Document of

The World Bank

Report No. 19143

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN AN AMOUNT OF SDR 12.5 MILLION (US$17.5 MILLION EQUIVALENT)

AND A GEF GRANT

IN AN AMOUNT OF US$4.7 MILLION EQUIVALENT

TO THE

REPUBLIC OF CAPE VERDE

FOR AN

ENERGY AND WATER SECTOR REFORM AND DEVELOPMENT PROJECT

April 15, 1999

Energy Unit
Country Department 14
Africa Region

CURRENCY EQUIVALENT

Currency Unit	=	Cape Verde Escudo (CVE)
US$1	=	98 CVE (as of April 1, 1998)

FISCAL YEAR

January 1 - December 31

ABBREVIATIONS AND ACRONYMS

CAS	Country Assistance Strategy
CNAG	*Conselho Nacional de Aguas* (National Council of Water)
CVT	*Cabo Verde Telecom*
DANIDA	Danish Development Agency
ELECTRA	*Empresa Pública de Electricidade e Agua* (Public Company for Electricity and Water)
EMAP	*Empresa Municipal de Agua da Praia* (Municipal Company for Water Distribution in Praia)
ENACOL	*Empresa Nacional de Combustíveis e Lubricantes* (National Company for Fuels and Lubricants)
ERSO	Economic Reforms Support Operation
EU	European Union
GARSEE	*Gabinete de Apoio à Reestruturação do Sector Empresarial do Estado* (Support Group for the Restructuring of Public Enterprises)
GEF	Global Environment Facility
GOCV	Government of Cape Verde
IDA	International Development Association
INGRH	*Instituto Nacional de Gestão dos Recursos Hídricos* (National Institute for Water Resource Management)
MAAA	*Ministério da Agricultura, Alimentacão e Ambiente* (Ministry of Agriculture, Food and Environment)
MIH	*Ministério das Infraestructuras e Habitação* (Ministry of Infrastructure and Housing)
MCIE	*Ministério do Comércio, Indústria e Energia* (Ministry of Trade, Industry and Energy)
NDP	National Development Plan
OPEC (Fund)	Oil Producing and Exporting Countries Fund
PEAS	*Projecto Energia, Agua e Saneamento* (Energy and Water Reform and Development Project)
PMU	Project Management Unit
SEPA	*Secretariado Executivo Para o Ambiente* (Executive Secretary for Environment)
VPM	Vice Prime Minister (Office of the)

Vice-President	:	Jean-Louis Sarbib, AFR
Country Director	:	Mahmood A. Ayub, AFC14
Sector Manager	:	Mark Tomlinson, AFTG1
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TABLE OF CONTENTS

Annexes

Cape Verde
Energy and Water Sector Reform and Development Project

Project Appraisal Document
Africa Region

Date: April 15, 1999	Task Team Leader: Philippe Durand
Country Director: Mahmood A. Ayub	Sector Manager: Mark Tomlinson
Project ID: 40990/42054 Sector: Energy/Water	Program Objective Category: ES
Lending Instrument: SIL	Program of Targeted Intervention: [ ] Yes [x] No

Project Financing Data [ ] **Loan** [x] **Credit** [ ] **Guarantee** [ ] **Other [Specify]**

Project cost (US$m): 48.0 Credit amount (US$m/SDRm): 17.5/12.5 GEF Grant amount (US$m): 4.7
Proposed terms: [ ] Multicurrency [x] Single currency (US dollars)
Grace Period (years): 10 years [ ] Standard variable [ ] Fixed [ ] LIBOR-based
Years to maturity: 40 years
Commitment fee: 0 %
Service charge: 0.75 %

Financing plan (US$ million):

Source	Local	Foreign	Total
Government	3.5		3.5
European Union	1.3	6.2	7.5
OPEC Fund	0.9	3.6	4.5
Austria		0.8	0.8
Electra privatized	1.5	6.2	7.7
Private PV concessionaires	0.2	1.6	1.8
IDA	3.1	14.4	17.5
GEF	0.6	4.1	4.7
Total	11.1	36.9	48.0

Borrower: Government of the Republic of Cape Verde
Guarantor: n/a
Responsible agencies: Office of the Vice Prime Minister, Ministry of Infrastructure and Housing, ELECTRA (after privatization)

Estimated IDA disbursements (US$M/FY):	2000	2001	2002	2003	2004
Annual	3.8	6.5	5.4	1.8	
Cumulative	3.8	10.3	15.7	17.5	

Estimated GEF disbursements (US$M/FY):	2000	2001	2002	2003	2004
Annual	0.5	1.8	1.8	0.6	
Cumulative	0.5	2.3	4.1	4.7	

Project implementation period: 1/1/00-12/31/03 Expected effectiveness date: 8/1/99 Expected closing date: 6/30/04

A: Project Development Objective

1. Project development objective and key performance indicators (see Annex 1):

The proposed project is embedded in the objectives of the National Development Plan for 1997-2000 (NDP) and will support the Government strategy to increase private sector participation in the infrastructure sectors. The development objectives of the project are: (i) to improve the supply of power, water and sanitation systems; (ii) to increase operational and end-use efficiency in the power and water sectors; (iii) to lessen the barriers to the development of renewable energy sources; (iv) to foster the sound management of water resources. Specific objectives of the project include: (a) privatization of ELECTRA; (b) increased private participation in and financial autonomy of water sector operations; (c) expansion and rehabilitation of power, water and sanitation systems in major urban centers; (d) development of windpower capacity with private financing; (e) promotion of solar photovoltaic and wind energy systems for decentralized use; (f) development of a regulatory and legal framework in the power and water sectors; (g) strengthening the capacity of sector entities to monitor and regulate energy and water sector activities and promote end-use efficiency in these sectors.
The project's performance indicators are shown in detail in Annex 1.

B: Strategic Context

1.1. Sector-related Country Assistance Strategy (CAS) goal supported by the project (see Annex 1):

The project is fully consistent with IDA's CAS for Cape Verde, which was discussed by the Executive Directors on December 23, 1997 (Report No. 17206-CV, dated December 1, 1997). The CAS focuses on: (a) achieving a viable and stable macroeconomic framework; (b) consolidating policy reforms in support of private sector development; and (c) accelerating poverty reduction and social sector development.
The project will support the broad goal of private sector development through the reduction of energy and water costs and by promoting the participation of private investors in the power and water sectors (privatization of ELECTRA, private development of renewable energy and private participation in and/or privatization of water supply). The project will also support poverty reduction by improving the quality and coverage of power, water and sanitation systems and reducing the costs of these services for lower income households.

1.2. GEF Operational Strategy/Program Objective addressed by the project

The global environment objective is to reduce carbon emissions resulting from power generation in Cape Verde. The project supports the GEF climate change Operational Program #6 aimed at promoting the adoption of renewable energy by removing barriers and reducing implementation costs. By making it possible for ELECTRA's strategic private partner to develop commercial wind farms, it will remove the barriers and bring down the costs of future wind energy projects being implemented on a fully commercial basis. By helping the local private sector to enter the market for the supply, installation and maintenance of household-level photovoltaic (PV) systems, a sustainable, economic PV activity will develop. Cape Verde ratified the Framework Convention on Climate Change on March 29, 1995.

2. Main sector issues and Government strategy:

2.1. Energy and water/sanitation sector background and issues.
2.1.1 Energy The country has no primary energy resources except for firewood which meet 57% of household energy needs (of which 92% rural); wood resources are scarce though and have low

regeneration capacity. Power generation installed capacity is 50 MW, which relies mostly on imported fuel oil and some windpower. Due to the geographical bearings of the islands, development of power generation was led by installing small capacity units and there are no major transmission networks. Many families own self generation units which capacity ranges from 1 kW to 5 kW. The total electric energy coverage is about 37%, mostly concentrated in the major urban centers. In the secondary centers, which hold about 63% of the country's population, only 24% of the families are being supplied with electricity.

ELECTRA, the public utility for power and water supply created in 1982, faces serious difficulties to meet growing electricity demand in Santiago, Sao Vicente, Sal and Boa Vista, the main islands where urban growth is rapid. ELECTRA increased power supply by 94% over the period 1990 to 1996 and the installed capacity of power plants owned by ELECTRA increased from 13.5 MW to 31 MW. Praia and Sal's power capacities currently face serious shortages; electricity demand in Praia alone is increasing at the rate of 15% per annum. Over the period 1990 to 1996, electricity demand increased by 92.5%. In 1996, ELECTRA supplied 30.8% of generated power to domestic consumers; 16.8% to commerce and services; 15.8% to desalinated water production; 12.1% to industry; 3.2% to public agencies; 2.3% for non-billable public lighting; 5% in self consumption and 14% was lost in the distribution network. With the help of IDA's Infrastructure and Technical Assistance Project (Cr.1954-CV), ELECTRA's global distribution losses were reduced to 15% in 1992 from 22% in 1987. Due to inadequate fuel oil handling and storage facilities, as well as operational problems, some of the generation units initially designed to be operated with fuel oil are currently run with gas oil, resulting in high operation costs. There is no standard medium voltage level for distribution network and range between 6.3 kV, 13.8 kV and 15 kV. The standard 20 kV level has been retained and is being implemented.

ELECTRA is facing financial difficulties and has consistently made losses since its creation (before accounting for Government operation subsidies). One of the main causes is the number of accounts receivables that reached $4.3 million in 1994, more than 60% of which was over a year past due by public agencies. Other factors are low sale price for desalinated water, losses in the distribution networks of both power and water and unsatisfactory accounting procedures.

In areas not covered by ELECTRA, municipalities or private consumers independently own and operate electricity production and distribution facilities, but ELECTRA provides technical support to some municipalities. These small, often old power systems have high operating costs, which are compounded by insufficiently trained staff and unsatisfactory management, commercial and accounting procedures. Distribution losses are estimated at 33% for low tension rural networks that are long, old and ill designed.

At the macro level, energy development is posing two serious challenges. First, the dependence on imported petroleum fuels is high, since these fuels represented about 74% of overall energy demand, 60% of exports and 6% of imports in 1997. Secondly, despite the good penetration of LPG as a household cooking fuel, the demand for woodfuels still exceeds the regeneration capacity of existing forest stands.

2.1.2 Water Water is scarce in Cape Verde due to limited average rainfall (227 mm/year in average) and mountainous slope of most islands, resulting in little recharge of ground water (13% of rainfall). The exploitation of 181 million m3/annum of surface water (20% of rainfall) is limited by torrential run-off and heavy sediment, and catchment and storage of surface water is very rare. Of the estimated 124 million m3/annum of ground water recharge, only half can be exploited, further declining to one third in case of dry periods. At present, the current rate of exploitation is 25 million m3/annum. About 94% of the exploitation of ground water is for irrigation purposes of which about 50% is lost. Salt intrusion from

the sea is taking place due to overpumping. Water supply quality is unreliable with the exception of desalinized water available in urban centers.

ELECTRA supplies desalinated drinking water to the cities of Praia, Mindelo and the islands of Sal and Boa Vista. Ground water is exploited by municipalities and private consumers, whereas EMAP, under the jurisdiction of the Municipality of Praia, is responsible for water production and distribution in Praia. Water supply coverage is very low in the main and secondary urban centers. As for example, in the city of Praia, only 30% of the population has access to safe piped water. The average per capita consumption is about 40 liters per day (l/d), with a large disproportion between connected consumers (50 l/d) and non connected populations (only 16 l/d). Half the water production (2650 m3/d) comes from ground water exploitation and the remaining 50% is provided by a desalination plant (2 units of 1250 m3/d each). Water supply through public network increased only 1% per year since 1990, while the population annual growth was 4% in the same period. In Mindelo, even though coverage has increased to 65%, the average per capita consumption is only 35 l/d. Water supply is intermittent in both cities (1 to 2 hours daily distribution), with negative consequences on the water quality. The majority of the population in Praia and Mindelo get their water from cistern trucks and through water fountains also supplied by trucks. Their per capita consumption remains on average 15 l/d. Water supply and distribution systems entail significant contamination risks, which probably explains the recrudescence of water-related diseases in Praia and Mindelo (e.g. the recent cholera outbreak). The urban water distribution is mostly made by old asbestos-cement pipes, resulting in over 25% of losses, which is unacceptable for a system based on expensive desalinated water.

2.1.3 Renewable Energies The country has excellent wind energy potential at average velocity of 7.5 m/s. Wind power is a suitable and technically viable option for Cape Verde for substituting diesel generation. The Government has taken steps to promote wind power. The first phase of the Danish/Cape Verde joint project was completed in December 1994, installing 2.4 MW of wind power capacity in Praia, Mindelo and Sal, which has been operating without major problem since that date and has contributed to a significant 10.1% of the energy supplied by ELECTRA to the grids in 1996. A feasibility study has been undertaken which suggests that a further 7.8 MW could added without operational problems (linked to grid stability and diesel plant operational constraints).

Solar energy potential is good and relatively constant along the year, with an estimated average of 5 kWh/m2/day. Photovoltaic systems are expected to play an increasingly important role in the decentralized supply of electricity in the rural areas of the country. There are about12,000 households that are not expected to be connected to a grid, even in the long term and a further 20,000 who are not connected now and will have to wait for a considerable period.. Promoting renewable energy with the help of the private sector would enable the Government to save foreign exchange on fuel oil and improve social conditions.

2.1.4 Sanitation Only 8% of the population of Praia (i.e. 6000 inhabitants or 1300 connections) is served by the sewer system. About 24% of the population has septic tanks and the remaining households do not have any means of sanitation facilities. To achieve objectives of the sanitation master plan, the number of sewage connections should be raised up to 5000 in year 2000 and to 11000 in year 2005 with an important extension of the secondary and tertiary network. The sewage system of Mindelo also covers only a small part of the city. None of the secondary urban centers have effluent disposal systems. Septic ditch is the sole existing sanitation system with low coverage levels, which raises serious risk to human health by polluting underground water. The lack of adequate basic sanitation infrastructure in most urban centers of Cape Verde, are contributing to environmental degradation and recrudescence of water related diseases.

2.1.5 Institutional and regulatory framework ELECTRA operates without a sound policy and regulatory framework. There is neither an electricity law nor a regulatory entity for power sector activities, which hinders significantly the possibility to involve the private sector in the provision of services. Municipality-managed secondary urban centers suffer from the same generic institutional weaknesses. The recently restructured Ministry of Trade, Industry and Energy is responsible for energy policy formulation and sector coordination, but it would require strengthening to comply this function efficiently.

In the water sector, it is necessary to achieve better economic rationale in supply and allocation of water resources and to reduce the excessive fragmentation of responsibilities in the sector. While water sector operations are being decentralized at municipal level, greater autonomy, capacity strengthening and private participation are needed to increase the efficiency of municipal services in charge of these operations. The Water Code should be revised to reflect these new orientations. The National Institute for Water Resource Management (INGRH) and the National Water Council (CNAG) should be strengthened for efficiently playing their role in defining water resource management policy, regulating the use of groundwater and monitoring water quality.

Both power and water tariff structures lack transparency and do not reflect economic costs by type of use. These distortions together with non-explicit Government subsidies, in particular for desalinized water and fuel prices, result in the wrong incentives for producers and consumers.

Regarding sanitation, lack of clarity in sharing of responsibilities between the state, municipalities and water operators is a major institutional hurdle. It is necessary to adopt a new tariff policy to ensure cost recovery for operating charges to allow adequate extension of sanitation infrastructure.

2.2 Sector Policies

The NDP central policy is aimed at achieving sustainable economic growth and social development and at reducing poverty. The strategy to reach these objectives centers on the efficient use of resources and building public-private partnerships. Increased access to energy and water and a reliable supply are crucial for ensuring the reaching of these objectives. In addition, the development of safe and reliable water supply and provision of sanitation systems is vital to raise health standards in the country. To achieve its goals, the NDP emphasizes the need to improve the corresponding institutional frameworks, make optimum use of available resources, increase productivity and improve infrastructure. Given the scarcity of public funds for infrastructure development, the NDP places special importance to the need to develop energy, water and sanitation systems with substantial private sector participation.

3. Sector issues to be addressed by the project and strategic choices:

Implementation of a stable business environment for attracting private investors in the power and water/sanitation sectors will require considerable institutional development to: (i) build up policy and planning capability at the government level, (ii) issue new or adapt existing legislation, (iii) create, establish and train regulatory authorities and prepare detailed regulations, (iv) implement corporate restructuring and financial rehabilitation, if needed, of existing government owned public utilities, (v) redefine relationships and competencies between the municipalities and the national institutions, and (vi) prepare concession contracts, and privatize national utilities.

ELECTRA will be privatized as a vertically integrated company by means of a bidding process to select a private strategic partner. Other shareholders would include individual nationals (living in Cape

Verde and abroad), ELECTRA's workers, the municipalities and the State (likely under golden share arrangements). The GOCV has recruited a Privatization Adviser to: (i) prepare the required institutional, legal and regulatory framework; (ii) carry out a technical and financial assessment of the situation and prospects of ELECTRA's activities; (iii) support the definition of the privatization strategy, the preparation of the concession contract and the execution of the bidding process. Specific aspects to be reviewed by the Adviser include: boundaries between power and water production and distribution (particularly respective responsibilities of ELECTRA and the municipalities); corporate restructuring and financial rehabilitation of ELECTRA; enacting of a revised legal and regulatory framework for the power and water sector; strengthening of government policy making capability; power/water tariff reform and review mechanisms; and introduction of competition in power generation and bulk desalinated water.

In order to achieve economies of scale and to improve service, the GOCV has decided that electricity, water and waste water activities should be the responsibility of the privatized Electra in the major cities (Praia, Mindelo, Sal and Boa Vista). Existing assets for water distribution and waste water collection would be transferred by the GOCV to the privatized Electra through a concession agreement. The privatized Electra would maintain separation of accounting for the three sectors.

An electricity law will define the legal and regulatory framework for developing, owning and operating electricity facilities and the rights and obligations of concessionaires and consumers. The law should define the position and functions of the regulatory authority and the principles for setting tariffs. The GOCV has decided to create a multi-sector agency for regulating utilities and transport. The regulatory functions for the electricity sector would be integrated to this agency.

The legal and regulatory framework for water and sanitation management will be strengthened, as well as local capacity for water resource management. To that effect, INGRH's statutes and organization will be reviewed to reflect its revised mandates and the project will support INGRH in its activities, including for: water sector regulation, resource inventory, water quality monitoring, water resource planning and management. INGRH will progressively transfer to municipal companies its activities of ground water production. INGRH activities might be financed through a fee charged to the operators of groundwater wells.

Water tariff reform is a prerequisite, since prices currently do not reflect costs and the tariff structure is not equitable, while the willingness-to-pay of households without access to water seem sufficient to cover costs of supply (their current expenditure to obtain lower quality water is much higher per unit than that of households with piped water).

Barriers to renewable energy applications to be addressed by the GEF component

Regarding renewable energy, particularly wind and photovoltaic power, the challenge is to remove the barriers to their development and create the right incentives to ensure that they will be used to their economically optimal extent over the long run. Further deployments of renewable energy for both on-grid and off-grid applications face substantial market barriers, that should be addressed in the reform of the electricity sector. The project will address the restructuring /reform barrier by supporting the transition from public to private operation of the existing wind farms and putting in place incentives for the privatized ELECTRA to develop wind resources. The GEF-supported renewable energy components will address the market barriers to the two target technologies as outlined below and further developed in Annexes 4.a and 4.b on incremental costs.

In the case of grid-connected wind energy, the main barriers are: (a) the high up-front capital cost of the first large-scale commercial grid connected systems in Cape Verde; (b) the perceived limits to grid penetration for the technology, due to concerns about potential voltage and frequency fluctuations as wind capacity approaches or exceeds 30% of generating capacity on each grid (one of the highest in the world); and (c) lack of technical capacity to manage the grid at this high level of penetration. The GEF will fund the incremental costs of removing the capital cost, system control and technical capacity barriers to proving that wind generation is technically-feasible and economic at a high level of penetration. The penetration to be achieved will be one of the highest in the world and will have a powerful demonstration impact. By demonstrating the feasibility of adding wind farm capacity in relatively large blocks and increasing the scale of wind capacity on the grid, the project will facilitate future commercial additions to the Cape Verde systems and to other similar systems around the world, which will benefit from the economies of scale that will result from system growth and further reductions in system supply costs.

In the case of PV technology, the barriers are: (a) lack of consumer information on and confidence in the technology; (b) lack of a supply, installation and service mechanism; (c) lack of adequate technical capacity to provide these services; and (d) the high up-front cost of supply when the initial PV market is virtually non-existent. These barriers will be removed by financing the incremental start-up costs of suppliers, who will compete for supply concessions and bring in international expertise, experience and financing; by subsidizing, on a declining scale over four years, the cost of the first few thousand systems that are installed; and by creating the necessary information, regulatory and oversight capacity in government. The removal of these barriers will stimulate the entry of private sector firms, NGOs and cooperatives into the market for meeting currently-suppressed demand for off-grid solar and wind electrification at the individual household level and for public services such as school lighting, health dispensaries and water pumping.

C: Project Description Summary

1. Project components (see Annex 2 for a detailed description and Annex 3 for a detailed cost breakdown):

Component	Category	Indicative Costs (US$M)	% of Total	Bank-financing (US$M)	% of Bank-financing	GEF-financing (US$M)	% of GEF-financing
1. Reform and development of the power sector Including support for the privatization of Electra, the financial restructuring of Electra, the implementation of a sound regulatory and legal framework, the promotion of demand-side management and energy efficient equipment, the contribution to the sector investment program (marginally economic grid extension and mitigation of environment liabilities), together with the related studies, technical assistance and training.	Institutional building, policy, physical & other	10.2	21.2	6.7	38.1		
2. Renewable energy promotion & development Including the extension of 7.8 MW of grid-connected wind farms in Praia, Mindelo and Sal, the development of decentralized wind or solar photovoltaic public and individual systems, together with the related studies, technical assistance and training.	Physical & Institutional building	14.5	30.2	1.0	5.7	4.7	100

Component	Category	Indicative Costs (US$M)	% of Total	Bank-financing (US$M)	% of Bank-financing	GEF-financing (US$M)	% of GEF-financing
3. Reform and development of the water sector Including support for the implementation of a sound regulatory and legal framework, the creation of autonomous municipal water companies in Assomada and other municipalities, the extension and rehabilitation of the primary and secondary water distribution network and water production systems in Praia, Mindelo, Assomada and Tarrafal, together with the related studies, technical assistance and training.	Physical, policy and institutional building	14.4	30.0	6.0	34.1		
4. Sanitation development Including the extension of sanitation systems in Praia, the improvement of sanitation systems in Assomada, and the construction of wastewater reuse systems for Praia, together with the related studies, technical assistance and training.	Physical & institutional building	6.4	13.3	1.6	9.1		
5. Project coordination and monitoring Including support to the Project Management Unit (staff, equipment) and for the implementation of the Environmental management program (studies, TA & training)	Project management & Institutional building	2.5	5.2	2.3	13.0		
	Total	48.0	100	17.5	100	4.7	100

2. Key policy and institutional reforms to be sought:

Policy and institutional reforms that the Government has decided to undertake in the power and water sectors are summarized in the above section B.3 and presented in detail in the Statement of Sector Development Policy (attached in Annex 2.2). The Statement will be finalized and signed by the GOCV during negotiations.

3. Benefits and target population:

Expected benefits of the project include: (i) improved quality of life and health for targeted population (both in urban and rural areas), through increased access to electricity, safe water and sanitation systems; (ii) enhanced private sector development through supply of least-cost, reliable energy and water by private companies; (iii) increased private sector investment, with consequent alleviation of pressure on public resources directed to the power and water sectors; (iv) modernization of the power and water sectors; (v) foreign exchange savings by reducing the imports of fuel for power generation; (vi) development of efficient entities for the monitoring and regulation of power & water sectors; (vii) reduction of greenhouse gas emissions with associated global environment benefit.

The project is targeting the population and enterprises of major and secondary urban centers, including those that currently benefit from unsatisfactory power and water services and those in periphery urban areas that do not have access to these services and currently use inferior, less safe and much more expensive means of supply. The project is also targeting part of those isolated households that are likely to be excluded from modern supply of electricity in the medium term (about 12,000 households). Cape Verde enterprises will benefit directly from the project by participating in the new companies created in the power and water sectors and also by entering the market to supply install and maintain decentralized renewable energy systems.

4. Institutional and implementation arrangements

Program oversight: the Office of the Vice Prime Minister will guide, coordinate and monitor the process of reform of the power and water sectors and privatization of ELECTRA, and supervise overall execution of the project.

Executing agencies:
The Project management Unit (PMU), established within the Office of the Vice Prime Minister, would coordinate and monitor overall project execution, including project accounting and procurement. The GOCV will establish an advisory committee consisting of representatives of public agencies, the private sector, water and energy consumers, and other project stakeholders, to advise the PMU on cross-sectoral issues.

Responsibility for IDA-financed project components will be as follows:

- the PMU will carry out the power/water sector reform component (in collaboration with the MCIE for the energy sector monitoring component), the water resource management sub-component (in collaboration with INGRH), the installation of photovoltaic/wind public systems, public information actions and the environment management program sub-component (in collaboration with SEPA);
- the MIH will implement the extension/rehabilitation of water and sanitation systems in Praia and Assomada (in collaboration with the Municipality of Assomada) and the design and construction of waste water reuse systems.

Responsibility for GEF-financed project sub-components will be as follows:

- The PMU will carry out the selection of photovoltaic/wind concessionaires and the support to selected concessionaires;
- The PMU will prepare the implementation of windfarms extension

After Electra is privatized, the agreements will be amended, and ELECTRA would be responsible for contracting and implementing investments for the GEF-financed extension of windfarms and for the installation of IDA-financed extension of power distribution systems in periurban areas (using equipment procured by the PMU).

Project implementation arrangements are detailed in the Project Implementation Manual, that was finalized by the GOCV prior to negotiations.

Accounting, financial reporting and auditing arrangements: An accounting and financial management system based on an internationally accepted accounting principles would be established and operational in the PMU before credit effectiveness. Project accounting and procurement will be centralized within the PMU. The possible application of the Loan Administration Change Initiative (LACI) to effect disbursements from the Credit will be assessed during the project launch workshop and, if found applicable, it will be implemented over a period of two years. Project accounts, SOEs and Special Account will be audited yearly. The audit reports would include separate opinions on SOEs and the SA, as well as a management letter identifying major weaknesses in financial management and proposing practical recommendations, and they would submitted to IDA within six months after the end of the Government fiscal year.

Procurement (see Annex 6): ELECTRA's strategic investor will be selected by international bidding and will then procure the goods and works required for the execution of project components under its responsibility (extension of wind farms, extension of power distribution) using its own procedures. The

PV private concessionaires will also be selected by international bidding. Classical Bank procedures will apply to other IDA-financed project components.

D: Project Rationale

1. Project alternatives considered and reasons for rejection:

The alternative to the power/water sector reform envisaged by the Government (increased private participation, including the privatization of ELECTRA) would be to restructure ELECTRA to increase its efficiency or to put it under a management or leasing contract with a private operator. Experiences in other countries of the region and worldwide indicate that the most appropriate form of private involvement to indeed achieve significant productivity gains would be through management control given by ownership, with full responsibility for investments for asset maintenance and development and establishment of an appropriate regulatory framework to protect the consumers' interests.

There are several options for ELECTRA's privatization strategy, which have been reviewed by the VPM's Office in August-September 1997 with support from a group of experienced consultants financed under the Japanese Grant, and were discussed during a workshop on October 14-15, 1997 with the participation of project stakeholders and donors. The workshop evidenced a strong consensus for the privatization of Electra and defined several of its aspects, including: maintaining the responsibility of water desalination with the privatized Electra, allowing competition in power generation, and bringing most of municipal systems in the assets of Electra before its privatization.

The alternative of addressing only power sector issues through the project was not retained because of the strong linkage between the power and water sectors in technical, institutional and financial terms. Not including wastewater treatment and reutilization would not be adequate either because of the scarcity of water and environment/health risks.

The expansion of power generation capacity through diesel plants instead of wind farms would be less economic when taking into account global environment externalities. The option of transferring the existing wind farms to a private IPP that would finance and implement wind farm capacity expansion would entail more financial and implementation risks than the retained option of entrusting these activities to the private investor that will take over ELECTRA.

Regarding the decentralized renewable energy component, the option of market development for household systems only (without the public sector component) was found inferior to the option of including a public sector component (photovoltaic systems for schools, health centers, public lighting and water pumping) that will increase the scope of the markets to be developed by local private enterprises and thus place them in better conditions for achieving sustainable commercial activities.

2. Major related projects financed by the Bank and/or other development agencies (completed, ongoing and planned):

Sector issue	Project	Latest Supervision Ratings (Bank-financed projects only)	
		Implementation Progress (IP)	Development Objective (DO)
Bank-financed			
Support development of infrastructure in transport and power and strengthening of sector entities	Cape Verde Infrastructure Rehabilitation and Technical Assistance Project (Cr.1954; completed)	S	S
Institutional strengthening of municipalities and government entities	Cape Verde Public Sector Reform and Capacity Building (Cr.2566, ongoing)	S	S
Support the withdrawal of the State from economic activities	Cape Verde Privatization TA project (Cr.2377, ongoing)	S	S
Support macroeconomic reforms	Cape Verde Economic Reform Support Operation (ongoing)	HS	HS
Support the withdrawal of the State from economic activities	Cape Verde Privatization and Regulatory Capacity Building project (proposed)		
Increase private participation in power sector	Guinea Power II Project (Cr.2416-GUI, ongoing)	U	U
	Senegal Power Sector Adjustment Credit (proposed)		
	Indonesia Solar Home Systems Project (ongoing)	S	S
	India Renewable Energy development Project (completed)		
	Argentina Decentralized Energy Project (proposed.)		
Other development agencies			
Development of water supply and sanitation systems and strengthening of EMAP	European Union/Cape Verde: Praia Water Supply project		
Development of power generation and water desalination capacity	EIB/Cape Verde: Power/water project		
Support to capacity building of municipalities	Austria/Cape Verde		
Photovoltaic systems for household/rural electrification	UNDP/GEF PV project in Zimbabwe		
	EU CILSS project for Cape Verde		
Installation of wind farms and support to ELECTRA	DANIDA/Cape Verde: Wind farm project		

IP/DO Ratings: HS (Highly Satisfactory), S (Satisfactory), U (Unsatisfactory), HU (Highly Unsatisfactory)

3. Lessons learned and reflected in proposed project design:

The project design reflects worldwide and regional experience that institutional development by way of privatization ensures efficiency gains in a short period of time and that sustainable development requires improved institutional framework, optimum use of available resources and improved productivity of human capital by targeting poverty issues. These lessons are reflected in the GOCV's policies, which emphasize the promotion of private sector participation in the provision of energy, water and sanitation services.

The project's schedule and expected outputs take into account the complexity of and time required for successfully reforming the power and water sectors, as experienced in other countries worldwide. Successfully attracting competent private investors requires careful preparation of bidding process, financial restructuring and prior definition of legal/regulatory aspects.

With regard to renewable energy development, the DANIDA-financed wind farm project has established the technical viability of this technology, and built technical capability in ELECTRA for system operation and monitoring. The project has demonstrated that there is considerable additional potential for cost reduction in wind generation and scope for substantially increased penetration on the network.

Concerning decentralized photovoltaic systems, experience indicates that: (a) for household use, systems have a high investment cost which the project must assist in overcoming; full cost recovery is, however, essential, which is generally achieved by ensuring that adequate consumer financing mechanisms are in place. Success is generally higher when projects focus on the household level rather than on collective systems where responsibility for payment is shared; (b) at the market level, it is necessary to establish responsive and sustainable PV sales and distribution delivery mechanisms by local private enterprises, providing quality products and ensuring that adequate managerial and technical skills are available. Past PV projects in Cape Verde have not systematically met the conditions for sustainable development, either by design or in their implementation; (c) international private sector operators will enter the market in partnership with locals when the conditions become favorable; and (d) sales of energy or services comparable with those in use for conventional grid electricity tend to be preferred by consumers over the sale of equipment.

4. Indications of borrower commitment and ownership:

As evidenced in the NDP and voiced by the VPM's Office, there is a strong commitment of the Government to reducing the role of the State in the economy (progress on this front is clear in the successful Bank-supported Privatization project) and to the reform of the power and water sectors, in particular through the privatization of ELECTRA which is a stated objective in the Bank-supported proposed Economic Reform Support Operation (ERSO). Sufficient progress on ELECTRA's privatization is linked to ERSO's tranche disbursement.

The Government organized a participatory workshop in 1996 to discuss issues and options in the power and water sectors, and to air out stakeholders' concerns and expectations. A stakeholder/donor workshop was conducted in October 1997 to discuss the reform's selected options and proposed schedule, to achieve donor coordination and to firm up the project financing plan.

5. Value added of Bank support in this project:

The Bank support would act as a catalyst to strengthen Government's partnership with other donors and mobilize financing. Injection of foreign funds are needed to pursue vigorously and successfully government's objectives to promote sustainable economic development. IDA's experience in other countries

offers comparative advantage and allows sound policy advice to the Government in (a) building public and private partnerships to promote private sector growth, (b) address long term human resources issues, (c) remove infrastructure bottlenecks, (d) help the country integrate into regional and world economy, and (e) increase the efficiency of public resource management (including better coordination of foreign aid). The Bank's support to the Government in developing a legal and regulatory framework and improving the institutional framework will foster increased participation of the private sector which is one of the important direction which the Government would like to take in the infrastructure sector. The Bank brings together the experience of other countries in privatization and in this way could result in increasing confidence of potential private investors in Government commitment and sustained policy. The Bank's support to the privatization of ELECTRA should also increase the transparency and quality of the process.

GEF's support will allow the development of renewable energy resources by private enterprises through sustainable marketing/implementation mechanisms. The market for wind power and solar photovoltaic systems will not develop by itself and GEF financing is required to remove existing barriers.

E: Summary Project Analysis (Detailed assessments are in the project file, see Annex 8)

1. Economic (supported by Annex 4)

The water supply and sanitation components of the project reflect least-cost investments necessary for increasing service coverage. The water supply component yield economic benefits with an estimated NPV of 797 million CVE at 12% discount rate, using willingness to pay of about 300 CVE/m3. However, at the current average tariff of about 200 CVE/m3, the NPV is about CVE -326 millions. This points both to the high cost of desalinated water and to the inadequacy of tariffs. For the sanitation component, the average incremental cost per cubic meter of effluent for both Praia and Mindelo is 30.23 CVE. The wastewater reuse in Praia has an NPV of about 96 CVE million and a rate of return of 27%.

The power sector reform component of the proposed project is expected to have economic and fiscal impacts. On the economic side, it would improve the efficiency, quantity and quality of electricity supply. The introduction of private operators in the electricity market is expected to provide a more efficient supply at a lower cost to the benefit of consumers. The improvement of the distribution systems would help reduce losses and improve the reliability of supply. On the fiscal side, the reform component would increase revenues for the government through the sale of existing facilities and the reduction of expenditures, as the government shifts most of its sector financial obligations to the private sector.

The GEF-financed renewable energy component has been designed based on the incremental cost and global environment benefit approach. Detailed financial and economic calculations are given in Annex 4A. The three proposed windfarms do not represent the least cost option (diesel power plants are) and have EIRRs of between 2 and 10% in a cost benefit analysis which does not include global environment externalities. To bring the EIRRs to 12%, which is the estimated opportunity cost of capital in Cape Verde, and to provide for TA to support the work, a total GEF grant of $3.73 million is required. The off-grid photovoltaic electrification sub-component has a positive net present value at a discount rate of 12% but requires GEF support in form of a grant of $950,000 to provide a demonstration effect and build a market and delivery mechanisms.

2. Financial (supported by Annex 5)

Electra's past and current financial performance and tariffs. Electra's electricity and water sales and revenues have been steadily increasing during the past 5 years ; however, its profitability has been very low due to the low level of tariffs. Electra's profitability is still overstated since the company has never

been able to spend enough money on maintenance due to continual cash shortages. Electra's capital structure is weak but not disastrous, as most of existing fixed assets were financed by grants or long term loans with soft conditions. The main issues lie in the high level of inventories and the large outstanding balance of accounts receivable and account payable. This reflects recurrent problems with collection regarding both private and public customers. Due to the consequent cash shortages, the company has not been able to honor much of its debt service for several years, and debt toward suppliers exceeds 6-months' equivalent of the costs of its purchases. Electra intends to improve its billing and collection performance with the recent implementation of a new commercial information system, but a sound capital structure can only be regained if there is a comprehensive financial restructuring including a cancellation of unrecoverable old receivable and a substantial contribution from the Government in order to reimburse the arrears on the debt service and pay suppliers. However, such a restructuring would just compensate for past tariffs inadequacy. A perennial adjustment of tariffs is necessary, which will allow Electra to meet its investment requirements while being financially balanced and maintaining a sound capital structure.

Electra's financial projections. Even assuming comprehensive improvements in operation and a doubling of average water tariffs, Electra financial performance would remain unbalanced for several years : the operating income would fall in 1998 and become positive in 2003. The net income, which has always been negative in the past, would only become positive in 2006. Electra's operational activity will still result in positive net cash flows over the whole period. However, this results from the forecast reduction in inventories and accounts receivable in 1998 and 1999, and the cash flows are absorbed in the reimbursement of cumulated arrears on the debt service (423 M CVE at the end of 1997). Cash shortage would keep increasing until 2004, when it would reach about 900 M CVE. In order to maintain Electra's viability, the Government should increase its contribution to Electra by such an amount, which closely matches the costs of the financial restructuring of the company (see Annex 5). Finally, a tariff adjustment is required as indicated above. An increase in the price of desalinated water sold by Electra was approved by the GOCV in September 1998; its impact on Electra's financial projections will be assessed by the adviser recruited to support Electra's privatization.

EMAP's past and current financial performance and tariffs EMAP's operating income has been negative for several years and is still very poor, which confirms the inadequacy of current tariff levels compared to the actual cost of the water. Moreover, EMAP's losses are clearly underestimated as EMAP purchases desalinated water from Electra at a price per m3 less than half the actual cost of producing it. If the current tariff policy is maintained, and desalinated water is properly valued, EMAP's activity will continue requiring increasing operating subsidies, which will rise from 100 M CVE in 1999 to 171 M CVE in 2005. A 73% rise in tariffs would be necessary for EMAP to reach a financial equilibrium. The price of water would then increase from 115 CVE / m3 in 1998 to 160 CVE / m3 in 1999 and to 200 CVE / m3 in 2000. In addition, a least 37 M CVE of operating subsidy would still be required in 1999.

Emap's Financial Projections Emap's financial projections show that without financial support from the Government, the company will in financial disequilibrium for the foreseeable future: operating income show a serious deterioration in 1999, after the price of the water bought from Electra is adjusted to reflect its real cost. It is forecast that after 1999 operating income continue to deteriorate. revenues from water sales only cover 62% of operating expenses in 1999 and 58% in 2005. The average price of the water sold by Emap is about 124 ECV/m3, but increasing volumes come from desalination plants. The cost to Emap of desalinated water was 216 ECV/m3 in 1996. If actual tariffs are maintained, the Government will be forced to finance EMAP deficits by giving the utility substantial operating subsidies that are forecast to grow from 100 M ECV/m3 in 1999 to 171 M ECV/m3 in 2005.

Privatization of Electra and Emap The privatization of Electra (after merging with Emap's assets) is designed and implemented with support from an experienced adviser that was recruited in August 1998. This work takes into account the above noted constraints and issues in Electra's and Emap's financial situation and prospects. It will define the necessary adjustments in electricity, water and waste water tariffs, as well as Electra's financial restructuring arrangements (in particular regarding medium/long term debt, which the GOCV intends to carry in large part), that will ensure cost-recovery of power sector activities and provide incentives for private investment required for sector development. Some of the costs of Electra's financial restructuring are estimated in Annex 6 (regarding proposed reductions in stocks, suppliers' debt and accounts receivable, as well as capitalization of overdue interest on debt). The proposed reduction of suppliers' debt to two months (estimated at US$1.6 million by end-1997) has been included as GOCV contribution to project costs.

Photovoltaic concessionaires A financial analysis of the likely outturn for the photovoltaic enterprises has been carried out to assist with designing the concession arrangements to make it sufficiently attractive to international investors (see Annex 5).

3. Technical

The strategy for the privatization of Electra was established with advice from a group of specialists in these matters, based on relevant privatization experiences for small power/water systems, and was fully discussed with stakeholders during a well-attended workshop. It resulted in the preparation of a strategy paper for the reform of the power/water sector and terms of reference for the recruitment of Electra's privatization adviser.

The design of the water and sanitation components of the project is technically sound, as based on several technical/economic/environmental studies financed under the PPF, as well as on studies conducted for the preparation of the EU-financed component in Praia.

The design of the project institutional strengthening components is consistent with other related, Bank-financed operations to support divestiture of public enterprises and the establishment of an adequate framework and capacity for the regulation of the power and water sectors. Regarding the interconnected windfarms, the issue of power network stability and diesel unit operational constraints (due to increased share of windpower in total power production) was fully reviewed through a GEF-financed specific study.

4. Institutional

Institutional and implementation arrangements are presented in C.4 and Annex 6.
The creation of municipality-owned, autonomous water distribution companies (in Assomada, Tarrafal and other municipalities) will be supported and implemented under the project. Performance indicators and agreed actions in relation to these companies would be spelled out in specific agreements.
Because of economies of scale, the GOCV decided to implement a single regulatory agency for the so-called public services (telecommunications, power, water, sanitation, and transport). Power and water regulation will be supported under this project, whereas regulation of other services will be supported through the proposed Privatization and Regulatory Capacity Building project.

5. Social

Social impact of the project is assessed as highly positive in the medium and long term. However, in the short term part of the population is expected to see an increase in their electricity and water bills,

although this increase should be compensated by a better service. The tariff schedules for the concession contract of Electra, which are under preparation, will include some degree of price-shock protection for low-income consumers. They are also expected to include strong resource saving signals such as increasing marginal prices for consumption brackets over the minimum consumption.

6. Environmental (See Environmental Data Sheet and Annex 7) Environmental Category: A

The proposed project would contribute to improving the environment, primarily through expansion and improved management of water and sanitation systems, as well as substitution of clean renewable energy for polluting thermal-based energy. The project does not include groundwater resource development and has no component with major environmental impact. The project implementation will not result in involuntary resettlement and will only require limited land acquisition (wind farms).

The final EA was completed in August 1998 and was released in November 1998. The EA defines a program of environmental impact mitigating measures for water, sanitation and energy. The strict application of standard operating and maintenance procedures for power plant facilities and the implementation of adequate training programs will minimize the potential accidental spills of fuel and waste oil products. The increase of stacks heights and use of fuel with lower content of sulfur, ash and trace metal will minimize the negative impacts of gas emissions in thermal power plants. Rehabilitation and installation of supplementary noise reduction measures will provide an adequate noise control in the existing thermal power plants. The Municipalities of Sal and Mindelo will transfer to Electra their land rights for the wind farm sites and in the case of the wind farm site in Praia, the Municipality will acquire land rights from private individuals that currently own part of this land. The detailed design and the implementation of the water and sanitation components will include a specific Environmental Management and Monitoring Plan to be developed and monitored by the GOCV and the water sector regulatory entity.

The project includes financing for implementing the Environment Management and Monitoring Plan, as well as environment mitigation measures for Electra and municipal power facilities (as identified through an detailed environmental audit to be finalized in March 1999), for a total amount of US$1.1 million. The EIA has also defined environment quality standards to be complied with by the privatized Electra in its future operations, which will be included in the bidding documents for the privatization of Electra.

7. Participatory approach (key stakeholders, how involved, and what they have influenced):

Participatory Approach	Preparation	Implementation	Operation
Private sector: Private sector views were obtained during the November 97 workshop and will continue to be solicited during project activities, specially regarding Electra's privatization and participation in water sector.	IS/CON	IS/COL	IS/COL
Water/Power Customers: A beneficiary assessment was conducted. NGOs and other concerned parties were consulted during the EIA.	IS/CON/ COL	CON/COL	CON/COL
Electra's workers and other potential local shareholders: Electra's management has kept its staff fully informed. Broader communication actions are being conducted by Electra and the GOCV, and will intensify during the last phase of Electra's privatization.	IS/CON	IS/CON	COL
Other donors: Various donors supporting the project participated in preparation missions. A donors coordination meeting was organized by the VPM's Office in 11/97	IS/CON/ COL	IS/CON/COL	IS

Note: IS = Information sharing; CON = consultation; and COL = collaboration

F: Sustainability and Risks

1. Sustainability:

Project sustainability will depend first upon the satisfactory completion of sector reform, i.e. the success of ELECTRA's privatization to a competent private investor selected through competitive bidding, together with the soundness of regulatory and monitoring dispositions (particularly the concession and tariff agreements), the continued commitment of the Government to sector modernization, and the compliance with contractual agreements by all parties. The timely setting up of an efficient, independent regulatory entity will be another condition of project sustainability. GOCV's role, limited to policy, coordination and monitoring functions, will also ensure sustainability of the corresponding project component. The municipalities commitment to provide sufficient autonomy to and allow private participation in municipal water companies is a key condition for satisfactory operation and development of municipal water and sanitation systems.

Wind Farms

Future developments of wind farms will be sustainable as a result of the combined effects of economies of scale in wind farm development and predicted decreases in the unit costs of equipment. In 1995, the first year of operation of the DANIDA-funded wind farms, aggregate energy supplied from wind accounted for 10% of the total from 2.4 MW installed. The proposed wind farm extension will, in the first year of their operation, account for around 28% of the total energy supplied from 10.2 MW installed (an increment of 7.8 MW). Increased experience and confidence in being able to operate the system at high penetrations of wind should permit higher penetrations in the future, forecast on the chart above as 35% of energy supplied. Such a penetration would require an incremental capacity addition of 16.1 MW to be installed in 2005.

There are also strong indications that wind farms capacity unit costs are decreasing and will continue to do so. The table below compares the cost of installed wind in Cape Verde with best practice in 1994 and 1998 and projections for 2004 (the years in which capacity in Cape Verde was or would be ordered). For wind acting as a fuel saver in Cape Verde, the installed cost shown is that which it must be for a wind farm to be cost-effective. The range is $815-900/kW, depending on assumptions about fuel cost.

Source	1994 ($/kW)	1998 ($/kW)	2004 ($/kW forecast)
Cape Verde	2000-2300	1325	815-900
UK (NFFO based data)	1244 – 1800	930-1150	775-880
US EPRI TAG, 1993[1]	900	745	620

[1] Substation and interconnection not included. With those components cost generally approaches those from the UK

Future cost reductions in Cape Verde will come from two sources:

(i) Continued reduction in installed costs world wide. The reductions stem from overall equipment cost reductions, the use of larger machines and reduction in fixed costs per unit of capacity installed. In all these are predicted to amount to 15-20% of current costs over the coming six years. This consideration also takes into account the scale economies that will occur with developing wind farms that will be over twice the size of the existing ones;

(ii) Convergence between international and Cape Verde costs. The proposed 1998 Cape Verde wind farms currently show a $175-395/kW premium over international ones (down from a near 100% premium). The premium can be expected to reduce to a range of $0-100/kW, partly as a result of Electra's privatization and partly through experience of both suppliers and buyers in international markets;

The forecast therefore indicates that the costs are likely to come down to where the fuel savings alone will justify the installation of wind farms, provided the barriers to penetration are removed. Even under more pessimistic scenarios, the implementation cost of future wind farms will have been very significantly reduced, as required in GEF's OP#6.

Photovoltaic markets

Decreasing prices and increasing demand for household photovolvaic systems will result in increased sales and a sustainable market for photovoltaic systems distributed by local private enterprises without further GEF financial support. The entrance of the concessionaires who will be in a position to make bulk purchases, as opposed to one-off sales as at present, will have an initial downward effect on prices. Typically the price of a 50Wp system is around $810 on a one-off purchase basis and it is expected that with a concessionaire being able to make bulk purchases the delivered cost will reduce to around $670. It is expected that further downward pressure will continue throughout the lifetime of the concession under the limited competition that would exist. At the end of the concession period, increased competition would continue to hold prices in check. At the end of the project, when the GEF subsidy is phased out, there should be sufficient prospects for continued market growth for the concessionaires to remain active for the remainder of their term of 10 years.

2. Critical Risks (reflecting assumptions in the fourth column of Annex 1):

Risk	Risk Rating	Risk Minimization Measure
Annex 1, cell "from Outputs to Objective"		
1. Government commitment for agreed-upon privatization strategy stops.	N	Pass irreversible step of reform before Board presentation.
2. No or delayed consensus of Government, stakeholders and donors on ELECTRA's privatization strategy and during its implementation.	S	Implement transparent and frequent consultation mechanisms with stakeholders.
3. There are not enough bids of competent firms for ELECTRA.	M	Satisfactory bidding/transaction conditions (designed by experienced privatization adviser). Adequate road shows.
4. Unsatisfactory concession agreement and inefficient work of regulatory entity.	N	Recruit experienced consulting firm for advice/support.
5. Penetration of electricity systems by wind is technically and economically limited.	N	Follow recommendations of technical studies. Design adequate incentives (GEF).
6. Local enterprises are not adequately trained/supported and there is no competitive dissemination of photovoltaic systems	S	Adequate TA and GEF incentives. Concession system for several enterprises.
7. The target population has insufficient incentives for rational use of power and water.	N	Apply proven, high-impact Demand Side Management measures.
8. Targeted households not able/willing to pay for power, water and sanitation services that do not meet their expectations.	M	Apply findings of beneficiary assessment for reform of power/water tariffs.
9. Project implementing entities are neither properly staffed, nor adequately supported or with insufficient budget.	M	Agreement on structure/staffing/budget before Board presentation.
Annex 1, cell "from Components to Outputs"		
1. Recommendations of the financial/privatization adviser are not timely implemented.	M	Adequate support to the privatization task force and to the project preparation unit.
2. Bidding for privatization of ELECTRA is delayed.	M	Sufficient time for bid preparation and prior regulatory/legal/restructuring work
3. Counterpart funds are not available in a timely manner.	M	Reasonable amounts and verification of inclusion in yearly budgets
4. Incentives are insufficient for development of renewable energy by private operators.	M	Adequate design of GEF support
5. Procurement/disbursement decisions are delayed.	M	Adequate procurement plan and training
Overall Risk Rating	S	

Risk Rating - H (High Risk), S (Substantial Risk), M (Modest Risk), N (Negligible or Low Risk)

3. Possible Controversial Aspects:

The possible sources of controversy are the perception of Electra privatization and the impact of necessary water tariff increases. The privatization of Electra might be perceived as job-threatening by Electra non-managerial staff, or could be viewed by the Cape Verde population at large as the Government relinquishing its control over strategic national assets. This possible source of controversy seems limited however, in view of the consensus about the justification and benefits of privatization that emerged during the workshop held in Praia in November 1997 and due the fact that Electra's management is fully supportive of privatization and claims that its staff has also perceived the possible benefits of privatization (including better incentives in terms of training, salaries, public image, and shareholding options, together with acceptable packages for separated staff paid from privatization proceeds). Also, adequate communication actions are to be developed by the GOCV prior to the sale of Electra, with support from the privatization advisor.

The significant increase in the average retail tariff of water (about a doubling, with further increases as the share of desalinated water in water supply will increase) that is necessary for cost recovery by municipal companies is likely to be perceived negatively by the public and possibly objected by the municipalities themselves. However it seems that household willingness-to-pay (as estimated from current expenditure by households not connected to the grid for what is and inconvenient and unsafe water supply) would be largely sufficient to allow the required water tariff restructuring, that would in any case include phased increases (with corresponding GOCV decreasing subsidies), a lifeline rate and adequate communication actions.

G. Main Credit/Grant Conditions

1. The following conditions were met during negotiations:

1.1 The Project Management Unit has been created (Decree No.40-A/98) and staffed with key personnel (Coordinator, Accountant, Program Officer, Renewable Energy Specialist, Executive Assistant);
1.2 The final Project Implementation Plan was discussed, including detailed performance indicators and procurement plans and agreement was reached on changes to be made to reflect final project scope and arrangements;
1.3 The PMU's accounting and financial procedures have been defined in a draft financial management handbook and the necessary software/hardware has been installed at the PMU;
1.4 Engineering design and draft bidding documents were prepared for IDA-financed water/sanitation extension works in Assomada;
1.5 Detailed technical specifications have been completed for the wind farm extension;
1.6 Draft bidding documents have been prepared for the selection of private PV concessionaires and the purchase and installation of PV systems;
1.7 A consultant has been recruited to prepare engineering design and bidding documents for IDA-financed water extension works in Praia;
1.8 A consultant has been recruited to conduct a detailed environment audit of Electra's facilities and prepare the engineering design for environment mitigation measures;
1.9 The final draft of PMU's financial management handbook was discussed during negotiations and agreement was reached on minor changes to be made to the handbook;
1.10 The final draft of the Statement of Sector Development Policy for the power and water sectors was discussed and signed during negotiations.

2. The following conditions of Board presentation have been met:

2.1 Five consortia have been pre-qualified for the privatization of Electra, based on qualification criteria satisfactory to IDA;
2.2 A consultant has been recruited to define engineering design for IDA-financed investment in electricity connections to be implemented by Electra privatized.

3. Credit Effectiveness Conditions include the following:

3.1 Promulgation of the Electricity Law, the Water and Sanitation Law and the Regulatory Agency Law and approval of the corresponding bylaws regarding regulatory arrangements, in form and substance satisfactory to IDA (expected completion: June 1999);
3.2 Final documentation for the privatization of Electra, satisfactory to IDA, is released by the GOCV to pre-qualified firms, including memorandum of information, draft concession agreements, draft statutes, draft shareholding agreement, approved resolution on tariff of electricity and water, and other documents as judged necessary by the privatization adviser (expected completion: May 1999);
3.3 The strategic partner has been selected for the privatized Electra and has been invited by the GOCV to enter into negotiations (i.e. Electra is brought to the point of sale);
3.4 The PMU is fully staffed and its financial management system is fully operational;
3.5 The DCA and GEF Agreement have been ratified;
3.6 The detailed Environmental Management Program, satisfactory to IDA, has been finalized;
3.7 The PMU has appointed an independent auditor;
3.8 The GOCV has opened a project account for counterpart funds and has made an initial deposit of the equivalent of US$100,000:
3.9 The GOCV has established the project advisory committee.

4. Other [classify according to covenant types used in Legal Agreements]:

DCA:
4.1 Signature of a Project Agreement with Electra privatized regarding implementation of IDA-financed extension of electricity connections, not later than 9 months after credit effectiveness;
4.2 Signature of concession agreements, satisfactory to IDA, between the GOCV and the municipality of Assomada, for the exploitation of IDA-financed water and sanitation systems: by December 31, 2001;
4.3 Signature of concession agreements, satisfactory to IDA, between the GOCV and the private concessionaires, for the exploitation of IDA-financed public PV systems, by December 31, 2001;
4.4 Conduct the project mid-term review: by December 31, 2001;
4.5 Deposit GOCV counterpart funds on the project account on a quarterly basis;
4.6 OPEC FUND to approve its cofinancing for the project by December 31, 2000.

GEF Agreement:
4.7 Signature of a Project Agreement with Electra privatized, regarding the GEF-financed extension of wind farms, not later than 9 months after credit effectiveness (condition of disbursement for the GEF category related to windfarm extension;
4.8 Selection of private concessionaires by PMU for the commercialization of small photovoltaic and wind systems, satisfactory to IDA: by March 31, 2000;

4.9 Signature of concession agreements, satisfactory to IDA, between the private concessionaires and the GOCV, regarding the commercialization of GEF-financed photovoltaic/wind systems: by June 30, 2000.

H. Readiness for Implementation

[x] The engineering design documents for the first year's activities are complete and ready for the start of project implementation. [ ] Not applicable

[ ] The procurement documents for the first year's activities are complete and ready for the start of project implementation.

[x] The Project Implementation Plan has been appraised and found to be realistic and of satisfactory quality.

[x] The following items are lacking and are discussed under loan conditions (Section G):

(i) complete bidding documents for privatization of Electra;

(ii) engineering design for IDA-financed investment in electricity connections to be implemented by Electra privatized.

I. Compliance with Bank Policies

[x] This project complies with all applicable Bank policies.

[ ] [The following exceptions to Bank policies are recommended for approval: None. The project complies with all other applicable Bank policies.]

[signature]
Task Team Leader: Philippe Durand, AFTG1

[signature]
Sector Manager: Mark Tomlinson, AFTG1

[signature]
Country Director: Mahmood Ayub, AFC14

Annex 1

Cape Verde Energy and Water Reform and Development Project
Project Design Summary

Narrative Summary	Key Performance Indicators	Monitoring and Supervision	Critical Assumptions and Risks
Sector-related CAS Goal Promote sustainable development by encouraging public-private partnership in the provision of economic infrastructure. **Global Environment Objective** Mitigation of climate change through reduction of greenhouse gas emissions	1 Full privatization of the power sector 2. Private participation in largest municipal water companies 3. Government subsidy for Electra is phased out by 2000 4. At least 15 % of all electricity generated by renewable energy by the year 2003 5. Savings of 6500 tons of petroleum products in 2004 (substituted with renewable energy), equivalent to 19,000 tons of CO2.	Bank/IMF Supervision and Sector Reports Economic reports by the Office of the Vice Prime Minister	*(CAS Objective to Bank Mission)* 1. Government remains committed to private sector infrastructure development 2. Political, social and economic stability continues.
Project Development Objectives (i) Improved access to energy, water, and improved sanitation services with optimum use of renewable resources and promotion of private sector participation. (ii) Increased operational and end-use efficiency in the power and water sectors **GEF Operational Program Objective** Under GEF OP#6, remove the barriers to grid connected wind generation and off-grid PV electric systems	1. Household access to electricity increasing as follows (in %): 98 02 07 Praia 69 80 90 Mindelo 92 95 99 2. Household access to water increasing as follows (in %): 98 02 07 Praia 25 50 65 Mindelo 65 80 90 3. Household access to sanitation increasing as follows (in %): 98 02 07 Praia 8 35 43 4. The penetration of wind power on the three main grids (Praia, Mindelo & Sal) averages 19% by 2002. 5. 4,500 households gain access to	Sector operators reports Supervision mission reports Beneficiary assessments	*(Development Objectives to CAS Objective)* 1. Incentives for private sector participation continue improving, including satisfactory power/water tariffs. 2. Power/water sector legal and regulatory framework is satisfactory and well enforced in the sectors. 3. Good coordination between donors. 4. Timely implementation of necessary investments by the privatized Electra.

Narrative Summary	Key Performance Indicators	Monitoring and Supervision	Critical Assumptions and Risks
	electricity from off-grid renewable sources. 6. Cost recovery achieved for water distribution in 2002 (without subsidy). 7. Water losses declining as follows (in %) 98 02 07 Praia 23 18 15 Mindelo 20 18 15		
Project Outputs **(1)** Privatized ELECTRA with improved commercial viability and establishment of an efficient & independent regulatory entity. **(2)** Increased electricity demand met by private sector involvement in developing grid-connected wind power and photovoltaic systems for decentralized rural areas. **(3)** Increased quantity, quality and reliability of drinking water for Praia and Mindelo, integrated multisectoral water resource strategy and strengthened regulatory framework for water sector.. **(4)** Increased coverage of sanitation systems in Praia and improved recovery of wastewater	1.1 ELECTRA privatized by December 1999 1.2 More than 90 % of committed investments by Electra privatized materialize in a timely manner. 1.3 100% of former ELECTRA & EMAP employees are trained by the privatized Electra by 2003. 1.4 Revenue targets for privatized ELECTRA are met. 1.5 80 electricity customers per Electra employee by 2003, up from 59 in 1997. 1.6 Rate of return on Electra's assets increases to 8% in 2003 from -1% in 1997 1.7 Power/water regulatory entity fully operational by 12/99 2.1 7.2 MW new wind capacity is added to the existing system. 2.2 Photovoltaic systems commercialized by at least 2 private enterprises by 2002. 3.1 Per capita water consumption rising as follows (l/d) 98 02 07 Praia 40 75 90 Mindelo 35 60 80 Assomada 25 50 60 3.2 Water quality meets WHO standards. 3.3 Satisfactory regulatory	1. Supervision mission reports. 2. Annual reports and financial statements of privatized ELECTRA and other commercial entities. 3. Quarterly reports on project implementation progress. 4. Yearly audit reports.	*(Outputs to Development Objectives)* 1. Government commitment for agreed-upon privatization strategy persists 2. Consensus of Government, stakeholders and donors on ELECTRA's privatization strategy and during its implementation. 3. Sufficient competent firms bid for ELECTRA. 4. Satisfactory concession agreement and efficient work of regulatory entity. 5. Penetration of wind farms is not technically/economically limited. 6. Local enterprises are adequately trained/supported for competitive dissemination of photovoltaic systems 7. The target population has sufficient incentives for rational use of power and water. 8. Targeted households able/willing to pay for power, water and sanitation services that meet their expectations. 9. Project implementing entities are well staffed, and with adequate support and budget.

Narrative Summary	Key Performance Indicators	Monitoring and Supervision	Critical Assumptions and Risks
	framework for water/sanitation sector in place by 12/99 3.4 Four secondary centers water utilities have been strengthened by 2000, and 8 by year 2007 3.5 Groundwater use and quality fully monitored nation wide by INGRH, by year 2003. 4. At least 5 % of wastewater in Praia is recovered for irrigation or other purposes.		
Project Components **(1)** Reform and development of power sector **(2)** Renewable energy promotion & development **(3)** Reform and development of water sector **(4)** Sanitation development **(5)** Project coordination and monitoring	**Inputs in $millions** (IDA financing/GEF financing) 10.2 (6.6) 14.5 (0.8/4.7) 14.4 (5.6) 6.4 (1.5) 2.1 (1.9)	1. Supervision mission reports. 2. Annual reports and financial statements of privatized ELECTRA and other commercial entities. 3. Quarterly reports on project implementation progress. 4. Yearly audit reports.	*(Components to Outputs)* 1. Recommendations of the financial/privatization adviser are timely implemented. 2. Bidding for privatization of ELECTRA takes place in a timely manner. 3. Counterpart funds made available in a timely manner. 4. Incentives are sufficient for development of renewable energy by private operators. 5. Procurement/disbursement decisions are not delayed.

Annex 2.1

Cape Verde: Energy and Water Sector Reform and Development
Detailed Project Description

A. Power Sector Reform and Development Component (IDA-financed)

1. This component is designed to support the power sector reform undertaken by the Government of Cape Verde, as presented in the draft Statement of Sector Development Policy (see Annex 2.2). The component consists mainly of the following:

(i) supporting the ad-hoc task force that the GOCV has established to prepare and conduct the privatization of Electra. This would include the definition of the legal and regulatory framework, the evaluation of Electra, the selection of the privatization strategy and the competitive sale or concession of Electra's assets to a strategic investor, Electra workers and other private interests (Cape Verde citizens, through a public offering), and possibly to institutional investors; most municipalities currently not served by Electra would also become shareholders of the new company, by contributing with their electricity production/distribution assets. The strategic international investor would have management control of Electra privatized, in which the Government of Cape Verde would retain control over strategic decisions through golden share arrangements. The privatization process will be conducted with support from a privatization adviser financed under the project (PPF), for a total cost of US$0.8 million;

(ii) supporting the implementation of a sound legal and regulatory framework for the power and water sectors, to be monitored and enforced by a multi-sector regulatory entity (that will also oversee the telecom and transport sectors) in order to ensure electricity service quality and some degree of competition for supply of electric power and desalinated water, and to apply the electricity tariff system as per the Electricity Law and the concession agreement with the privatized Electra; This will include technical assistance (regulatory experts, external auditors for financial and technical services, legal specialists, environment specialists, etc.), studies, training, and the purchase of vehicles and equipment for the regulatory entity, for a total cost of US$0.7 million;

(iii) promoting demand-side management and energy efficient equipment: This will include information actions, training, pilot activities, definition and application of technical norms for equipment, and design of incentive measures, for a total cost of US$0.5 million.

(iv) supporting the Ministry of Trade, Industry and Energy (MCIE) for formulating energy sector policies and strategies, coordinating sector development, preparing and updating statistical data, and monitoring sector activities and demand. This will include technical assistance, studies, training, and the purchase of vehicles and equipment, for a total cost of US$0.25 million;

(v) contributing to investment costs of measures to be implemented by the privatized Electra for: (a) the mitigation of existing environment impacts of Electra activities (as defined by an environmental audit carried out prior to the privatization of Electra), for a total cost of US$0.5 million; and (b) developing marginally economic electricity supply to 4,000 new customers in periphery urban areas or secondary urban centers, for a total cost of US$3 million; and

(vi) supporting the financial restructuring of Electra, through the financing of severance payments to Electra workers (for a total cost of US$1 million) and Electra's debt restructuring (suppliers debt reduction in an amount of US$1.7 million), both to be financed by the Government.

B. Water and Sanitation Reform and Development Component (IDA-financed)

B.1 City of Praia

Background

2. The population of the city of Praia currently numbers 80,000. At the present growth rate of 4.5 percent, it should exceed 100,000 by the year 2000. The city's chief source of potable water supply is a system of wells and galleries to reach aquifers and to collect infiltration water, which provide a total capacity of 2,650 m3 per day. Since the end of 1996, the city has had a sea-water desalination plant with a daily capacity of 2,500 m3 (two units with a daily capacity of 1,250 m3 each, of which only one is currently in operation because of power supply deficit in Praia). Taking into account losses from the distribution network, estimated at 23 percent, the total volume of water available for consumption is around 4,000 m3 per day.

3. Deducting from total supply the 24 percent used by industrial, commercial and public-sector consumers leaves an average consumption of residential users of around 40 liters per inhabitant per day. However, there is a large difference between those users connected to the network, who consume around 50 liters per inhabitant per day, and those without a connection, who have access to no more than 16 liters per inhabitant per day. To handle the increasing demand for water resulting from population growth and the expanding connection rate, the water supply master plan for the city of Praia includes the installation of supplementary desalination units, each with a 1,200-m3 per day capacity, in each of the years 1999, 2000, 2001 and 2002. Investments in strengthening desalinated water production will be handled by the privatized Electra. Nevertheless, given the privatization timetable, investments needed until the year 2000 would be covered by Electra and/or the Government.

4. There are a number of technical issues in the water distribution system that need addressing. Technical losses in the potable water supply network are high, especially in the case of a system fed by desalinated water. This is a serious problem that merits careful attention. The configuration of the water distribution system, and in particular the inadequacy of the secondary and tertiary network, also represent an operating constraint. The water distribution system covers only 60 percent of the city area, and the water is supplied intermittently, for just a few hours a day. Only 20,000 inhabitants (4,000 subscribers) are directly connected to the network. Since the water distribution system does not extend to the densely populated periphery urban areas, 75 percent of the population of Praia (60,000 inhabitants) are served either directly by tank trucks or by standpipes (most of which are not hooked up to the network and are also supplied by tank trucks). The consumers served in this way use methods of carrying and storing the water that are conducive to pollution and contamination of the water, with serious consequences in terms of public health. Indeed there has been an increasing prevalence of waterborne diseases, with the recent cholera outbreaks being a case in point.

5. Praia's sanitation facilities are still inadequate. Only 8 percent of the population (6,000 inhabitants) have connections to the sewerage system. To achieve the 25 percent connection objective for the year 2000 and the 43 percent goal for 2005 that have been set in the water and sanitation master plan, the number of household connections will need to rise from the present 1,300 units to 5,000 by the year 2000 and 11,000 by 2005. This will demand a major investment effort, both to extend the basic

infrastructure (main drains and relay stations) and to develop secondary and tertiary networks. The wastewater treatment plant, capable of handling an hourly flow of 220 m3, will not need to be extended before the year 2003.

Project scope

6. In order to improve the technical conditions of operation of the primary and secondary networks, the European Union (EU) has included in Phase 2 of "Strengthening of the Praia Water Supply" a CVE 200 million (US$2 million) investment program that is intended principally to improve the primary distribution system by (i) increasing water storage capacity (construction of a 50-m3 and a 400-m3 reservoir); and (ii) laying new primary and secondary pipes totaling 6350 meters to interconnect and extend the distribution system. The EU-financed program also includes the construction of 6 new standpipes and the connection of 16 existing standpipes to the existing network.

7. The actions to be financed by IDA under the Energy and Water Project aim to make potable water accessible to the most disadvantaged population groups located downstream of Praia's water distribution system. These mainly involve work on the secondary and tertiary networks designed to:

- Reduce water losses by rehabilitating 11 km of the old asbestos-cement tertiary pipelines, so that water formerly lost through leakage can be supplied to communities hitherto lacking water service. Amount: CVE 22 million (US$0.22 million).

- Expand access to running water and improve water quality in the poorly supplied areas by connecting 34 existing standpipes to the primary network and constructing 6 new units, also connected to the network. Amount: CVE 13 million (US$ 0.13 million).

- Increase the penetration rate of the potable water network in the periphery urban areas located to the north of the city by extending the secondary and tertiary networks to those new neighborhoods (an area of approximately 200 ha). Amount: CVE 215 million (US$2.15 million).

8. With respect to sanitation, the second phase of investment in the EU program, totaling CVE 390 million (US$3.9 million), is intended to bring about substantial improvements in Praia's sewerage system. This program will extend the primary and secondary network to neighborhoods still lacking service, and will include overall densification of the tertiary network to increase the number of residential sewer connections. The work will include: (i) laying of 3,360 m of main drains, (ii) construction of three wastewater pumping stations and 900 m of discharge pipes, (iii) extension of the secondary and tertiary pipelines to the neighborhoods of Achadinha, Varzea, Palmarejo and Achada São Antonio (an area of approximately 95 ha).

9. The project also provides for an IDA-financed study of the possibility of recycling Praia's treated wastewater, a promising solution for Cape Verde, where water resources are rare and costly. This study, at an estimated cost of CVE 20million (US$ 200,000), will be divided into the following four phases: (i) identification of possible uses for recycled wastewater, (ii) determination of the required quality for recycled effluent (taking account of the need to observe hygiene and public health standards), (iii) assessment of the available treatment system and determination of any necessary upgrades, (iv) technical and economic assessment of the solution adopted. With a view to subsequent financing of the wastewater recycling infrastructure, the Energy and Water Project includes a sum of CVE 100 million (US$ 1 million).

B.2 City of Mindelo

Background

10. The city of Mindelo has close to 60,000 inhabitants. Its water supply depends entirely on a sea-water desalination system with a capacity of 3,000 m3 per day. Mindelo's water supply coverage is one of the highest in Cape Verde, with 65 percent of the city's inhabitants receiving service. However, per capita specific consumption is still low, a mere 35 liters per inhabitant per day. The city has an old water distribution network that is difficult to operate because of its poor configuration. Losses in the distribution network are estimated at close to 20 percent of production, again high for a system based on desalinated water. As in Praia, water distribution in Mindelo is intermittent, with resultant poor water quality.

11. The city has a sewerage system linked to a wastewater treatment plant (oxidation pond). A portion of the effluent from this plant is recycled for agricultural purposes. Mindelo's sanitation facilities operate relatively well, but they need to be extended in order to keep up with the pace of the city's rate of development.

Project scope

12. The water and sanitation facilities in the city of Mindelo were constructed, for the most part, during phases 1 and 2 of implementation of the Mindelo Water Master Plan (financed by the African Development Bank during the periods 1985-87 and 1992-94). It has now become necessary to update that master plan to bring it into line with the present-day economic and population growth of a city in transition. To that end, the Energy and Water Project includes the sum of CVE 50 million (US$0.5 million) to finance a study for updating the Master Plan, and an allocation of CVE 300 million (US$3 million) for subsequent implementation of the emergency investment phase of the updated Master Plan for water investments.

B.3 City of Assomada

Background

13. Assomada is the capital of the municipality of Santa Catarina, which has a population of approximately 45,000. Located on Santiago Island, this municipality has to cope with a heavy volume of immigrants, which, owing to its proximity to Praia, makes it the first settlement choice for migrants from the rural areas. As a result, the demand for water there is steadily growing, and the quality of the service cannot keep up with the city's economic and social development. Water distribution is inadequate and intermittent (barely two hours a day). The city's water supply comes from two wells connected to an 8-km distribution network serving 800 subscribers (5,000 inhabitants). The rest of the population, as well as the inhabitants of the numerous surrounding villages (in particular Ribeirão Manuel), are supplied from two other wells by tank trucks. The distribution network is quite old, dating back to the fifties. It is composed essentially of leaky asbestos-cement pipes, which account for losses of over 20 percent of production, despite the fact that water is distributed for no more than two hours a day and pressure within the network is weak.

Project scope

14. The municipality of Santa Catarina, and particularly the city of Assomada, were targeted in the priority investment phase of the Energy and Water Project, not only because of their economic importance and large populations but also because the municipality is already engaged in restructuring its municipal water and electricity service within the framework of a "Program to Support the Autonomous Water and Electricity Services" financed by the Austrian cooperation agency. This program, in the amount of CVE 80 million (US$0.8 million) is being applied in four municipalities: São Domingos, Santa Catarina, Tarrafal and São Miguel. Its objective is to help local governments set up autonomous water and electricity management services that will operate along commercial lines. Reorganization of the Assomada water and electricity service is under way.

15. The project contains a program in the amount of CVE 115 million (US$1.15 million) for rehabilitation and extension of Assomada's potable water supply, designed to: (i) repair existing reservoirs and build a new 200 m3 reservoir, (ii) replace all the old asbestos cement pipes by new PVC piping, (iii) rehabilitate the 800 existing connections, install 500 new connections, and install water meters for all subscribers, (iv) extend the water supply network to new neighborhoods and peripheral villages (Bolanha, Cumben, Nhagar, Pedra Barro. Achada Gomes).

16. In the area of sanitation, the project will provide support to the municipality for the purchase of a septic tank disposal truck, procurement of household waste collection equipment, and rehabilitation of the public landfill. The estimated cost of this sub-component is CVE 15 million (US$0.15 million). The feasibility of and justification for a sewer network linked to a wastewater treatment plant (oxidation pond) will also be studied at the time of preparation of the detailed design for the water distribution facilities to be installed in Assomada.

B.4 Evaluation of Public Investments for Waste Water

17. Over the next five years, the GOCV intends to implement an ambitious program of investment in waste water collection and treatment, in order to improve the conditions of public health and urban environment. To that effect, technical and economic studies will be conducted to assess the justification and timing of actions and investments to be undertaken in the cities concerned by the program. The GOCV has requested the Bank to ensure the coordination of these studies which will be partly financed by the project for an amount of CVE 10 million (US$0.1 million).

B.5 Institutional support and capacity building

18. The project includes an important institutional component designed to: (i) support the reform of Cape Verde's urban water subsector, (ii) improve the efficiency of the municipal water distribution companies, and (iii) strengthen national capacities in the areas of water resource regulation and management. The amount earmarked under this heading is CVE 50 million (US$0.5 million).

Support for restructuring of the urban water subsector

19. The project will support GOCV's efforts in the restructuring of the water and waste water sectors, in conjunction with similar restructuring undertaken in the electricity sector. The reform option retained by the GOCV consists in entrusting the privatized Electra with the service of electricity, water and waste water in all major cities in Cape Verde, including the capital city Praia where the assets of the municipal

water company (EMAP) will be transferred to the privatized Electra. The corresponding advisory services are financed under the project (through a PPF) in the framework of Electra's privatization.

20. The project will also support the review of the legal and regulatory framework for water and waste water management, in order to adapt it to the new institutional situation resulting from the sector reform (privatization of Electra that becomes a concessionaire for water/waste water in all major cities and creation of municipal water companies in secondary urban centers). The new institutional framework for sector management will require strengthening regulatory mechanisms and sector monitoring. To that effect, the GOCV has decided to create a multi-sector regulatory agency for the electricity, water, telecommunications and transport sectors. This agency will be created in 1999 and will benefit from logistical support for its installation and technical assistance for strengthening its capacities, to be financed in the framework of the project for the water and electricity sectors.

21. Regarding water tariffs, the project includes an EU-financed tariff study with the objective of achieving full cost-recovery over a reasonable period of time, including the progressive reduction of Government subsidies. The tariff study should take into account the promising perspectives for reducing the cost of desalinated water that could be achieved through the most recent technologies.

Support for the creation of autonomous municipal water distribution companies

22. The project provides assistance for restructuring and strengthening the municipal water distribution services, in order to make them more efficient and to support the sustainable development of the urban water subsector. This support, which falls within the framework of strengthening of the national decentralization policy, will promote the creation of autonomous commercial enterprises to operate potable water supply networks within the municipalities. These enterprises will have decision-making autonomy, and the municipalities will no longer be involved in their day-to-day operations. In the secondary urban centers not covered by the privatized Electra, the municipal potable water companies could also be made responsible for electricity distribution. This would have several advantages, in that it would make optimum use of human and logistical resources, reduce commercial costs (meter readings and billing), and expand the list of customers. Private sector participation in the municipal water and electricity companies would be highly desirable and should be allowed in the statutes of these companies.

23. The program for restructuring and strengthening capacities of the municipal water distribution services is already under way with Austrian financing in the secondary urban centers of Santa Catarina, São Domingos, Tarrafal and São Miguel. The new municipal enterprises will benefit under the project from a technical assistance and training program covering the following aspects: (i) water demand planning and formulation of investment programs, (ii) project management, (iii) diagnostic survey of networks and design of servicing techniques, (iv) customer management, and (v) financial and accounts management.

Support to INGRH for improved water resource management

24. Water resource conservation is of strategic importance in Cape Verde. The project proposes to support this aspect by strengthening INGRH's resources and capacities in the area of water resource management. The Institute would receive capacity-building assistance in the areas of: (i) groundwater resource inventory and quality control; and (ii) rational resource use planning in light of existing groundwater potential. Support for INGRH will be provided within the framework of a performance contract. The Institute will need to be relieved (perhaps gradually, over a period to be determined) of such activities as construction and operation of rural wells. It will instead focus on two principal tasks:

(i) regulation of the water and sanitation sector; and (ii) water resource management. In the medium term, the Institute will focus mainly on planning and management of water resources and will be responsible for: (i) the assessment of water resources in Cape Verde; (ii) the monitoring of water quality; and (iii) the delivery of permits to pump underground water according to the potential of aquifers. In other words, INGRH will control water resources and ensure consistency between existing potential and actual use of groundwater resources. Regarding waste water, INGRH will establish and monitor the application of adequate norms for disposal, collection, treatment and re-use of waste water.

25. To finance the Institute's activities in the area of water resource management, a pumping tax (*taxe d'exhaure*) will be imposed on all consumers using groundwater wells (municipalities, farmers, industrial companies, private individuals, etc.). The revision of the institutional and regulatory framework governing water resource management will be effected within the project, in particular the revision of the Water Code and the definition of new relationships between INGRH, the National Council of Water (CNAG) and the multi-sector regulatory agency.

C. Renewable Energy Component (GEF-financed)

C.1. Grid Connected Wind Farms

C.1.1. Objective

26. The objective of the Grid Connected Wind Farm sub-component is to increase the proportion of wind-generated electricity supplied to the major grids.

C.1.2 Overview

27. The sub-component covers the supply and construction of three wind farms on the main grids of the islands of Santiago, Sao Vicente and Sal. The three main grids are served mainly by existing diesel generation though each grid has a wind farm, the result of an earlier Danida-supported project. The wind regime in Cape Verde is excellent and the existing wind farms have achieved capacity factors in the range of 27% to over 50%. There are good sites close to the main load centers where further wind capacity may be built. The wind farms are financially attractive to private investors but carry substantial risks if built at the size envisaged. By making it possible for ELECTRA's strategic private partner to develop the first commercial wind farms, it will remove the barriers and bringing down the costs of future wind energy projects being implemented on a fully commercial basis. The role of the GEF is to assist in reducing the risks, both perceived and actual, in building large-scale wind farms and achieving high levels of wind penetration.

28. The physical characteristics of the proposed wind farms on the Praia, Mindelo and Sal grids are given in the table below. The wind farms will be located as follows:

- Monte San Felipe on Santiago island, connected to the Praia grid (4.8MW)
- Selada do Flamengo on Sao Vicente, connected to the Mindelo grid (1.8 MW)
- Santa Maria or Palmeira on Sal, connected to the island's single grid (1.2 MW)

29. The construction of the wind farms will form part of the investment program to be undertaken by Electra SA, after it has been privatized.

Wind Farm Installations ($6.36 million private investor, $3.28 million GEF)

30. This section contains a brief summary of each of the proposed wind farms. The characteristics have been derived as a result of a detailed study undertaken by consultants. The study included for each of the proposed sites:

- Electrical system studies including measurement campaigns and operating strategy analysis;
- Energy resource assessment;
- Civil engineering and transport issues;
- Electrical engineering considerations;
- Detailed designs for each of the wind farms;
- Financial and economic analyses for the project;
- Preparation of draft bidding documents for an Engineer, Procure, and Construct (EPC) type contract arrangement;
- Development of a project implementation plan (PIP).

31. The sites and specifications described in this section are those which have been agreed with Electra pre-privatization. Given the technical, construction and operation risks that are concerned with the construction of all new plant, the investor must have latitude to determine the final technical and contractual details by which the project is implemented. Safeguards to ensure the requirements of the Government of Cape Verde and the GEF are outlined in the Implementation section below.

Praia

32. The proposed wind farm site is at Monte San Felipe, approximately 8km north of the center of Praia, the same site occupied by the existing Danida-sponsored wind farm consisting of three 300kW turbines. There is adequate space for the existing turbines on the site and the existing infrastructure, including roads, electrical system connections, and control building has adequate spare capacity for the extension. The annual mean wind speed derived from the performance of the existing turbines is 7.7 m/s at 31m hub height. The site is a rocky and sparsely vegetated plateau which is occasionally used for grazing animals.

Mindelo

33. The proposed wind farm site is at Selada do Flamengo, approximately 8 km southwest of Mindelo and about 1.5 km southeast of the existing Danida-sponsored wind farm. The site is the crest of a steep ridge. Although there are likely to be difficulties of construction on such terrain and the possibility of some loss of energy due to flow separation at the crest of the ridge, they not considered insuperable. Roads to the site already exist and the electrical system connection from the existing site could also be used, as could the control room. The annual mean wind speed is predicted to be 9.8 m/s at 31m hub height. A reserve site approximately 500m north of the planned site has been identified.

Sal

34. Two potential sites have been identified on Sal. One, at Palmeira, is adjacent to the existing wind farm, where there is sufficient room for substantial expansion or at Santa Maria, at the southern end of the island, approximately 25 km from the existing site. The Santa Maria site has the potential to capture approximately 20% more energy and is near the tourist area which is the expected center of load growth. Annual mean wind speed calculated from the existing units at Palmeira is 7.2 m/s and at Santa Maria is

7.7m/s. As the greater cost balances out the increased energy capture at Santa Maria, the choice of site will be a matter of management preference and will be left to the privatized Electra.

Summary Details

35. The table below summarizes details of the wind farms:

Characteristic	**Praia**	**Mindelo**	**Sal**
Location	M.S Felipe	S. do Flamengo	S. Maria
Size (MW)	4.8	1.8	1.2
Cost 600kW m/c (less IDC) $000	5,621	2,283	1,726
Annual mean wind speed (31m)	7.7	9.8	7.7
Capacity factor (%)	28.5	53.9	32.3
Turbine size (kW)	300 - 600	300 – 600	300 – 600
Existing system capacity (MW)	14.41	16.14	3.25
Existing wind capacity (kW)	990	990	660

Technical Assistance ($450,000 GEF funded)

36. Technical assistance is required in the run up to privatization and afterwards. There are four major activities envisaged under the technical assistance program, which will be managed by Electra:

- Wind resource assessment ($85,000). The estimates derived from the wind turbine performance need to be supplemented for Selado do Flamengo on Sao Vicente and the Santa Maria site on Sal. The optimum way to undertake this work is by establishing meteorological monitoring at the proposed sites. There is a mast at the Sao Vicente site but it has not operated for some time and requires rehabilitation. A new station will be established at Santa Maria. Both stations will require a monitoring program which should be managed by Electra but further assistance in analysis will be essential;

- Power system analysis ($80,000). Further, detailed power system analysis will be required to ensure that bid specifications contain the most up to date information on which bidders can base their offers. This analysis will be able to make use of existing ongoing studies and supplement them where necessary;

- Project performance evaluation and documentation ($160,000). It has been observed that the proposed levels of penetration for wind will be among the highest in the world. The wind regime is also exceptionally demanding on turbines, with capacity factors on existing machines being among the highest in the world. Technical assistance will be provided to monitor the wind farms and systems, to forestall emerging problems and to document performance. Dissemination of results will also be included under this activity;

- Assistance with Operations and Maintenance (O&M) in the first year ($125,000). Though the privatized Electra will be owner and operator of the wind farms, it is likely that the same management and staff currently employed on the existing wind farms will be responsible for the new plant. There is some evidence that O&M has been poor and that further training and support will be necessary. The TA will also support improving management of O&M and relevant contracts and supplier warranties.

C.1.3 Implementation Arrangements

37. The wind farms will be part of the investment program required of the privatized Electra and will be a condition of privatization. The program will define the amount of wind capacity to be installed, time limitations under which the privatized Electra will be required to install them and the level of GEF subsidy that will be available. The GEF grant will create an incentive for the privatized Electra to maximize the installed capacity of the wind equipment. The wind farms will be wholly owned by the privatized Electra.

Sequencing and Coordination with Privatization of Electra

38. The privatization of Electra will include an obligation to undertake a program of investments in the Electra system. The bidding and construction program for the wind farms is determined by the date at which the privatized Electra can start the project. Delays to this date will affect wind farm construction though it is unlikely to have an adverse effect on costs. On present plans, start date is assumed to be 3-6 months after the privatization of Electra with a construction period estimated to be 24 months (though there is potential to reduce the elapsed time and the management of the privatized Electra may choose to do so).

39. Private sector bidders for Electra will receive the wind farm specification so that they are able to build both costs and the sequencing into their plans and thus formulate their bid accordingly. They will also be required to give an undertaking to have the wind farms operational within 30 months of the privatization of Electra. It will be up to the privatized Electra to determine the precise contractual arrangements by which the wind farms are built but EPC contracting is considered the most likely and is the basis for the cost estimates.

Coordination

40. The Government of Cape Verde will monitor the installation of the wind farms through its electricity regulator who will have responsibility for overseeing the agreed investment program. If required, the regulator will be able to appoint a consultant for detailed monitoring.

41. Subject to the agreement of the World Bank, a Grant Subsidiary Agreement will be established between the Government of Cape Verde and the privatized Electra for both the wind farm construction and the technical assistance. Disbursements to Electra will be based on the progress indicators outlined above, monitored through project supervision.

42. Coordination between the Government of Cape Verde and the World Bank will take place through normal project supervision.

Implementation Incentives

43. Electra will be required to build at least 7MW of wind capacity with the flexibility to site this plant anywhere on the three islands, subject to minima of 600kW on Sal, 1,200kW on Sao Vicente and 3,000 kW on Santiago. This will permit flexibility while still achieving the objectives of the Government of Cape Verde. Because nameplate rating is subject to misinterpretation and is an unsuitable measure of turbine size, the requirement will be stated in terms of total rotor swept area.

44. The GEF grant will be calculated as follows: Maximum GEF grant of $3.276 million for an installed capacity of 7.8MW is equivalent to $420,000 per MW. Based on the average of 51 turbine designs in the size range of 300-600kW, the ratio between turbine rating and rotor area is 0.4kW/m^2. The GEF grant will therefore be calculated on the basis of $168/$m^2$ of rotor swept area, up to the maximum of 19,500m^2 or $3.276 million. This grant approach also provides an incentive to the operator to maximize wind farm capacity up to the 7.8MW capacity because of the significant economies of scale that accrue to larger wind farms.

45. To ensure that the project is constructed in a timely fashion, the GEF grant will be disbursed in tranches on a wind farm by wind farm basis as shown in the table below. Disbursements for the TA component will be based on agreed arrangements in the consultancy contract and will follow normal practice.

Milestone	Payment (%)[1]
Award of contract to construct wind farms	20%
Delivery of all turbine components to Cape Verde	20%
Handover of Praia (or largest) wind farm	25%
Handover of Sao Vicente (or second largest) wind farm	15%
Handover of Sal (or smallest) wind farm	10%
Satisfactory completion of all performance tests	10%

[1] Percentage based on total GEF contribution for wind farm construction (ie $3.276 million)

C.2. Off-grid electrification (Small photovoltaic and wind systems)

C.2.1 Objective

46. The objective of this sub-component is to create a private-sector delivery infrastructure for off-grid electrification services using photovoltaic and wind systems.

C.2.2 Overview

47. For individual household and communities, there are few, if any, means by which off-grid electrification systems can be acquired. 90% of the rural unelectrified are to be found on the three islands of Santiago, Santo Antão and Fogo. Even with an ambitious grid-based rural electrification program, some 12,000 households will never be connected to the grid and many more, up to 20,000 will have to wait for a considerable period. There is limited private sector capacity in Cape Verde for delivering off-grid electrification and virtually none that involves either PV or other potentially economic renewable sources. What little private capacity there is concentrates on capturing business from the bulk tenders from donors and NGOs. There is little, if any, sustainable mechanism for training installers, market building or after sales service unless specified within a donor program.

48. The proposed project will create the circumstances under which environmentally benign renewable energy technologies such as SHS and WHS will be chosen instead of fossil-fuel based technologies. The project will have to overcome three barriers:

(i) The absence of the delivery mechanism and consequent lack of the necessary business and technical skills and experience in the rural energy supply business;

(ii) The absence of information on the benefits and costs of renewable energy systems for rural supply; and
(iii) The high cost of systems, a product of both the current situation in Cape Verde and inherent in renewable systems generally where the first cost is significant.

49. Any attempt to address the needs of those households must be based on two principles:

- Development of a range of products and services which offer access to a large number of the currently unelectrified households;
- That to achieve sustainability, the private sector must be involved in such a way that self-sustaining, profitable businesses can be developed from the opportunity the market offers.

50. In Cape Verde, the development of the off-grid market will be developed exclusively through the promotion of private initiative. Promotion will be based on the selection of a certain number of specialist enterprises on whom will be placed the responsibility to develop the market. Since the project will be starting from a weak base, the project will encourage the formation of consortia of international firms experienced in the field of off-grid rural energy supply working in partnership with local entities. The incentives for enterprises to enter the businesses will include (i) adaptation, as part of the reform process, the regulatory and fiscal environment to be more conducive to businesses in this niche; (ii) privileged access to a market for the installation and management of publicly-owned equipment; (iii) subsidies to undertake market development activities; (iv) subsidies for off-grid equipment.

Market Description

51. The population of Cape Verde is growing rapidly, as shown in Table 1 below;

Table 1: Population of Cape Verde

Numbers in 000	1980	1990	1997	% growth 80-90
Total population	295.2	341.5	377.8	1.5
Households	57.1	67.6	76.8	1.8
Urban households	n/a	30.6	37.2	2.8
Rural households	n/a	37.0	39.5	1.0

52. The distribution of households by island is uneven, though Santiago, the main island is home to over half the total households. Large numbers of rural households are to be found in Santiago, Santo Antão, Fogo, São Nicolau and Brava.

53. In 1997, the estimated level of connection of households was 44% at the national level though there were considerable variations between islands. The large urban grids of Praia, Mindelo and Sal had a much higher connection level while other areas were correspondingly low. It was estimated that in the secondary centers and the rural areas, coverage by grid was as low as 25%. On this basis, around 32,500 households are thought not to have access to electricity services.

54. Based on these data, estimates have been derived of the total population without electricity now and those which cannot expect to be connected to the grid within the medium term (say 5-10 years) – the so-called *durablement exclus*. These are given in Table 2 below:

Table 2: Households without electricity connections, 1997

Island	Households		
	Without connection	*Durablement exclus*	*% Durablement exclus*
Santiago	20,000	8,000	40
Fogo	5,500	2,000	40
Santo Antão	5,000	1,250	25
All other islands	2,000	500	25
Total	32,500	11,750	37

55. Based on Government of Cape Verde surveys on the three islands (Santiago, Santo Antão and Fogo) on which 95% of the *durablement exclus* are to be found, income levels and household energy expenditures in the rural areas have been characterized into three groups as shown in Table 3 below:

Table 3: Household incomes on Santiago, Santo Antão and Fogo

Household type	Income level ($/month)	Energy expenditure ($/month)	Proportion (%)
Small consumer	<200	2.30 – 7.20	1.1 - 3.6
Medium consumer	280	8.80 – 30.30	3.0 – 10.5
Large consumer	560	26.60 – 69.90	4.7 – 12.4

56. Taking these data into account, estimates of the market size for off-grid electrification suggest the data in Table 4.

Table 4: Estimated market for off-grid electrification services

	Cash purchases, numbers		Credit purchases, numbers	
Island	3 years	10 years	3 years	10 years
Santiago	400	2,260	1,130	5,570
Santo Antão	40	390	200	920
Fogo	260	1,180	330	1,720
Total	700	3,830	1,660	8,220

57. The estimates suggest that over the first three years there is a reasonable market for household electrification services, worth a total of perhaps $3/4 million, climbing to $4million over ten years. These services can be met from small photovoltaic (PV) and wind systems in the range of 20 Watts peak (W_p, a measure of the capacity of the system. $20W_p$ is sufficient for one or two lights for a few hours a day) through to 300 W_p which is sufficient to provide power for lighting, radio, TV and refrigeration. In addition, there will be a public market promoted by the Government of Cape Verde, worth a further $1 million over the lifetime of the project.

C.2.3. Implementation arrangements

58. It is planned that this part of the project will be implemented through an adapted version of the concession system. The concessionaire will not receive statutory monopoly rights, but it will receive privileges in return for undertaking to provide a service. It will be overseen by a Project Management Unit (PMU) which will act as the concessions' regulator in the first instance.

Concession arrangements

59. The concession will be for 10 years, which will provide adequate time to recover investment costs. There will be two concession areas: one comprising Santiago island and the other comprising the remaining 9 inhabited islands of Cape Verde. There will be no territorial limitation within the islands, permitting the concessionaire, if it wishes, to compete with the providers of grid connected electricity. The concession will be awarded by competitive tender, for which detailed bidding documents have been prepared. Consortia will be allowed to bid for both concessions and, in the event that they produce the best bid for both, amalgamate the two concessions into one. The Government of Cape Verde will have the right to terminate the concession at any time throughout its lifetime.

60. Although the project will have a duration of four years, the concession period will be for 10. It is considered that support over the first five years will be give the market a sufficient strong start to be sustainable thereafter. The prospect of an established market with continued growth prospects should provide sufficient incentives for the concessionaire to continue for the remaining term of the concession, and beyond.

61. The economic analysis of the concession, based on incremental costs is shown in Annex 4.B. A consolidated financial analysis from the point of view of the concessionaires is contained in Annex 5.

The obligations of the concessionaire

62. Concessionaires will be obliged to undertake three roles:

- Sales of off-grid electrification systems, sold for either cash or credit;
- Sales of electricity or the services provided by electricity, through systems installed in houses and public places, which they will own on a typical concession basis;
- Management of publicly owned equipment, including installation, maintenance, setting of tariffs and fee collection.

63. Under the first of these roles, the operator will sell either complete systems or components, as required by the consumer. The sales will be made under normal retail/consumer arrangements, including equipment guarantees/warranties as appropriate. Components will be required to meet specifications as established by one of a number of internationally recognized testing bodies. Operators will be obliged to keep a sales and service office on the main islands of concern for the project, namely Santiago, Santo Antão and Fogo.

64. Under the second activity, the operator will be expected to provide a fee-for-service arrangement for consumers, where systems will be supplied to individual households and for other private use (e.g. in small businesses). The operator will use proprietary funds, or those of cofinanciers, to invest in systems which it will continue to own but for which it will be able to charge a fee, which will be set by the operator. The operator will establish from the outset the levels of service it offers and will be expected to guarantee those to the consumer.

65. Under the third role, the operator will act as the agent for publicly owned equipment. The Government of Cape Verde will hold regular, probably six-monthly, tenders for this equipment, the size of the tender being based on the volume of private sales the operator has achieved. The operator will supply, install and maintain the equipment, either for public services, such as street lighting, or in private households. The choice of use for the public equipment will rest with municipalities, which will be responsible for meeting the fees charged by the concessionaire for the service it provides. The Government will meet the capital costs of the equipment (financed by an IDA grant) and either municipalities or individuals will pay the concessionaire's fees. The concessionaire will pay the Government an annual fee based on the size of the installed 'park' of equipment.

The rights of the concessionaires

66. The concessionaires will have privileged access to the market for off-grid electrification services. This, plus the subsidies which are described below will give them a market advantage over other enterprises which may wish to supply equipment for sale or under a fee-for-service arrangement. There will, however be no prohibition for other businesses to enter the market should they wish.

67. *Market access.* Concessionaires will have privileged access to the public market for equipment for use either in domestic or collective places. The size of the public market will be fixed according to the level of private sales; the greater the level of private sales, the larger the public market, based at the municipality level. In each of the first four years, an increasing level of private sales will be required for access to a given level of public market sales, effectively tapering this support down over 4 years as follows:

	Year 1	Year 2	Year 3	Year 4
For 1 W_p of public market, operator must sell private systems totaling	1 W_p	1.5 W_p	2 W_p	5 W_p
Value of public market ($)	353,000	286,000	241,000	130,000

68. *Direct subsidies for equipment.* A subsidy will be provided for smaller equipment in the 20W_p and 50W_p range to overcome the high first cost barrier. The subsidy will be on a per unit basis and will initially be 100% of the incremental cost of PV and wind systems but will decline over time. The baseline for the incremental cost is the least cost alternatives of kerosene, dry cells and other equipment (See Annex 4 for details). Though the concessionaire will have the latitude to offer whatever system it considers to most appropriate to the market conditions, the three generic systems, 20W_p, 50W_p and 50W_p for public lighting are likely to be the most popular. The subsidy will be used as follows:

System	Year 1	Year 2	Year 3	Year 4
20 W_p household system	148	148	89	45
(% of incremental cost)	*(100)*	*(100)*	*(60)*	*(30)*
50 W_p household system	157	141	79	31
(% of incremental cost)	*(100)*	*(90)*	*(50)*	*(20)*
50 W_p public lighting system	267	267	267	267
(% of incremental cost)	*(100)*	*(100)*	*(100)*	*(100)*

69. The subsidy will be disbursed six monthly on production of adequate proof that the sales or installations have been completed; systems will be put in place to ensure that systems are properly accounted for.

70. *Market development subsidies.* During the first two years, the operator will receive GEF support for market development activities, to include market studies, business planning, establishing sales networks, staff training and promotional activities. The sum available for this will be $180,000 for the Santiago concession and $240,000 for the rest of the islands. The support will be limited to 35% of the operators' investments in the first two years. The subsidy will be disbursed six monthly.

Institutional strengthening ($0.14 million GEF)

71. The project will be managed through the Project management Unit (PMU) which has recently been established. To assist with its support, technical assistance will be provided in a number of areas:

(a) Bidding for concessions. The bidding process will be managed by the PMU with consultant support. Bidding documents have been developed as part of project preparation and discussed with a number of potential private sector bidders. Bidding will commence on project effectiveness.

(b) Training of PMU staff. PMU staff will be trained in matters relating to off-grid electrification, including technology, financing and cost recovery, project and program management and supervision of the concessions. It is expected that much of this will be carried out 'on the job'.

(c) Technical standards. The project will rely on concessionaires supplying equipment that meets certain minimum standards. Because Cape Verde is too small for it to be cost-effective for national standards to be prepared or used, concessionaires will be given the choice of using existing internationally-recognized standards. Some support work to identify which standards and which testing institutions are appropriate will be required following project start-up, though most has been done in preparation.

(d) Assistance with regulation. Following reform and privatization of the power sector, an independent utilities regulator has been established. Part of that role is to regulate the concessionaires, which will be delegated to the PMU during project implementation. In the initial years, some support to the PMU will be required as it deals with issues particularly related to off-grid electrification.

Annex 2.2

Cape Verde: Energy and Water Sector Reform and Development
Statement of Sector Development Policy

A. Purpose

To improve public health and promote sustainable economic and social development, the Government of Cape Verde (GoCV) intends to improve energy, water and wastewater related services, by expanding access to them and increasing their quality while mitigating their effects on the environment. The GoCV considers restructuring and reforming the sectors as indispensable if it is to achieve these objectives. This statement spells out the GoCV's strategy, targets and time-frame for implementing such policy.

The core objective of the GoCV is to reduce State intervention in the ownership and management of public utilities providing energy, water and wastewater related services, enabling the private sector to participate and/or own totally those entities.

The reforms to be implemented in the above sectors are fully consistent with macro-economic policies, and with sectoral policies and a significant contribution to the accomplishment of the objectives and targets established in the National Development Plan (1997-2000), which aims at achieving sustainable economic growth and social development and at reducing poverty.

B. Resources

Energy is one of the most important sectors for Cape Verde, since it is a major factor for the economy. The country is totally dependent upon external sources of fossil fuel. Local wind and solar resources are still underdeveloped. Moreover, because of the scarcity of natural water resources, energy is increasingly required for the production of potable water through desalination. The sound management of scarce water resources is of paramount importance for the country.

Cape Verde is also confronted with poor or absent basic infrastructure for its electricity, water and sewerage systems, a minimum requirement for improving the quality of life of the population. This lack of infrastructure has serious implications on public health, apart from hindering development of the other sectors, tourism in particular.

C. Existing Situation

C1. Institutional Framework. There is no public service law in Cape Verde. The National Council for Water (CNAG) is an inter-ministerial authority with overall responsibility for the long-term management of water resources. The National Institute for Water Resources Management (INGRH) oversees extraction of groundwater. Neither distribution of water from any source nor the collection of wastewater is regulated.

Cape Verde has an established Foreign Investment Legal Framework, aimed at attracting and stimulating investment through fiscal incentives and legal measures. The GoCV is implementing a privatization and reform program to restructure the economy and to help reduce domestic debt. The program aims to privatize public companies.

C2. Delivery of Services. Electra, the national power and water utility, generates power and desalinated water and distributes electricity and water in the four islands of Sao Vicente, Sal, Boavista and Santiago. Municipalities generate and distribute electricity in areas not served by Electra onBoavista and Santiago, and are the only source of electricity on the other five inhabited islands: Santo Antão, São Nicolau, Maio, Fogo and Brava. Generally, municipalities are also responsible for groundwater extraction and distribution (often with support from the INGRH), except in Praia where a municipality-owned enterprise, EMAP, distributes water and provides wastewater treatment. The municipality of Sao Vicente provides its own wastewater service, the only other place in the country served by a treatment plant.

Service coverage varies greatly from island to island; however on average nationally, 43% of households are connected to the electric grid and 20% are connected to a water supply system. Average electric distribution system losses for Electra are estimated at 14%. Water supply in the major population centers is provided on a rotational basis with Praia receiving water for two hours each day, and Mindelo only one day per week until recently – although currently with permanent supply. Water losses in Mindelo and Praia are high, at an estimated level of 26% and 20% respectively. Wastewater coverage amounts to about 50% in Mindelo, 7% in Praia and none elsewhere.

C.3 Tariffs. Electric tariffs have not been revised since 1985 and there is no established cost indexation method. Electra's production costs have increased substantially generating significant financial deficits which must be covered by government contributions. Accordingly, there is little likelihood that the Electra's financial situation is sustainable over the long-term under the current institutional set up in view of the need for expanding service, equipment replacement and refurbishment, capacity expansion, and adjustments for inflation.

In addition, there are subsidies embedded in the current structure, for production of desalinated water and for public lighting, which preclude price signals that encourage rational use. Furthermore, there is no established structure for ensuring affordable basic levels of service for low income consumers.

Water tariffs are established for desalinated water by Electra, and by INGRH and municipalities for underground water, and submitted to the CNAG for approval. CNAG approved tariffs are partly based on costs but are also based on political and social references, which reflect neither steady regulation nor national balance. These tariffs are below average costs. No fee is charged for wastewater service, where available.

D. Government Objectives and Strategy

The geographic characteristics of Cape Verde create an unusual set of circumstances which constrain efficient and low cost delivery of water and electricity. Further, there is a pressing need for wastewater service in urban areas and for treatment of effluents.

In an effort to improve services, the GoCV plans to restructure the electricity, water and wastewater sectors to:

- Extend service coverage to a greater proportion of the population
- Improve quality of service
- Reduce prices of electricity and water to the consumer, in the medium term, to the minimum levels compatible with economic costs

- Provide incentives for rational use of electricity and water
- Encourage development of renewable energy sources, and
- Install, when environmentally and economically suitable, wastewater treatment facilities.

The GoCV's strategy to reach the above objectives is based on the implementation of a far-fetched reform of the power and water sectors with the following main features:

- Creation and/or modification and enhancement of the legal and regulatory framework to encourage private sector participation and investment in electricity generation and water desalination;
- Adjustment of tariff levels and structure for both electricity and water so that retail prices reflect costs, with progressive adjustments in the case of water and wastewater;
- Privatization of Electra, with the expansion of its scope of activities to achieve economies of scale;
- Supporting the creation of municipal enterprises to assume responsibility for water distribution and wastewater treatment services in secondary urban centers; and
- Creation of business opportunities that will expedite rural electrification, expansion of water supply, and use of renewable energy resources.

The GoCV intends to accomplish the above objectives having in mind the following constraints:

- Geographical situation;
- The small size of the systems, which emphasizes the need to take advantage to the maximum possible extent of economies of scale;
- The scarcity of skilled human resources;
- Shortest possible implementation time;
- Maximum degree of transparency;
- Minimum "price shock" effects due to retail electricity and water price adjustments; and
- Positive impact on the environment.

E. Measures to be Implemented

The development of the electricity, water and sanitation sectors needs considerable institutional reform, increased private participation, competition at production level and efficient regulation. The measures the GoCV intend to put in place are detailed below.

E.1 Legal and Regulatory Framework. This activity will address the definition of a general framework for the functioning of the electricity and water sectors and includes a review of current issues and constraints, the definition of the institutional set up, the definition of responsibilities of authorities (national and municipal) and the operators, the preparation of a new electricity law and of the corresponding regulations. To accomplish this activity the GoCV has contracted consultant services of a consortium of experienced firms which in addition will be in charge of assisting with the privatization of Electra (see E4 below).

E.2 Establishment of Regulatory Authorities. This activity is aimed at the establishment of the authorities which will regulate the water and electricity sectors;. It will be based on the conclusions of the studies which are being carried out for the activity outlined in the preceding paragraph. These authorities and their functions are:

(a) Electricity. In charge of controlling concession contracts for electricity production and distribution, administering tariff rules, elaborating detailed standards of service which may be required to complement legislation, monitoring compliance with the electricity law, ensuring fair competition in bulk power supply and facilitating the settlement of disputes within the sector.

(b) Water supply and sewerage. In charge of controlling concession contracts for the production and/or purchase of desalinated water or for the exploitation of water resources and the distribution and commercialization of water, administering tariff rules for potable water distributed by water companies, elaborating detailed standards of services and facilitating the settlement of disputes within the sector. This authority will be also responsible for supervising the functioning of sewerage services and the compliance with the corresponding regulations, as well as for ensuring fair competition in bulk desalinated water supply.

The GoCV has examined the different options for establishing the above regulatory authorities in the framework of its overall policies for the whole economy and has determined that the creation of a single regulatory body to oversee the public utility sector (energy, water and communications) and the transport sector will maximize administrative and economic efficiencies. Thus regulatory authority will be concentrated in a single entity to be created progressively, starting with those sectors whose regulations have been approved -- the first being electricity, water and telecommunications.

Responsibility for overseeing the use of water resources and executing policies with regard to their evaluation and use will remain vested in the Ministry of Agriculture through its agency, INGRH, including control of quality of water sources and wastewater treatment and reuse. INGRH will progressively relinquish its current activities in developing and operating water supply facilities in secondary centers, a responsibility that will be transferred to municipal water utilities. The Code of Water will be revised to foster decentralized and private use of water resources and the responsibilities of the National Council of Water and the INGRH will be made consistent with the new institutional and regulatory framework for the water sector.

E.3 Definition of Tariffs. To ensure increasing efficiencies in the electricity and water sectors, the GoCV has determined that tariffs should reflect costs. For the water sector a study will be conducted to determine the tariff structure and levels which will serve as the basis for granting concession contracts for the municipalities and/or the concessionaires that are expected to provide water distribution services. For the electricity sector, the GoCV has determined that the faster way to increase efficiency is the establishment of a price-cap system to be incorporated in the concession contract of the privatized Electra. Such concession contract will include efficiency incentives which eventually are expected to be passed on to the consumers. The definition of the tariff schedule for Electra privatized is part of the work to be done by the adviser in charge of preparing the tender documents for the privatization of Electra.

E.4 Privatization of ELECTRA. The GoCV has decided to privatize Electra and has retained the services of a privatization adviser for preparing the tender documents. Electra will be privatized by the sale of 51% of its capital to a strategic partner. 5% of Electra's capital will be sold to Electra's workers and 31% to private investors through a public offering. The municipalities will retain 13% of Electra's capital . The State will retain a 'golden' share which would permit, by means of provisions in the shareholders agreement, to reserve for the state the right to block some fundamental actions such as dissolution of the company, incorporation of new partners, transfer of the concession agreement, and others which in the view of the GoCV could affect its policies and objectives.

The GoCV has decided to privatize Electra by the selling of its assets related to the electricity and desalinated water production but retaining assets related to electricity and water distribution and sanitation as state property in accordance to current legislation. Assets to be retained under state ownership will be operated, maintained and expanded, as required, by the strategic partner under a 50-year concession contract.

Electra, once privatized, will be required to have analytical accounting and will have separate concessions for the electricity, water supply and sanitation sectors. It will provide electricity distribution services in the whole country and water supply services in Praia, Mindelo, Sal and Boavista. Electra may extend services to other areas subject to additional agreements with the GoCV.

Privatization of Electra will include the following steps: (i) transformation of Electra into a commercial company (plc); (ii) transfer of the electricity production and distribution assets that belong to the state and the municipalities and the state-owned desalination facilities to the newly created company; (iii) preparation of the tender documents for privatization --including the procedures for selecting strategic partner, (iv) pre-selection of investors and operators interested in the privatization; and (v) execution of the privatization.

E.5 Creation of Municipal Enterprises for Water/Wastewater Services. Because it is essential for the sustainable development of the water sector, the GoCV intends to establish autonomous municipal enterprises, in the areas not covered by the privatized Electra, with authority to acquire resources, bill and collect for services (with tariffs based upon delivery costs) and terminate service for non-payment. At the same time, it may be appropriate to outsource selected functions to professional operators (e.g., the privatized Electra, or other private operators). Reutilization of wastewater for industrial and/or agricultural applications, as well as development of institutional and staff abilities for technical operations and quality control, are also to be considered.

The activities to support the creation of municipal enterprises to take over these activities include: (i) defining unserved areas based upon allocation of service responsibilities to the privatized Electra; (ii) identifying the most appropriate form of municipal enterprise and whether or not outsourcing is required; (iii) ensuring that the legal and regulatory framework accommodates the proposed solution, increasing water and wastewater supply to appropriate levels in the main populations centers; and (iv) refurbishing and expanding water and waste water facilities of these municipal enterprises.

The extension of water services to presently unserved rural areas will require developing self-standing models based on the build-up of local capabilities on this subject. Alternatively, separate concession contract could be established with a private operator for rural areas, with a separate set of tariffs designed to shoulder the heavier capital investment burden associated to drinking water facilities. A GoCV policy on this matter will be issued on the basis of a deeper specific study to be finalized by end-2000.

E. 6 Business Models for Off-Grid Electrification. The GoCV intends to attract private providers of off-grid electrification services based primarily on renewable sources of energy and in particular photovoltaics (PV). One or more short term concessions or exclusive marketing agreements will be established between the government and suitably qualified private firms selected through competitive bidding. To avoid establishing a private monopoly, the operators would be required to undertake market development activities and the market will be progressively opened up to competition.

E.7 Development of Grid-Connected Wind Power. Electra and other entities presently operate wind turbines which were financed from various sources. The exploitation of this renewable source of energy offers both the opportunity to reduce the foreign exchange needed to purchase oil and to make a positive contribution to the environment. It is therefore GoCV policy to encourage the use of wind power wherever it is economically attractive and environmentally acceptable. Investment in wind power will be encouraged by the following measures:

- The wind energy assets currently operated by Electra will be included on privatization; and
- Investment in further wind capacity will be encouraged, initially by the privatized Electra and subsequently by private operators

E.8 Promotion of Energy Efficiency. The GoCV will develop programs to encourage and promote further fuel substitution, where viable. To this end the GoCV intends to establish national regulations and provide financial or fiscal incentives.

F. Execution, Coordination and Timetable.

The above reform program will be placed under the direct responsibility of the Vice-Prime Minister. A project execution unit will be in charge of the preparation of the studies, legal instruments and contracts. A Task Force, in which relevant institutions and the GoCV are represented will provide advice to the Vice-Prime Minister for the making of major decisions until the privatization of Electra is completed.

The timetable for the execution of the whole process is three years (1998-2000). A schedule of the main tasks to be carried out is attached.

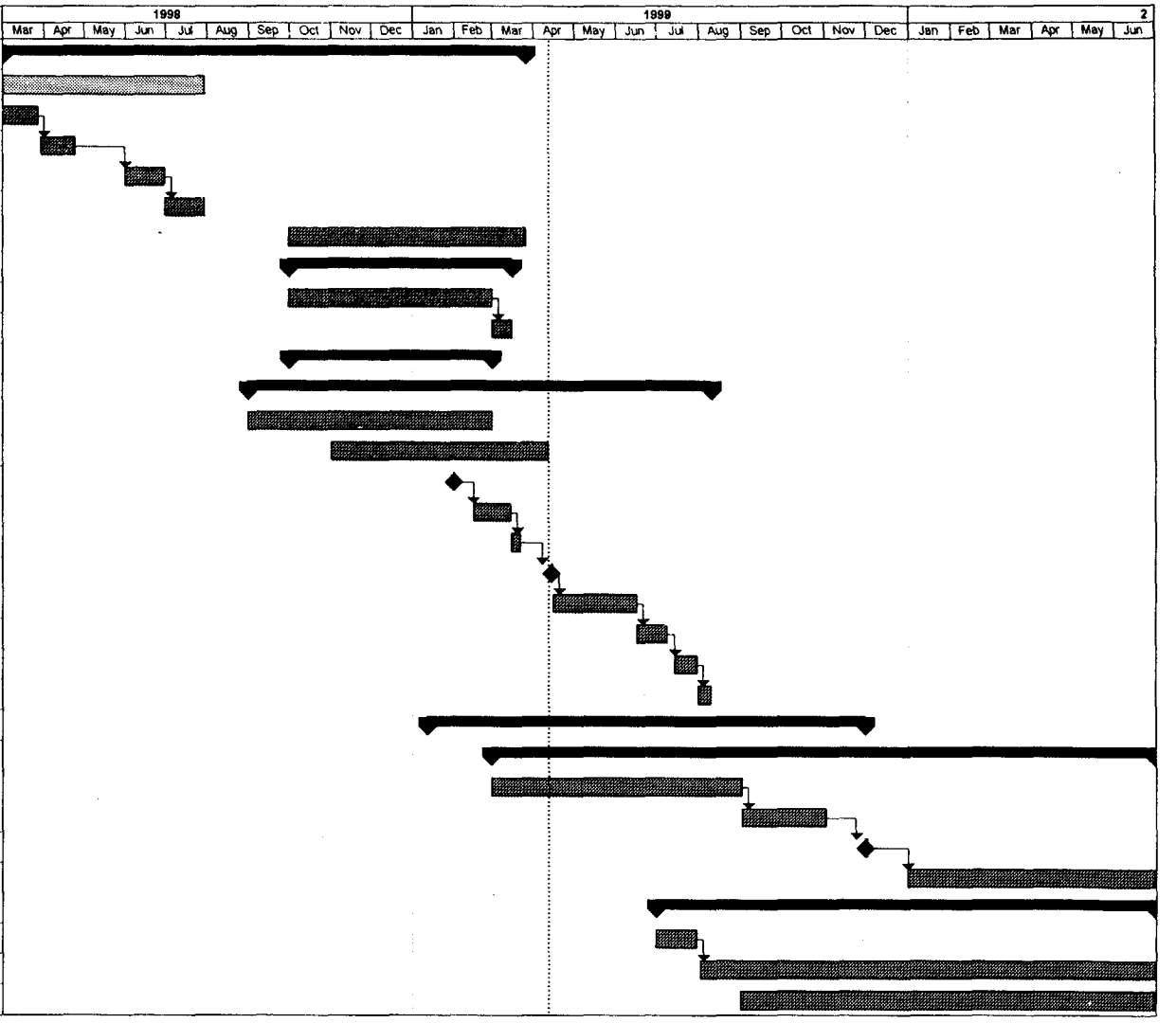
G. Conclusion.

The GoCV is convinced that the above statement of policies, objectives and strategy for the reform of the electricity, water and wastewater sectors represent a sound framework for the development of these sectors.

Government of Cape Verde
(signed by the Vice prime Minister on 1/21/99)

REPUBLIC OF CAPE VERDE
ENERGY, WATER AND WASTEWATER SECTORS
STATEMENT OF DEVELOPMENT POLICY
Schedule of Main Tasks

ID	Responsible	Task Name
1	VPM/PMU	**E1. Legal and regulatory framework**
2	VPM/PMU	**Contracting Consultants**
3	VPM/PMU	-Preparation of letter of invitation
4	VPM/PMU	-Reception of proposals
5	VPM/PMU	-Negotiations
6	VPM/PMU	-Mobilization
7	VPM/PMU	**Electricity Law**
8	VPM/PMU	**E2. Establishment of Regulatory Authorities**
9	VPM/PMU	Regulatory Rules for Electricity and Water
10	VPM/PMU	Appointment of Regulator
11	MIH/MCIE	**E3. Definition of Tariffs**
12	VPM/PMU	**E4. Privatization of Electra**
13	VPM/PMU	Evaluation of Electra
14	VPM/PMU	Concession Contract Preparation
15	VPM/PMU	Issuing of Pre-qualification Documents
16	VPM/PMU	Reception of prequalification documents
17	VPM/PMU	Prequalification of Bidders
18	VPM/PMU	Issue of Bidding documents to prequalified bidders
19	VPM/PMU	Submission & Reception of Proposals
20	VPM/PMU	Bid evaluation
21	VPM/PMU	Bid Awards and Negotiations
22	VPM/PMU	Transfer of Operations
23	VPM	**E5. Creation of Municipal Enterprises**
24	MCIE	**E6. Business Models for Off-grid Electrification**
25	MCIE	Preparation of bidding documents
26	MCIE	Bidding for private operators
27	MCIE	Contract award for private operators
28	MCIE	Construction & launching of services
29	MCIE	**E7. Development of Grid-connected Windpower**
30	MCIE	Transfer of existing wind farms to private operator
31	MCIE	Capacity expansion
32	MCIE	**E8. Promotion of Energy Efficiency**



Project: Schedule-R
Date: Mon 4/12/99

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress
External Tasks
Project Summary
Split
Rolled Up Split

Annex 3
Cape Verde Energy and Water Sector Reform and Development Project
Estimated Project Costs and Financing Plan

Estimated Project Cost Summary

	(Cape Verde Escudo Million)					(US$ Million)				
	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs
1. Power Sector Reform & Development	311.94	584.11	896.05	65	21	3.19	5.96	9.15	65	21
2. Renewable Energy Promotion & Development	183.13	1,147.03	1,330.16	86	31	1.87	11.71	13.58	86	31
3. Reform and Development of Water Sector	242.99	1,013.63	1,256.62	81	30	2.48	10.35	12.83	81	30
4. Sanitation development	115.57	433.65	549.22	79	13	1.18	4.43	5.61	79	13
5. Project Coordination & Monitoring	126.84	100.36	227.20	44	5	1.30	1.02	2.32	44	5
Total BASELINE COSTS	980.46	3,278.78	4,259.25	77	100	10.01	33.48	43.49	77	100
Physical Contingencies	91.50	225.33	316.83	71	7	0.93	2.30	3.23	71	7
Price Contingencies	33.31	142.30	175.61	81	4	0.22	1.05	1.27	83	3
Total PROJECT COSTS	1,105.27	3,646.42	4,751.69	77	112	11.16	36.83	48.00	77	110

Cape Verde
Energy and Water Reform and Development
Table 1. Power Sector Reform & Development
Detailed Costs
(US$ Million)

	Base Cost					Totals Including Contingencies					Parameters (in %)			Other Accounts					
	2000	2001	2002	2003	Total	2000	2001	2002	2003	Total	Phy. Cont. Rate	For. Exch.	Gross Tax Rate	Disb. Acct.	Fin. Rule	Proc. Acct.	Proc. Method	Impl. Agency	Proj. Are
I. Investment Costs																			
A. Support to Power Sector Regulation																			
Equipment & Vehicles	0.20	-	-	-	0.20	0.23	-	-	-	0.23	10.0	100.0	0.0	EQUIPMENT.DA	IDA (100%)	EQUIP.PA	ICB_PM (80%), INTL_SHOPPING_PM (20%)	PMU	PRAIA
Studies, Advisory Services & Training	0.15	0.15	0.10	0.10	0.50	0.16	0.16	0.11	0.11	0.54	0.0	100.0	0.0	CS&T.DA	IDA (100%)	CS&T	CON_SRVCS_PM (100%)	PMU	PRAIA
Subtotal	0.35	0.15	0.10	0.10	0.70	0.38	0.16	0.11	0.11	0.76									
B. Promotion of Energy and Water Conservation																			
Equipment & Vehicles	-	0.15	0.15	-	0.30	-	0.17	0.18	-	0.35	10.0	100.0	0.0	EQUIPMENT.DA	IDA (100%)	EQUIP.PA	ICB_PM (80%), INTL_SHOPPING_PM (20%)	PMU	COUNTR
Studies, Advisory Services & Training	0.10	0.05	0.05	-	0.20	0.10	0.05	0.05	-	0.21	0.0	100.0	0.0	CS&T.DA	IDA (100%)	CS&T	CON_SRVCS_PM (100%)	PMU	COUNTR
Subtotal	0.10	0.20	0.20	-	0.50	0.10	0.23	0.23	-	0.57									
C. Support to Energy Sector Monitoring																			
Equipment & Vehicles	0.05	-	-	-	0.05	0.06	-	-	-	0.06	10.0	100.0	0.0	EQUIPMENT.DA	IDA (100%)	EQUIP.PA	ICB_PM (80%), INTL_SHOPPING_PM (20%)	PMU	PRAIA
Studies, Advisory Services & Training	0.05	0.10	0.05	-	0.20	0.05	0.11	0.05	-	0.21	0.0	100.0	0.0	CS&T.DA	IDA (100%)	CS&T	CON_SRVCS_PM (100%)	PMU	PRAIA
Subtotal	0.10	0.10	0.05	-	0.25	0.11	0.11	0.05	-	0.27									
D. Contribution to Environmental and Social Investments																			
Distribution equipment for small municipalities	0.60	0.80	0.80	0.80	3.00	0.69	0.93	0.96	0.98	3.56	10.0	100.0	0.0	EQUIPMENT.DA	IDA (100%)	EQUIP.PA	ICB_PM (100%)	PMU	COUNTR
Installation of Distribution Equipment	0.10	0.15	0.15	0.15	0.55	0.11	0.17	0.17	0.17	0.63	15.0	30.0	0.0	CONSTRUCTION.DA	ELECTRA (100%)	CONSTRUCTION.PA	NBF_PM (100%)	PE	COUNTR
Environmental Improvements	0.20	0.30	-	-	0.50	0.23	0.34	-	-	0.57	15.0	60.0	0.0	CONSTRUCTION.DA	IDA (92%)	CONSTRUCTION.PA	ICB_PM (100%)	PMU	COUNTR
Subtotal	0.90	1.25	0.95	0.95	4.05	1.03	1.45	1.13	1.15	4.76									
E. Costs of Electra restructuring to GOCV																			
Cash Payment (workers' compensation)	1.00	-	-	-	1.00	1.09	-	-	-	1.09	10.0	0.0	0.0	FRE.DA	GOVT	FRE.PA	NBF_PM (100%)	MF	PRAIA
Cash Payment (suppliers' credit reduction)	1.60	-	-	-	1.60	1.74	-	-	-	1.74	10.0	0.0	0.0	FRE.DA	GOVT	FRE.PA	NBF_PM (100%)	MF	PRAIA
Subtotal	2.60	-	-	-	2.60	2.83	-	-	-	2.83									
F. Miscellaneous																			
PPF Refinancing	1.00	-	-	-	1.00	1.00	-	-	-	1.00	0.0	100.0	0.0	PPF.DA	IDA (100%)	PPF.PA	CON_SRVCS_PM (100%)	PMU	PRAIA
	5.05	1.70	1.30	1.05	9.10	5.46	1.94	1.53	1.26	10.19									

Cape Verde
Energy and Water Reform and Development
Table 2. Renewable Energy Promotion & Development
Detailed Costs
(US$ Million)

	Base Cost					Totals Including Contingencies					Parameters (in %)			Other Accounts					
	2000	2001	2002	2003	Total	2000	2001	2002	2003	Total	Phy. Cont. Rate	For. Exch.	Gross Tax Rate	Disb. Acct.	Fin. Rule	Proc. Acct.	Proc. Method	Impl. Agency	Proj. Area
I. Investment Costs																			
A. Wind Farm extension																			
Supply & Installation of Equipment	-	4.66	4.66	-	9.32	-	5.09	5.24	-	10.33	2.5	85.0	0.0	SEE.DA	GEF (32%), ELECTRA (68%)	SEE.PA	NBF_PM (100%)	PE	COUNTRY
Studies, Advisory Services & Training	-	0.20	0.25	-	0.45	-	0.21	0.27	-	0.48	0.0	100.0	0.0	CS&T.DA	GEF (100%)	CS&T	NBF_PM (100%)	PE	COUNTRY
Subtotal	-	4.86	4.91	-	9.77	-	5.31	5.51	-	10.82									
B. Private Development of PV/Wind Systems																			
Support / TA to PMU	0.05	0.05	0.02	0.02	0.14	0.05	0.05	0.02	0.02	0.14	0.0	100.0	0.0	CS&T.DA	GEF (100%)	CS&T	NBF_PM (100%)	PMU	COUNTRY
Pre-financing Private Operators	0.22	0.20	-	-	0.42	0.22	0.20	-	-	0.42	0.0	90.0	0.0	EQUIPMENT.DA	GEF (100%)	EQUIP.PA	NBF_PM (100%)	PMU	COUNTRY
Individual systems	0.37	0.54	0.55	0.68	2.14	0.37	0.53	0.55	0.68	2.13	0.0	90.0	0.0	EQUIPMENT.DA	GEF (17%), PCS (83%)	EQUIP.PA	NBF_PM (100%)	PMU	COUNTRY
Public systems	0.35	0.29	0.24	0.13	1.01	0.35	0.29	0.24	0.13	1.01	0.0	80.0	0.0	SEE.DA	IDA (96%)	SEE.PA	ICB_PM (100%)	PMU	COUNTRY
Total	0.99	5.93	5.72	0.83	13.48	0.99	6.38	6.32	0.83	14.52									

Cape Verde
Energy and Water Reform and Development
Table 3. Reform and Development of Water Sector
Detailed Costs
(US$ Million)

	Base Cost					Totals Including Contingencies					Parameters (in %)			Other Accounts					
	2000	2001	2002	2003	Total	2000	2001	2002	2003	Total	Phy. Cont. Rate	For. Exch.	Tax Rate	Gross Disb. Acct.	Fin. Rule	Proc. Acct.	Proc. Method	Impl. Agency	Proj. A
I. Investment Costs																			
A. Support to Water & Sanitation Sector Reform																			
1. Water Tariff Study in Praia																			
Studies, Advisory Services & Training	0.15	0.15	-	-	0.30	0.16	0.16	-	-	0.32	0.0	100.0	0.0	CS&T.DA	EU (100%)	CS&T	NBF_PM (100%)	MIH	COUN
2. Support to Autonomous Water Utilities in Santiago																			
Equipment	0.10	0.10	-	-	0.20	0.11	0.12	-	-	0.23	10.0	100.0	0.0	EQUIPMENT.DA	AUSTRIA (100%)	EQUIP.PA	NBF_PM (100%)	INGRH	SANT.
Studies, Advisory Services & Training	0.25	0.25	-	-	0.50	0.26	0.27	-	-	0.53	0.0	100.0	0.0	CS&T.DA	AUSTRIA (100%)	CS&T	NBF_PM (100%)	INGRH	SANT.
Subtotal	0.35	0.35	-	-	0.70	0.37	0.38	-	-	0.76									
3. Support to Autonomous Water Utilities in Other Islands																			
Equipment & Vehicles	-	0.20	-	-	0.20	-	0.23	-	-	0.23	10.0	100.0	0.0	EQUIPMENT.DA	IDA (100%)	EQUIP.PA	ICB_PM (80%), INTL_SHOPPING_PM (20%)	MIH	COUN
Studies, Advisory Services & Training	0.10	0.10	0.10	-	0.30	0.10	0.11	0.11	-	0.32	0.0	100.0	0.0	CS&T.DA	IDA (100%)	CS&T	CON_SRVCS_PM (100%)	MIH	COUN
Subtotal	0.10	0.30	0.10	-	0.50	0.10	0.34	0.11	-	0.55									
4. Support to INGRH Restructuring																			
Equipment & Vehicles	0.15	-	-	-	0.15	0.17	-	-	-	0.17	10.0	100.0	0.0	EQUIPMENT.DA	IDA (100%)	EQUIP.PA	INTL_SHOPPING_PM (20%), ICB_PM (80%)	PMU	PRA
Studies, Advisory Services & Training	0.10	0.20	0.15	-	0.45	0.10	0.21	0.16	-	0.48	0.0	100.0	0.0	CS&T.DA	IDA (100%)	CS&T	CON_SRVCS_PM (100%)	PMU	PRA
Subtotal	0.25	0.20	0.15	-	0.60	0.28	0.21	0.16	-	0.65									
5. Support to Water & Sanitation Sector Regulation																			
Equipment & Vehicles	0.10	-	-	-	0.10	0.11	-	-	-	0.11	10.0	100.0	0.0	EQUIPMENT.DA	IDA (100%)	EQUIP.PA	INTL_SHOPPING_PM (20%), ICB_PM (80%)	PMU	PRA
Studies, Advisory Services & Training	0.10	0.10	0.10	-	0.30	0.10	0.11	0.11	-	0.32	0.0	100.0	0.0	CS&T.DA	IDA (100%)	CS&T	CON_SRVCS_PM (100%)	PMU	PRA
Subtotal	0.20	0.10	0.10	-	0.40	0.22	0.11	0.11	-	0.43									
6. Extension of Primary Water Distribution Network in Praia																			
Civil Works	1.00	1.00	-	-	2.00	1.15	1.15	-	-	2.30	15.0	80.0	0.0	CONSTRUCTIO N.DA	EU (100%)	CONSTRUCTIO N.PA	NBF_PM (100%)	MIH	PRA
Supervision	0.10	0.10	-	-	0.20	0.12	0.12	-	-	0.24	15.0	100.0	0.0	S&S.DA	EU (100%)	S&S.PA	NBF_PM (100%)	MIH	PRA
Subtotal	1.10	1.10	-	-	2.20	1.27	1.27	-	-	2.54									
7. Rehabilitation & Extension of Water Distribution in Praia																			
Civil Works	-	1.80	0.50	-	2.30	-	2.06	0.57	-	2.63	15.0	60.0	0.0	CONSTRUCTIO N.DA	IDA (92%)	CONSTRUCTIO N.PA	ICB_PM (100%)	MIH	PRA
Studies & Supervision	-	0.10	0.10	-	0.20	-	0.11	0.11	-	0.21	0.0	100.0	0.0	S&S.DA	IDA (100%)	S&S.PA	CON_SRVCS_PM (100%)	MIH	PRA
Subtotal	-	1.90	0.60	-	2.50	-	2.17	0.68	-	2.85									
8. Rehabilitation & Extension of Water Production & Distrib. systems for Mindelo																			
Civil Works	-	0.70	1.46	0.45	2.61	-	0.80	1.68	0.52	3.00	15.0	80.0	0.0	CONSTRUCTIO N.DA	OPEC (100%)	CONSTRUCTIO N.PA	NBF_PM (100%)	MIH	MINDE
Studies & Supervision	0.50	-	-	-	0.50	0.52	-	-	-	0.52	0.0	100.0	0.0	S&S.DA	IDA (100%)	S&S.PA	CON_SRVCS_PM (100%)	MIT	MINDE
Subtotal	0.50	0.70	1.46	0.45	3.11	0.52	0.80	1.68	0.52	3.52									
9. Rehabilitation & Extension of Water Prod & Distrb. Systems in Secondary Centers																			
a. Assomada																			
Civil Works	0.75	0.25	-	-	1.00	0.86	0.29	-	-	1.15	15.0	60.0	0.0	CONSTRUCTIO N.DA	IDA (92%)	CONSTRUCTIO N.PA	ICB_PM (100%)	MIH	ASSOM
Studies & Supervision	0.07	0.08	-	-	0.15	0.07	0.08	-	-	0.16	0.0	100.0	0.0	S&S.DA	IDA (100%)	S&S.PA	CON_SRVCS_PM (100%)	MIH	ASSOM
Subtotal	0.82	0.33	-	-	1.15	0.93	0.37	-	-	1.30									
b. Tarrafal																			
Civil Works	-	-	0.95	0.25	1.20	-	-	1.09	0.28	1.37	15.0	80.0	0.0	CONSTRUCTIO N.DA	OPEC (100%)	CONSTRUCTIO N.PA	NBF_PM (100%)	MIH	COUN
Studies and Supervision	-	-	0.07	0.07	0.14	-	-	0.08	0.07	0.15	0.0	100.0	0.0	S&S.DA	OPEC (100%)	S&S.PA	NBF_PM (100%)	MIH	COUN
Subtotal	-	-	1.02	0.31	1.33	-	-	1.17	0.35	1.52									
Subtotal	0.82	0.33	1.02	0.31	2.48	0.93	0.37	1.17	0.35	2.82									
Total Investment Costs	3.47	5.13	3.43	0.76	12.79	3.85	5.81	3.90	0.87	14.43									
II. Recurrent Costs																			

TOTAL	3.47	5.13	3.43	0.76	12.79	3.85	5.81	3.90	0.87	14.43									

Cape Verde
Energy and Water Reform and Development
Table 4. Sanitation Development
Detailed Costs
(US$ Million)

	Base Cost					Totals Including Contingencies					Parameters (in %)			Other Accounts					
	2000	2001	2002	2003	Total	2000	2001	2002	2003	Total	Phy. Cont. Rate	For. Exch.	Gross Tax Rate	Disb. Acct.	Fin. Rule	Proc. Acct.	Proc. Method	Impl. Agency	Proj. A
I. Investment Costs																			
A. Extension of sanitation systems in Praia																			
Civil Works	1.70	2.20	-	-	3.90	1.95	2.52	-	-	4.48	15.0	80.0	0.0	CONSTRUCTION.DA	EU (100%)	CONSTRUCTION.PA	NBF_PM (100%)	MIH	PRAI
Studies and Supervision	0.10	0.10	-	-	0.20	0.10	0.11	-	-	0.21	0.0	100.0	0.0	S&S.DA	EU (100%)	S&S.PA	NBF_PM (100%)	MIH	PRAI
Subtotal	1.80	2.30	-	-	4.10	2.05	2.63	-	-	4.69									
B. Improvement of sanitation systems in Assomada	0.10	0.05	-	-	0.15	0.11	0.06	-	-	0.17	10.0	100.0	0.0	EQUIPMENT.DA	IDA (100%)	EQUIP.PA	ICB_PM (100%)	MIH	ASSOM
C. Wastewater treatment reuse systems for Praia																			
Civil works	-	0.60	0.40	-	1.00	-	0.69	0.46	-	1.15	15.0	60.0	0.0	CONSTRUCTION.DA	IDA (92%)	CONSTRUCTION.PA	ICB_PM (100%)	MIH	PRAI
Studies and Supervision	-	0.20	-	-	0.20	-	0.21	-	-	0.21	0.0	100.0	0.0	S&S.DA	IDA (100%)	S&S.PA	CON_SRVCS_PM (100%)	MIH	PRAI
Economic Study of Wastewater Investments	0.15	-	-	-	0.15	0.16	-	-	-	0.16	0.0	100.0	0.0	CS&T.DA	IDA (100%)	CS&T	CON_SRVCS_PM (100%)	MIH	PRAI
Subtotal	0.15	0.80	0.40	-	1.35	0.16	0.90	0.46	-	1.51									
Total	2.05	3.15	0.40	-	5.60	2.33	3.59	0.46	-	6.37									

Cape Verde
Energy and Water Reform and Development
Table 5. Project Coordination & Monitoring
Detailed Costs
(US$ Million)

	Base Cost					Totals Including Contingencies					Parameters (in %)			Other Accounts					
	2000	2001	2002	2003	Total	2000	2001	2002	2003	Total	Phy. Cont. Rate	For. Exch.	Gross Tax Rate	Disb. Acct.	Fin. Rule	Proc. Acct.	Proc. Method	Impl. Agency	Proj. Area
I. Investment Costs																			
A. Project Management Unit																			
1. Professional staff																			
Project Coordinator	0.04	0.04	0.04	0.04	0.17	0.04	0.05	0.05	0.05	0.19	0.0	0.0	0.0	PMS.DA	IDA (100%)	PMS	CON_SRVCS_PM (100%)	MEC	PRAIA
Power Engineer	0.03	0.03	0.03	0.03	0.12	0.03	0.03	0.03	0.04	0.14	0.0	0.0	0.0	PMS.DA	IDA (100%)	PMS	CON_SRVCS_PM (100%)	PMU	COUNTRY
Sanitary Engineer	0.03	0.03	0.03	0.03	0.12	0.03	0.03	0.03	0.04	0.14	0.0	0.0	0.0	PMS.DA	IDA (100%)	PMS	CON_SRVCS_PM (100%)	PMU	COUNTRY
DSM & Renewable Energy Specialist	0.03	0.03	0.03	0.03	0.12	0.03	0.03	0.03	0.04	0.14	0.0	0.0	0.0	PMS.DA	IDA (100%)	PMS	CON_SRVCS_PM (100%)	PMU	COUNTRY
Project Management Specialist	0.02	0.02	0.02	0.02	0.07	0.02	0.02	0.02	0.02	0.08	0.0	0.0	0.0	PMS.DA	IDA (100%)	PMS	CON_SRVCS_PM (100%)	PMU	COUNTRY
Accountant	0.02	0.02	0.02	0.02	0.07	0.02	0.02	0.02	0.02	0.08	0.0	0.0	0.0	PMS.DA	IDA (100%)	PMS	CON_SRVCS_PM (100%)	PMU	COUNTRY
Administrative Assistant	0.01	0.01	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.05	0.0	0.0	0.0	PMS.DA	IDA (100%)	PMS	CON_SRVCS_PM (100%)	PMU	COUNTRY
Subtotal	0.18	0.18	0.18	0.18	0.71	0.19	0.20	0.20	0.21	0.80									
2. Support Staff																			
Secretary	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.02	0.0	0.0	0.0	PMS.DA	GOVT	PMS	NBF_PM (100%)	PMU	PRAIA
Driver	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.0	0.0	0.0	PMS.DA	GOVT	PMS	NBF_PM (100%)	PMU	PRAIA
Messenger	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.0	0.0	0.0	PMS.DA	GOVT	PMS	NBF_PM (100%)	PMU	PRAIA
Subtotal	0.01	0.01	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.05									
3. Local Consultants																			
Legal, Financial, Information & Other services	0.11	0.12	0.12	-	0.35	0.12	0.13	0.14	-	0.39	0.0	0.0	0.0	CS&T.DA	IDA (100%)	CS&T	CON_SRVCS_PM (100%)	PMU	PRAIA
4. Vehicles (2)	0.03	0.03	-	-	0.05	0.03	0.03	-	-	0.06	10.0	100.0	0.0	EQUIPMENT.DA	IDA (100%)	EQUIP.PA	INTL_SHOPPING_PM (100%)	PMU	PRAIA
5. Equipment																			
Computers (6)	0.03	-	-	-	0.03	0.03	-	-	-	0.03	10.0	100.0	0.0	EQUIPMENT.DA	IDA (100%)	EQUIP.PA	INTL_SHOPPING_PM (100%)	PMU	PRAIA
Printers (4)	0.00	-	-	-	0.00	0.00	-	-	-	0.00	10.0	100.0	0.0	EQUIPMENT.DA	IDA (100%)	EQUIP.PA	INTL_SHOPPING_PM (100%)	PMU	PRAIA
Copier	0.01	-	-	-	0.01	0.01	-	-	-	0.01	10.0	100.0	0.0	EQUIPMENT.DA	IDA (100%)	EQUIP.PA	INTL_SHOPPING_PM (100%)	PMU	PRAIA
Furniture and miscellaneous	0.02	-	-	-	0.02	0.02	-	-	-	0.02	10.0	0.0	0.0	EQUIPMENT.DA	IDA (100%)	EQUIP.PA	LCL_SHOPPING_PM (100%)	PMU	PRAIA
Subtotal	0.06	-	-	-	0.06	0.07	-	-	-	0.07									
6. Training	0.02	0.02	0.02	0.02	0.08	0.02	0.02	0.02	0.02	0.09	0.0	100.0	0.0	CS&T.DA	IDA (100%)	CS&T	DIR_CONTRACT_PM (100%)	PMU	PRAIA
Subtotal	0.40	0.35	0.33	0.21	1.29	0.43	0.39	0.38	0.25	1.45									
B. Environmental Management Program																			
Studies, Advisory Services & Training	0.35	-	-	-	0.35	0.36	-	-	-	0.36	0.0	100.0	0.0	CS&T.DA	IDA (100%)	CS&T	CON_SRVCS_PM (100%)	PMU	PRAIA
C. Miscellaneous																			
PPF Refinancing	0.50	-	-	-	0.50	0.50	-	-	-	0.50	0.0	100.0	0.0	PPF.DA	IDA (100%)	PPF.PA	CON_SRVCS_PM (80%), LCL_SHOPPING_PM (20%)	PMU	PRAIA
Total Investment Costs	1.25	0.35	0.33	0.21	2.14	1.30	0.39	0.38	0.25	2.31									
II. Recurrent Costs																			
A. Office Rental, utilities/fuel, office supplies & communications -PMU	0.04	0.04	0.04	0.04	0.16	0.04	0.04	0.05	0.05	0.18	0.0	0.0	0.0	PMU_O&M.DA	GOVT	PMU_O&M.PA	NBF_PM (100%)	MEC	PRAIA
Total Recurrent Costs	0.04	0.04	0.04	0.04	0.16	0.04	0.04	0.05	0.05	0.18									
Total	1.29	0.39	0.37	0.25	2.30	1.34	0.43	0.42	0.30	2.49									

Cape Verde
Energy and Water Reform and Development
Expenditure Accounts by Years -- Totals Including Contingencies
(US$ Million)

	Totals Including Contingencies				
	2000	**2001**	**2002**	**2003**	**Total**
I. Investment Costs					
A. Civil Works					
Construction	4.30	8.02	3.97	0.97	17.26
B. Goods					
1. Equipment & Vehicles	2.17	2.28	1.68	1.66	7.80
C. Supply & Installation of Equipment	0.35	5.38	5.48	0.13	11.34
D. Services					
1. Project Management Staff	0.20	0.21	0.22	0.23	0.85
2. Studies, Advisory Services & Training	1.75	1.58	1.05	0.15	4.53
3. Design & Supervision	0.82	0.63	0.18	0.07	1.70
Subtotal	2.76	2.42	1.45	0.45	7.09
F. Financial Restructuring-Electra	2.83	-	-	-	2.83
G. PPF Refinancing	1.50	-	-	-	1.50
Total Investment Costs	13.92	18.10	12.58	3.21	47.82
II. Recurrent Costs					
A. Operations & Maintenance	0.04	0.04	0.05	0.05	0.18
Total Recurrent Costs	0.04	0.04	0.05	0.05	0.18
Total PROJECT COSTS	13.96	18.15	12.63	3.26	48.00

Cape Verde
Energy and Water Reform and Development
Components by Financiers
(US$ Million)

	IDA	Government of Cape Verde	GEF	Electra,SA	Private Concessionaires	Austrian Govt	OPEC Fund	European Union	Total
	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount
1. Power Sector Reform & Development	6.68	2.88	-	0.63	-	-	-	-	10.19
2. Renewable Energy Promotion & Development	0.97	0.04	4.71	7.03	1.77	-	-	-	14.52
3. Reform and Development of Water Sector	6.00	0.30	-	-	-	0.76	4.51	2.85	14.43
4. Sanitation development	1.59	0.09	-	-	-	-	-	4.69	6.37
5. Project Coordination & Monitoring	2.27	0.23	-	-	-	-	-	-	2.49
Total Disbursement	17.52	3.53	4.71	7.65	1.77	0.76	4.51	7.54	48.00

Cape Verde
Energy and Water Reform and Development
Expenditure Accounts by Components - Totals Including Contingencies
(US$ Million)

	Power Sector Reform & Development	Renewable Energy Promotion & Development	Reform and Development of Water Sector	Sanitation development	Project Coordination & Monitoring	Total
I. Investment Costs						
A. Civil Works						
Construction	1.20	-	10.44	5.62	-	17.26
B. Goods						
1. Equipment & Vehicles	4.20	2.55	0.75	0.17	0.13	7.80
C. Supply & Installation of Equipment	-	11.34	-	-	-	11.34
D. Services						
1. Project Management Staff	-	-	-	-	0.85	0.85
2. Studies, Advisory Services & Training	0.96	0.62	1.96	0.16	0.84	4.53
3. Design & Supervision	-	-	1.28	0.42	-	1.70
Subtotal	0.96	0.62	3.24	0.58	1.68	7.09
F. Financial Restructuring-Electra	2.83	-	-	-	-	2.83
G. PPF Refinancing	1.00	-	-	-	0.50	1.50
Total Investment Costs	10.19	14.52	14.43	6.37	2.31	47.82
II. Recurrent Costs						
A. Operations & Maintenance	-	-	-	-	0.18	0.18
Total Recurrent Costs	-	-	-	-	0.18	0.18
Total PROJECT COSTS	10.19	14.52	14.43	6.37	2.49	48.00

Annex 4

Cape Verde Energy and Water Sector Reform and Development Project
Economic Analysis Summary

A. Water and Sanitation Component

1. The financial and economic appraisal of the water supply component is shown on pages 5 through 10 of this annex. At the current average tariff of about 150 ECV/m3, the financial net present value of benefits at the estimated 12% discount rate is ECV -326 millions and the IRR is 3%.

2. On the other hand, using the willingness to pay of about 300 ECV/m3, the NPV of economic benefits at 12% discount rate is ECV 797 millions and the IRR is 42%.

3. Economic NPV at 12% = Financial NPV at 12% + Present Value of externalities generated by the project at 12% discount rate. In our case, this would give: 797 = -326 + PV externalities at 12% discount rate, or PV externalities (ECV 1123 millions). These externalities are essentially represented by the implicit subsidy to consumers contained in the existing water tariff (ECV 875 million).

4. For the sanitation component, the average incremental cost per cubic meter of effluent for both Praia and Mindelo is 30.23 CEV. The wastewater reuse in Praia has a net present value of about 96 ECV million and an IRR of 27% (see page 10 of this Annex)

B. Power Sector Reform and Development Component

5. This component of the project would support the reform process in the electricity sector and the privatization of Electra. This section evaluates the impact of ELECTRA's privatization.

ELECTRA's Financial Restructuring

6. The cost of the financial restructuring of ELECTRA prior to its privatization has been estimated on the basis of its balance sheet at December 31, 1997 as follows:

- Accounts receivable are reduced to two months sale equivalent. The rest is left to the due diligence of Government which can sub-contract the recovery either to ELECTRA's private buyer or to another entity. Assuming that only 50% of these accounts are recoverable, the burden would be approximately 361 ECV millions;

- Existing inventories also need restructuring to take into account the fact that some of these are basically useless/outdated and cannot be used in the production process now or in the future. The proportion of these inventories to be retired has been estimated at about 50% of total existing inventories, at a cost of about 179 ECV millions;

- ELECTRA's accumulated debt service arrears should be capitalized at a cost to the Government of 341 ECV million;

- Accounts payable should be reduced to the equivalent of two months of supply. The Government should mobilize approximately 164 ECV millions to pay ELECTRA's suppliers.

7. The restructuring of ELECTRA would cost the Government the equivalent of ECV 956 million (approximately US$10 million), that will be covered with part of Electra's privatization revenues. This

excludes the capitalization of subsidies received by ELECTRA (843 ECV million) to cover accumulated losses (797 ECV million) and the payment of Electra's workers compensation (to come either from the privatization revenues or under the form of shares in Electra).

8. Several methods can be used to approximate the value of ELECTRA. Two of these methods are discussed below:

a) ELECTRA's Accounting Value (1997), Some Elements

- Net asset value is estimated at ECV 4.1 billion (or about US$41 million);
- Current assets exceed current liabilities, excluding short-term debt, by about ECV 232 million, (approximately US$2.32 million);
- Loans contracted to finance the purchase of assets, approximately ECV 2.8 billion (about US$28 million);
- Equity is about ECV 1.5 billion (or about US$15 million).

9. The accounting value will depend on the amount of debt that the GOCV will decide to transfer to the privatized ELECTRA.

10. In all cases, the liquidation of ELECTRA after privatization would leave the Government with a net balance equivalent to the Government's equity in ELECTRA, (US$15 million).

b) Cash-Flow Valuation

11. Accounting analysis is only one (very approximate) method to determine the value of a company. A private buyer would be interested not in the assets per se, although they may be important, but in their earning power (i.e. the cash-flow they are likely to generate). Suppose that the private buyer were to mobilize US$40 million for the acquisition of ELECTRA. The future company should be in a position to earn substantial benefits to its private owner if he were to require a 15% return on equity: US$6 million (or ECV 600 million) per year). Therefore, the cash flows that the privatized company would be required to generate depend on the amount of capital the private buyer would have to mobilize and on his required rate of return on equity. These parameters can, however, only be known after the evaluation of the privatization bids has taken place

Economic Evaluation: Welfare Effect of Divestiture

12. The basic approach to the evaluation of divestiture involves calculating the difference between the social value of ELECTRA under private operation (i.e. post-divestiture) and the social value of ELECTRA under continued public operation. The welfare effect of divestiture consists largely of this difference. The only remaining effect is the one-time effect of the transfer of the sale price from the buyer to the government. The major groups likely to be affected by the divestiture are: consumers, the government, the buyers, employees, competitors, and the tax-payers. Conceptually, the social value of ELECTRA is the sum of the welfare levels of each of these groups that might be affected by the divestiture. In general, there is a trade-off between the possibility that private objectives are less desirable socially, and the possibility that the private sector will pursue these objectives more efficiently.

13. Let $-W$ denote the net welfare effect of divestiture, we can write: $-W = -S$ (consumer surplus) + $-P$ (effect on the buyer and the government) + $-L$ (effect on providers of inputs, principally labor) + $-C$

(effect on competitors). In the case of ELECTRA, –L and –C are not significant and can be neglected. The welfare change of divestiture is therefore reduced to –W = –S (consumer surplus) + –P (effect on the buyer and the government). The effect of ELECTRA's divestiture on consumers depends on whether and how much it caused movements in real prices and in output quantity and quality. Consumers are better off the lower the real price, the greater the quantity produced, and the better the quality of that production. The value of –S depends entirely on what happens to tariffs and quality of service after divestiture. Should real tariffs not change, under a price-cap regulation for instance, there would be no change in consumer surplus (–S = 0). It is foreseen that the actual level of electricity tariffs would remain stable for an initial period still to be determined, after that a reduction of tariffs would be effected to capture some of the efficiency gains made by the privatized ELECTRA. Water tariffs, on the other hand, would have to go up immediately and substantially to eliminate the subsidy that now exists in the water tariff because of the expensive water desalination. On balance, the expectation is that consumers would be worse off after divestiture, at least in the short to medium term. This is not because of divestiture per se but because of low tariffs that would have needed fixing even under public ownership. It so happens that the fixing of tariffs will done under divestiture. For the privatization of ELECTRA to be a welfare enhancing operation, –P, the effect on the government would have to be positive and exceed the loss in consumer surplus. This can only be ascertained ex-post (i.e. after the transaction has taken place).

Annex 4

CAPE VERDE
ENERGY AND WATER SECTOR REFORM AND DEVELOPMENT PROJECT
WATER SUPPLY COMPONENT

Table 1. Financial Appraisal (ECV Million)

1US$=	100	ECV
Tariff	150	ECV/m3
Op. & Maint.	110	ECV/m3
Connection fee:	12240	ECV
Discount Rate	12%	

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2025	
Praia																			
Investment	55	230	55																
Operation & Maintenance	36	39	39	37	40	38	38	42	42	42	42	42	42	42	42	42	42	42	
Total Costs	91	269	94	37	40	38	38	42	42	42	42	42	42	42	42	42	42	42	
Value of sales	38	41	43	41	46	44	45	52	52	52	52	52	52	52	52	52	52	52	NPV at 12%
Connection fees	9	11	15	15	17	20	24	23	23	23	23	23	23	23	23	23	23	23	
Net Benefits	-44	-216	-37	19	23	27	31	33	33	33	33	33	33	33	33	33	33	33	-73
Mindelo																			
Investment		50	100	50															
Operation & Maintenance		19	20	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	
Total Costs		69	120	90	40	40	40	40	40	40	40	40	40	40	40	40	40	40	
Value of sales		22	27	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	
Other Rev.		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Net Benefits		-45	-91	-33	17	17	17	17	17	17	17	17	17	17	17	17	17	17	-45
Assomada																			
Investment	75	25																	
Operation & Maintenance	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Total Costs	76	26	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Value of sales	1	1	2	1	1	1	2	2	1	1	1	1	1	1	1	1	2	2	
Other Rev.	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	
Net Benefits	-74	-24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	-76
Other Secondary Centers																			
Investment			150	50															
Operation & Maintenance			3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Total Costs			153	53	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Value of sales			3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Net Benefits			-150	-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-172
Total Net Benefits	-117	-285	-276	-62	42	45	50	51	51	51	51	51	51	51	51	51	51	52	

NPV:Financial@8%	-240	IRR (%)	3%
NPV:Financial@12%	-326		

Annex 4

CAPE VERDE
ENERGY AND WATER SECTOR REFORM AND DEVELOPMENT PROJECT
WATER SUPPLY COMPONENT

Fin. Analysis																			
Investment		130	305	305	100														
Operation & Maintenance		37	59	64	81	85	82	82	87	87	87	87	87	87	87	87	87	87	87
Total Costs		167	364	369	181	85	82	82	87	87	87	87	87	87	87	87	87	87	87
Value of sales		40	65	75	100	106	103	105	112	111	111	111	111	111	111	112	112	112	112
Conn. fees & Other Rev.		10	14	18	18	21	24	27	26	26	26	26	26	26	26	26	26	26	26
Net Benefits		-117	-285	-276	-62	42	45	50	51	51	51	51	51	51	51	51	51	51	52
NPV:Financial@8%	-240	IRR (%)	3%																
NPV:Financial@12%	-326																		

Water supply. Production and Sales (demand)

Praia	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2025**
Total Requirements (m3/day)	3724	4619	5578	6561	7476	8481	9416	10358	11414	11414	11414	11414	11414	11414	11414	11414	11414	11414	11414	11414
Incremental (m3/day)		895	959	983	915	1005	935	942	1056	1056	1056	1056	1056	1056	1056	1056	1056	1056	1056	1056
Production (m3/year)	0	326675	350035	358795	333975	366825	341275	343830	385440	385440	385440	385440	385440	385440	385440	385440	385440	385440	385440	385440
losses (%)		22	21	20	18	16	14	12	10	10	10	10	10	10	10	10	10	10	10	10
Sales (m3/year)		254807	276528	287036	273860	308133	293497	302570	346896	346896	346896	346896	346896	346896	346896	346896	346896	346896	346896	346896

Mindelo	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2025**
Sales (m3/day)		2100	2100	2500	3000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Incremental (m3/day)			0	400	500	1000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sales (m3/year)			0	146000	182500	365000	365000	365000	365000	365000	365000	365000	365000	365000	365000	365000	365000	365000	365000	365000
losses (%)		15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Production (m3/year)		0	0	171765	214706	429412	429412	429412	429412	429412	429412	429412	429412	429412	429412	429412	429412	429412	429412	429412

Assomada	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2025**
Consumption	120815	129538	138891	148920	157449	166465	175997	186075	196735	204376	212314	220561	229127	238026	247271	256875	266852	277217	287985	287985
m3/year (incremental)		8723	9353	10029	8529	9016	9532	10078	10660	7641	7938	8247	8566	8899	9245	9604	9977	10365	10768	8899
losses (%)	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Production (m3/year)	142135	152398	163401	175200	185234	195841	207055	218912	231453	240442	249781	259484	269561	280031	290907	302206	313944	326138	338806	338806
m3/year (incremental)		10262	11004	11799	10034	10607	11214	11856	12541	8989	9339	9702	10078	10469	10876	11299	11738	12194	12668	10469

Secondary centers: Production: 15 liters/person
5000 persons
27375 m3/year

Sales (with 20% losses) 21900 m3/year

CAPE VERDE
ENERGY AND WATER SECTOR REFORM AND DEVELOPMENT PROJECT
WATER SUPPLY COMPONENT

Table 2. Economic Appraisal (ECV Million)

1US$=	100	ECV	Conversion factors	
Willingness to Pay	300	ECV/m3	Investment	0.84
Op. & Maint.	110	ECV/m3	Operation & Maintenance	0.77
Connection fee:		12240 ECV		
Discount Rate		12%		

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2025		
Praia																				
Investment	46	192	46																	
Operation & Maintenance	25	26	27	30	30	31	36	36	36	36	36	36	36	36	36	36	36	36		
Total Costs	71	218	73	30	30	31	36	36	36	36	36	36	36	36	36	36	36	36		
Value of sales	88	92	97	109	107	111	127	127	127	127	127	127	127	127	127	127	127	127		NPV at 12%
Connection fees	9	11	15	15	17	20	24	23	23	23	23	23	23	23	23	23	23	23		
Net Benefits	27	-115	38	93	94	101	115	114	114	114	114	114	114	114	114	114	114	114	561	
Mindelo																				
Investment		42	84	42																
Operation & Maintenance		12	15	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		
Total Costs		54	99	72	31	31	31	31	31	31	31	31	31	31	31	31	31	31		
Value of sales		44	55	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110		
Other Rev.		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
Net Benefits		-8	-42	39	81	81	81	81	81	81	81	81	81	81	81	81	81	81	431	
Assomada																				
Investment	63	21																		
Operation & Maintenance	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Total Costs	63	22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Value of sales	3	3	3	3	3	3	3	2	2	2	3	3	3	3	3	3	3	3		
Other Rev.	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2		
Net Benefits	-59	-18	3	3	3	3	4	3	3	3	3	3	3	3	3	3	4	4	-47	
Other Secondary Centers																				
Investment			125	42																
Operation & Maintenance			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Total Costs			126	43	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Value of sales			3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
Net Benefits			-123	-40	2	2	2	2	2	2	2	2	2	2	2	2	2	2	-128	
Total Net Benefits	-33	-141	-124	96	180	187	202	200	200	200	200	200	201	201	201	201	201	201		

NPV Economic@8%	1328	
NPVEconomic@12%	797	42%

CAPE VERDE
ENERGY AND WATER SECTOR REFORM AND DEVELOPMENT PROJECT
WATER SUPPLY COMPONENT

Conversion factors:

a) Investment Item	Fraction	X	Conversion Factor	=	Weighted Value
Foreign Exchange (10% import duty)	70%		0.9		0.63
Skilled labor	5%		1		0.05
Unskilled labor	15%		0.5		0.075
Other Items	10%		0.8		0.08
	100%				**0.835**
			Total Conversion factor		

b) Operation & Maintenance Item	Fraction	X	Conversion Factor	=	Weighted Value	Weighted Value
Foreign Exchange (10% import duty)	15%		0.9		0.13 5	0.13 5
Skilled labor	5%		1		0.05	0.05
Unskilled labor	20%		0.5		0.1	0.1
Other items	60%		0.8		0.48	0.48
	100%		Total Con. fact.		**0.77**	**0.77**

		1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2025
Fin. Analysis																			
Investment		130	305	305	100														
Operation & Maintenance		37	59	64	81	85	82	82	87	87	87	87	87	87	87	87	87	87	87
Total Costs		167	364	369	181	85	82	82	87	87	87	87	87	87	87	87	87	87	87
Value of sales		40	65	75	100	106	103	105	112	111	111	111	111	111	111	112	112	112	112
Conn. fees & Other Rev.		10	14	18	18	21	24	27	26	26	26	26	26	26	26	26	26	26	26
Net Benefits		-117	-285	-276	-62	42	45	50	51	51	51	51	51	51	51	51	51	51	52
NPV Fin.@8%	-240																		
NPV Fin.@12%	-326																		
Econ. Analysis																			
Investment		109	255	255	84														
Operation & Maintenance		25	39	44	63	62	64	68	68	68	68	68	68	68	68	68	68	68	68
Total Costs		134	294	299	146	62	64	68	68	68	68	68	68	68	68	68	68	68	68
Value of sales		91	139	157	224	222	227	242	242	242	242	242	242	242	242	242	242	243	243
Conn. fees & Other Rev.		10	14	18	18	21	24	27	26	26	26	26	26	26	26	26	26	26	26
Net Benefits		-33	-141	-124	96	180	187	202	200	200	200	200	200	201	201	201	201	201	201
NPV Fin.@8%	1328																		
NPV Economic@12%	797																		

Annex 4

CAPE VERDE
ENERGY AND WATER SECTOR REFORM AND DEVELOPMENT PROJECT
WATER SUPPLY COMPONENT

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2025		Govert	Consumers
Net Resource Flow of Externalitites																			**NPV@12%**		
Investment	-21	-50	-50	-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-106	106	
Operation & Maintenance	-12	-20	-20	-18	-22	-18	-14	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-143	143	
Total Outflows	-33	-70	-70	-35	-22	-18	-14	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-249		
Sales	51	74	82	124	116	123	138	130	130	131	131	131	131	131	131	131	131	130	875		875
Conn. fees & Other rev.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Total Inflows	51	74	82	124	116	123	138	130	130	131	131	131	131	131	131	131	131	130	875		
Net Flow	84	144	152	158	139	142	152	149	149	149	149	149	149	150	150	150	150	149	1123	249	875

NPV Fin. @ 8%	1568
PV @ 12%	1123

Allocation of Externalitites

Government	**Consumers**
249	
	875

Summary of the Distribution of Net Benefits

	ELECTRA	**Government**	**Consumers**
NPV Fin. @ 8%	-240		
PV of Externalities @ 12%		249	875
Total Net Benefits	-240	249	875

PV of Externalities @ 12%	1123
NPV Fin @ 12%) - (NPV Fin. @ 8%)	-87
NPV Externalities	1036
NPV Fin. @ 8%	-240
NPV Econ. @ 12%	797

CAPE VERDE
ENERGY AND WATER SECTOR REFORM AND DEVELOPMENT PROJECT
SANITATION COMPONENT

Table 1. Cost Effectiveness Analysis
(ECV Million)

1US$= 100 ECV — Conversion factor
Operation & Maint. 5% of investment cost — Investment 0.835
Discount Rate 12% — Op. & Maintenance: 0.765

Year	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2025**	
Investment	125	200	25											
Operation & Maintenance	5	12	13	14	14	14	14	14	14	14	14	14	14	NPV at 12%
Total Costs	130	213	38	14	14	14	14	14	14	14	14	14	14	391
Quantity of Effluents (thousand of m3) (*)	230	704	1241	1409	1566	1730	2248	2248	2248	2248	2248	2248	2248	12925
Average Incremental Cost 30.23 CEV/m3														
(*) Quantity of Effluents ('000 m3)														
Praia	115	352	621	704	783	865	1124	1124	1124	1124	1124	1124	1124	
Mindelo (1)	115	352	621	704	783	865	1124	1124	1124	1124	1124	1124	1124	
Total	230	704	1241	1409	1566	1730	2248	2248	2248	2248	2248	2248	2248	

(1) The quantities of effluents for Mindelo will be determined during the updating of the Plan Sanitaire de Mindelo. It is, however, expected that the quantities will be similar to those of Praia.

For Assomada, the project will finance the purchase of a cistern truck to help empty septic tanks

The Wastewater Reuse in Praia:

Year	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2025**	
Investment	0	50	33											
Operation & Maintenance	0	2	3	3	3	3	3	3	3	3	3	3	3	NPV at 12%
Total Costs	0	52	37	3	3	3	3	3	3	3	3	3	3	84
Qty. of treated Effluents (thousand of m3) (*)			496	564	626	692	899	899	899	899	899	899	899	6100
(*) 80% of the Effluents														13.79
Benefits ECV '000 (treat. wat. 35 sold 70	ECV m3) (1)		17	20	22	24	31	31	31	31	31	31	31	
Net Benefits		-52	-19	17	19	21	28	28	28	28	28	28	28	96
NPV@12% (ECV miln.) 96														
IRR 27%														

(1) Half the lifeline water tariff (i.e 70 ECV m3)
(SEMAP tariff for consumption of less than 5 m3 month)

C.1 GEF Incremental Cost for Grid-connected Wind Farms

The economic analysis for the wind farm investment was carried out as part of the feasibility studies for the wind farms. The report is available on files A cost benefit analysis is not reported here.

Costs

Capital costs were estimated based on quotations received from equipment manufacturers, in-country knowledge of civil engineering costs, and electrical interconnection costs provided by Electra. Contingencies were also included.

The capital and operating costs for the three projects were estimated for both 300kW and 600kW turbines. These two sizes were chosen as the likely limits of commercially available machines and the physical feasibility of installation. For all projects currently envisaged, it was determined that the 600kW turbine was slightly more cost-effective but it assumes the availability of a self erecting machine that could be installed using the largest crane available on the islands. If a larger crane is required then 300kW machines become more attractive.

The analyses are based on costs determined for the largest sized installations outlined in Annex 2 (4.8MW on Praia, 1.8MW on Mindelo and 1.2MW on Sal). This is not based on an absolute limit but what is considered to be technically feasible given the installed capacity on each island. It should be noted that the economics of the project is not only limited by size but also by the impact of having to 'curtail' supply from wind sources in periods of low overall load.

Capital costs are given in Table 1 below.

Table 1. Capital Cost Estimate 1998 $US

Cost Category	Praia	Mindelo	Sal	Total
Turbine costs	4,356,387	1,646,077	1,104,014	7,106,478
Civil costs	600,782	266,738	255,874	1,132,394
Electrical Costs	295,994	127,560	107,618	531,172
SCADA system costs	24,040	23,540	23,440	71,020
Design costs	120,000	59,000	60,000	239,000
Project management costs	46,041	20,892	19,347	86,280
Operator training	6,154	2,308	1,538	10,000
Engineering services	80,000	18,462	12,308	110,770
Network connection	92,000	118,000	142,000	352,000
TOTAL PROJECT COSTS	**5,621,399**	**2,291,576**	**1,726,138**	**9,639,113**
Wind Farm Size	**4.8 MW**	**1.8 MW**	**1.2 MW**	**7.8 MW**

Baseline

The islands which constitute the Republic of Cape Verde rely heavily on imported fuel for their electricity needs. The main grids on the three islands of Santiago (serving Praia), Sao Vicente (serving Mindelo) and Sal (serving the whole island) are largely supplied by diesel generators operated by Electra. Installed diesel capacities for the grids are 11.2MW, 16.2 MW and 3.8 MW on the Praia, Mindelo and Sal grids respectively; demand growth has run at 10-15% annually in recent years. A project jointly

sponsored by the Danish Aid Agency (DANIDA) and the Government resulted in the building of wind farms in the 600-1000kW range which are now connected to the Praia, Mindelo and Sal grids. Other wind installations exist but are largely out of service, with the exception of a 300kW wind farm on Mindelo which has recently been refurbished by the original donor, KfW.

The baseline scenario is the continued use of fuel to generate electricity. No diesel capacity has been or will be displaced by the existing or planned wind farms. Additional wind-generated will displace further fuel use.

Global Environmental Objective

The global environmental objective is to mitigate carbon emissions resulting from power generation in Cape Verde. The project supports the GEF climate change Operational Program #6 aimed at promoting the adoption of renewable energy by removing barriers and reducing implementation costs. By making it possible for Electra's strategic private partner to sponsor a wind farm project, it will open the way for further projects on a fully commercial basis.

GEF Alternative

The islands of Santiago (Praia), Sao Vicente (Mindelo) and Sal have a substantial wind resource. An alternative to diesel generation is the development of grid-connected wind energy projects. Wind energy projects are currently operating in Cape Verde and additional wind energy development is possible.

Benefits to the Country

The expansion of the wind farms on Cape Verde provide the country with an indigenous, environmentally-friendly generating resource. The wind farm extension component will provide electricity directly to the Electra grids on the islands of Sao Vicente (Mindelo), Santiago (Praia), and Sal. The islands current utilize diesel generating plants to meet their electricity demands and new diesel generating facilities are planned to meet the projected increases on each of these islands. Because the wind farms do not use any fuel, the projects also provide a hedge against fuel price escalation.

As intermittent generators, the wind farms are considered in this analysis as fuel savers. The period of system maximum annual demand occurs between July and September and coincides with the period of minimum monthly mean wind speed. It is assumed in the analysis that diesel capacity to cover the maximum demand (plus a safety margin) must be maintained to keep loss of load probability at acceptable levels since that will be the *de facto* situation. As a result, capacity value of the wind farms must be ignored.

Additional benefits from the extension of the wind farms include reduced implementation costs in the future and the development of local skills in the construction and operation of wind power projects. The existing wind projects have suffered from lack of proper maintenance, due largely to inexperience and limited knowledge of the technology.

Benefits to the Global Environment

There are no carbon emissions associated with the wind farm expansion alternative, so there will be a total replacement of the fossil fuel emissions that would have taken place under the baseline scenario. The carbon emissions resulting from the manufacture, transport, and erection of the equipment were not

considered. The overall avoided emissions are over 352,000 tons of carbon for the wind farm expansion (over the20 year life of the project).

The wind farm expansion provides an additional global benefit in that technical knowledge will be gained on the effects of high penetration of intermittent resources into small utility grids. Perceived penetration limits are a barrier for wide spread use of renewable energy technologies such as wind energy, because of concerns about potential voltage and frequency fluctuations arising from swings in power output from an intermittent generating resource. The proposed wind farm expansion projects in Cape Verde will result in some of the highest penetration levels, over 30%, for wind energy projects in the world. System stability studies on the Cape Verde island grids indicate that some curtailment of the wind projects may be required in the first few years of operation due to these effects. This curtailment has been considered in the project evaluation; however, actual experience with operating wind farms at these penetration levels will be invaluable to the international energy community. This experience will also provide Cape Verde with the technical knowledge to evaluate additional investments in wind energy projects as their electricity demand grows, thus removing a barrier to renewable energy development in the country.

Scope of the Analysis

The scope of the analysis is essentially national as it includes the national government, the utility, and the turnkey contractor.

Project Economic Analysis

Under the baseline scenario, Electra will continue to generate electricity from fossil-fuel generating plants on the three islands under consideration. Expansion of the existing wind farms would displace generation from these plants. Therefore, the economic benefit of the wind projects was considered to be the cost of the fuel that was displaced.

A breakdown of the costs of each wind project are included in Table 1. The economic benefit of the projects was based on the 1997 fuel costs[1] and the amount of energy generated by the wind projects that could be used by each island on an annual basis. In the first few years of operation, a small amount of energy is expected to be curtailed from each project during periods of low demand.

Project Incremental Cost

The baseline course of action is greater reliance on fossil fuels for power generation and will lead to significant emissions of greenhouse gases (CO_2).

The GEF alternative to the baseline scenario is expanding the existing wind farm capacity on each of the three islands of Sao Vicente (Mindelo), Santiago (Praia), and Sal. Additional technical assistance (such as wind resource assessment work, power system analyses, operational assistance and training, and monitoring), which would contribution to the removal of barriers resulting from inexperience with high penetration of intermittent generation resources such as wind energy into utility grids, is included in the GEF alternative.

As shown in Table 2, the incremental cost of the GEF alternative is based on a comparison of the NPV of the displaced fuel with the NPV of the wind farm costs. However, without a contribution from the GEF,

[1] See reference #20 in Annex 8 (Project File).

the EIRRs for the wind projects are lower than are commonly acceptable in Cape Verde, where it is estimated that the opportunity cost of capital is 12%.

Technical assistance is also necessary to ensure the successful implementation of the proposed wind projects. Wind resource assessment activities are necessary to finalize the site selection on Sal, and determine the basis for making future energy estimates for each project. Power system studies will further define the potential impact of integrating the wind systems into the utility grid. Operations assistance and training is necessary in the first years to ensure that Electra has appropriate procedures and strategies in place to properly maintain the wind turbines and optimize their operation. Finally, on-going performance evaluation and monitoring is appropriate to document the experience and convey the lessons learned to others in the energy community.

Table 2. Economic Components (1998$US)

Exchange Rate: 95 ECV/$	Discount Rate: 12%			
	Praia 4.8 MW	**Mindelo 1.8 MW**	**Sal 1.2 MW**	**Total 7.8 MW**
Wind Project Energy Generation				
Wind Project Capacity Factor	28.5%	53.9%	32.3%	35.0%
Annual Estimated Energy (MWh)	12,000	8,500	3,400	23,900
Economic Values				
NPV of Wind Farm Costs[1]	5,561,059	2,264,256	1,696,453	9,521,768
NPV of Displaced Fuel[2]	3,398,860	1,988,340	858,645	6,245,840
EIRR on Wind Farms	4.5%	9.9%	2.2%	
Incremental Cost (EIRR=12%)	$2,162,199	$275,916	$837,808	$3,275,923
Technical Assistance, GEF Funded				$ 450,000
Wind Resource Assessment Program	$ 85,000			
Power System Analysis	$ 80,000			
Project Performance Evaluation & Documentation	$ 160,000			
First year O&M Assistance	$ 125,000			
Total GEF Contribution				**$ 3,725,923**

[1] Using investment costs in Table 1 and annual costs: $6.000/turbine for O&M; land charges of 1% of annual revenue; and insurance of 0.5% of total costs.

[2] Fuel displaced is calculated based on average fuel oil consumption of diesels of 0.22t/MWh for Mindelo, 0.24 t/MWh for Praia and 0.26t/MWh for Sal (figures from Patou report, cited). For the economic cost of diesel, the untaxed landed price of fuel of $156-160/t was used plus a ha..dling premium to cover costs associated with transferring it from the ship's bunker to the generating engine.

Incremental Cost Matrix

	Baseline	Alternative	Increment
Domestic Benefit	Electricity generation from diesel generation *with* carbon emissions Continued reliance on imported fuel	Electricity generation from wind power *without* carbon emissions Avoided fuel costs	 Hedge against fuel cost escalation
Global Environment Benefit	352, 293 tons of CO2 emissions[1]	0 tons of CO2 emissions	Abatement of 352,293 tons of CO2 emissions
Cost	$6,245,845 (NPV of fuel)	$9,971,768 (including TA)	$3,725,923

[1] Source: M. Patou's report

Process of Agreement

The incremental cost parameters described herein have been derived on the basis of market studies and economic models developed in the course of project preparation. These parameters have been confirmed at project appraisal and will be formally agreed between the GOCV and the Bank at negotiations.

C.2 GEF Incremental Cost for the Decentralized Rural Electrification Sub-component

Baseline

Around 10,000 households currently receive electricity from mini-grids, and on average consume about 80 kWh/month (ranging from 20 - 120 kWh/month). The mini-grids will be extended and linked to cover a further 202,000 households over the medium term but about 12,000 households can be described as *durablement exclus:* they will never be connected. For households, the baseline is either a small gasoline generator, 2 kVA for the larger loads or, for the poorer, kerosene and bottled LPG for lighting and dry cells for electrical needs such as radio (there is very little use of automotive batteries for domestic electricity in Cape Verde). For small businesses and community use (such as street lighting or communal facilities), a gasoline generator or LPG is preferred.

Quoted initial purchase costs for SHS are among the highest in the world and availability is poor. In the Dominican Republic, for example, a 48Wp system costs around $700 while in Sri Lanka a 35Wp system costs around $500[2]. Comparable figures for Cape Verde at the present time are $420 for a 20Wp and $810 for a 50Wp system (based on dealer estimates). There is one dealer in the country, whose main business has been to supply donor projects with bulk orders of equipment. While there are firms and individuals with the necessary skills, there is no-one practicing as a system designer or installer.

There is good evidence to suggest that the potential for decentralized electrification is high. Those who are not connected exhibit high willingness to pay (WTP) and there is a substantial remittance income in many rural households. The prospects for many of not being connected within any reasonable period

[2] Source: Best Practices for Photovoltaic Household Electrification Programs Lessons from Selected Countries. World Bank Technical Paper 324.

adds further credence. Without some form of intervention, it is clear that the market will not develop. In market terms the baseline is the same as at the individual level: kerosene, LPG and dry cells for the poorer households, gasoline generators for the better off.

Global Environment Objective

The global environment objective is to mitigate carbon emissions resulting from use of gasoline or diesel generators for household electricity and the use of kerosene and LPG for lighting. Total carbon emissions are expected to be reduced by 1,110 tons of CO_2 over the lifetime of the project. This mitigation is the rationale for the GEF grant and indicates the international community's WTP for avoided CO_2 emissions.

The project supports the GEF climate change Operational Program #6 aimed at promoting the adoption of renewable energy by removing barriers and reducing implementation costs. By helping the local private sector to enter the market for the supply, installation and maintenance of household-level photovoltaic systems, it is intended that a sustainable economic activity will develop.

GEF Alternative

The role of the GEF funding would be to meet the incremental costs of supplying renewable energy rather than the baseline equipment and support for the market development activities. The GEF alternative is described in Annex 2 (Project Description). Briefly the project will be implemented through an adapted version of the concession system. The concessionaire will not receive statutory monopoly rights, but it will receive privileges in return for undertaking to provide a service. The concession will be for 10 years, which will provide adequate time to recover investment costs. There will be two concession areas: one comprising Santiago island and the other comprising the remaining 9 inhabited islands of Cape Verde. There will be no territorial limitation within the islands, permitting the concessionaire, if it wishes, to compete with the providers of grid connected electricity. The concession will be awarded by competitive tender, for which detailed bidding documents have been prepared.

Concessionaires will be obliged to undertake three roles:

- Sales of off-grid electrification systems, sold for either cash or credit;
- Sales of electricity or the services provided by electricity, through systems installed in houses and public places, which they will own on a typical concession basis;
- Management of publicly owned equipment, including installation, maintenance, setting of tariffs and fee collection.

The Government of Cape Verde will have the right to terminate the concession at any time throughout its lifetime.

Scope of the analysis

There are two sets of project benefits, those that accrue directly to the households and those which accrue to the global environment and both of these are considered in the analysis. The analysis is made from the point of view of the country and of the beneficiary households. The point of view of the concessionaire is not covered in the scope of the analysis as the nature of the concession has yet to be determined.

Direct benefits to households

Households benefit in numerous ways, many of which are difficult to quantify since other factors are also implicated. Generally, however, the following benefits result from the availability of electricity in the home:

(i) Access to electricity allows the use of radio and television, connecting individuals with the social and economic mainstream of Cape Verde;
(ii) Improvements in lighting quality and quantity extend the working day (especially for women) and permit the possibility of income generating activities after dark;
(iii) Improvements in lighting quality and quantity lead to better conditions under which children are able to read and study. There is a long-term positive effect on education and learning experienced by children;
(iv) By reducing the use of substitutes such as kerosene and candles, there is a reduction of indoor pollution and of risk of fire so contributing to improved health.

The benefits to households can be measured by their willingness to pay (WTP) for the improved electricity service. Deriving a figure for households' WTP is complex since it is the sum of the actual payments made for the SHS or WHS by the household plus the consumer surplus. While actual payments can be determined, it is not possible to measure the consumer surplus. Hence the project benefits will be somewhat understated.

Direct Benefits to the Global Environment

Global environment benefits accrue from the reduction in CO_2 emissions which are avoided when kerosene, LPG and gasoline are replaced by renewable energy. The mitigation is the rationale for the GEF grant and indicates the international community's WTP for avoided CO_2 emissions.

Costs

Baseline and GEF Alternative Uses and Costs Compared

There is evidence of ability and willingness to pay for improved electrification services (See Annex 2), although remittance income from family members abroad is a major factor in the purchase of larger items. The improved service provided by PV in comparison with kerosene and gas can be expected to increase willingness to pay of at least some buyers. Current use of energy equipment is given below, categorized by the same income classes used in Annex 2:

Household type	Baseline Provision		GEF Provision
	Light	Electricity	
Small consumer	1 kerosene wick lamp 1 LPG lamp	-	20Wp SHS
Medium consumer	2 kerosene wick lamp 1 LPG lamp	8 R20 batteries/month	50Wp SHS
Large consumer	Small gasoline generator, 240 W incandescent bulbs, other equipment including TV, refrigerator/freezer. Estimated 80-120 kWh/month total use		300 Wp SHS or 300Wp WHS
Community use	2 LPG lamps for street lighting	Small gasoline generator	50Wp public lighting PV system, equivalent of 300 Wp SHS or 300Wp WHS

The concessionaire will be given latitude to meet the demands of the market in terms of system type and size. It is difficult to make exact comparisons between the light provided by a kerosene or LPG lamp and that from a fluorescent bulb as may be used in an SHS because quality of light and convenience is not taken into account. Incremental costs have been based on estimated prices of equipment a concessionaire might be expected to pay for equipment, and not current prices which are significantly higher because such equipment that is bought privately tends to be one-off purchases. Levelized Monthly Cost (LMC) is used for comparison with existing levels of payment. Investment costs are expressed as sum of the first cost of the system and the present value of the running costs. A discount rate of 12% and a lifetime of 15 years is used.

System	LMC ($)	LMC of baseline ($)	Inv. cost ($)	Inv. cost of baseline ($)
20Wp SHS	7.00	5.20	575	427
50Wp SHS	12.60	10.60	1,025	869
300Wp SHS	49.00	138.40	3,645	11,313
300Wp WHS	57.20	138.40	4,672	11,313
50Wp Public lighting	13.90	13.60	1,136	870
300Wp Public use	variable	138.40	variable	n/a

Incremental costs

The incremental costs of each system can be calculated from the information in the table above. The table below presents the incremental cost and the expected rates of deployment for each type of system.

System	Annual Deployment		Incremental
	Yrs 1-3	Yrs 4-5	Cost($)
20Wp SHS	40	1,412	148
50Wp SHS	124	384	157
300Wp SHS	32	60	(7,667)
300Wp WHS	32	60	(6,640)
50Wp Public lighting	186		267
300Wp Public use	100	0	Negative

Parentheses denote negative cost

The project incremental cost is derived by using the information from the table above and modifying it as discussed below.

Small Consumers. These consumers will typically wish to acquire systems of 20Wp in size. The system carries a significant incremental cost at the moment because of the weakness of the market. It is expected that over the coming years, market growth will bring about a significant reduction in system cost and hence incremental cost. Reductions in system cost of the range of 10-20% can be expected over the lifetime of the project, which would bring them to the same order as those in other countries. It is thus proposed that a 'first cost grant' is used, payable to the concessionaire to absorb the incremental cost in the initial years. The first cost grant would follow a schedule of reducing payments:

20Wp System	Year 1 ($)	Year 2 ($)	Year 3 ($)	Year 4 ($)	Year 5 & on ($)
First cost grant payable	148	148	89	45	-
Proportion of incremental cost (%)	100	100	60	30	0

The schedule outlined above anticipates costs being brought down to a level more comparable with those found in more mature markets. Direct comparisons are of little value given the special circumstances of Cape Verde which add to costs, for example the small market size and distance from suppliers.

Medium Consumers. Medium consumers are expected to wish to acquire systems of 50Wp. The consumers who acquire the 50Wp system will have either kerosene, gas and batteries or a gasoline generator as the alternative. As with the 20Wp systems reductions in system cost of the range of 10-20% can be expected over the lifetime of the project, which would bring them to the same order as those in other countries. To account for the existence of a lower cost option in the 20Wp system and to avoid the subsidy benefiting those who obtain a larger system (and who will tend to be better off) it is proposed that the first cost grant cover 100% and 90% of the incremental costs in years 1 and 2 respectively, declining thereafter as shown in the table. Such a level of grant would keep the cost to the end user approximately constant if prices decline at the rate expected and would result in year 6 in costs broadly comparable with those found in more mature markets.

50Wp System	Year 1 ($)	Year 2 ($)	Year 3 ($)	Year 4 ($)	Year 5 & on ($)
First cost grant payable	157	141	79	31	-
Proportion of incremental cost (%)	100	90	50	20	0

Large Consumers. There is no incremental cost for the larger consumers to use PV or wind in preference to a gasoline generator and so no incentive is required.

Public Use. Electrification of these will be an option for the municipalities, who will have access to funds made available by central governments. For water pumping and use in rural schools and community centers, the incremental cost is estimated to be negative, so no GEF grant will be necessary. In the case of street lighting, the installations are expected to take place in years 1-4 of the concession to achieve a strong demonstration effect. Payment for the full incremental cost of $267 throughout the lifetime of the project is justified because installations are not proposed for subsidy to bring about cost reduction but for their value as means of raising awareness and confidence in PV. The aggregation of the demand for the public electrification services will be the basis for attracting concessionaires and so meeting the full incremental costs for the public use is an essential part of the overall project approach.

Technical Assistance and Startup Costs for the PMU. To support the activities of the PMU, the national energy agency, in the launching of the bidding for the concessions and subsequently their regulatory oversight, technical assistance is required over 2 years, costing a total of $140,000. The breakdown is as follows:

Activity	Increment ($)
Bidding for concessions	50,000
Training of PMU staff	25,000
Technical standards	30,000
Assistance with regulation	35,000

Business Development and Startup Costs for Concessionaires. Although it is expected that the concessionaires will be required to capitalize their operations on being awarded the concession, they will incur costs incremental to those which they would incur if they did not have a requirement to deal only in renewable energy products. The increments for one concession are estimated as follows:

	Increment ($)	
Activity	Santiago	Increment ($)Other islands
Business planning	20,000	20,000
Technical training for staff and managers	30,000	30,000
Setting up delivery systems, and infrastructure	25,000	45,000
Market development and research, promotion	60,000	100,000
Setting/negotiating regulatory norms	20,000	20,000
Developing and agreeing technical standards	25,000	25,000
Total	180,000	240,000

These costs will be incurred within the first year of each concession's lifetime.

Total GEF grant is thus determined as follows:

Item	GEF grant ($)
20Wp SHS	181,000
50Wp SHS	59,000
50Wp Public lighting	149,000
TA for PMU	140,000
Concessionaires	420,000
Total	949,000

Incremental Cost Matrix

	Baseline	Alternative	Increment
Domestic Benefit	Lighting and electricity provided by fossil fuels	Lighting and other appliances provided from renewable sources	-
Global Environment Benefit	29,138 tons of CO_2 emissions[1]	0 tons of CO_2 emissions	Abatement of 29,138 tons of CO_2 emissions
Cost	20Wp: $427 50Wp: $869 50Wp public: $870 Project, PV@12%: $1.64 million	20Wp: $575 50Wp: $1,025 50Wp public: $1,136 Project, PV@12%: $2.52 million	20Wp: $148 50Wp: $157 50Wp public: $267 Project, PV@12%: $0.88 million

[1] Source: Russel de Lucia, Indonesia RED, Global Environmental Calculus Note

Process of Agreement

The incremental cost parameters described here have been derived by Bank staff in consultation with the Government of Cape Verde (this is a Bank-executed project preparation). The information has been gained from market studies and modeling developed in the course of project preparation. The parameters have been agreed during project appraisal and will formally be agreed between the Bank and the Government of Cape Verde at negotiations.

Annex 5
Cape Verde Energy and Water Sector Reform and Development Project
Financial Analysis Summary

Electra's Past Financial Performance (1995-1997).

1. Over the past few years, Electra has increased its production of water and electricity to respond to a growing demand. Electricity generation went from 53.1 Gwh in 1992 to 93.6 Gwh in 1997 at an average annual growth rate of about 10%. Over the four islands, losses have been about 14.4% of generation. In the water sector, demand has also been growing rapidly. Water production increased from 0.88 M m3 in 1992 to 1.67 M m3 in 1997 at an average annual growth rate of 11.3%. The island of Sao Vicente uses most of the desalinated water (60.4% of the total in 1996), Praia 22%, Sal 16% and Boavista 1.6%. Losses are important in Sao Vicente (26%), but moderate in Sal and Boavista where the network is small and relatively new. Sales, which reflect the growing demand for water and electricity, have increased from 610 M ECV in 1992 to 1,195 M ECV in 1997 at an average annual growth rate of 12%.

2. Despite the growth of its activities, however, Electra has experienced systematic losses since 1982. The cumulated losses are about 1,145 M ECV, after taking into account operating subsidies of 641 ECV M received between 1982 and 1995). This poor financial performance is largely explained by the inadequacy of tariffs, particularly of water tariffs. The strong growth of sales between 1995 and 1997 was not sufficient to reverse the trend and the operating income (before interest) represented -2.1% of sales in 1997. The rate of return on average net fixed assets was also negative (-1.2 %). After interest, losses reached 188 M ECV in 1997, representing 15.7% of sales or about 12% of equity. Despite these recurrent losses, however, the financial structure of Electra is weak but not catastrophic as a large share of investments in Electra's balance sheet were acquired through grants and other concessional funding. Owing to a low "cost of capital", Electra has had positive cash-flows until 1995. The debt service coverage ratio was 1.3 in 1995. It became less than 1 in 1997 (0.9), thus showing the inability of Electra to service its debt. The current ratio is stable at around 1.2 in 1997. The level of stocks is between 6 to 7.5 months of purchases. Accounts receivable were about 5 months in 1997. Public customers accounted for 50% of the arrears and for only 10% of sales. Accounts payable were about 6 months in 1997.

3. Electricity tariffs. The average production cost is about 8.38 ECV/kWh. Taking into account network losses, public lighting (which is not billed) and the cost of distribution, the total cost of a kWh is about 12.5 ECV. Electra's tariff was about 15 ECV/kWh in 1997. This leaves a small margin of about 2.5 ECV/kWh. This surplus is nearly wiped out by unpaid bills. Collection is about 93%.

4. Water tariffs. The average water production cost for Electra as a whole is about 208 ECV/m3 (about US$2.2/m3). This cost is relatively homogenous over the three main islands but exceeds 520 ECV/m3 (about US$5.8/m3) in Boavista. The average cost of a cubic meter, including distribution losses and other costs, is about 320 ECV/m3 (US$3.74/m3) in Mindelo and Sal. This cost is about 591 ECV/m3 in Boavista. These costs are to be compared to the average revenues (including meter rent) observed in 1996: 186 ECV/m3 (57% of the cost) in Mindelo, 195 ECV/m3 (60% of the cost) in Sal, 187 ECV/m3 (32% of the cost) in Boavista, and 100 ECV/m3 (47% of the cost) in Praia. Losses in 1996 from this pricing policy were 170 M ECV, higher than the loss experienced by Electra for the same year. Action should be taken to drastically reduce system losses and reduce unit investment cost to the maximum allowed by technology and demand considerations. This is, however, not sufficient and water tariffs would have to be raised, sometimes substantially.

Electra's Financial Projections (1998-2010)

5. The main assumptions made for the financial projections over the period 1998 - 2010 are the following:

(a) The demand for electricity and water are expected to grow at an average annual growth rate of 8 and 8.9%, respectively.

(b) Operating costs: the assumed inflation rate is 2.5%. Fuel consumption is calculated as follows: the share of thermal energy falls from 90% in 1996 to 85% in 2001 and stays at that level afterwards, the complement is made up by wind farms. The distribution between gasoil and fuel oil is expected to remain at about 86.4% for gasoil and 13.6% for fuel oil. Specific consumption for gasoil would decrease from 258 g/kWh in 1996 to 240 g/kWh in year 2000. Fuel oil specific consumption would also decrease from 207 g/kWh in 1996 to 200 g/kWh in 1998. Energy consumption for water desalination has been estimated as follows: the specific consumption of electricity was 12 kWh/m3 in 1996, it is assumed that it will progressively decrease to 10 kWh/m3 in 2001. Contrary to Electra's practice, electricity consumed for water desalination is accounted for as a cost to the water activity and a revenue to the electricity branch. The electricity thus consumed is priced at 66% of Electra's average tariff (i.e. excluding distribution costs and network losses).

c) Stock turnover has been slow in 1996 and 1997: between 6 and 7 months of consumption, including fuels. A significant improvement in stock management and supply would progressively bring down this ratio to 1 month for fuels and 2 months for other equipment and materials by year 2001.

d) Accounts receivable for private consumers represented about 3 months of sales in 1997. They are assumed to fall to 2 months billing starting in 1999. Thins are different for the public sector where accounts receivable stand at about 24 months of sales. It has been assumed that public accounts receivable are substantially reduced to bring them to 1 year in 1998 and to 3 months in 2001.

e) Accounts payable stood at 6 months in 1997, including fuels. It is assumed that a rationalization of payments to suppliers would bring accounts payable to 1 month for hydrocarbons and to 2 months for equipment and other materials.

f) Electra's investment program is assumed to be financed by a 20% operating subsidy from the Government, and by long-term loans at an average annual rate of 8%, 10 years repayment period including a 4 year grace period.

g) Tariffs. The average electricity tariff was not adjusted in 1996 and 1997. The average water tariff was increased by 13% in 1996 but was not adjusted in the following years. It is assumed that the electricity tariff would be adjusted annually to take into account the forecast inflation of 2.5%. The electricity tariff for desalinated water is taken to be 66% of the average electricity tariff. Given the substantial tariff modification necessary, it is recommended to spread the adjustment over a period of at least 4 years. For the financial projections, the tariff is increased by 20% from 1999 to 2002 to reach 368 ECV/m3. The water tariff to EMAP (excluding distribution, network losses and accounts receivable) would increase from 100 ECV/m3 in 1997 and 1998 to 228 ECV/m3 in 2002.

Electra's Projected Financial Performance

6. Electra's financial projections show that the operating income and net income do not become positive until 2003 and 2006, respectively. Analysis of the accounts of 1996 and 1997 show that the losses incurred are essentially due to low water tariffs. Electricity tariffs on the other hand are slightly higher than production costs. This, however, hides the fact that the lack of financial resources forces the company to reduce maintenance significantly (0.5% of fixed assets in 1996 instead of the customary 2%), artificially reducing the operating deficit. This practice lead to an accelerated depreciation of the equipment and would ultimately force the company into heavy rehabilitation or replacement expenses, and therefore to more important tariff adjustments.

7. The following measures are needed: (i) tariff adjustment: the financial projections which assume a constant electricity tariffs (i.e. adjusted regularly with inflation) and an adjustment of water tariffs to production cost levels observed in 1996, show that these tariff adjustments are not sufficient to insure the survival of the company. Electra will not be able to undertake normal maintenance of its equipment and would not be able to participate to the financing of its investments during the period 1998-2003; (ii) Financial restructuring of Electra: as shown in Annex 4, the Government should contribute about 900 M ECV to Electra to pay it suppliers and provision bad accounts receivable. It is important to note that if the financial restructuring is not undertaken, any expansion of the system (extensions, densification, etc.) will lead to additional operating losses.

EMAP

8. Emap's past financial performance as well as financial projections are given in page 6 of this Annex. Comments are found in the main body of the report: Section E. Summary Project Analysis - 2. Financial.

Annex 5

Cape Verde Energy and Water Sector Reform and Development Project
ELECTRA Financial Summary

Years ending December 31, 1995 through December 31, 2010

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Av. Annual Growth (%)
		Actual		Forecast													
Income Statement Items																	
Electricity Sales (MWh)	47664	53697	57475	62905	68769	75102	81942	89329	97306	105923	115228	125278	136132	147854	160514	174186	8.86
Average tariff (ECV/kWh)	16	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	2.50
Water Sales ('000 m3)	878	992	1051	1135	1226	1324	1430	1545	1668	1802	1946	2101	2269	2451	2647	2859	8.00
Average tariff (ECV/m3)	157	177	177	177	213	256	307	368	377	387	396	406	416	427	437	448	8.03
Water Sales to EMAP ('000 m3)	28	371	393	424	458	495	534	577	623	673	727	785	848	916	989	1068	8.00
Average tariff (ECV/m3)	80	100	100	100	132	159	190	228	234	240	246	252	258	265	272	278	8.90
Revenues	952	1046	1195	1274	1635	1883	2175	2531	2824	3148	3508	3906	4348	4838	5381	5982	13.76
Operating Income	- 30	- 38	- 25	- 287	- 364	- 383	- 291	- 111	20	195	410	652	922	1 224	1 562	1 941	
Net Income	- 79	- 152	- 188	- 379	- 549	- 759	- 754	- 635	- 516	- 332	- 71	223	548	909	1 306	1 742	
Funds Statement Items																	
Internal Sources	184	234	214	117	216	371	554	788	950	1142	1357	1598	1869	2171	2509	2888	30.63
Borrowings	332	207	560	1246	2540	1144	839	349	351								-22.40
Equity Investments	95	413	140	312	635	286	210	87	88								-22.40
Total Sources	611	854	914	1675	3391	1801	1602	1225	1389	1142	1357	1598	1869	2171	2509	2888	2.63
Capital Expenditures	474	620	700	1558	3175	1430	1048	437	438								-22.40
Working Capital Increase (Decrease)	-106	-29	2	-261	-80	27	29	64	53	58	65	72	80	88	98	108	
Debt Service	141	207	248	268	384	513	591	779	1033	1140	1180	1165	1146	1090	1009	953	11.15
Cash Variation	101	55	-36	110	-88	-169	-65	-54	-135	-57	112	362	643	993	1402	1826	26.34
Total Applications	611	854	914	1675	3391	1801	1603	1225	1389	1142	1357	1598	1868	2171	2509	2888	4.64

Cape Verde Energy and Water Sector Reform and Development Project
ELECTRA Financial Summary

Years ending December 31, 1995 through December 31, 2010

Balance Sheet Items																	
Current Assets	827	959	1028	806	118	-58	-136	-120	-195	-186	-2	439	1170	2260	3770	5716	17.74
Net Fixed Assets	3074	3285	4137	4424	7019	7694	7897	7433	6941	5994	5047	4101	3154	2207	1260	313	-19.80
Total Assets	3900	4244	5166	5230	7137	7636	7760	7314	6746	5808	5045	4540	4324	4467	5031	6029	1.19
Current Liabilities	712	765	879	851	331	296	254	261	269	275	283	290	299	308	318	329	-7.60
Long-term Liabilities	1691	1721	2765	2925	5265	6273	6983	7077	693	817	5618	4882	4109	3334	2582	1827	-3.85
Equity	1497	1758	1521	1454	1540	1067	523	-25	-45	784	-855	-632	-84	825	2131	3872	8.51
Total Liabilities and Equity	3900	4244	5166	5230	7137	7636	7760	7314	6746	5808	5045	4540	4324	4467	5031	6029	1.19
Financial Ratios																	
Operating Income as a % of Revenue	-3.1	-3.6	-2.1	-22.6	-22.3	-20.3	-13.4	-4.4	0.7	6.2	11.7	16.7	21.2	25.3	29.0	32.4	
Net Income as a % of Revenue	-8.3	-14.6	-15.7	-29.7	-33.5	-40.3	-34.7	-25.1	-18.3	-10.5	-2.0	5.7	12.6	18.8	24.3	29.1	
Average Net Fixed Assets		3179	3711	4281	5721	7357	7795	7665	7187	6468	5521	4574	3627	2680	1734	787	
Return on Net Fixed Assets		-1.2	-0.7	-6.7	-6.4	-5.2	-3.7	-1.4	0.3	3.0	7.4	14.2	25.4	45.7	90.1	246.7	
Debt Service Coverage	1.3	1.1	0.9	0.4	0.6	0.7	0.9	1.0	0.9	1.0	1.1	1.4	1.6	2.0	2.5	3.0	17.52
Percent of Total Capital Expenditures financed by Internal Sources	38.8	37.7	30.6	7.5	6.8	25.9	52.9	180.5	216.9								52.25
Current Ratio	1.2	1.3	1.2	0.9	0.4	-0.2	-0.5	-0.5	-0.7	-0.7	0.0	1.5	3.9	7.3	11.8	17.4	27.42
Debt-Equity ratio	0.4	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.0	1.1	1.1	1.1	1.0	0.7	0.5	0.3	-4.98

Annex 5
Cape Verde Energy and Water Sector Reform and Development Project
EMAP Financial Summary

Years ending December 31, 1995 through December 31, 2010

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Av. Annual Growth (%)
		Actual	Forecast														
Income Statement Items																	
Water Sales ('000 m3)	865	987	1043	1125	1213	1308	1405	1507	1617	1734	1858	1991	2132	2283	2443	2613	7.28
Average tariff (ECV/m3)	112	124	124	123	171	213	213	213	213	213	213	213	213	213	213	213	4.69
Revenues (ECV millions)	102	132	138	149	222	300	322	345	370	397	426	456	488	523	560	599	12.31
Operating Income	- 13	- 18	- 27	- 31	- 53	- 5	- 8	- 11	- 13	- 15	- 16	- 16	- 15	- 14	- 19	- 23	
Net Income	- 8	- 9	- 17	- 21	0	16	14	13	12	13	14	16	19	22	20	19	
Funds Statement Items																	
Internal Sources	6	5	-3	-6	-23	30	28	27	27	27	28	30	33	36	34	33	
Total Sources	6	5	-3	-6	-23	30	28	27	27	27	28	30	33	36	34	33	
Capital Expenditures					14	14	14	14	14	14	14	14	14	14	14	14	
Other uses	6	5															
Total Applications	6	5	0	0	14	14	14	14	14	14	14	14	14	14	14	14	
Balance Sheet Items																	
Current Assets	82	99	100	95	101	119	135	150	165	180	196	214	235	260	283	305	10.23
Net Fixed Assets	119	110	95	81	81	81	81	81	81	81	81	81	81	81	81	81	0.00
Total Assets	201	209	196	176	182	200	216	231	246	261	277	295	316	341	364	386	6.77
Current Liabilities	7	13	17	18	24	26	28	30	33	35	37	40	42	45	48	52	9.31
Equity	193	196	179	158	158	174	188	201	213	226	240	255	274	296	316	335	6.44
Total Liabilities and Equity	201	209	196	176	182	200	216	231	246	261	277	295	316	341	364	386	6.77

Annex 5
Cape Verde Energy and Water Sector Reform and Development Project
EMAP Financial Summary

Years ending December 31, 1995 through December 31, 2010

Financial Ratios																
Operating Income as a % of Revenue	-12.5	-13.9	-19.4	-20.8	-23.6	-1.7	-2.6	-3.2	-3.6	-3.7	-3.7	-3.5	-3.1	-2.7	-3.3	-3.8	
Net Income as a % of Revenue	-7.4	-7.0	-12.5	-13.8	0.0	5.2	4.3	3.7	3.4	3.2	3.2	3.5	3.8	4.2	3.6	3.1	
Average Net Fixed Assets		114	102	88	81	81	81	81	81	81	81	81	81	81	81	81	
Return on Net Fixed Assets		-16.0	-26.2	-35.0	-64.8	-6.2	-10.2	-13.6	-16.3	-18.2	-19.3	-19.5	-18.7	-17.6	-23.1	-28.2	
Current Ratio	11.0	7.6	6.0	5.3	4.2	4.5	4.8	4.9	5.0	5.2	5.3	5.4	5.6	5.8	5.9	5.9	0.84

Cape Verde Energy and Water Sector Reform and Development Project
Financial Performance of Off-Grid PV Concessionaires (consolidated)

000 CVE	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11-14	Year 15
Receipts												
Cash sales to private market	11,717	13,610	15,510	21,557	25,879	25,879	25,879	25,879	25,879	25,879		
Cash sales to public market	18,139	14,837	12,753	6,095								
Down payments for leases – private	3,545	2,965	2,610	3,670	2,640	2,640	2,640	2,640	2,640	2,640		
Lease payments – Private and Public	5,285	9,934	14,204	18,358	21,344	24,332	27,320	30,308	33,296	36,284	25,086	25,086
GEF support – market development	20,800	19,000										
GEF support for equipment	12,191	11,869	9,031	3,537								
Residual equipment value (year 15 only)												55,328
Total receipts	71,777	72,215	54,108	53,215	49,863	52,851	55,839	58,827	61,815	64,803	25,086	80,414
Expenses												
Business startup, maintenance	57,000	38,000						38,000				
Equipment for leasing	3,473	4,117	4,589	6,523	7,764	7,764	7,764	7,764	7,764	7,764		
Affermage payments to GoCV	2,283	4,215	5,929	6,560	6,560	6,560	6,560	6,560	6,560	6,560		
Cost of equipment sales and installation	25,482	25,991	27,404	30,183	30,313	32,404	34,496	36,587	38,679	40,771	17,560	56,290
Total expenses	88,238	72,323	37,921	43,265	44,636	46,728	48,819	88,911	53,002	55,094	17,560	56,290
Net cash flow	(16,461)	(109)	16,186	9,950	5,227	6,124	7,020	(30,083)	8,813	9,709	7,526	24,124
Discounted value @ 12% over 15 years	18,226											
Internal rate of return	34%											

Assumptions:

Level of recovery of private payments	80%
Level of recovery of public payments	100%
Margin on equipment and installation	30%
Initial investment in business start ups	95,000 CVE
Cash sales as a proportion of total installed private market	70%

Sales prices (in CVE):

	20 W_p	50 W_p	300 W_p	50 W_p public
Cash sales price for complete system	18,000	49,000	200,000	47,000
Down payment for leased system	5,000	10,000	50,000	
Monthly lease payment	500	1,000	4,000	650
Annual equivalent of monthly lease payment	6,000	12,000	48,000	7,800

Annex 6
Energy and Water Sector Reform and Development Project
Procurement and Disbursement Arrangements

PROCUREMENT

The procurement methods applicable to the various expenditure categories are summarized in Table A.

Table A: Project Costs by Procurement Arrangements
Non ICB Aggregated as Other
(US$ million equivalent)

	Procurement Method			
	International Competitive Bidding	Other b/	N.B.F. c/	Total
A. Civil Works d/				
1. Construction	5.50	-	11.76	17.26
	(5.06) a/	-		(5.06)
B. Supply & Installation of Equipment e/	1.01	-	10.33	11.34
	(0.97)	-		(0.97)
C. Goods f/				
1. Equipment & Vehicles	4.66	0.36	2.78	7.80
	(4.66)	(0.36)		(5.02)
D. Services				
1. Project Management Staff	-	0.80	0.05	0.85
		(0.80)		(0.80)
2. Design & Supervision	-	1.10	0.60	1.70
		(1.10)		(1.10)
3. Studies, Advisory Services & Training	-	3.07	1.46	4.53
		(3.07)		(3.07)
E. Operating Costs g/				
1. Project Management Unit				
PMU O&M	-	-	0.18	0.18
F. Financial Restructuring-Electra	-	-	2.83	2.83
G. PPF Refinancing	-	1.50	-	1.50
		(1.50)		(1.50)
	11.16	6.83	30.00	48.00
	(10.68)	(6.83)	-	(17.52)

a/ Figures in parenthesis are the amounts to be financed by the IDA credit.

b/ Other procurement methods include international shopping (for equipment purchase) and selection of consultants following IDA guidelines, equipment and works procured by strategic investor in Electra, S.A. (selected by competitive bidding). National Competitive Bidding will not be used.

c/ N.B.F. = Not Bank-financed.

d/ "Civil works" financed by IDA include construction of water distribution infrastructure, waste water reuse facilities and environmental improvements in power plants.

e/ "Supply and installation of equipment" financed by IDA includes the purchase and installation of small solarphotovoltaic public systems for municipalities.

f/ "Goods" financed by IDA include purchase of equipment, related supplies and vehicles for supporting project implementation and purchase of electricity distribution equipment to be installed by Electra after it is privatized.

g/ "Operating costs" (financed by the GOCV) include incremental operating costs incurred on account of project management and supervision, including office rental, office supplies, communications, fuel, utilities and travel expenses of PMU staff.

All works, goods and services under the IDA Credit would be procured in accordance with IDA guidelines for goods, works and services ("Guidelines: Procurement under IBRD loans and IDA Credits", published by the bank in January 1995 and revised in January and August 1996, September 1997 and

January 1999 (the Guidelines) and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers", published by the Bank in January 1997 and revised in September 1997 and January 1999 (the Consultant Guidelines)).

Contracts to supply works, goods and services will be the responsibility of the following project implementing agencies:

- The Project Management Unit (PMU), created during project preparation under the Office of the Vice Prime Minister, will be responsible for: the power/water sector reform and regulation component; the demand-side management component; the GEF photovoltaic component; the power distribution equipment component; the environment management program (in coordination with SEPA); the energy sector monitoring component (in coordination with MCIE), and the water resource management component (in coordination with INGRH).
- The MIH will be responsible for the extension/rehabilitation of water and sanitation systems in Praia and Assomada, in coordination with the Municipality of Assomada for the latter sub-component) and for the construction of waste water reuse facilities in Praia.
- Electra, once it is privatized, will be responsible for the GEF wind-farm component and for the installation of power distribution equipment procured by the PMU.

Project accounting and the transmission of all procurement documents or decisions to IDA will be centralized in the PMU.

Procurement Capacity of the Project Implementing Entities

The current Project Coordinator became familiar with the World Bank's procedures for consultant services and international shopping, that he has applied within the framework of the PPF-financed preparatory work for the proposed Project. The MIH is familiar with international procurement procedures, through its role in supervising the development of sanitation systems in Cape Verde, and with the World Bank's procedures for procuring works through its implementing role for Bank projects in transport and infrastructure in Cape Verde. Training will be organized for procurement and disbursement staff of the PMU and MIH before Credit effectiveness, with support from the Bank Resident Mission in Dakar.

The private strategic investor in Electra – to be selected through international competitive bidding - will provide adequate procurement capabilities and use commercial practices for the components under its responsibility (extension of windfarms with GEF co-financing, and installation of IDA-financed electricity distribution equipment).

Procurement Schedule and Methods

A draft procurement schedule is included in the Project Implementation Plan (PIP). It will be finalized and made available by the Borrower for review at negotiations. The procurement schedule includes relevant information and milestones concerning procurement of works and goods and services for all project components.

The procurement plan and arrangements outlined in the PIP will be updated semi-annually and at the annual review with IDA. During implementation, all bidding documents, bid evaluation reports and draft contracts transmitted to IDA for review will contain an updated copy of the procurement plan.

Procurement information will be collected and recorded as follows:

(a) prompt recording of contract award information by the Borrower; and,
(b) semi-annual reports to the Bank by the Borrower indicating: (i) revised cost estimates for individual contracts and the total program, including best estimates of allowances for contingencies; (ii) revised timing of estimated procurement actions, including experience with completion time and completion costs for individual contracts; and (iii) compliance with aggregate limits on specified methods of procurement.

The Government will take the necessary measures to ensure that procurement phases do not exceed the following target time periods:

Procurement phases	Maximum number of weeks
Preparation of bidding documents	4 (consultants/goods); 8 (works)
Preparation of bids by bidders	4 (consultants/goods); 6 (works)
Bid evaluation	2
Signature of contracts	2
Payments	3

Procurement of goods

Goods will automatically be grouped in packages of US$200,000 or more and procured through ICB. Procurement for readily available off-the shelf goods that cannot be grouped or standard specifications commodities for individual contracts less than US50,000 not exceeding an aggregate amount of US$0.35 million for the life of the project, will be procured on the basis of comparison of at least three eligible international suppliers (not excluding national suppliers).

Procurement of works

All civil works contracts which are not expected to cost less than US$500,000 each (totaling US$5.5 million) will be procured through ICB. All contracts exceeding US$1 million each will be subject to prequalification because of the complexity of the corresponding works.

Supply and Installation of Equipment

IDA-financed solar photovoltaic public systems totaling US$1 million will be procured through ICB, using the standard bidding documents for the supply and installation of equipment. To simplify procurement, all equipment to be installed over a period of three years will be included in one single contract, with provision for delivery in several tranches.

Margin of preference

Taking into account the nature of civil works and goods to be procured, as agreed with the GOCV during negotiations, the margin of preference for local firms is not justified and will not be applied.

Contracts for consultant services and training

The recruitment of consultant services will be carried out in accordance with Bank Guidelines for the selection of consultants, January 1997 (Revised September 1997). A list of expected consulting assignments will be published in a General Procurement Notice in Development Business and will be updated annually. Contracts exceeding US$200,000 each shall be advertised in Development Business and in a national newspaper in order to obtain expressions of interest from qualified firms. The method of selection will be based on quality and cost of the offer, except for the auditing services which would be

procured through least cost selection procedures. Provisions of paragraph 2.7 of the Guidelines would not apply. Simplified contracts will be used for short-term assignments, i.e. those not exceeding six months, carried out by firms or individual consultants.

Review by the Bank (see Table B below)

(a) Consultants service

Prior Review: With respect to each contract for the employment of consulting firms estimated to cost the equivalent of US$100,000 or more but less than the equivalent of US$200,000, the procedures set forth in paragraphs 1, 2 (other than the second subparagraph of paragraph 2(a) and 5 of Appendix I to the Consultant Guidelines shall apply. With respect to each contract for the employment of consulting firms estimated to cost the equivalent of US$200,000 or more and each contract for the employment of individual consultants estimated to cost the equivalent of US$50,000 or more, the procedures set forth in paragraphs 1, 2 (other than the third subparagraph of paragraph 2(a)) and 5 of Appendix I to the Consultant Guidelines shall apply.

Post Review: With respect to each contract not governed by paragraph 2 of paragraph 4.4(b), the procedures set forth in paragraph 4 of Appendix I to the Guidelines shall apply.

Training: For training abroad and in country, the program containing names of candidates, cost estimates, courses, period of training and institutions selected would be reviewed by IDA annually.

(b) Goods and Works: Prior review for goods would apply to contracts exceeding the amount of US$100,000. All contracts for works and supply & installation of equipment would be subject to prior review. The review would cover about 90% of the total amount of contracts for goods.

Table B: Thresholds for Procurement Methods and Prior Review [3]

Expenditure Category	Contract Value (Threshold) [4]	Procurement Method	Estimated Total Value of Contracts Subject to Prior Review
1. Civil Works[5]	All contracts	ICB	US$5.5 million
2. Supply and Installation of equipment	All contracts	ICB	US$1 million
3. Goods (vehicles and equipment)	$200.000 and above Below $50.000	ICB IS	US$4.66 million n/a
4. Services (including consultant services contracts and training)	$100.000 and above [6] Less than $50.000	QCBS LCS for audits Individuals	US$3.6 million n/a n/a

ICB = International Competitive Bidding
IS = International Shopping
QCBS = Quality and Cost Based Selection
QBS = Quality Based Selection
LCS = Least Cost Selection

DISBURSEMENTS

Disbursements of the IDA credit and of the GEF Grant will be made for works, goods and services that are eligible for IDA and GEF financing. The credit and the grant will be disbursed over a period of four years, and the credit and grant closing date would be six month after the end of the fourth year. The disbursements would be fully documented at time of submission of withdrawal application, except for expenditures which would be made against Statement of Expenditures (SOEs). The possible application of the Loan Administration Change Initiative (LACI) to effect disbursements from Credit will be assessed during the project launch workshop.

Use of Statements of Expenditures (SOEs):

Expenditures valued at less than US$100,000 equivalent would be made against SOEs and would be kept available for examination by auditors, technical audits and by IDA supervision missions. Applications for direct payment could be submitted for amounts exceeding US$100,000 equivalent.

Special accounts:

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[3] All thresholds stated in this table would be reviewed by IDA during the annual review and aggregate amounts would be updated after the implementation period of two years.

[4] Documents related to procurement below the prior review thresholds will be maintained by the Borrower for ex-post review by auditors and by IDA supervision missions. Selective ex-post review of contracts awarded below the threshold levels will apply to about one in three contracts.

[5] Civil works contracts above US$1,000,000 each will be subject to Prequalification. All prequalification documents will be subject to review.

[6] Terms of Reference for all consultant contracts are subject to prior review. For contracts above US$200,000, a technical evaluation report will be required by IDA for no objection.

To facilitate disbursements, the Government would open an IDA Special Account and a GEF Special Account at the Central Bank (Banco de Cabo Verde) for IDA's and GEF's shares of eligible expenditures. The authorized allocations of these two accounts would be the equivalent of US$500,000 and US$200,000 respectively. IDA would make initial deposits of the equivalent of US$250,000 and US$100,000 respectively upon credit and grant effectiveness. Each replenishment requests will be accompanied, as necessary, by an up-to-date bank statement and a reconciliation statement.

Credit and Grant categories and financing percentages

Disbursement categories and the percentage financed are shown for the IDA Credit in Table C-1 below.

Table C-1: Allocation of IDA Credit Proceeds
(US$ millions)

Expenditure Category	Amount	Financing Percentage
1. Civil Works	5.06	100% of foreign expenditures, 80% of local expenditures
2. Supply & Installation of Equipment	0.97	100% of foreign expenditures, 80% of local expenditures
3. Goods	5.02	100% of foreign expenditure, 90% of local expenditures
4. Consulting Services and Training	4.98	100%
5. PPF Refinancing	1.30	
Total:	17.52	

Amounts net of taxes and duties

Disbursement categories and the percentage financed are shown for the GEF Grant in Table C-2 below.

Table C-2: Allocation of GEF Grant Proceeds
(US$ millions)

Expenditure Category	Amount	Financing Percentage
1. Supply & Installation of Equipment	3.31	100% of foreign expenditures, 80% of local expenditures
2. Goods	0.78	100% of foreign expenditures, 90% of local expenditures
3. Consultant Services and Training	0.62	100%
Total:	4.71	

Amounts net of taxes and duties

Counterpart Funds

Government's counterpart funds needed for twelve months to cover the share of investments and PMU's recurrent costs not covered by IDA, GEF and other donors will be deposited by the Government in a project account on a quarterly basis starting on January 15, 2000. The following table provides the estimated needs of Government counterpart funds, including payments for Electra's workers compensation and suppliers credit reduction totaling an estimated $2.83 million that will be paid in 1999 from the privatization proceeds.

GOCV contribution to project costs (US$ million)

Project component/sub-component	Total	1999	2000	2001	2002	2003
1. Power sector reform & development	2.88					
Workers' compensation (100%)	1.09	1.09				
Suppliers' credit reduction (100%)	1.74	1.74				
Environment improvements (8%)	0.05		0.02	0.03		
2. Renewable energy promotion & development	0.04					
Public PV systems (4%)	0.04		0.01	0.01	0.01	0.01
3. Water sector reform & development	0.30					
Water distribution works in Praia (8%)	0.21			0.16	0.05	
Water distribution works in Assomada (8%)	0.09		0.07	0.02		
4. Sanitation development	0.09					
Waste water reuse works Praia (8%)	0.09			0.05	0.04	
5. Project coordination and monitoring	0.22					
Support staff PMU (100%)	0.05	0.01	0.01	0.01	0.01	0.01
Recurrent costs PMU (100%)	0.17	0.02	0.04	0.04	0.04	0.03
Total	3.53	1.86	0.15	0.32	0.15	0.05

Accounting, Financial reporting and Auditing arrangements

An accounting and financial management system, based on internationally accepted accounting principles acceptable to the Bank, would be established and operational in the PMU. The PMU would maintain separate set of accounts for each component of the project. The PMU would prepare the consolidated project accounts and financial statement on the basis of the individual accounts. All procurement documents, contracts, and invoices would also be maintained by the PMU and made accessible to supervision missions and auditors.

The Bank is introducing an initiative to change loan administration in Bank group projects, the Loan Administrative Change Initiative (LACI). This initiative, which relies on the existence in the project of sound financial management, procurement and output monitoring systems, effects disbursements on the

basis of agreed quarterly Project Management Reports (PMR) rather than on the basis of individual invoices or statements of expenditure.

Since project appraisal was carried out prior to July 1, 1998, the process does not apply to it. The LACI concepts have, however, been taken into consideration in project preparation. To that end, an assessment of the project accounting and financial management system will be carried out during the project launch workshop.

The assessment of the project financial management system would determine whether the project meets LACI standards for PMR-based disbursement. If not, complementary measures will be introduced and additional assistance will be provided over the first 18 months of implementation to strengthen further the financial management of the project to ensure an orderly transition to LACI. To that end, IDA will carry out at the end of the first year of implementation, a comprehensive and detailed assessment of the project financial management to determine its adequacy and readiness for LACI. A second assessment will be carried out at the end of the third quarter of the second year of implementation to evaluate the effectiveness of the transition to LACI. During the first two years of implementation however, disbursements under the project will be made in accordance with the SOE-based approach. The project will still be required to submit, in addition to its financial statements, five quarterly reports, namely a Summary of Sources and Uses of Funds, a Contract Expenditure Report - Goods & Works, a Contract Expenditure Report - Consultants, a Procurement Management Report - Goods & Works, and a Procurement Management Report – Consultants.

During negotiations, the government would provide assurances that: (a) project accounts will be audited in accordance with international audit standards by experienced and internationally recognized audit firms acceptable to IDA. The audit reports and related project accounts will be submitted to IDA within 6 months after the end of Government fiscal year; (b) in addition to their standard short form report with the opinion, the auditors would be required to: (i) carry out a comprehensive review of all the SOEs, along with the internal control procedures governing their preparation, pertaining to the relevant period under audit, and express a separate opinion thereon; (ii) review the management and utilization of the special account and express a separate opinion thereon as well; and (c) finally, the auditor would perform an in-depth review the internal control system of the program with a view to identify the major weaknesses and shortcomings and propose practical recommendations for improvement. The results of this review would be documented in a Management Letter to be submitted along with the audit reports.

Reporting and Supervision

The PMU will submit the following reports, prepared jointly with the MIH and with the entities collaborating in project implementation (SEPA, MCIE, INGRH): (a) semi-annual progress reports; (b) annual project accounts to be audited; (c) a detailed progress report on technical and financial project activities not later than a month before the date of the project mid-term review; and, (d) the Government contribution to the Implementation Completion report (ICR) before the closing date.

The project will require intensive supervision during the start-up phase. The first full IDA/donors mission would take the form of a project launch workshop, to take place at credit/grant effectiveness, and will be followed by two other missions in the same fiscal year. The project will then be supervised every six months. A mid-term review will be conducted not later than two years after project effectiveness and a project completion mission will be conducted just prior to closing date.

Annex 7

Cape Verde Energy and Water Sector Reform and Development Project
Summary of Environment Assessment and Management Program

A. Main Environmental Impacts of the Project

Water and Sanitation Component: The main environmental impacts of the project are expected to be positive. Through increasing access to good quality drinking water and sanitary services, both in quality and in coverage the project will undoubtedly increase the quality of life for the people in Praia, Mindelo and Assomada. The hygiene standards will be improved with corresponding drop in health problems; the pollution of the environment will also be reduced, by concentrating wastewater and solid waste in places where they can de dealt with in an environmentally safe manner.

The main potentially negative effects are:

(i) Unplanned land use and occupation due to migration to areas with new services.
(ii) Social impact due to increase in price of water and sanitation services.
(iii) Contamination of groundwater in Assomada due to septic tank system
(iv) Groundwater depletion and contamination due to excessive abstraction of water, in Praia where salinity of the groundwater is increasing.
(v) Degradation of water quality in coastal waters receiving treated waste water. The modern technology waste water treatment facility in Praia is vulnerable to correct operation practice.
(vi) Public health hazards in vicinity of discharge of treated waste water.
(vii) Pollution coastal waters in Praia due to poor waste handling and treatment. The surface runoff from the solid waste site discharges into the ocean close to the intake to the desalination plant

Energy Component - Thermal Generating Stations: The main environmental impacts of the project with respect to electricity supply are both positive and negative. The expected positive impacts are the life quality improvements for the affected population that may follow infrastructure development. However, there are also negative environmental impacts from thermal electricity generation.

The main negative impacts from existing thermal electricity generation are:

(i) High level of air pollution from operation of existing power plant engines. The impacts are greatest in the cities of Mindelo and Praia, where large power plants are situated in the center of the cities, and in the village of Assomada. The power plant on Sal is located further from residential areas, and therefore the impacts from this site are of a lesser magnitude.
(ii) High level of noise from operation of existing power plant engines, again as with air pollution, the impacts are more serious for the city located plants of Mindelo, Praia and Assomada – less so for Sal.
(iii) Risk of soil and groundwater contamination from discharge of untreated drainage water, leaking oil storage tanks, fuel pipes or faulty oil handling procedures. The larger units are equipped with spill containment facilities, waste water treatment facilities are planned and the general standard of operation is of a relatively higher quality at these sites. For the municipal plant inspected in Assomada – and presumably for other municipal plants as well – the potential risks and impacts associated with deficient oil handling procedures are at least an order of magnitude greater: Fuel storage facilities are not equipped with containment facilities, there is generally a poor level of personnel training, and at least one major spill of oil had occurred. This needs urgent attention.

The impacts associated with the existing thermal power generation are compounded by the unsuitable location of many power plants in the centers of the cities. The magnitude of the impacts may be reduced by relocating or building new unit expansions at more suitable, remote sites. However, the issue of land ownership, and conflicting land use for power plant sites and transmission line right-of-way (ROW) should in that eventuality be considered carefully.

Energy Component: Off-grid Electrification: For the off-grid rural electrification using photovoltaic or wind systems, main environmental impacts are the risks associated with the potential soil and groundwater contamination from discarded or improperly disposed of batteries and acid. Launching and enforcing a battery collection and recycling scheme may mitigate these impacts.

Energy Component: Wind Farms: The main positive environmental benefit is of course the reduction in diesel fuel consumption and associated atmospheric emissions. Others identified are:
- reduced dependence on imports;
- increased production of electricity;
- reduced risk of oil spills.

Potential negative environmental effects studied are:
- changes in land use (none expected);
- conflict with other forms of land use (quarrying at Praia, tourism and industrial development on Sal);
- effect on birds (no major impacts identified);
- effect on flora (no major impacts identified given good civil design and construction practices);
- effect on telecommunications (none expected);
- effect on air traffic control (none expected);
- landscape and visual effects (negative impacts not expected);
- noise (negative impacts not expected, though this issue may affect future developments on Sal);
- health and safety (no high or unusual risks, given normal wind farm construction and operation practice).

B. Mitigating Measures and Recommendations

General Observations. As a new organisation SEPA has little institutional capacity and experience. In order to be able to enforce the environmental policies and supervise the monitoring and implementation of the mitigation measures recommended in this report SEPA must be strengthened. SEPA has committed themselves to assign one staff member to the Project. It is recommended to include a substantial institutional support program to SEPA with main components being: Capacity building on organisation and strategic planning, development of standards and regulations, and environmental monitoring. A programme of technical assistance from international specialists should also be included.

Water and Sanitation Component: The mitigating measures for the identified potential negative impacts are listed in Table 7.1. Mitigation can be seen in relation to the different stages of the project: Design: Many of the potentially negative impacts can be mitigate effectively simply by a good environmentally sound design. Construction : To mitigate negative impacts during construction is basically a problem of setting the rules for the contractor and make sure they are adhered to. Operation : Once the construction phase is over and the normal operation and maintenance of the water and sanitation services starts, it is even more important to have good mitigating measures in place. Even small negative impacts can over the lifetime of the infrastructure accumulate into a major problem.

Communities and staff of the organisations involved do not have the skills, knowledge and motivation to base mitigation only on contracts and manuals. It will be necessary to implement capacity building programs, training programs and awareness programs for the communities, the labour force and the responsible institutions. Some specific recommendations are:

(i) INGRH do not seem to possess the capacity to assist SEPA in monitoring the project and implementing the mitigation measures. It is recommended to include a substantial institutional support program to INGRH with main components being: Capacity building on development of standards and regulations and environmental monitoring.

(ii) Awareness campaigns should cover subjects like: information about the proposed project, water and sanitation and hygiene, connecting to and using the services, hygienic disposal of solid waste, Save Water, pollution and the natural environment, and environmental mitigation. Awareness programs must be targeted at the communities but also at staff of the operating institutions (Electra and *Camaras Municipais*) and the regulating institutions (SEPA and INGRH).

Some specific mitigating measures are recommended for immediate implementation:

(i Give housing support to poorer people and enforce building code in order to limit the illegal construction of houses, causing soil erosion problems in all three cities.

(ii) Support connection to the piped sewer system in Praia by giving financial support, adapt a tariff policy encouraging connections.

(iii) Start water quality control at consumers in Praia and Assomada.

(iv) Start chlorinating drinking water in Assomada.

(v) Improve septic tank system in Assomada with design support and emptying system.

(vi) Regulate solid waste dumps in Assomada and Praia.

Energy Component: Thermal and Off-Grid Electricity: It is proposed that the following mitigation measures be implemented within the context of the proposed project:

- Review in detail the environmental status of the existing units of Electra. Develop technical feasibility studies regarding the possibility of improving said units to such an extent that the environmental load reaches acceptable limits. The primary study areas should be (in order of priority): i) Reduction of air emissions from the existing Electra power plants in Praia and Mindelo to an acceptable standard; ii) reduction of noise emissions from the existing Electra power plants in Praia and Mindelo to reach acceptable limits and iii) collection and treatment of waste water and pluvial drainage from the Electra facility on Sal.
- Review the existing environmental status of all municipal systems to prioritize allocation of economic resources either to relocate these operations to environmentally more suitable sites or to connect to the existing major grids. Develop mitigation plans.
- Develop, record and implement spill contingency plans, standard operating procedures for fuel and oil handling, fire fighting and emergency plans for both Electra as well as municipal units.
- Identify and develop appropriate new sites for thermal power plant expansion (for municipal as well as Electra plants). Provide all new sites with exclusion zones, to protect against future encroachment from

residential or other conflicting land use. Identify present day land ownership and ensure that ownership can be transferred permanently or leased to Electra for a period of not less than 50 years.
- Build capacity within Electra and the regulatory agencies (SEPA) to: (i) apply EIA methodology for future expansion projects, (ii) perform strategic planning with respect to environmental protection, (iii) develop standards and regulations appropriate for the sector and (iv) define needs for, and monitor environmental performance in the sector.
- Develop the necessary institutional organization and capability to launch, administrate and enforce a collection and recycling/disposal scheme for used batteries and acid.

Energy Component: Wind Farms:
The following mitigating measures have been recommended:
- Enforcement of good civil engineering and construction practice;
- Negotiation of the Wind Farm sites ownership and/or concession between Electra and Municipal Governments;
- Designation of exclusion zones around each Step 1 and 2 site;
- Limitation on expansion of the quarry at the Praia site;
- Use of underground cables in preference to overhead lines;
- Provision of training, and establishment of a reporting system, for bird collision victim collection and identification;
- Detailed review of ornithological issues concerning any future movement of the proposed sites into coastal or mountainous areas;
- Ecological baseline study of Sal southern site (if selected) with post-construction visit.

C. Action Program

Water and Sanitation Component: To be able to implement the recommended mitigating programme in an effective and efficient manner it is recommended to (i) enforce environmental mitigation measures during construction; (ii) implement an Environmental Monitoring Plan covering communities, coastal waters, groundwater, rivers with social, biological, physical and chemical parameters; (iii) implement an environmental management training programme and education programme on organisation and strategic planning, standards and regulations, monitoring and operation of water and sanitation services; (iv) implement a comprehensive awareness programme on water-sanitation-health, environment, social communication. The details of the recommended measures can be seen in table 7.1.

Energy Component: Table 7.2 presents the actions needed to implement the environmental mitigation programme and an estimated budget. The budget covers primarily the study and program costs to establishing the necessary measures.

Table 7.1 Water and Sanitation: Action Program and Measures:

Action	Main aspects and requirements	Application Phase	Documents provider	Responsibility	Cost Estimate-US$
Enforcement of environmental mitigation measures during construction of water and sanitation systems	Identify environment aspects during implementation of water and sanitation systems • Pollution control • Vegetation protection • Erosion control • Burrow areas and landfill sites control • Construction waste control	During construction phase	Consultant Company	MIT	Included in the Bid Documents
Environmental Monitoring Plan	Communities, Coastal waters (For Praia and Mindelo), Groundwater (particularly for Assomada) and Rivers. Social, Physical, Chemical and Biological parameters.	During construction phase and operation of water and sanitation systems	Consultant Company	SEPA / INGRH	150.000 US$ to prepare a monitoring plan
Management Training and Sanitary and Environment Education Program for all organised employees involved	Organisation and Strategic Planning Development of Standards and Regulations Monitoring of the Environ-ment Routine operations of Water and Sanitation	Phases: planning design, construction and operation of water and sanitation systems	Consultant Company	SEPA	100.000 US$ to prepare a training program inclusive curriculum and materials
Awareness Program	Water-Sanitation-Health Sanitation-Environment Social Communication	Phases: planning design, construction and operation of water and sanitation systems	Consultant Company	SEPA	100.500 US$ to make initial survey on awareness and prepare awareness program

Table 7.2 Energy: Action Program and Measures:

Action	Main aspects and requirements	Application Phase	Documents provider	Responsibility	Cost Estimate-US$
Enforcement of environmental mitigation measures during rehabilitation of thermal units and Off-grid electrification	Execute the detailed study of environment aspects of safety and protection during rehabilitation of thermal units: • Reduction of air emissions • Reduction of noise • Collection and Treatment of waste water and pluvial drainage • Solid Waste control • Spill Contingency Plan	During rehabilitation phase	Consultant Company	Electra, SEPA, PMU	39,750 to prepare the reduction of air emissions study 40,000 to prepare the noise and water studies 54,000 to prepare the Contingency Plans
Environmental Monitoring Plan	Control and evaluate mitigating measures, establish parameters, stations and procedures	During construction phase and operation of thermal units and Off-grid electrification	Consultant Company	Electra, SEPA, PMU	20,000 to prepare a monitoring plan
Environment Management Training and Sanitary and Environment Education Program for all organized employees involved	Utility management Operation of Water and Sanitation infrastructure	Phases: planning design, construction and operation of Thermal Units and Off-grid electrification	Consultant Company	Electra, SEPA, PMU	95,500 to prepare and execute a training program
Wind Farms: Bird Control: Training Program	Procedures and Management: Bird Collision	Phase: Operation	Consultant Company	Electra, SEPA,	10,000 to execute a training program

D. Environmental Management and Training

Water and Sanitation

The Environmental Management should be undertaken by both the operator (presently EMAP in Praia, the *Camara Municipal* in Assomada and Electra plus *Camara Municipal* in Mindelo) and the regulator (SEPA and INGRH). The current capacity of the existing institutions is generally not sufficient to guarantee satisfactory environmental management. This is with respect to knowledge, skills, experience and equipment. SEPA and INRGH need to be ahead of the operators to be able to manage the environment rather than being managed. It is very important that environmental management is done in close collaboration between the operator and the regulator, but also that the two groups are clearly distinct and independent of each other. SEPA must be capable of looking ahead and in collaboration with the industry develop new procedures and regulations as technology and demands on resources develop. Environmental Management must be seen globally and it is important that the management strategy is transparent and known to all parties including the public. Also relevant environmental information must be published regularly to ensure full participation and avoid unnecessary unrest due to misinformation. It is anticipated that in the longer term the INGRH should be able to develop some impact monitoring programs. An overall Training program must include the headlines in Table 7.; the details are only examples.

Table 7.3

Capacity Building in Environmental Management

Activities	SEPA	INGRH	*Camara Municipal*	Electra
Training in strategic planning Setting objectives Internal Organising Consultative / Participatory approach Communication / Information	X	X	X	X
Training in development of standards and regulations International requirements/experience Enforcing standards and regulations	X			
Training in monitoring of the environment Water quality laboratory technique Remote sensing Mathematical modelling		X	X	X
Training in routine operation of water and sanitation services Safety procedures Sewer treatment plants (several sub issues) Chlorinating potable water Maintenance of submerged pumps Leak detection and repair			X	X
Technical assistance Support from long or short term specialists Equipment and materials	X	X		

The environmental management-training program should be co-ordinated closely with the support the institutions already being received from Portugal and Sweden.

Energy

The lack of experience in environmental protection work, in national environmental guidelines and environmental administrative capacity creates complications in relation to the design, implementation and control of the EAP for the proposed project. In order to carry out and manage the proposed mitigation measures and execute the proposed monitoring plan, experts in these areas have to be allocated to the project.

It is recommended that a study with the main objective of determining the need for regulatory authority capacity building be undertaken. Not only with respect to the specific needs of the proposed project, but with the greater aim of developing the environmental protection agency and national environmental protection guidelines to a standard appropriate to the country's need as a whole. Especially pertinent for this specific project is training and capacity building in:

- Environmental protection, legislation, regulation and guidelines
- Pollution control and monitoring
- Risk and safety management, assessment and analysis
- Environmental impact assessment, management and auditing
- Oil spill contingency planning, emergency response planning

Within the context of this specific project, it is recommended that a small ad-hoc environmentaladministrative and regulatory structure (the Committee) incorporating, if necessary, assistance from international experienced consultants be established. The implementation of the EAP will in that way serve as a pilot project in EIA and implementation of EAP and transfer valuable methodological and environmental experience from international consultants to Cape Verde regulatory agencies.

The main objectives of the advisory committee would be that of advising, examining and evaluating the environmental action plan for the project. The committee would incorporate:

- one member representing the Government of Cape Verde (chair),
- one member representing SEPA (high-level environmental officer),
- one member representing international environmental impact assessment and pollution control expertise, and
- one member representing Cape Verde energy and environment NGOs.

Electra, ENACOL, Shell Cabo Verde and other operators in the energy sector may act in an advisory capacity and as a dialogue partner to the Committee to define and implement all national standards and good engineering practices with respect to issues such as fuel handling and disposal, contingency planning and emergency response planning, to be defined by the Government of Cape Verde or its Executive Agency.

It is recommended that the main responsibility for the economic component and the implementation part of the EAP be designated to Electra for their specific tasks. Electra should designate an environmental liaison officer. He should carry the responsibility for implementing the EAP and coordinating environmental activities with the local and national authorities and contractors. A responsible environmental officer representing the Government or its Executive Agency (SEPA) should be designated to the project and carry the overall administrative responsibility for controlling the implementation of the EAP.

It is thus recommended to contract an international consultant experienced in regulatory capacity building, EIA, pollution control and monitoring design. The international consultant should act as project leader for supervising the environmental part of the project and carrying the overall responsibility for supervision and implementation of the environmental action plan. The project leader will also be responsible for environmental clauses in any tender documents. A tentative budget for the assistance provided by the international expert is presented below and the internal manpower costs to Electra or SEPA isnot included.

ITEM	**COST**
Technical Assistance	
International consultant, 4 man-months (1 man month = 17,500 US$)	70,000 US$
Reimbursable expenditures	
3 international airfare (round-trip)	9000 US$
pr. diem (60 days/150 US$)	9000 US$
Reporting	2,500 US$
Miscellaneous	5,000 US$
TOTAL	**95,500 US$**

Annex 8
Cape Verde Energy and Water Sector Reform and Development Project
Project Processing Budget and Schedule

A. Project Budget (US$000)	Planned	Actual
	$225.000 (BB)	$202.000
	$139.000 (GEF)	$94.000

B. Project Schedule	Planned (At final PCD stage)	Actual
Time taken to prepare the project (months)	6	12
First Bank mission	02/10/95	20/09/97
Pre-appraisal mission departure	10/10/97	10/10/97
Appraisal mission departure	05/25/98	05/25/98
Negotiations	08/10/98	01/19/99
Board	09/22/98	05/11/99
Planned Date of Effectiveness	12/31/98	08/31/99

Prepared by: Office of Vice Prime Minister
Preparation assistance: PPF Q069-0/1 CV: $1,300,000. Japanese Grant TF29426: $400,000.
GEF PDF Grant TF28964: $230,000
Cape Verde team:

Name/entity	Specialty
Antão Fortes, VPM's Office	Project preparation coordinator
Martinho Ramos, Electra	Power sector reform
J. Fonseca, Electra	Power sector development
A. Fonseca, Electra	Electra financial projections/restructuring
A. Horta, EMAP	Water/sanitation development Praia
Jorge Brito, INGRH	Water sector reform
J. Goncalves, VPM/ERSO	Electra privatization
P. Monteiro	Water/sanitation development Assomada
L. Sousa, MIH	Sanitation development
Local consultants	Environment, legal, financial

Bank team:

Name, Unit	Specialty
Philippe Durand, AFTG1	Team leader
Matar Fall, AFTU2	Water & sanitation sector
Noureddine Bouzaher, AFTG1	Economic analysis
Richard Spencer, IENPD	Renewable energy
Susana Hristodoulakis	Project costs
Magaye Gaye	Financial management
Agilson Perazza, consultant	Environment impact assessment
Serge Pagnucco, consultant	Financial analysis

Quality Assurance Team:

Hernán García, IENPD	Power sector reform
Jan Janssens, AFTU2	Water and sanitation sector reform
Omar Fye, AFTE1	Environment
Robin Broadfield, ENVGC	GEF component

Annex 9
Cape Verde Energy and Water Sector Reform and Development Project
Documents in the Project File

1. Plano Director de Energía Eléctrica. Relatorio final. Internel & EDF International Abril de 1993.

2. Cape Verde Wind Farms. Step 2. Feasibility Report (3 volumes). RISO & ElsamProjekt, Sept. 1996.

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Annex 10
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Republic of Cape Verde
Status of Bank Group Operations in Cape Verde
Operations Portfolio
As of 12-Apr-99

Project ID	Fiscal Year	Borrower	Purpose	Original Amount in US$ Millions				Difference Between expected and actual disbursements a/	
				IBRD	IDA	Cancellations	Undisbursed	Orig	Frm Rev'd
Number of Closed Projects: 5									
Active Projects									
CV-PE-55467	1999	GOV. OF CAPE VERDE	PRIVATIZATION TA	0.00	9.00	0.00	8.59	.27	0.00
CV-PE-50956	1998	GOV. OF CAPE VERDE	ECO. REFORMS SUPPORT	0.00	30.00	0.00	14.79	11.53	0.00
CV-PE-438	1996	GOV. OF CAPE VERDE	PRIVATE/FINANCIAL SE	0.00	11.40	0.00	4.95	2.26	0.00
CV-PE-426	1995	MIN EDUC & SPORTS/LABOR,	BASIC EDUCATION AND	0.00	11.50	0.00	1.38	-.75	0.00
CV-PE-437	1994	GOV. OF CAPE VERDE	PUB SEC REFORM & CAP	0.00	8.10	0.00	1.51	1.11	1.11
CV-PE-435	1993	GOV, ENAPOR, ASA	TRANSPORT INFRASTRUC	0.00	12.50	0.00	2.34	2.37	0.00
Total				0.00	82.50	0.00	33.56	16.79	1.11

	Active Projects	Closed Projects	Total
Total Disbursed (IBRD and IDA):	47.31	23.40	70.71
of which has been repaid:	0.00	.79	.79
Total now held by IBRD and IDA:	82.50	20.41	102.91
Amount sold :	0.00	0.00	0.00
Of which repaid :	0.00	0.00	0.00
Total Undisbursed :	33.56	0.00	33.56

a. Intended disbursements to date minus actual disbursements to date as projected at appraisal.

Note:
Disbursement data is updated at the end of the first week of the month and is currently as of 31-Mar-99.

Cape Verde
STATEMENT OF IFC's
Committed and Disbursed Portfolio
As of 28-Feb-99
(In US Dollar Millions)

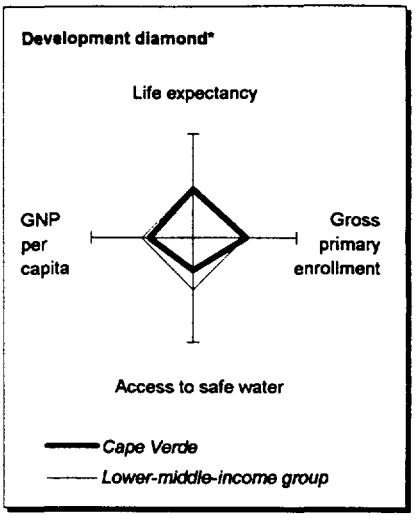
		Committed				Disbursed			
		IFC				IFC			
FY Approval	Company	Loan	Equity	Quasi	Partic	Loan	Equity	Quasi	Partic
1992	AEF Growela	.30	0.00	0.00	0.00	.30	0.00	0.00	0.00
1993	AEF Htl Tropico	.64	0.00	0.00	0.00	.64	0.00	0.00	0.00
Total Portfolio:		.94	0.00	0.00	0.00	.94	0.00	0.00	0.00

	Approvals Pending Commitment			
	Loan	Equity	Quasi	Partic
Total Pending Commitment:	0.00	0.00	0.00	0.00

Cape Verde at a glance

1/19/99

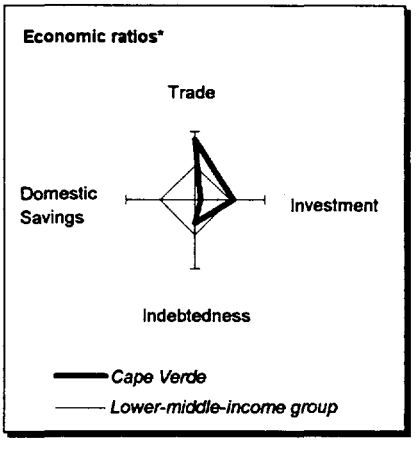
POVERTY and SOCIAL	Cape Verde	Sub-Saharan Africa	Lower-middle-income
1997			
Population, mid-year *(millions)*	0.40	614	2,285
GNP per capita *(Atlas method, US$)*	1,047	500	1,230
GNP *(Atlas method, US$ billions)*	0.42	309	2,818
Average annual growth, 1991-97			
Population *(%)*	2.3	2.7	1.2
Labor force *(%)*	1.3	2.6	1.3
Most recent estimate (latest year available, 1991-97)			
Poverty *(% of population below national poverty line)*	30	..	..
Urban population *(% of total population)*	52	32	42
Life expectancy at birth *(years)*	65	52	69
Infant mortality *(per 1,000 live births)*	46	90	36
Child malnutrition *(% of children under 5)*	19	27	..
Access to safe water *(% of population)*	52	44	84
Illiteracy *(% of population age 15+)*	28	43	19
Gross primary enrollment *(% of school-age population)*	114	75	111
Male	119	82	116
Female	110	67	113



KEY ECONOMIC RATIOS and LONG-TERM TRENDS

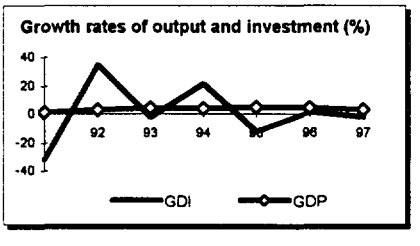
	1976	1986	1996	1997
GDP *(US$ billions)*	0.06	0.15	0.43	0.43
Gross domestic investment/GDP	36.3	48.3	33.5	30.3
Exports of goods and services/GDP	10.7	24.8	23.7	30.9
Gross domestic savings/GDP	-29.6	-7.7	-6.9	-4.6
Gross national savings/GDP	-34.1	9.3	25.7	23.5
Current account balance/GDP	..	-27.8	-7.9	-6.8
Interest payments/GDP	0.2	1.4	0.5	0.5
Total debt/GDP	19.2	79.2	53.8	61.8
Total debt service/exports	..	7.4	5.1	7.6
Present value of debt/GDP	0.0	0.0	31.4	36.2
Present value of debt/exports	..	0.0	68.4	73.6

	1976-86	1987-97	1996	1997	1998-02
(average annual growth)					
GDP	10.6	3.5	4.3	3.0	4.3
GNP per capita	9.4	1.2	1.5	0.2	1.6
Exports of goods and services	17.3	7.4	25.0	6.6	13.5

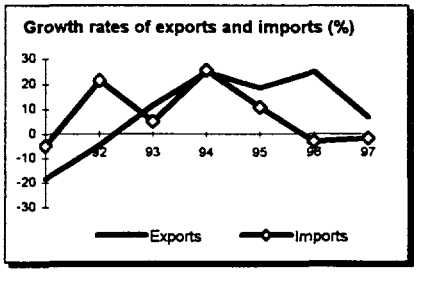


STRUCTURE of the ECONOMY

	1976	1986	1996	1997
(% of GDP)				
Agriculture	11.4	11.7	7.5	8.6
Industry	20.5	18.0	17.6	21.4
Manufacturing	..	..	0.6	0.5
Services	68.1	70.3	74.9	70.0
Private consumption	118.9	82.1	77.4	84.5
General government consumption	10.7	25.7	29.5	20.1
Imports of goods and services	76.6	80.9	64.2	65.9



	1976-86	1987-97	1996	1997
(average annual growth)				
Agriculture	9.3	-6.7	5.7	6.1
Industry	7.6	6.4	2.5	6.7
Manufacturing	..	18.7	3.9	3.5
Services	11.7	5.0	4.8	1.5
Private consumption	6.9	3.4	-2.9	3.9
General government consumption	12.6	13.3	-2.7	-7.3
Gross domestic investment	10.2	3.1	1.5	-2.1
Imports of goods and services	8.0	8.1	-3.1	-2.0
Gross national product	10.8	3.4	4.0	2.9

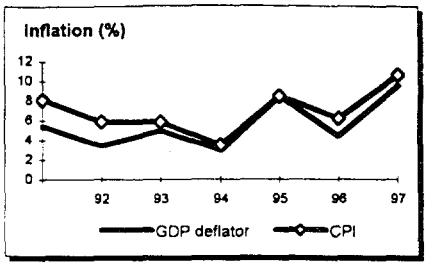


* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

Cape Verde

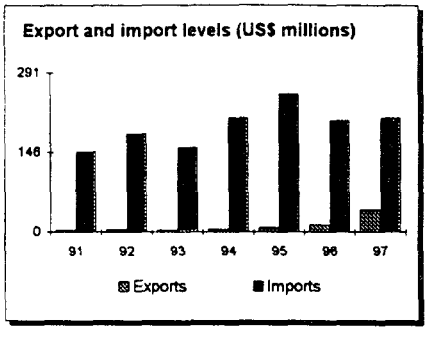
PRICES and GOVERNMENT FINANCE

	1976	1986	1996	1997
Domestic prices				
(% change)				
Consumer prices	..	10.9	6.2	10.6
Implicit GDP deflator	0.0	16.4	4.4	9.5
Government finance				
(% of GDP, includes current grants)				
Current revenue	..	21.9	35.9	36.8
Current budget balance	..	0.4	8.9	11.1
Overall surplus/deficit	..	-39.1	..	-14.6



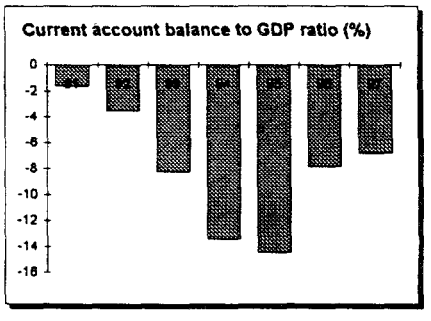
TRADE

	1976	1986	1996	1997
(US$ millions)				
Total exports (fob)	..	..	13	40
Commodity 1	..	..	1	1
Commodity 2	..	..	1	1
Manufactures	..	..	0	0
Total imports (cif)	..	91	203	209
Food	..	..	45	47
Fuel and energy	..	..	10	10
Capital goods	..	..	119	79
Export price index *(1995=100)*	..	..	100	100
Import price index *(1995=100)*	..	..	106	107
Terms of trade *(1995=100)*	..	..	94	94



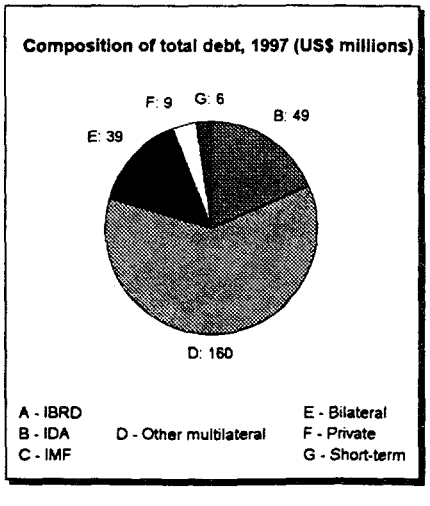
BALANCE of PAYMENTS

	1976	1986	1996	1997
(US$ millions)				
Exports of goods and services	..	36	101	132
Imports of goods and services	..	102	273	280
Resource balance	..	-65	-172	-149
Net income	..	-4	-7	-7
Net current transfers	..	73	146	108
Current account balance	..	-41	-33	-29
Financing items (net)	..	44	36	24
Changes in net reserves	..	-4	-3	5
Memo:				
Reserves including gold *(US$ millions)*	33	56	54	50
Conversion rate *(DEC, local/US$)*	30.2	80.1	82.6	93.2



EXTERNAL DEBT and RESOURCE FLOWS

	1976	1986	1996	1997
(US$ millions)				
Total debt outstanding and disbursed	12	115	229	263
IBRD	0	0	0	0
IDA	0	5	42	49
Total debt service	0	5	10	16
IBRD	0	0	0	0
IDA	0	0	0	0
Composition of net resource flows				
Official grants	11	76	62	62
Official creditors	11	7	36	16
Private creditors	0	1	0	0
Foreign direct investment	0	0	28	12
Portfolio equity	0	0	..	..
World Bank program				
Commitments	0	0	11	30
Disbursements	0	2	9	8
Principal repayments	0	0	0	0
Net flows	0	2	9	8
Interest payments	0	0	0	0
Net transfers	0	1	9	8



CAPE VERDE

ELECTRIC POWER AND WATER SUPPLY SYSTEM

SISTEMAS DE FORNECIMENTO DE ENERGIA ELÉCTRICA E AGUA

ENERGY AND WATER REFORM AND DEVELOPMENT PROJECT

PROJECTO DE REFORMA E DESENVOLVIMENTO DOS SECTORES DE ENERGIA E AGUA

INSTALLED POWER CAPACITY (DIESEL PLANTS)
CAPACIDADE ELÉCTRICA INSTALADA (PLANTAS DIESEL)

INSTALLED CAPACITY (WINDFARMS)
CAPACIDADE ELÉCTRICA INSTALADA (PLANTAS EÓLICAS)

PLANNED CAPACITY (WINDFARMS)
CAPACIDADE PREVISTA (PLANTAS EÓLICAS)

WATER DESALINATION PLANTS
PLANTAS DESALINADORAS DE AGUA

BOREHOLES
FUROS

POWER TRANSMISION LINE (EXISTING)
LINHAS DE TRANPORTE ELÉCTRICO (EXISTENTES)

POWER TRANSMISION LINE (PLANNED)
LINHAS DE TRANPORTE ELÉCTRICO (PREVISTAS)

INTERNATIONAL BOUNDARIES
FRONTEIRA INTERNACIONAL

WINDWARD ISLANDS

LEEWARD ISLANDS

ATLANTIC OCEAN

SANTO ANTÃO
Ribeira Grande
Paúl
Pôrto Novo

SÃO VICENTE
Mindelo
1800 KW
3600 m³/day

SANTA LUZIA

BRANCO

RASO

SÃO NICOLAU
Ribeira Brava
Tarrafal

SAL
4000 KW
Palmeira
1250 m³/day
1200 KW
Airport
600 KW
Santa Maria

SAL-REI
712 KW
195 m³/day
BOA VISTA

SANTIAGO
1250 m³/day
Tarrafal
1300 KVA
Sta. Cruz
Sta. Catarina
Pedro Badejo
São Jorge
4800 KW
São Domingos
900 KW
115 KVA
PRAIA
2600 m³/day
11528 KW
2500 m³/day

MAIO
Vila do Maio
2512 KW

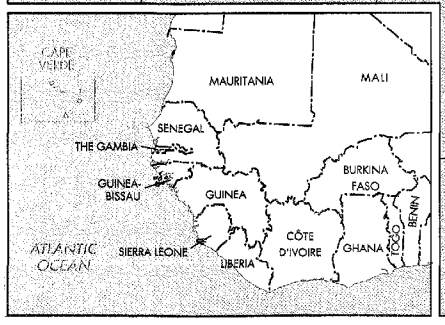
ROMBO
Mosteiros

SECOS

FOGO
Fúrna
São Filipe

BRAVA
Nova Sintra

0 10 20 30 40 50 60 Kilometers
0 10 20 30 40 Miles



MARCH 1999