986 943 897	412	250 000 000	1 942 380
2003		1 016 552 214	412	250 000 000	2 008 821
2004		1 047 048 780	412	250 000 000	2 077 255
2005		1 078 460 243	412	250 000 000	2 147 743
2006		1 110 814 051	412	262 500 000	2 206 729
2007		1 144 138 472	412	262 500 000	2 281 509
2008		1 178 462 626	412	262 500 000	2 358 533
2009		1 213 816 505	412	262 500 000	2 437 867
2010		1 250 231 000	412	262 500 000	2 519 582
2011		1 287 737 930	412	262 500 000	2 603 747

**17%**

**Internal Rate of Return = 17%**

## **BENIN – TOGO : CEB Dispatching Project**

### **Overall Project Evaluation**

N°	Indicators	Rating	Remarks
<b>1.</b>	<b>Relevance and quality at entry</b>	<b>3.0</b>	<b>The request was accompanied by a full feasibility study; the project was introduced into the portfolio and appraised the following month</b>
1.i	Consistency with the countries' overall development strategy	4	Reduction in Benin and Togo's energy dependence on the outside is a priority for both countries
1.ii	Consistency with the Bank's assistance policy	4	Practically all ADF programs maintained energy as a key sector of intervention
1.iii	Macro-economic policy	3	The two countries' development plans treat energy as a priority sector
1.iv	Sectoral policy	3	Both countries adopted a common electricity code called "the Daho-Togo electricity code"
1.v	Environmental concerns	3	Environmental classification was introduced into the Bank after the project had been appraised. Nonetheless, the dispatching project which neither produces nor transports any kWh held no danger for the environment
1.ix	Human resources development	4	The project emphasized the training of staff who would oversee the dispatching operation
1.x	Institutional development	1	The project had institutional development dimensions that have not been concretized
1.xi	Private sector development	1	The private sector was not associated with the project which was to operate in a state-controlled environment
1.xii	Regional economic integration	4	A solid point for the project which taps from the natural resources of a neighboring country (Ghana) within the context of regional economic integration
1.xiii	Quality at portfolio entry (including exigency, complexity and risk, etc.)	3	The project was introduced into the Bank's portfolio with the feasibility study at an advanced state

## BENIN – TOGO : CEB Dispatching Project

### Overall Project Evaluation

N°	Indicators	Rating	Remarks
2.	<b>Effectiveness (attainment of objectives and results)</b>	<b>3.26</b>	<b>The performance is rated as satisfactory in the light of such parameters as the material objectives, natural resources management within a regional framework, etc.</b>
2.i	Policy action objectives	2.33	Inadequate
	<ul style="list-style-type: none"> <li>• Regulation of the private sector and incentives</li> </ul>	1	The private sector was omitted from the project cycle. There were no incentives to encourage private citizens and expatriates to invest in the sector
	<ul style="list-style-type: none"> <li>• Efficient billing</li> </ul>	2	Real prices were taken into account during project design but not implemented in fact. Although predating the project, the Daho-Togo code set forth an effective pricing framework
2.ii	Material objectives (output)	4	The project succeeded and contributed effectively to energy movement management
2.iii	Financial objectives	2.5	Inadequate
	<ul style="list-style-type: none"> <li>• Financial viability</li> </ul>	3	The project has no in-built viability since it generates no resources. However, it is viable via its economic fallout
	<ul style="list-style-type: none"> <li>• Cost recovery</li> </ul>	2	The CEB customer timeline has gradually worsened
2.iv	Institutional development objectives	2.93	Inadequate
2.iv.1	National capacity	2.66	Inadequate
	<ul style="list-style-type: none"> <li>• Support to the private sector</li> </ul>	1	In the course of the project, the private sector was not promoted in both countries
	<ul style="list-style-type: none"> <li>• Environment and natural resources</li> </ul>	4	Ghana's water resources through electricity sold by the VRA to the CEB is an action in favor of sub-regional natural resources rehabilitation
	<ul style="list-style-type: none"> <li>• Sectoral capacity</li> </ul>	3	The project put in place an effective energy movement management tool
2.iv.2	Executing agency	3.2	Satisfactory
	<ul style="list-style-type: none"> <li>• Planning/policy analysis</li> </ul>	3	The CEB has a planning unit that steered study preparation and works implementation
	<ul style="list-style-type: none"> <li>• Financial management</li> </ul>	2	Separate accounts funded by the ADF loan were not kept
	<ul style="list-style-type: none"> <li>• Skills improvement</li> </ul>	4	CEB managers and staff received appropriate training
	<ul style="list-style-type: none"> <li>• Management information system</li> </ul>	4	The information management system was strengthened through modernization
	<ul style="list-style-type: none"> <li>• Agency restructuring</li> </ul>	3	The CEB was reorganized with a view to enhanced staff efficiency and service quality improvement
2.v	Social and beneficiary objectives	3	The project has no direct social objectives. The beneficiaries embraced the project achievements
	<ul style="list-style-type: none"> <li>• Access and service quality</li> </ul>	3	The key project beneficiaries (Benin and Togo's electricity companies) have easier access to energy with enhanced service quality
2.vi	Environmental objectives	3.5	Satisfactory
	<ul style="list-style-type: none"> <li>• Natural resources management</li> </ul>	4	The energy comes mostly from the Akossombo hydroelectric dam. Efficient energy movement management contributes to the sound exploitation of the sub-region's natural resources
	<ul style="list-style-type: none"> <li>• Quality of the urban environment</li> </ul>	3	The semi-urban areas of Benin and Togo's main towns will have easier access to electricity
2.vii	Private sector development	1.33	Inadequate
	<ul style="list-style-type: none"> <li>• Private sector legal framework</li> </ul>	1	The project was not concerned by the lack of possibility for expressing private initiative in the sub-sector
	<ul style="list-style-type: none"> <li>• Restructuring/privatization of PE</li> </ul>	1	Privatization is not the ideal solution for enhanced management of the sub-sector; however, the eventuality was not envisaged

## **BENIN – TOGO : CEB Dispatching Project**

### **Overall Project Evaluation**

N°	Indicators	Rating	Remarks
	<ul style="list-style-type: none"> <li>• Private sector development</li> </ul>	1	Provisions of the Daho-Togo electricity code were strengthened
	<ul style="list-style-type: none"> <li>• Technical assistance to the private sector</li> </ul>	1	The sector received no assistance
3)	<b>Efficiency</b>	<b>4</b>	<b>The project's economic return has been confirmed</b>
3.i	Economic rate of return estimated at appraisal: 14.4% New estimate (PCR/PPER): 16%	4	The calculation of the economic rate of return should be taken with much caution especially in connection with energy losses in a no-project situation. The minimization of human error, the reduction in intervention time in the event of total system collapse are the project's unquantifiable benefits
3.ii	Financial rate of return estimated at appraisal: 14.4% New estimate (PCR )16% PPER 17 %	4	The IFRR was considered equivalent to the IERR since the dispatching generates no additional production but only manages available energy
4	<b>Impact on institutional development (ID)</b>	<b>2.85</b>	<b>The impact on institutional development is inadequate in terms of the fragile financial situation and the absence of technology transfer</b>
4.i	National capacity	3	Satisfactory
	<ul style="list-style-type: none"> <li>• Environment and natural resources</li> </ul>	3	The project does not hurt the environment but promotes regional natural resources development
4.ii	<u><b>Executing Agency</b></u>	2.71	
	<ul style="list-style-type: none"> <li>• Planning/policy analysis</li> </ul>	3	The organization of the CEB comprises a planning and general studies unit
	<ul style="list-style-type: none"> <li>• Management control and audit</li> </ul>	3	The Company has put management control and internal audit functions in place
	<ul style="list-style-type: none"> <li>• Training/skills improvement</li> </ul>	4	The CEB has a training and skills improvement center in Calavi, Benin. The project contained a training component for all engineers, senior technicians and field staff
	<ul style="list-style-type: none"> <li>• Technology transfer</li> </ul>	1	The project contains no technology transfer component
	<ul style="list-style-type: none"> <li>• Management information system</li> </ul>	3	The least communication which prevents rumor mongering is in place. Service bulletins are issued and staff representatives regularly elected. The internal mail network is in place
	<ul style="list-style-type: none"> <li>• Financial, budget, operating and maintenance systems</li> </ul>	2	The CEB's checkered net income and deteriorating financial situation should be corrected. The Company should be capitalized as the ADB had recommended (its survival depends on that)
	<ul style="list-style-type: none"> <li>• Agency restructuring (decentralization)</li> </ul>	3	CEB's centralized management is not a handicap. Gradual decentralization should be introduced as needed.

**BENIN – TOGO : CEB Dispatching Project**

**Overall Project Evaluation**

N°	Indicators	Rating	Remarks
5	Sustainability	3	<b>The sustainability of project impact is guaranteed thanks to the security of spare parts and the maintenance contract with the installer</b>
5.i	Technical viability (including E&E facilitation, availability of recurrent financing, spare parts, workshops, etc.)	3	The dispatching maintenance and operating charges are covered. Spare parts are available for some time to come. In the medium term, the system might become obsolete due to rapidly evolving technology
5.ii	Borrower's sustainable commitment (including legal/regulatory framework)	3	The Borrower (CEB) monopolizes energy transport in both countries and should live up to the billing. For now, it has the resources to do so.
5.iii	Socio-political support (including beneficiary participation, protection of the underprivileged, political stability)	2	Togo's socio-political situation in 1993 affected the project's smooth implementation
5.iv	Economic viability	3	The project is viable
5.v	Financial viability	3	Although the IFRR is hard to judge, the project is viable
5.vi	Institutional arrangements (organizational and management)	3	The current structure favors the sound management of project assets
5.vii	Environmental viability	3	The project has no negative impact on the environment
5.viii	Resistance to exogenous factors	4	Dispatching is an automated system and only responds to information meant for it and programmed for the purpose
6	<b>Overall performance indicator</b>	<b>3.22</b>	<b>The general performance indicator is above 3. The project is rated as satisfactory.</b>

**BENIN – TOGO : CEB Dispatching Project****Borrower's Performance**

<b>Component Indicators</b>	<b>Rating (1 to 4)</b>	<b>Remarks</b>
<b>1. <u>Preparation Quality</u></b>	<b>2.25</b>	Apart from administrative moves to put the bilateral assistance fund in place, the borrowers did not monitor the trend of the studies
• Control, beneficiary participation	3	The CEB monitored the project preparation cycle by making relevant comments on the consultant's reports
• Government commitment	3	The Governments of Togo and Benin concretized their project commitments through various actions, including the submission of an official request to the Bank
• Macro-economic and sectoral policy	2	Above all, the project aimed at reducing both countries' dependence on Ghana for their electricity supply
• Institutional arrangements (counterpart financing)	1	The CEB represented the two governments during the implementation phase and loan reimbursement
<b>2. <u>Implementation Quality</u></b>	<b>2.75</b>	The borrowers did not enforce the agreements
• Assignment of key staff	4	Enough staff were assigned to the project
• Management performance of the executing agency	3	The performance of the project unit is rated as satisfactory
• Use of technical assistance	SO	The project has no technical assistance component
• Mid-term adjustment	3	Certain loan conditionalities were reviewed downwards so as not to block project operations
Respect of schedules and costs	<b>1</b>	The initial schedule was not respected. The local currency cost increased significantly
Application of agreements	<b>1</b>	Agreements in connection with the CEB institution building was not respected
Adequate follow-up/evaluation and forwarding of reports	<b>2</b>	Follow-up is acceptable. The reports were not forwarded
Satisfactory operations (where necessary)	<b>4</b>	Dispatching contributes effectively to managing energy movements in the network
<b>Borrower's overall performance</b>	<b>2.16</b>	<b>Inadequate</b>

**BENIN – TOGO : CEB Dispatching Project**

**Bank Performance**

Component Indicators	Rating	Remarks
<b>During Identification</b>	<b>3</b>	<b>The Bank was present during the identification stage</b>
<ul style="list-style-type: none"> <li>• Project compliance with the governments' development strategy</li> </ul>	3	Reduce the two countries' dependency vis-à-vis Ghana
<ul style="list-style-type: none"> <li>• Project compliance with the Bank's strategy vis-à-vis the two countries</li> </ul>	3	The Bank's energy sectoral development policy is correctly implemented
<ul style="list-style-type: none"> <li>• Participation of governments/beneficiaries</li> </ul>	3	The electricity companies were not involved in project identification
<ul style="list-style-type: none"> <li>• Project's innovatory character</li> </ul>	3	Dispatching is a modern energy movement management tool
<b>During Preparation</b>	<b>3</b>	<b>The Bank did not conduct a preparation mission but monitored the studies</b>
<ul style="list-style-type: none"> <li>• Rationale and Bank's support</li> </ul>	3	The project falls within the sub-sectoral development framework. Through the Belgian assistance fund, the Bank funded the preliminary studies
Bank's timely support	3	No other action was financed except the financing of preliminary studies
<b>During Appraisal</b>	<b>3</b>	Given its knowledge of the dossier, the Bank was able to appraise the project within six months of the official request
<ul style="list-style-type: none"> <li>• Quality of technical, economic, financial, institutional, social and environmental analyses</li> </ul>	3	The Bank had then not instituted environmental classification. Other project aspects were well analyzed
<ul style="list-style-type: none"> <li>• Relevance of conditions and agreements</li> </ul>	4	The loan conditionalities are relevant and should, if fulfilled, enable the rehabilitation of CEB finances in the long term
<ul style="list-style-type: none"> <li>• Adequacy of the lending instrument</li> </ul>	3	In the absence of a grant, the ADF window is the most suitable for the project
<ul style="list-style-type: none"> <li>• Adequacy of financing</li> </ul>	2	Private partners may have been interested in funding the project
<ul style="list-style-type: none"> <li>• Quality of coordination with other donors/partners</li> </ul>	NA	
<ul style="list-style-type: none"> <li>• Implementation and supervision plan (including performance indicators, follow-up and evaluation criteria)</li> </ul>	3	The implementation plan did not factor in delays caused by the borrowers and equipment suppliers

**BENIN – TOGO : CEB Dispatching Project**

**Bank Performance**

Component Indicators	Rating	Remarks
<b>At the supervision stage</b>	<b>3.3</b>	<b>The Bank contributed to solving problems that arose during the implementation phase</b>
<ul style="list-style-type: none"> <li>• Suitability of Bank staff (skills, time and continuity)</li> </ul>	3	Although enough, the supervision staff do not spend the needed time on supervision. Continuity was not effective owing to the Bank's restructuring
<ul style="list-style-type: none"> <li>• Resolution of problems</li> </ul>	3	Project staff tried to solve problems as they arose
<ul style="list-style-type: none"> <li>• Attention to sustainability problems</li> </ul>	4	Although not formalized, sustainability was of concern to the Bank.
<b>Overall Bank performance</b>	<b>3.</b>	<b>Overall, the Bank performed satisfactorily</b>

**BENIN – TOGO : CEB Dispatching Project**

**Factors that May Affect Project Performance**

N°	Factors	Substantial	Partial	Negligible	NA	Remarks
1	<b>Beyond the control of the authorities</b>					
1.1	World market prices		-			Crude oil price
1.2	Natural events		-			Earth quakes, tornados, etc.
1.3	Bank performance	+				Financing of installation renovation and rehabilitation
1.4	Performance of contractors/consultants	+				Implementation of the maintenance assistance contract
1.5	Civil war	-				Risk of the network being blown up
1.6	Others (specify)					
2.	<b>Within State control</b>					
2.1	Macro-economic policy	-				Hierarchical arrangement of the sector in the development plan and finance edicts
2.2	Sectoral policy	-				Idem
2.3	Government commitment	-				Government commitment
2.4	Appointment of key staff	+				The training is a project component. The staff for training were selected
2.5	Counterpart financing			-		The CEB covered governments' counterpart contribution
2.6	Administrative capacity			-		The loan and project administration were inadequate. Quarterly and completion reports were not prepared
2.7	Others (specify)					
3.	<b>Depending on the executing agency</b>					
3.1	Management	+				The CEB has an effective management capacity
3.2	Staff assignment	+				Staff for training were selected based on objective criteria and put on time at the supplier's disposal
3.3	Use of technical assistance				NA	
3.4	Follow-up and evaluation		-			Follow-up/evaluation was not developed
3.5	Beneficiary participation		+			Active participation of beneficiaries to finalization of the peak limiting plan
3.6	Others (specify)					
4.	<b>Factors affecting implementation</b>					
4.1	Modification of project scope, scale and design		+			There were no changes in design; the initially planned servo system was replaced with an Intranet
4.2	Over- or underestimation of material inputs, base cost units			+		A slight cost over-estimate which help to avoid any major increase in the total project amount
4.3	Inadequate contingencies				NA	Contingencies accounted for 19% of the base cost (adequate)
4.4	Change of exchange rate, financial and institutional provisions	-				The institutional performance did not materialize; the CFA Franc devaluation increased the local currency cost.
4.5	Unrealistic implementation schedule		-			Usually, the Bank when drawing up the implementation schedule does not take into account the possible difficulties that the Borrower may have fulfilling loan conditions
4.6	Management quality, including financial management	+				The CEB was able to put necessary funds on time at project disposal
4.7	Delay in selection of staff/the consultant/contractors and reception of the counterpart		-			Delay in awarding the hardware batch contract

**BENIN – TOGO : CEB Dispatching Project**

**Factors that May Affect Project Performance**

N°	Factors	Substantial	Partial	Negligible	NA	Remarks
	contribution					
4.8	Ineffective procurement and disbursement procedures			-		The procurement procedure had much impact on project implementation
4.9	Others (specify)					