

East Asia and Pacific Region  
EASEG

<b>Date:</b> August 28, 2003 <b>Sector Manager:</b> Junhui Wu <b>Country Director:</b> Robert V. Pulley <b>Project ID:</b> P066397 <b>Lending Instrument:</b> Adaptable Program Loan (APL)					<b>Team Leader:</b> Selina Wai Sheung Shum <b>Sector(s):</b> Power (50%), Renewable energy (50%) <b>Theme(s):</b> Infrastructure services for private sector development (P), Rural services and infrastructure (P), Environmental policies and institutions (P)				
<b>Global Supplemental ID:</b> P072096 <b>Sector Manager/Director:</b> Junhui Wu <b>Lending Instrument:</b> Adaptable Program Loan (APL) <b>Focal Area:</b> C - Climate change <b>Supplement Fully Blended?</b> Yes					<b>Team Leader:</b> Selina Wai Sheung Shum <b>Sector(s):</b> Renewable energy (100%) <b>Theme(s):</b> Climate change (P) , Rural services and infrastructure (S)				
<b>Program Financing Data</b>									
<b>APL</b>		<b>Indicative Financing Plan</b>			<b>Estimated Implementation Period (Bank FY)</b>		<b>Borrower</b>		
		<b>IBRD US\$ m</b>	<b>%</b>	<b>Others US\$ m</b>	<b>Total US\$ m</b>	<b>Commitment Date</b>	<b>Closing Date</b>		
<b>APL 1 Loan/ Credit</b>		10.00	37.5	16.70	26.70			Development Bank of the Philippines, with the Republic of the Philippines as guarantor	
<b>APL 2 Loan/ Credit</b>		35.00	61.9	21.50	56.50			Development Bank of the Philippines, with the Republic of the Philippines as guarantor	
<b>APL 3 Loan/ Credit</b>		50.00	66.7	25.00	75.00			Development Bank of the Philippines, with the Republic of the Philippines as guarantor	
<b>APL 4 Loan/ Credit</b>		55.00	73.5	19.80	74.80			Development Bank of the Philippines, with the Republic of the Philippines as guarantor	
<b>Total</b>		150.00		83.00	233.00				
<input checked="" type="checkbox"/> <b>Loan</b> <input type="checkbox"/> <b>Credit</b> <input type="checkbox"/> <b>Grant</b> <input type="checkbox"/> <b>Guarantee</b> <input type="checkbox"/> <b>Other:</b> government, private sector, consumers									
<b><u>For Loans/Credits/Others:</u></b>									
<b>Loan Currency:</b> Japanese Yen									
<b>Amount (US\$m):</b> 20									
<b>Borrower Rationale for Choice of Loan Terms Available on File:</b> <input checked="" type="checkbox"/> <b>Yes</b>									
<b>Proposed Terms (IBRD):</b> Fixed-Spread Loan (FSL)									
<b>Grace period (years):</b> 8					<b>Years to maturity:</b> 20				
<b>Front end fee (FEF) on Bank loan:</b> 1.00%									
<b>Initial choice of Interest-rate basis:</b>									
<b>Type of repayment schedule:</b>									

☐ Fixed at Commitment, with the following repayment method (choose one):

☒ Linked to Disbursement

Conversion options: ☒ Currency ☒ Interest Rate ☒ Caps/Collars:

Financing Plan (US\$m):	Source	Local	Foreign	Total
BORROWER		0.20	0.00	0.20
IBRD		0.00	10.00	10.00
GLOBAL ENVIRONMENT FACILITY		0.00	9.00	9.00
LOCAL SOURCES OF BORROWING COUNTRY		3.40	0.00	3.40
SUB-BORROWER(S)		3.10	0.00	3.10
UN DEVELOPMENT PROGRAMME		0.00	1.00	1.00
<b>Total:</b>		6.70	20.00	26.70

**Co-financing for GEF Supported Activities:** Renewable Energy Components, with (a) GEF trust fund implemented by the World Bank for the rural electrification subprojects and capacity building (\$9 million), and by UNDP for the partial credit risk guarantee component (\$1 million); and (b) co-financing with the government, DBP, private investors and consumers (\$9.6 million).

**Borrower/Recipient:** DBP

**Responsible agency:** DBP,DOE

DEVELOPMENT BANK OF THE PHILIPPINES (DBP)

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**Estimated Disbursement in US\$m Equivalent (Bank FY/Semesters):**

FY	2004	2005	2006	2007	2008	2009	2010	
Source	Sem. 1 Sem. 2	Sem. 1 Sem. 2	Sem. 1 Sem. 2	Sem. 1 Sem. 2	Sem. 1 Sem. 2	Sem. 1 Sem. 2	Sem. 1 Sem. 2	
IBRD	0.00 0.30	0.30 0.40	0.50 1.00	1.00 1.00	1.00 1.00	1.00 1.00	1.50	
GEF	0.00 0.30	0.30 0.40	0.50 1.00	0.60 0.90	1.00 1.00	1.00 1.00	1.00	
<b>Cumulative</b>	\$0.60	\$2.00	\$5.00	\$8.50	\$12.50	\$16.50	\$19.00	

**Project implementation period:** 5 years

**Expected effectiveness date:** 01/31/2004

**Expected closing date:** 12/31/2009

## **A. Program Purpose and Project Development Objective**

### **1. Program purpose and program phasing:**

The eradication of poverty remains a top national concern and a daunting challenge to the Government of the Philippines (GOP). About 37% of the population are below the national poverty line, of which some 70% are living in the rural areas. To achieve the overarching objective of poverty alleviation, the government's medium term plan is anchored on economic growth with social equity, including bridging the urban/rural divide. Towards this end, rural electrification is a pro-poor flagship program of the Department of Energy (DOE) which aims to improve the quality of life in rural areas through the provision of adequate, affordable and reliable energy services, in partnership with the private sector. Access to modern energy, particularly electricity, is a key element that cuts across all sectors in rural development. Whether it is used to provide higher quality lighting for rural homes accustomed to kerosene lamps or provide power for rural industries and microbusinesses, the availability of even small amounts of electricity can make a difference in the lives of people in remote rural areas.

The latest DOE target, set in 2001, calls for increasing barangay (village) electrification from 77% in 2000 to 100% in 2006, entailing electrification of about 8,300 barangays during the period 2001-2006. 30% of non-electrified barangays are in remote areas, or with low sales density, and grid extension in many instances is not financially viable. Indeed, even when all the barangays are considered electrified (defined by DOE as having at least ten households served in a barangay in off grid areas), about one million households will still not have access to electricity. Given the high cost of service in remote areas and concerns for limited affordability of the poor, coupled with fiscal and institutional constraints, the government recognizes the challenge of achieving its vision for the rural power sector. In rising to meet this challenge, the government has recently put in place an enabling policy framework for far reaching structural reforms in the rural power sector.

It is in this context that the Rural Power Development Program is a high priority of the government. The Program would provide support for the implementation of reforms and priority investments critical for achieving the goals for the sector in a sustainable manner. It also provides a programmatic structure for testing new business models and “learning by doing”. Targeted Bank support for this Program will be financed under an adaptable program loan (APL), rolled out in 4 phases over a period of about 14 years. At present, only about 25% of the Electric Cooperatives [ECs, the key service providers in rural areas] are considered to be financially self-sufficient, and some 20% of the population still do not have access to electricity. By the end of the APL Program, it is envisioned that 90% of the ECs would have become financially self-sufficient and about 90% of the population would have access to electricity.

During the initial phase of the APL, a two-pronged strategy would be adopted for assistance provided under the rural electrification subprojects:

(i) “quick win”, relatively low-risk, financially-viable investments to improve the efficiency of commercially-qualified ECs and transform them towards financial self-sufficiency; and (ii) pilot public/private partnership business models that bring in new players from the private sector for decentralized electrification. Based on lessons learned from similar projects in other countries, capacity building activities would be front-loaded during the first phase of the Program. Successful implementation of these pilot programs would be scaled up and expanded geographically in subsequent phases of the APL.

### **2. Project development objective: (see Annex 1)**

The objective of the project is to assist in the implementation of the first phase of the Rural Power Development Program aimed at supporting reforms and priority investments to improve quality of life in

rural areas through the provision of adequate, affordable and reliable energy services, in partnership with the private sector. Electrification is one important component of overall rural development efforts. With financing from the Bank and other donors, the government is presently carrying out projects to provide other infrastructure (notably roads and water supply), social facilities and other rural development support. The APL for the rural power project would complement this range of ongoing efforts.

### **3. Global objective:** (see Annex 1)

The project would contribute towards the global objective of mitigating climate change caused by greenhouse gas (GHG) emissions through wider use of clean, renewable energy technologies (RET) in power generation. This would be complemented by grid system rehabilitation and loss reduction in distribution systems operated by electric cooperatives (ECs) which would lead to increased efficiency of grid based supply, thus reducing harmful emissions associated with diesel-fired power generation.

### **4. Key performance indicators:** (see Annex 1)

It is proposed to address the monitoring indicators of the proposed project in three categories. The first will deal with traditional indicators addressing access and performance related issues such as number of connections, villages served, system losses, collection performance, debt service coverage and other technical and financial performance ratios. The second category will be related to GHG mitigation, including the scale of renewable energy technology mobilization, fossil fuel displaced, and expanded scope of the RET commercial sector. The third category will deal with the social and economic impact of rural electrification. Baseline socio-economic data, including average household income and monthly expenditures on energy consumption, have been collected through household surveys. Additional socio-economic data will be collected through household surveys under the ongoing market assessment study for solar home systems.

## **B. Strategic Context**

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

**Document number:** 24042      **Date of latest CAS discussion:** June 2002

The Country Assistance Strategy (CAS) reflects a two-part approach: achieve more rapid sustained growth; and empower the poor to increase their participation in development. This project supports both approaches. It addresses infrastructure deficiencies that limit growth, by placing high priority on the improvement of infrastructure facilities and services and by creating an enabling environment for private sector participation. It also seeks to empower the poor through the creation of greater opportunities that come with expanded access to power. The project pursues these twin objectives for the rural sector, which is a CAS priority area. The CAS also recognizes that the rural power reform agenda is complex, requiring long-term intervention and a programmatic approach to achieve sustained impact. Hence, the rationale for an APL approach. The project is also fully consistent with the government's Medium-Term Development Plan, which shares the CAS' overarching objective of poverty alleviation.

#### **1a. Global Operational strategy/Program objective addressed by the project:**

Philippines' Agenda 21 identified the promotion of renewable energy as a priority component of the country's global environment strategy. Its Climate Change Action Plan endorses a gradual shift from the current fossil-dominated energy mix to one that involves greater use of renewable energy resources. The UNDP/ADB/GEF Asia Least-Cost GHG Abatement Strategy (ALGAS) report and the outcomes of the UNDP/GEF Capacity Building Activity have both highlighted the crucial role of the energy sector in reducing Philippines' GHG emissions and have identified the promotion of renewable energy technologies

as a priority.

The government's commitment to promote renewable energy development has been indicated in the Philippine Energy Plan (2003-2012) and official policies, strategies and programs elaborated in DOE's Renewable Energy Policy Framework (dated June 2003) that sets ambitious targets for doubling the current level of renewable energy-based power generation capacity by 2012.

Due to the archipelago geography of the Philippines, individual off-grid systems or independent mini-grid solutions are expected to be the least-cost solution for about 30% of the non-electrified and underserved barangays. It is expected that RETs, particularly photovoltaic (PV) systems, small hydros and biomass power will be competitive, if market barriers to their adoption are significantly reduced. The pilot project component aims to test business models and build local capacity to remove market barriers to the wider adoption of RETs, including PV systems, in off-grid electrification, thus contributing to global reduction of GHG emissions in energy production.

## **2. Main sector issues and Government strategy:**

### **Background**

The National Electrification Administration (NEA) is the apex organization for implementing the government's rural electrification policy. Hitherto, it has been the predominant lender to the Electric Cooperatives (ECs), of which there are 119. Most of the distribution systems of the ECs are connected to the main grids. For remote areas and small islands, a functional group of the National Power Corporation (NPC) called Small Power Utilities Group (SPUG) is responsible for generating power (mainly through isolated diesel systems) that is then distributed by the ECs in the areas concerned.

By end-2002, 100% of municipalities and cities, 86% of barangays and about 80% of households have been electrified. Many unelectrified barangays are in remote areas that are far away from the main grids. Moreover, household densities and incomes in these areas are much lower than in the last connected areas, making expansion of electrification a difficult challenge for the ECs.

There is a great diversity of performance among individual ECs. Only about 25% of the ECs, for example, are considered eligible for private sector financing. Very few, if any, have the experience and capacity to introduce new decentralized power solutions to the unserved remote parts of their franchises. In the SPUG areas, the operation of many isolated diesel systems, which are heavily subsidized, have proved unsustainable.

As the country's rural electrification program enters the final, high-cost phase in reaching the remaining unconnected areas, it is clear that more effective institutional and financing arrangements must be found and new strategies formulated.

### **Main Issues in the Rural Power Sector**

#### ***1. Operational and financial constraints of many ECs***

These constraints have led to the vicious cycle of underinvestment in rehabilitation, low efficiency, poor quality of service, high cost and lack of attention to the needs of consumers in difficult or unviable areas. Most of the ECs cannot access private commercial financing for the necessary investments, while public sector funding, through NEA, is constrained.

#### ***2. Program heavily focused on grid extension/ high cost of providing service to remaining unserved***

*populations.*

The program being implemented by the ECs is almost wholly grid-extension. A primary reason for the lack of attention to offgrid areas is that unserved populations are highly dispersed. The high cost per connection is exacerbated by the generally low paying capacity of these customers. The ECs have limited capability or initiative to design decentralized solutions or apply least cost offgrid technologies.

**3. *Barriers to private investment in rural electrification***

Before the recent enactment of the Electric Power Industry Reform Act (EPIRA), there were major policy barriers for private sector entry. In particular, it was not possible for private third parties to engage in power provision to unserved areas within an EC franchise and subsidies for power generation in island grids could only be channeled to SPUG through NPC.

**Government Strategy**

The government's strategy for addressing these issues is contained in the Medium-Term Philippine Development Plan (MTPDP). One of the MTPDP's strategic objectives is to strengthen government and private sector partnership in infrastructure development, including the power sector. For rural electrification, the umbrella program of the DOE is the "O Ilaw" (gift of light) Program, which encompasses all electrification projects being undertaken by DOE and its attached agencies (NEA, PNOC and NPC).

EPIRA was approved in June 2001, followed by promulgation of the implementing rules and regulations (IRR) in February 2002. EPIRA stipulates the declared policy of the State to: (i) accelerate total electrification of the country; (ii) ensure the quality, reliability, security and affordability of the supply of electric power; (iii) establish a strong and independent regulatory body and system to ensure consumer protection and enhance the competitiveness of the electricity market; (iv) enhance the inflow of private capital and broadening the ownership base of the industry; and (v) promote the utilization of renewable energy in power generation. The DOE, for its part, has put in place a framework to facilitate implementation of EPIRA, including the priority actions in the rural power sector.

***Refocusing the role of NEA***

As part of the reform action plan, NEA will be restructured. EPIRA mandates NEA to (a) prepare the ECs for operating in the envisaged competitive market environment, (b) strengthen the ECs technical and financial viability, (c) review and upgrade the regulatory policies related to ECs, (d) develop Performance Improvement Programs and Rehabilitation and Efficiency Plans; (e) grant EC franchises until the reversion of this mandate to Congress in 2006; (f) administer subsidies from Congressional appropriation for line expansion by ECs; and (g) guarantee ECs in power purchase from the spot market. Apart from the operational improvements, the revised mandate of NEA includes the temporary takeover of EC management if there is a sustained failure of meeting operational guidelines.

***Segmented financing strategy to transform ECs***

In light of the significant diversity of performance among the ECs, the DOE's plan for assistance is a segmented financing strategy that is based on the graduation of better-performing ECs from public sector funding for financially viable investments. The categorization of ECs and the proposed plan for each category are shown in Table 1.

**Table 1. Categorization of ECs**

<b>EC Category</b>	<b>Characteristics</b>	<b>Number</b>	<b>Plan</b>
Type A	Better performance record, financially self-sufficient	Baseline: about 30 ECs (25% of total ECs)	Phase out public sector financing, increase autonomy Long term target: increase to about 90% of total ECs
Type B	Critical mass (size and density), high margins, high potential efficiency gains (high losses/low collection)	Baseline: about 10 ECs (8% of total ECs)	Phase out public sector financing using Investment Management Contract (IMC) model Long term target: convert all to Type A
Type C	Marginal viability, unable to attract private financing at present	Baseline: about 44 ECs (37% of total ECs)	Public sector lending or credit enhancement. Long term target: Convert all to Type A
Type D	Operating in low density and disadvantaged areas	Baseline: about 35 ECs (29% of total ECs)	Smart subsidy from government Long term target: decrease to about 10% of total ECs

The basic principle of the strategy is to tap, as a first resort, private sources of funding for EC investments. Public funding will be limited to the financing of: (a) viable investments (upgrading, subtransmission projects, etc.) by marginal ECs, that are important to lift the ECs from that status, but are unable attract private funding, and (b) non-viable expansion investments for both on-grid and offgrid electrification by financially viable ECs and new qualified third-party (QTP) players in certain unserved areas in accordance with the provision of EPIRA. The expansion investment project in such a case is generally non-viable and requires government subsidy to enable the QTP to obtain an adequate return. This is shown in Table 2.

**Table 2. Segmented Financing Strategy**

<b>EC Category</b>	<b>Financially Viable Investment</b>	<b>Non-viable expansion investments, including in areas waived by the ECs</b>
Type A [Financially self-sufficient project sponsors (a) ECs; and (b) non-ECs in areas waived by ECs]	Private sector funds as first resort; public/donors debt financing as last resort	Public sector financing (debt & subsidy) to attract private sector (QTP) investment
Type B [IMC candidates]	Private sector: IMC investor	IMC investor as a first resort; public sector financing if returns inadequate
Type C [Marginal ECs with potential to turnaround but unable to attract private financing]	Public sector debt financing and/or credit enhancements, subject to commitment to reforms	Public sector financing (debt & subsidy) to attract private sector (QTP) investments
Type D [Disadvantaged ECs]	Smart subsidy from government	Smart subsidy from government

Two innovative approaches to tapping private sector financing of ECs are summarized below. :

Commercial funding vehicle. Taking into account the experience of the Cooperative Finance Corporation in the US (CFC), a feasibility study sponsored by the IFC and the National Rural Electric Cooperative Association (NRECA) was completed for a new vehicle to tap long-term commercial funding by financially sound (Type A) ECs for viable investments. Fifteen ECs recently established this funding mechanism, entitled Rural Electrification Financing Corporation (REFC); about fifteen additional ECs have become equity shareholders of the REFC. REFC's request for funding is now being considered by the IFC and the ADB private sector facility.

Investment management contract (IMC) pilots. A PHRD-financed technical assistance (TA) activity completed a feasibility study of IMC pilots at five ECs, the management of which has been taken over by NEA due to their poor operational and financial performance. The findings of this study, including consultations with potential private investors/operators, confirm the potential for the pilot ECs to attract private risk capital and improve the quality of service by turning over the management of EC operations to the IMC investors/operators during the contract period. The IMC would, by design, provide incentives for efficiency through performance-based remuneration, enhance the accountability of service providers, and mobilize private finance without recourse to the government. The duration of the IMC contract would be sufficiently long (up to about 15 years) to initiate and sustain the change management towards operational efficiency and improved service levels as well as the culture of EC workforce and expectations of consumers even after the eventual departure of the IMC contractor. The NEA Board has recently approved the implementation framework for the IMC..

### ***Strategy for offgrid electrification***

As noted earlier, of the remaining unelectrified barangays, about 30% cannot be economically connected to the main grids (offgrid) and will require more expensive decentralized solutions. The government realizes that public funds alone will not be sufficient for this purpose; participation of the private sector, both as investors and as service providers, will be needed. Private investors will require cost-recovery pricing for the services that they provide, and, clearly, will need to be subsidized in some fashion if non-viable areas are to be served at all

### ***Removing barriers to private investments in rural electrification***

Three inter-related provisions of the EPIRA facilitate entry of the private sector as investors and service providers in rural electrification: a) rationalization of EC franchise areas, b) privatization of existing assets and operations of SPUG, and c) rationalization of tariff and subsidy policy.

- Rationalization of franchise areas. The EPIRA mandates the opening up of areas that the franchised utilities are unable to serve to other qualified third parties. This includes the case where extension of the grid from the neighboring EC is the least cost solution to electrifying unserved barangays, making it rational to redraw the borders between the two ECs concerned. At the same time, it enables the mobilization of new players, particularly other private parties, to accelerate electrification of the remaining unserved communities.
- Privatization of existing assets/operations of SPUG. The EPIRA-IRR calls for SPUG to bring its functions to commercial viability on an area-by-area basis at the earliest time and encourage private sector participation in its operations. Options for private sector participation in SPUG's operations will be identified with the assistance of consultants (financed by ESMAP and ODA trust fund). SPUG restructuring will require significant tariff reform, including mechanisms to manage the difficult transition to full cost recovery levels.



- **Rationalization of tariff and subsidy policy.** The government recognizes that cost-reflective pricing is a critical factor for the financial sustainability of the sector and its ability to attract private risk capital. It is also recognized, however, that the high cost of initial connection can be legitimately subsidized in part. Through the Rural Power Project, Government will test new subsidy approaches that 1) provide for private service provision; 2) subsidize, on an output-basis, part of the overall costs, so that affordability is enhanced; 3) provide for competitive subsidy award mechanisms; and 4) rigorously monitor outputs so that most subsidy is disbursed only on an ex-post basis once the targets have been met.

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

After a series of active Bank lending to NPC to eliminate the power crisis in the early 1990s, there has been no new Bank lending to the energy sector in the Philippines since 1996. The prevailing CAS calls for Bank assistance in the energy sector to be highly selective and focus on the rural power sector. In parallel, the Asian Development Bank (ADB) is taking the lead in providing financial support for power sector restructuring and NPC privatization; the Bank will continue to coordinate closely with the ADB on the policy dialogue with the government.

A rural power sector strategy and an indicative action plan for policy and institutional reform have been developed by the DOE with the assistance of PHRD-financed consultants. The reform framework, as summarized in the government's letter of sector development program (Annex 11), covers priority areas related to resolution of the key issues that, in effect, provides the underpinning for the APL.

Implementation of reforms and priority investments will be supported by this project.

#### ***EC transformation.***

The rural electrification component under the project will help finance the transformation of selected ECs. Further details are presented below (Section C and Annex 2). For background, the current institutional structure of the ECs does not point to inherent weaknesses. Indeed, a recent World Bank study indicated that institutional structure does not appear to be a critical factor for the success of rural electrification programs for the developing countries. The crux of the issue in the Philippines is related to political interference and deviations from sound commercial principles in the operations of many ECs, including the creation of ECs with non-viable franchise areas. In sum, minimization of political interference and maximization of professional management and commercial operations lie at the heart of the remedial action plan.

In accordance with EPIRA, EO 119 provides for EC restructuring as well as condonation of EC loans (from NEA and other government agencies) with corresponding reduction in EC tariff. Building on the results of earlier studies on the rural power sector, an ongoing PHRD-financed TA activity will develop a comprehensive program to break the vicious circle of underinvestment, reduce system losses and improve operational efficiency, thereby transforming marginal ECs towards financial self-sufficiency over the longer term.

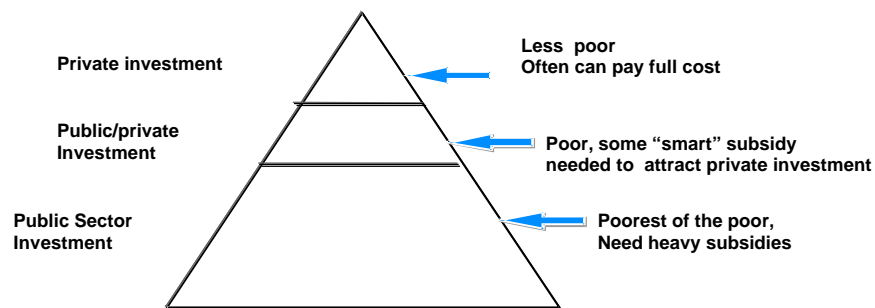
By selection criteria, all the ECs to be supported under this project have the potential for improving performance with some limited help. These ECs basically have fairly good managers and the desire and commitment to turn around. The inherent structure is viable (e.g. required consumer mix and network characteristics for profitable operations). They have been constrained mainly due to lack of financing for badly needed investments. Such financing will be made available under the project. The goal is to improve operational efficiency and help achieve a better financial position so that they could become eligible for private sector financing over the medium and longer terms. To ensure that commercial financing for ECs is

not crowded out in the future, an agreement was reached with DBP that it will price the subloans to ECs at rates that are no less than those of the REFC.

To complement the proposed Bank financing, credit enhancement mechanisms, including a possible GEF partial risk guarantee, is being developed to facilitate credit access for EC transformation. The GEF assistance is being justified on the basis of potential benefits of decreasing greenhouse gas emission through significant reduction in power distribution system losses and avoidance of fossil fuel power generation.

### ***Strategy for offgrid electrification***

While offgrid communities are generally “poor”, the income levels are typically segmented as follows:



The project will finance pilot schemes for offgrid electrification that will employ appropriate energy technologies and demonstrate innovative service mechanisms based on public/private partnerships. Such approaches have been successfully demonstrated in other countries. Incentives could be financial (subsidies) or non-financial (market conditioning support, etc). The size of the total market is crucial. Given enough customers in the “apex”, for example, it may be possible for an external vendor to have a profitable business selling solar home systems (“cream skimming”). What is more common global practice is for the public/private collaboration to cover both the apex and the next segment, with the government providing transparent "smart" subsidies. As an example, implementation of public/private partnership pilot schemes for mini-grids would be supported under this project. The “base” portion is the most problematical but could still be included in such collaborations if political will are backed up by sufficient budgets. The pilot projects will test investment cost sharing with the private sector, with the government providing transparent and well targeted subsidies.

### ***Removing barriers to private investment***

With the opening up of unserved EC franchise areas to qualified third parties, the immediate task for DOE was to determine the location of such areas, develop a system for cost-sharing with the private sector and institute a procedure for competition and contract awards. This was the essence of the Missionary Electrification Development Plan (MEDP). During project preparation, technical assistance was provided to the DOE in the formulation of the interim MEDP and related universal charge which will be crucial for the implementation of the minigrid market package pilots under the project.

A key barrier to private investments is the lack of information on the nature of the investment project, the availability of subsidies, and the potential return on investment. For the initial phase of the MEDP and the first batch of pilot subprojects, a project pipeline is under development. This process may be

complemented in the future with a completely open competition where eligible bidders may request subsidy for any eligible connection, with award being based strictly on the basis of minimum subsidy requested.

Finally, there is a need to reduce the barrier to credit access by providers, suppliers and end-users of relatively new renewable energy technologies. Under the Bank-financed project, GEF will provide seed money to establish a partial credit risk guarantee fund, improving the climate for medium and long term commercial debt financing.

### **Strategic Choices**

The *first strategic choice* of the project is to place high priority in institutional and policy reform to effect a paradigm shift in leveraging limited government resources by attracting a diversity of new players and solutions, particularly from the private sector, in the financing and delivery of rural energy services through new and innovative public/private partnerships. Considered most crucial is the development of a more effective, output-based, sustainable subsidy policy for rural electrification, which will be applied to all types and sources of subsidies by the government in a coherent and integrated manner.

The *second strategic choice* made is to deliberately set realistically low targets in APL1 for the investments in offgrid electrification, comprising independent minigrids and individual solar PV systems. Experience by the Bank so far in similar projects in other countries (Argentina, Sri Lanka, Indonesia, India) indicates that the uptake of new technologies and new business models in offgrid situations proceed very slowly in the first few years but increases significantly once start up problems are solved and institutional capacity is built. It will be very important to take time and care in setting up the needed policy, institutional and financing framework and ensure maximum participation of all stakeholders in the effort early on.

### **4. Program description and performance triggers for subsequent loans:**

The proposed APL, with an indicative total amount of about \$150 million, would assist the country implement the priority reforms and investments necessary to substantially improve the state of the rural power sector. In particular, the APL is designed to support the implementation of difficult, long-term solutions through new business approaches. Phasing of the APL generally follows the "horizontal expansion" model to progressively adapt and expand the earlier successful approaches to include new areas and cohorts in other parts of the country. Mindful of the absorptive capacity of the institutions concerned, the proposed APL has been designed with manageable "bite size" modules, to be rolled out in four phases over a period of about 14 years. The implementation period of each phase will be five years, and the phases will be staggered, with commencement of the next phase one or two years prior to the completion of the prevailing phase. By the end of the APL program, it is envisioned that 90% of the ECs would have become financially self-sufficient and about 90% of the population would have access to electricity. An indicative phasing of the APL targets is summarized below. The indicative targets for APL2-4 are tentative, and will be subject to a full appraisal process.

	<b>Stand alone renewable energy system subcomponent</b>	<b>Mini-grid subcomponent</b>
	<b>(no. of connections/households)</b>	<b>(no. of connections/households)</b>
APL 1	10,000	8,000
APL 2	18,000	13,500
APL 3	40,000	14,500
APL 4	67,000	14,000
TOTAL	135,000	50,000

Judicious Bank loan and GEF grant support for priority investments would focus on two broad subsectors: (i) **EC grid subcomponent** which aims to transform ECs into empowered, competitive, efficient and financially viable organizations, which would allow them to effectively carry out their mandate of supplying electricity in a safe, reliable and cost effective manner; and (ii) **decentralized electrification subcomponent**, including small scale energy generation and mini-grids. The objective is to increase electrification through piloting of various types of mechanisms that would attract private sector participation while minimizing the government subsidy for financially non-viable off grid areas. Description of these project components is summarized in Section C and elaborated in Annex 2. To minimize the risks in portfolio management, there will be no earmarking of loan funds for individual subcomponents, thus allowing for maximum flexibility in the use of loan funds to support the “quick wins”.

The succeeding phases of APL would provide for expanding the geographic coverage of the rural electrification program by scaling-up successful pilot activities in previous phases, include the following: (a) rehabilitation of ECs under EC transformation subcomponent; and (b) decentralized electrification – small scale energy generation and minigrid market packages and acceleration of stand alone renewable energy systems in dispersed areas.

### **Performance Triggers of Investment Support**

(a) Performance indicators proposed as triggers for approval of APL2:

- Implementation, satisfactory to the Bank, of reforms in the rural power sector, as evidenced by (a) the issuance of a regulatory framework for the provision of electricity by qualified third party in areas unserved by the Distribution Utilities; and (b) issuance of DOE circular governing rationalization of subsidy for solar PV systems.
- About 50% of disbursement of APL1; and substantial commitment of the remaining loan balance
- For the EC grid subcomponent, about 70% of participating ECs achieve satisfactory financial performance, as indicated by their debt service coverage ratios of at least 1 time.

Similar to the condition of disbursement for a multi-component project, it is proposed that *specific triggers for proceeding to the next phase of APL support for each of the subcomponents, whether on grid or off-grid, be independent of each other*, since the trigger for one subcomponent is not critical for the successful implementation of the other subcomponents. Thus, for an individual phase of the APL, the project components could comprise one or both subsectors.

(b) Indicative triggers for approval of APL2 to APL3 are as follows:

- About 50% of disbursement of APL2 and substantial commitment of the remaining Bank loan balance

- Satisfactory implementation of the decentralized electrification, as indicated by (a) stand alone renewable energy system subcomponent – of the total prevailing target for SHS sold, about 100% completion for APL1 and about 25% for APL2; and/or b) mini-grid subcomponent – at least one new contract awarded to a private operator; and of the total prevailing target connections, about 100% completion for APL1, plus about 25% for APL2.
- For the EC grid subcomponent, about 70% of participating ECs achieve satisfactory financial performance, as indicated by their debt service coverage ratios of at least 1 time.

(c) Indicative triggers for approval of APL3 to APL4 are as follows:

- About 50% of disbursement of APL3 and substantial commitment of the remaining Bank loan balance
- Satisfactory implementation of the decentralized electrification, as indicated by (a) stand alone renewable energy system subcomponent – of the total prevailing target for SHS sold, about 100% completion for APL1 and APL2, plus about 25% for APL3; and/or b) mini-grid subcomponent – at least one new contract awarded to a private operator; and of the total prevailing target connections, about 100% completion for APL1 and APL2, plus about 25% for APL3.
- For the EC grid subcomponent, about 70% of participating ECs achieve satisfactory financial performance, as indicated by their debt service coverage ratios of at least 1 time.

## C. Program and Project Description Summary

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

The project components, which would be demand-driven, would include the following: (a) rural electrification subprojects; (b) partial credit guarantee fund; and (c) capacity building.

#### I. Rural Electrification Subprojects

The eligibility criteria for the subloans and subgrants to be financed under the Bank loan and GEF grant, respectively, are summarized in Annex 12.

**(a) Decentralized Electrification:** This will include small scale energy generation and distribution of basic electricity services to households, public centers (e.g. schools, health clinics) and productive applications. For purposes of testing different business models, these customers would be classified into two broad categories: concentrated and dispersed. The least-cost electrification solution for the concentrated users is normally a minigrid (or microgrid depending on the number of connections) powered by a centralized generation system, usually diesel, hydro and/or biomass power. For the dispersed users who are remote from the grid, the least-cost solution is normally individual photovoltaic (PV) systems. The first phase APL is intended to support systematic piloting of market-based electrification services at a sufficient scale and visibility, and generate needed interest and support by the private sector and municipalities.

#### *Small scale energy generation and minigrids*

The strategy for this subcomponent is to group the target barangays into “market packages” of sufficient critical mass for business operations. Depending on the characteristics of each package, one or more minigrids may be installed. For example, several barangays could be linked into one minigrid powered by a single hydro resource or the barangays could each have their own microgrids powered by small diesels. In any case, the business model is for a single entity to be contracted to provide long-term services to all customers in the entire package. Consistent with the provisions of the EPIRA, qualified third parties would be allowed to provide energy services in the unserved franchise areas of the incumbent ECs. These parties could be private rural energy service companies (RESCO), qualified NGOs or local cooperatives organized

for this specific purpose. An important objective of APL1 is to pilot these various types of service mechanisms and adopt the most successful ones for the subsequent phases. To the extent possible, the priority packages for project support are those that are commercially viable in themselves and require only non-financial incentives. It is recognized, however, that many of the offgrid communities have very low-income consumers, and that some form of “smart” subsidies may need to be provided by the government to enable the subprojects to be implemented. The preinvestment studies for two of the market packages have recently been completed. A transaction task force will be established at DOE and, with the assistance of transaction advisors, prepare bidding documents and model contract, along with marketing activities, including consultations with potential investors, investment promotion/road shows.

### ***Stand-alone Renewable Energy Systems***

For dispersed users that are not feasible to connect to the grids, this subcomponent will make available funds for direct purchase various capacities of PV systems through private vendors and NGOs. The solar PV subcomponents would include individual solar home systems (SHS), community or commercial sector applications including battery charging stations, schools, health clinics and other social institutions, community water supply, offices, shops, restaurants and other commercial facilities. Recognizing the generally low incomes of dispersed users and the still high capital costs of PV systems, the project will provide, through GEF and government funds, subsidies to lower the cost to consumers, and financing to spread out the payments. The suppliers would offer small PV system options (e.g. 20-60 Wp) sufficient to provide basic services to households. Competing vendors would be enticed to do business through incentives that include assistance in market development and capacity building, product promotions and other risk-reducing activities funded by the GEF grants. These grants would be supplemented with government subsidies to bring PV system prices close to the willingness-to-pay levels of consumers. Further, to remove the barrier of credit access, this subcomponent would provide a line of credits to financial intermediaries (such as rural banks and micro-finance institutions) to enable them to provide consumer loans for the PV systems and financing of incremental working capital for dealers. In addition, as elaborated below, GEF funding would support the provision of capacity building in PV financing operations and partial credit risk guarantees for the suppliers and users of PV systems.

**(b) EC Grid Subcomponents :** This subcomponent of the project will include support for the transformation of participating ECs through financially viable investments and other measures aimed at:

- (i) improving power supply system safety, reliability, efficiency and power quality for existing customers, through rehabilitation and capacity upgrades of the existing supply system and, in pursuance of EPIRA, acquisition of existing subtransmission assets from the National Transmission Corporation (Transco);
- (ii) removing supply system constraints and thus allowing additional customers to be supplied within financially viable grid service areas;
- (iii) encouraging institutional development of ECs, through implementation and adoption of efficient and effective staff organization structures, adoption of progressive, objective and transparent policies for staff hiring and promotions, performance based compensation packages to improve productivity and accountability of staff and management; and
- (iv) providing the necessary hardware, software, motor vehicles, tools and equipment to improve employee productivity, safety and efficiency of customer service provision.

## **II. Partial Credit Guarantee Fund**

One of the key barriers for renewable energy development is the lack of medium and longer term commercial debt financing, which is in turn attributable to the stringent collateral requirements of the

commercial banks. This has already been recognized in the UNDP-GEF project for Capacity Building to Remove Barriers to Renewable Energy Development (CBRED) in the Philippines, which includes a Loan Guarantee Fund, but does not cover solar PV. Under this project, a GEF-financed partial credit risk guarantee fund would be established to provide grant funds to financiers of renewable energy technology (RET), notably solar PV, to partially cover loan losses incurred in the provision of loans to RET purchasers and suppliers. As it is more efficient and effective for the two funds to be consolidated under one execution agency and one Project Management Office (PMO) at DOE, UNDP would be the implementation agency for the GEF trust fund for this component.

### III. Capacity Building

This component would be financed by GEF to foster the reduction of market barriers to the commercialization of RETs suitable for offgrid electrification through a comprehensive range of activities to (i) build capacity of DOE, DBP and selected public and private sector entities (including participating financial intermediaries, RET system suppliers, ECs, and NGOs) on selected RET matters, including appraisal, selection, procurement, and supervision related to RET subprojects; (ii) foster the reduction of investment risks in the rural power sector by carrying out surveys and assessments of rural electricity services market including RETs; and applying the findings of such surveys and assessments; and (iii) developing and implementing policies on energy tariffs and subsidies, regulation, and integration of RETs in the missionary electrification program, including the provision of computer hardware and software. Taking into account the lessons learned from similar projects in other countries, the technical assistance component to reduce market barriers to the commercialization of RETs would be front-loaded during the first phase of APL. Further details on the planned capacity building activities and their budgets for this project (APL1) and the overall APL program are presented in Annexes 2, 3 and 13.

Component	Indicative Costs (US\$M)	% of Total	Bank financing (US\$M)	% of Bank financing	GEF financing (US\$M)	% of GEF financing
1. Rural Electrification Subprojects	17.30	62.5	9.90	99.0	1.10	12.2
2. Partial Credit Guarantee Fund	1.00	3.6	0.00	0.0	0.00	0.0
3. Capacity Building	9.30	33.6	0.00	0.0	7.90	87.8
<b>Total Project Costs</b>	<b>27.60</b>	<b>99.6</b>	<b>9.90</b>	<b>99.0</b>	<b>9.00</b>	<b>100.0</b>
<b>Front-end fee</b>	<b>0.10</b>	<b>0.4</b>	<b>0.10</b>	<b>1.0</b>	<b>0.00</b>	<b>0.0</b>
<b>Total Financing Required</b>	<b>27.70</b>	<b>100.0</b>	<b>10.00</b>	<b>100.0</b>	<b>9.00</b>	<b>100.0</b>

Note: Partial Credit Guarantee Fund will be financed by GEF under the UNDP CBRED Project

### 2. Key policy and institutional reforms supported by the project:

Consistent with the thrust of the EPIRA, the government is committed to an action plan for policy and institutional reform over the medium and longer term (the letter of sector development program is in Annex 11). The reform framework covers the following priority areas:

- rationalization of tariff and subsidy policy for both grid and off grid electrification (this has been covered, in part, by the IRR of EPIRA);
- rationalization of franchise areas by opening up areas that cannot be served by the Distribution Utilities to qualified third parties;
- segmented financing strategy for ECs, measures for performance improvements of ECs to enable them to operate and compete effectively under a deregulated market, and transformation of marginal ECs towards financial self-sufficiency over the longer term;
- restructuring of NEA; and



- e) privatization of the existing assets/operations of SPUG.

The action plan is a living document that will be revised, as appropriate, to reflect changed circumstances and additional inputs from further analytical work.

### **Upfront Reform Actions**

A range of up-front actions has recently been put in place a satisfactory implementation framework for the above-cited policy and institutional reforms. Among these are reform actions that are already mandated by the EPIRA, including, (i) establishment of a competitive power structure; (ii) establishment of technical specifications in the Distribution Code and standards for service, performance and financial capability of distribution utilities; and (iii) rationalization of EC Franchises, including opening up to private sector participation and provision for tariff that allow full cost recovery. In addition, a series of policy directives aimed at strengthening the NEA and ECs include the following:

- Executive Order (EO 119) on NEA and EC restructuring, with the implementation rules on EC loan condonation as provided by the EPIRA;
- NEA Board issued guidelines for the submission by ECs of a Performance Improvement Program (PIP) and/or a Rehabilitation and Efficiency Plan (REP) to prepare ECs to operate and compete under the deregulated electricity market, and to strengthen the technical and managerial capability and financial viability of rural ECs.
- NEA policy authorizing ECs to avail loans from other sources, including collateral sharing; this is essential for the ECs to tap new sources of long-term commercial funding, including for example the newly established Rural Electrification Financing Corporation (REFC); and
- NEA Board approval of the implementation framework for investment management contract (IMC) as an innovative mechanism to bring in private risk capital to rehabilitate and improve technical and institutional operations of ECs without recourse to the government.

### **3. Benefits and target population:**

The project's target beneficiaries are the rural poor that would gain access to electricity under the project. Several studies, including an ESMAP study on the benefits of rural electrification in the Philippines, have established that electricity is a fundamental instrument in the quest for equitable rural growth. Studies have shown that access to electricity enables substantial improvement in living conditions of the poor and positively influences rural economic development. It provides opportunities to increase the effectiveness of social services, such as making possible adult literacy classes in the evenings under electric lights or making available medicines or vaccines that require refrigeration. Surveys carried out in the Philippines have shown that both the quality of life and household earnings improve with electrification. The number of households adopting electricity continues to grow for years after a village receives electricity, reinforcing the argument for evaluating these programs from a long-term perspective.

### **4. Institutional and implementation arrangements:**

- APL1 will be implemented over a five-year period. The projected disbursement profile and related chart on funds flow for the key project components is in Annex 2, while procurement, financial management and disbursement arrangements are in Annex 6 (b).
- An inter-agency Project Supervisory Committee (PSC), to be chaired by DOE, with memberships from national oversight agencies (NEDA, DOF) and DBP will be organized to provide policy direction, guidance and oversight supervision for the policy and institutional reforms supported under the project. At the implementation level, a Technical Working Group (TWG) will be organized composed of DOE,



DBP, NEA, SPUG, etc. to ensure coordination of activities among organizations involved in the implementation of various tasks as well as to act as the secretariat of the PSC, performing liaison tasks with oversight agencies.

- DBP will be the borrower for the rural electrification subproject component and will on-lend the loan proceeds to eligible sub-borrowers, including (a) satisfactorily performing ECs; (b) solar PV suppliers; (c) mini-grid project sponsors; (d) LGUs; (e) other qualified private sector proponents of rural electrification subprojects; and (f) participating financial institutions for providing consumer loans for the purchase of solar PV systems.
- DOE would implement the GEF grant for (a) eligible RET subprojects; and (b) capacity building on RET in selected public and private entities, except for DBP, which would implement a limited portion of the GEF grant for its own capacity building on RET.
- Both DOE and DBP will organize within their respective structures a separate project management office (PMO) to take charge of the day-to-day operations of their respective sub-components. Further discussions of the PMOs are in Section E (4.2 Project Management).
- Building on the existing lending policies and procedures of DBP, as articulated in its Desk Manual and Risk Asset Management Manual, an Operations Manual for this project has been developed to guide the preparation and implementation of subprojects. The Operations Manual include the policies and procedures for rural electrification subproject appraisal, approval, implementation, monitoring and evaluation. Separately, to guide the implementation of the GEF grant, DOE has developed an Operational Manual for the GEF-financed RET subprojects. Agreement has been reached on the Project Implementation Plan (PIP).
- Insofar as the decentralized electrification component is concerned, TA will be provided to DOE in the competitive bidding for mini grid contracts to private energy service providers who will use established commercial practices for procurement of goods and services once they have been awarded the contracts competitively. DOE will lead an inter-agency committee in tender evaluation. The procedures are shown in Annex 2, Attachment 1. One of the lessons learned from the LGU Water Project is that the private service providers should be responsible for the design of the subprojects, in addition to construction and operation.

## D. Project Rationale

### 1. Project alternatives considered and reasons for rejection:

**Project design alternative:** Perpetuation of "business as usual" approach: continued heavy reliance on national government funding and donors financing channeled through NEA, and continuation of monopoly by ECs within their individual franchised areas. While this approach represents the path of least resistance and thus far less time consuming and demanding (in terms of difficulty and resource inputs by the local counterparts and the Bank) during project preparation and implementation, it was rejected as it has proved to be unsustainable under the earlier Bank-financed Rural Electrification Revitalization Project (with outcome rated by OED as unsatisfactory).

**Instrument alternatives:** Other lending instruments, be it a specific investment loan (SIL) or a learning and innovation loan (LIL) for a subsector (e.g. off grid electrification), would be less complex and lower cost to prepare. However, they were rejected as they would not be adequate to support incremental changes and solutions to deep seated problems in a holistic and sustained manner over the long term. By contrast, the proposed APL would support the implementation of difficult, long-term solutions through learning by doing, starting with limited risks on a small scale to test new approaches which, if successful, would be replicated in other parts of the country under subsequent phases of the APL.

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

Sector Issue	Project	Latest Supervision (PSR) Ratings (Bank-financed projects only)	
		Implementation Progress (IP)	Development Objective (DO)
<b>Bank-financed</b> Primary objective is to finance a time slice of sector investments, with limited contribution to the sector's institutional and policy framework	First Rural Electrification Project (completed in 1978 and completed in 1983)  OED rating: satisfactory outcome	S	S
(a) NEA's capability to function as an effective core agency for rural electrification (b) Electric cooperatives' weak performance (c) availability and reliability of electric supply in rural areas	Rural Electrification Revitalization Project (approved in 1992 and completed in 1998) OED rating: unsatisfactory outcome	U	S
<b>Other development agencies</b> Rural Electrification  Rural Electrification [financing for Rural Electric Finance Corporation (REFC)]	JBIC (loan closed in October 2001) possible ADB private sector facility and IFC financing		

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

**3. Lessons learned and reflected in the project design:**

Care has been taken to incorporate lessons learned from earlier projects in the energy sector as well as the relevant country experience in other sectors, most notably (a) the APL for the LGU Urban Water and Sanitation Project in the Philippines, with DBP as the borrower; and (b) the IDA/GEF financed Energy Services Delivery Project in Sri Lanka. As part of project preparation, the Bank/ASTAE organized a workshop in Manila for the practitioners from the above Sri Lankan project to share the lessons learned in solar home system (SHS) financing programs with the key potential players of the SHS subcomponent under this project.

- The OED audit report on the Rural Electrification Revitalization Project included the following comments: Critical reforms requiring legislative action should be passed before a Bank loan is approved by the Board. One of the key issues is the failure of congress to pass the necessary enabling legislation required to recapitalize NEA. Yet the financial restructuring was crucial to putting NEA's finances on a sound footing. It was also a prerequisite for justifying the direct IBRD loan to NEA.
- Consistent with the OED audit report recommendation, the proposed borrower for this project is financially sound DBP which is governed by the prudential regulation of the Central Bank. In addition, NEA would not be the procurement agent under this project due to its poor performance under earlier projects. During project preparation, alternative local procurement agents for the ECs will be assessed

by an accredited procurement expert and satisfactory arrangements for a qualified procurement agent will be a pre-condition for any Bank-financed support for EC investments.

- The project design also takes into account the recommendations of OED review of Bank experience in rural electrification (*Rural Electrification in Asia: A Review of Bank Experience, June 1994, and Rural Electrification: A Hard Look at Costs and Benefits; OED Précis, May 1995*). The Project's proposed economic and financial appraisal will be strengthened, consistent with the recommendations of the OED review mentioned above. Additional lessons are obtained from *Rural Energy and Development (World Bank Development in Practice, September, 1996)* which recommends five main principles to provide better access to electricity: provide for consumer choice, ensure cost reflective pricing, overcome the high first cost barrier, encourage local participation, and implement good sector policies.
- The Bank is currently conducting a review of best practices in rural electrification. The emerging lessons from this review and incorporated in designing the proposed program include: the necessity of effective institutional structures to implement programs; the necessity for programs to keep political pressures from interfering with expansion plans; the development of a flexible set of criteria to direct the planning of service expansion; the continued importance of keeping distribution costs low, especially in areas with small electricity consumption; the overriding importance of cost recovery of distribution entities involved in rural electrification; encouraging all income groups in a region with electricity availability to obtain a connection; and the importance of involving local participation and cooperation to promote local ownership of the project.
- Other lessons learned are also obtained from "*The GEF Solar PV Portfolio: Emerging Experience and Lessons*", mainly based on review of WBG-financed projects in renewable energy. Key lessons include the following: (i) viable business models must be demonstrated to sustain market development for solar PV; (ii) delivery/business model development, evolution, and testing require time and flexibility; (iii) institutional arrangements for project implementation can greatly influence the value of the project in terms of demonstrating variable business models and thus achieving sustainability; (iv) projects must explicitly recognize and account for the high transaction costs associated with marketing, service, and credit collections in rural areas; (v) consumer credit is essential and can be effectively provided by microfinance organizations with close ties to the local communities if such organizations already have a strong history and cultural niche in a specific country; (vi) projects have not produced adequate experience on the viability of dealer-supplied credit a sales model; and (vii) rural electrification policies and planning have a major influence on project outcome and sustainability, and must be explicitly addressed in project design and implementation. Based upon this review, future projects in the GEF portfolio, including the proposed project, would focus on five key issues: (i) affordability; (ii) use of GEF resources for non-recurring costs; (iii) access to credit and incremental risk sharing; (iv) explicit linkages to rural electrification policies and planning; and (v) commercially feasible business models.
- Some of the lessons learned cited by a recent ICR for an energy project in the Philippines are relevant for this project: (i) there are no short cuts to a successful complex operation; above-average inputs of Bank resources and broad staff skill mix for project design, appraisal and supervision are required; and (ii) frequent changes of task manager and team members are not conducive to efficiency and effectiveness of the Bank's inputs.
- Lessons learned from the LGU Urban Water and Sanitation Project that are relevant for this project include: (i) subproject selection criteria to include agreement reached between service organizations and end-users regarding user payment for services and prioritization of subregional clusters; however,

measures are needed to mitigate potential risks related to a single contractor obtaining contracts in subregional clusters; and (ii) the need for mitigating the potential of political interference, streamlining the process of concluding private sector participation (PSP) transactions, improving the management of project implementation, and maintaining a pipeline for potential PSP deals.

#### **4. Indications of borrower and recipient commitment and ownership:**

The government has demonstrated its commitment to structural reforms through the recent passage of the EIRA. Consistent with the EIRA, DOE has developed a rural power sector strategy and an indicative time-bound action plan through a highly participatory approach. The government's commitment to promote renewable energy development has been indicated in the Philippine Energy Plan (2003-2012) and official policies, strategies and programs elaborated in DOE's Renewable Energy Policy Framework (dated June 2003) that sets ambitious targets for doubling the current level of renewable energy-based power generation capacity by 2012.

The Board of DBP, the proposed borrower, has approved DBP's participation in this project. During project preparation, DBP has demonstrated its support of the project through their participation in the Project Preparation Team led by DOE. Separately, targeted municipalities, barangays and ECs for Bank support will be identified through self-selection. Consultations with selected ECs, LGUs and the private sector indicated their interest to participate in this project. In the case of the solar PV subcomponent, eight companies have expressed interest and provided DOE with their business plan as part of the DOE requirement for accreditation of the companies to participate under the project.

#### **5. Value added of Bank and Global support in this project:**

The proposed Bank interventions, which are highly selective, fit well with both the East Asia regional strategy and the country's strategy over the 2010 horizon directed at sustainable social and economic development with equity. Over the past few years, the Bank has been instrumental in nurturing country ownership in policy and institutional reforms, most notably in the implementation of a paradigm shift and a segmented EC financing strategy to maximize private sector participation in the rural power sector. New approaches to address old problems are being developed by the Bank's global team, in close partnership with the IFC, bringing to bear the global experiences of the World Bank Group and its international partners, including GEF, Asia Alternative Energy Program (ASTAE), Energy Sector Management Assistance Programme (ESMAP), Public-Private Infrastructure Advisory Facility (PPIAF) and the Solar Development Group (SDG). This is particularly relevant for the decentralized electrification component. Although several market-based approaches for electrification of low-income offgrid areas have been successfully used in some countries, these emerging business models must be carefully tailored to specific country/site conditions. To ensure quality at entry, the Bank has facilitated the design and implementation of various essential preinvestment studies and mobilization of related grant financing from the international partners noted above. The Bank has also initiated donors meetings since January 2000, and some of the preinvestment studies were co-financed with USAID. Finally, the Bank has been proactive in promoting stakeholder consultation and participation, including civil society and academe, in the design and implementation of the reform agenda and the proposed APL.

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

#### **1. Economic (see Annex 4):**

- Cost benefit      NPV=US\$ million; ERR = % (see Annex 4)
- Cost effectiveness
- Incremental Cost
- Other (specify)

## Rural Electrification Subprojects

**(a) EC Grid Subcomponent:** Cost benefit analyses for two proposed EC subprojects serve as illustrative examples of the economics of this subcomponent. The quantified economic benefits of this subcomponent would include (i) significant gains in operating efficiency and resulting savings in operating costs; (ii) reduction in both technical and non-technical power distribution system losses and resulting savings in operating costs as well as environmental benefits; (iii) removal of supply system constraints improving the ability to serve additional customers; (iv) improvements in reliability and power quality, enhancing the value of benefits for various electricity applications; and (v) significant improvements in public and employee safety. When the current tariff of P5.95/kWh and P6.9/kWh is conservatively assumed as the willingness to pay (WTP) for Ileco II and III, respectively, the ERR is estimated at 23% and 34%, respectively. The above ERR is based on very conservative assumptions in the valuation of project benefits. Specifically, there are benefits related to the power quality and reliability of supply as well as social, environmental and public safety benefits associated with electrification and supply system rehabilitation and upgrades (e.g. the avoidance of significant number of burn injuries and fires; reduction in indoor pollution; the benefit to families of higher levels of educational achievement and attaining higher levels of income). These intangible project benefits have not been monetized. Further, from the surveys of energy expenditures of unelectrified households, electrification of unelectrified households implies significant gains in consumer surplus that should be included in the economic benefits. These studies show the average WTP for the first 300 kWh of consumption of a newly electrified household to be P15/kWh. If this value is applied to the first 300kWh for annual consumption of newly electrified consumers served by the ECs as a result of the project, the ERR increases to about 34% and 41% for Ileco II and III, respectively. While the resulting ERR is clearly very sensitive to the assumptions made, the switching value is P2.45/kWh and P4.22/kWh for Ileco II and III, respectively, which is significantly below the current tariff of the ECs concerned. Thus, there is a very low risk of this subcomponent being uneconomic as a result of the economic benefits being over-estimated.

**(b) Mini-grid Electrification Subcomponent:** The least life cycle cost generation technology for the mini-grids was analyzed in detail under the preinvestment study for the Palawan and Davao market packages. The minimum valuation of benefits can be taken as the replacement costs of energy expenditures that mini-grid electrification would displace. The survey data on monthly energy expenditure by income group serves as this baseline. Based on the assumption that average WTP is about P15/kWh, the observed WTP for households connected to small diesel gensets, the ERR for the Palawan and Davao market packages is estimated at about 28% and 21%, respectively. For Palawan, the assumed WTP corresponds to the monthly average HH expenditure of the poorest group (annual income less than P 40,000), and therefore represents a conservative assumption, given higher monthly energy expenditures of the non-poor. Indeed, the results of sensitivity analysis indicate that the ERR is robust with respect to the main uncertainties: increases in the world oil price; increases in initial cost (generating station and the initial mini-grid); and the estimate of WTP. The switching value for WTP is estimated at about P7.6/kWh and P8.7/kWh for the respective market packages at Palawan and Davao, which is substantially below the current market price for small diesel gensets noted above.

**(c) SHS Subcomponent:** Studies in the Philippines and elsewhere find that solar PV can be the least

cost solution to providing basic electricity services for lighting, communications and other household/community needs etc. in areas with small dispersed populations and remote from the grid. The economic benefits include (a) the avoided costs, in which the economic costs of the PV system are compared against the economic costs of energy expenditures (kerosene, battery charging, etc.) that the PV system replaces; (b) the gains in consumer surplus; and (c) global environmental benefits. The economic analysis of the solar homes component of the project shows high economic returns. Under conservative assumptions, the ERR for the first phase (APL-I), which has a target of 10,000 systems, is estimated at about 45% prior to consideration for environmental externalities. When global environmental benefits are included, the ERR increases to about 53%. The benefits are consistent with those estimated in other countries for similar projects. They reflect high willingness to pay for the improved levels of lighting service, and the significantly higher levels of TV viewing. The result of net economic benefit is robust with respect to input assumptions in the plausible range. A switching values analysis shows that increases in initial cost, problems in system performance, and assumptions about the shape of the demand curve pose relatively small risks to achieving the project benefits. With 10,000 systems as the goal for APL-I, the risks of having overestimated market size is small. Although distributors of solar home systems will need to make up-front business development investments, payment of government and GEF subsidies are linked to actual installation of systems, which necessarily implies customer willingness-to-pay for the system. Thus, the risk of the government/GEF supporting uneconomic investments is very small. Indeed, the results of a risk analysis validated the robust economic return of the SHS subcomponent.

## **2. Financial (see Annex 4 and Annex 5):**

NPV=US\$ million; FRR = % (see Annex 4)

The DBP, as borrower of record for the Project, will on-lend the funds to sub-borrowers, including subproject proponents and participating financial institutions, in accordance with the Operational Manual for their on-lending operations under this project. Onlending terms: up to 15 years maturity, including up to 5 years grace. Two interest rate options will be available to Project sub-borrowers: (a) a variable rate; and (b) a fixed rate, with a market-related, stepped-up pricing. To ensure that both the government and DBP are appropriately covered for their risks, the floor price formula will comprise the Bank rate plus guarantee fee plus Foreign Exchange Coverage Fee plus DBP's minimum spread. The pricing mechanism will be subject to review by DBP and the Bank, at least once a year, or as the need arises, and any changes to the mechanism are subject to agreement among DBP, the Bank and the government. Further discussions are in Annex 12.

### **I. Sub-borrowers**

The eligibility criteria for sub-borrowers (Annex 12) would include, among others, the willingness and ability of the sub-borrowers to pay for the debt service (as indicated by debt service coverage ratio of no less than 1time. In addition, the sub-borrowers would be required to contribute to local counterpart funding (at least 10% equity as local counterpart funding for LGUs and ECs and 25% for other subproject sponsors from the private sector). Illustrative examples of the projected EC finances for ILECO II and III, with projected debt service coverage ratio of at least 1.2 times even based on conservative assumptions, are in Annex 5. DBP has a track record of lending to 15 ECs, with 100% collection rate, while the collection rate from MFIs is 98%.

### **II. Rural Electrification Subprojects**

- **EC Grid Subcomponent:** By design and selection criteria, these investments would not require any government subsidy; they are relatively low risk, financially viable investments to improve the



efficiency of qualified ECs and transform them towards financial self-sufficiency.

- **Mini-grid electrification Subcomponent:** The basic strategy is to identify business opportunities in offgrid electrification, provide financial incentives with output-based subsidies and market development support, and have private players compete for the package. The subsidies—minimized through competition—are needed because most offgrid investments are not financially viable; no private investor or provider will want to participate in a money losing venture. The subsidies are, by design, one-time upfront investment subsidies and not subsidies on recurring O &M costs. Under the preinvestment study for mini-grid market packages at Palawan and Davao, minimum financial performance indicators required by the subproject sponsors are assumed to be 20% return on equity and 1.2 times debt service coverage ratio. The results of sensitivity analysis indicated that depending on the levels of tariffs, the subsidy requirement (if any) would vary substantially.
- **SHS Subcomponent:** The analysis is based on a breakdown of the total market by the size of the PV systems which are assumed to vary according to income groups: 20Wp for the poorest, 40Wp for the poor, and 75Wp for the non-poor. GEF grant, averaging \$2/Wp, will help defray the high up-front cost of market development. In addition, a transparent government subsidy is proposed to target the poor households as follows: P8,000 for 20Wp systems, P5,000 for 40Wp systems, and zero for systems higher than 40Wp. These subsidy levels reflect the perception that it is the poorest households, and therefore 20Wp systems, that are most worthy of subsidy support. For each case, the financial rate of return (FRR) has been calculated from the consumer's perspective (Annex 4). For the poorest households, even though the estimated FRR is high, the first year cash flow is projected to be negative even at the P8,000 subsidy level and assuming only 5% downpayment. The proposed subsidy scheme, coupled with the availability of consumer loans, are designed to remove the barrier of high up-front capital cost the the poor consumers. This is consistent with the OED recommendations to increase access to electricity (*Rural Electrification in Asia: A Review of Bank Experience, June 1994, and Rural Electrification: A Hard Look at Costs and Benefits; OED Précis, May 1995*).

#### Fiscal Impact:

In accordance with the provisions of EPIRA, universal charge from electricity users nationwide will help finance missionary electrification to provide basic electricity services in remote and unviable areas not connected to the main grid. In the case of this project, output based subsidy is proposed to be funded by the universal charge for the pilot public/private partnership schemes for mini-grids and SHS. As such, government budget appropriation is not required to provide local counterpart funding for the investment supported under this project. Indeed, the paradigm shift from predominant government funding to maximizing private investment in rural electrification will free up the limited government resources for priority social expenditures. While DOE would need to request for budget appropriation to cover taxes related to its capacity building component, the fiscal impact is neutral as the tax revenues of the government would be increased correspondingly.

#### 3. Technical:

Technical assistance and training for both project preparation and implementation will bridge the gaps of specialized skills. In terms of investment support by the project, the choice of technology will be based on least cost solution. All potential technology options will be those that are commercially proven. For the minigrid subprojects, qualified private companies would be responsible for the design, installation, operation and maintenance of energy supply system in order to minimize technical and operational risks.

#### 4. Institutional:

##### 4.1 Executing agencies:

DBP, an experienced Bank borrower, will be the executing agency for the proposed Bank loan and the portion of GEF grant for building the capacity of its Project Management Office (PMO), while the DOE will be the executing agency for the balance of the GEF grant.

DBP was established more than 50 years ago, is a Government owned universal bank. It has an authorized common share capital of PhP35 billion while 125 million shares valued at PhP12.5 billion were issued and paid. It offers a fairly diversified financial products and services. DBP provides financial services to almost all the country's economic sectors, including manufacturing, housing and real estate, power and energy, transport and telecommunications, health education and social services, financial intermediary, and others. As of 2002 year end, its total resources amounted to about PhP149 billion (about US\$2.8 billion), higher than 2001 level by about PhP10 billion or 7%.

DBP is currently a major conduit of Official Development Assistance (ODA) funds. In 2001 ODA funds accounted for about 60% of DBP's total resource of about PhP139 billion. While promoting the country's economic development activities through the financing of large variety of projects, DBP is also focusing on environmental protection. It has recently registered under ISO 14001, an international recognition of its environment oriented operations.

Most of these ODA resources are channeled to the targeted beneficiaries through DBP's wholesale operation which accounted for about 55% of its total loan outstanding in 2001 of about PhP78.7 billion. DBP is probably the biggest source of wholesale funds in the market.

DPB is also providing direct lending to strategic sectors such as manufacturing, power and energy, transport and communications. Retail lending accounted in 2001 for about PhP36 billion or 45% of DBP's outstanding loan portfolio.

DBP is currently one of the most financially sound banks in the Philippines. The quality of its assets compares favorable with the industry. Its equity to risk assets ratio has increased from about 20% in 2001 to about 24% in 2002. Its nonperforming loans (NPLs) ratio of 12.7% in 2001 was among the lowest in the industry.

During 2002 DBP continued to improve its financial performance and operational efficiency. It was able to expand its operations while its manpower strength was slightly reduced. The quality of its loan portfolio was further improved, particularly in terms of net past due loans (past due loans minus provisions). While it's past due loans was slightly reduced, it's net past due was substantially improved, reflecting the relative large provision that was made by the bank in 2002.

#### 4.2 Project management:

- o **DBP-PMO.** The Program Management Department oversees the Project Management Office for this Project, as well as the Financial Management Unit and Procurement Unit. The above two units will be responsible for financial management and procurement, respectively, for this Project as well as the Bank-financed LGU Water Project. DBP staff who are handling lending for the power and renewable energy will expand their scope of work to cover this Project. DBP staff will be supplemented by technical consultants for specialized skills in subproject appraisal and supervision, project promotion and implementation.

- o **DOE-PMO.** The DOE-PMO will administer the GEF grant and oversee the overall policy and technical aspects of the project. It will provide technical secretariat support to the PSC and TWG, and



ensure effective coordination of activities of the various organizations involved in the implementation of project components as well as manage and supervise the different activities and tasks under the project. Substantial capacity building support for the PMO would be financed by the GEF grant. DOE has indicated its intention to hire the UNDP-Development Support Service Center (DSSC), to assist DOE-PMO in project management, procurement, financial management and disbursement for the GEF grant under the project.

#### 4.3 Procurement issues:

Bank staff undertook the assessment of the project's implementing agencies during the appraisal stage of the project. The procurement assessments (in project files) were fully discussed and agreed with the agencies in February 2003, and the general findings conform to those of the Country Procurement Assessment Report (CPAR). Overall risk assessment for the project: average risk category.

*The Development Bank of the Philippines (DBP).* The assessment found that although they are implementing one on-going Bank-funded project (LGUWSP-APL2), they are not fully involved in the procurement process, as this is being done by the Local Government Units (LGUs). For this project, they will mainly be responsible for Component 1, Rural Electrification Subprojects, where they will be selecting a consultant who will be assisting them in the management of the project, with procurement on the subprojects handled by participating ECs and other subproject sponsors.

*The Department of Energy (DOE).* The assessment found that the proposed PMO for the project will only be formed for this project and hence has no prior experience in procurement on Bank-funded project. However, this PMO will include staff that are not only currently involved in the implementation of the on-going PHRD and GEF grants, but were also involved in the selection of the consultants for these grants. The assessment, however, concluded that DOE will still require the expertise of a Procurement Specialist who is very experienced on Bank procurement, to help them facilitate all the required procurement on the project. As noted above, the necessary assistance in procurement will be covered by the UNDP-DSSC. Risk assessment of DOE is considered to be average.

#### 4.4 Financial management issues:

The Financial Management(FM) system of DBP as an entity, and the FM arrangement for the Project is acceptable and satisfies the Bank's minimum FM requirements. The creation of an FM unit, within the Project Management-I department of the Development Banking Sector of DBP, (PMI-FM), to handle Bank projects such as the ongoing LGU Water Project and this proposed project is an important move by DBP. While the FM system of the PMI-FM is operating satisfactorily, its documentation into an FM manual is in the process of being completed. This is due to the recent reorganization at DBP which included a change in the FM head for the project as well as the organizational location of the PMI-FM. The FM manual for the project would be finalized prior to loan effectiveness. Further details on FM arrangements are in Annex 6 (b).

### 5. Environmental: Environmental Category: F (Financial Intermediary Assessment)

#### 5.1 Summarize the steps undertaken for environmental assessment and EMP preparation (including consultation and disclosure) and the significant issues and their treatment emerging from this analysis.

A draft Environmental Policy Framework (available in project files) has been disclosed to the public by DOE, NEA and DBP. An Initial Environmental Examination (IEE) will be prepared for each subproject by the sub-borrower prior to approval for any subloan. The IEE may be developed into a full-blown Environmental Impact Statement (EIS) should the IEE generate insufficient information to make a decision on the issuance of the environmental clearance arise. The IEE identifies the potential environmental impacts

of each subproject and contains an Environmental Management Plan (EMP).

## 5.2 What are the main features of the EMP and are they adequate?

An EMP has two parts, namely 1) the Environmental Mitigation Plan and 2) the Environmental Monitoring Plan. The EMP has been developed with the participation of key stakeholders and arrangements would be made for public dissemination of the EMP in the participating local communities. Specialists of the subproject sponsors will be responsible for the implementation of the EMP.

## 5.3 For Category A and B projects, timeline and status of EA:

Date of receipt of final draft: January 2003

## 5.4 How have stakeholders been consulted at the stage of (a) environmental screening and (b) draft EA report on the environmental impacts and proposed environment management plan? Describe mechanisms of consultation that were used and which groups were consulted?

Stakeholder consultations (community meetings, joint EA scoping and public hearings with the Department of Environment and Natural Resources (DENR), LGUs and communities), including but not limited to the EMP, will be carried out during subproject preparation, design and implementation. Stakeholders will be consulted about the project site during the TOR preparation of the IEEs which include environmental screening of the subprojects and during the processing of their application for Environmental Compliance Certificates with the Department of Environment and Natural Resources

## 5.5 What mechanisms have been established to monitor and evaluate the impact of the project on the environment? Do the indicators reflect the objectives and results of the EMP?

The Environmental Management Plan which identifies indicators to be monitored and evaluated, provides a framework for a comprehensive monitoring and evaluation of the potential environmental impacts of the project for the entire project cycle.

## 6. Social:

### 6.1 Summarize key social issues relevant to the project objectives, and specify the project's social development outcomes.

The key social impacts of the project will be largely reflected in a) improving access to power in the rural areas; b) negative impacts from restructuring of selected ECs and c) possible need for limited amount of land.

**Rural access to power.** DOE has completed a market assessment study of rural electrification with the assistance of PHRD-financed consultant. The results serve to provide the socio-economic profiles, energy demand characteristics as well as expenditures on energy of unelectrified barangays. Of the 1.7 million households in all the unelectrified barangays in the country 6,000 households were surveyed. Only 20% of them are non-poor, while 29% are poor and 51% are the poorest (with average annual household income of P109,391, P39,862 and P16,705, respectively). Given that the majority of the households are far below the average income of rural households (P 74,000/year), special attention is required to address the issues of affordability and sustainability. The project would help address these issues through rationalization of tariff and subsidy policy, including direct and transparent smart subsidy for the poor, and increased productive uses of electricity.

There will be an on-going pilot project to be implemented by an NGO and supported by ESMAP to explore and provide alternative energy for the poorest of the poor. Important lessons will be obtained from this pilot project. Barangays targeted for Bank support in expansion of rural electrification in the project will be self-selected. As part of the preinvestment study, the process of outreach has started with information

dissemination and barangays will be able to make their own decisions whether they wish to participate in the project or not.

**Restructuring.** The restructuring of selected ECs may result in the redundancy of staff. Under the ongoing TA for management and institutional strengthening of ECs, particular attention will be paid to the social impact of any retrenchment program and concrete recommendations will be developed through close consultations with the concerned staff (management, ranks and file) to develop appropriate mitigation measures, including staff training/re-tooling and an early retirement package.

**Safeguard Policy Framework.** The project is planned to be implemented through a financial intermediary, in this case, the Development Bank of the Philippines, who would select and finance investment proposals on a demand-driven approach. At this stage of project preparation, it remains to be determined whether the project activities would require any land acquisition and resettlement, or whether the project would affect any indigenous peoples. In line with World Bank policy, the project has followed a two-step approach, i.e. policy frameworks during project preparation and action plans if necessary when the specific activities are selected during project implementation. The Borrower has developed a policy framework and procedural guidelines for social safeguard policies in line with local laws, decrees and World Bank policies on involuntary resettlement and indigenous people. These policy frameworks cover objectives, guiding principles, entitlement policies, organizations, implementation procedures, supervision and monitoring, costing and budgeting requirements, and operational procedures. These policy frameworks have been discussed and disseminated among key stakeholders.

#### 6.2 Participatory Approach: How are key stakeholders participating in the project?

The policy note was discussed with the government in October 1999. Since then, written comments have been received from the DOE and NEDA which indicated their general agreement with the thrust of the recommendations, while cautioning that it may take some time to effectively achieve a paradigm shift towards maximization of private sector participation. Separately, supported by the World Bank pilot fund to promote participatory activities in the Philippines, a series of broad-based consultations with key stakeholders (NGOs/civil society, government and related agencies, key donors) took place in January 2000. The design and implementation of the proposed project will continue to take into account the comments by stakeholders. Consistent with the Bank's rural electrification policy, it is important to make sure that the targeted beneficiaries participate in the project design and are offered choices in the different levels of services that are commensurate with their ability to pay. The choices they make must also be based on full and accurate information. This would require consumer education. As noted above, for purposes of identifying self-selected barangays for APL support, close consultations with the LGUs and local communities are an integral part of the ongoing preinvestment consultancy study.

#### 6.3 How does the project involve consultations or collaboration with NGOs or other civil society organizations?

As noted above, consultations with the civil society were first initiated in January 2000, prior to identification of the project. Summaries of the consultations with civil society and proceedings on the participatory project design planning workshop are available in the project files. The Project Information Document (PID) was disseminated to the civil society through the Infoshop and the public information center at the WB Manila office, and hard copies of the PID were distributed to the stakeholders.

#### 6.4 What institutional arrangements have been provided to ensure the project achieves its social development outcomes?

- **Rural Power Sector Reform.** The government has a track record of broad-based consultations, including recent consultations with the civil society in connection with the Power Reform Act, which

provides for consumer education and protection. In addition, DOE is developing a strategic communications plan with the assistance of PPIAF-financed local consultants, taking into account the results of consumer opinion survey.

- **Project Design and Implementation.** Care would be taken to ensure that the targeted beneficiaries for off-grid electrification are provided with full and accurate information and participate in the project design, including making choices in the different levels of services that are commensurate with their ability to pay. In addition, during project implementation, NGO participation in monitoring and evaluation of project output and impact would help promote transparency, accountability and anti-corruption.

#### 6.5 How will the project monitor performance in terms of social development outcomes?

As noted above, baseline socio-economic data, including average household income and monthly expenditures on energy consumption, have been collected through household surveys under various studies, including (a) market assessment of unelectrified barangays; and (b) preinvestment study for mini-grid market packages. After identifying appropriate baseline indicators, the enhancement in living conditions of rural households would be measured on the basis of socio-economic studies to be carried out under the project during the implementation phase.

### 7. Safeguard Policies:

#### 7.1 Are any of the following safeguard policies triggered by the project?

Policy	Triggered
Environmental Assessment (OP 4.01, BP 4.01, GP 4.01)	<input checked="" type="radio"/> Yes <input type="radio"/> No
Natural Habitats (OP 4.04, BP 4.04, GP 4.04)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Forestry (OP 4.36, GP 4.36)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Pest Management (OP 4.09)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Cultural Property (OPN 11.03)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Indigenous Peoples (OD 4.20)	<input checked="" type="radio"/> Yes <input type="radio"/> No
Involuntary Resettlement (OP/BP 4.12)	<input checked="" type="radio"/> Yes <input type="radio"/> No
Safety of Dams (OP 4.37, BP 4.37)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Projects in International Waters (OP 7.50, BP 7.50, GP 7.50)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Projects in Disputed Areas (OP 7.60, BP 7.60, GP 7.60)*	<input type="radio"/> Yes <input checked="" type="radio"/> No

#### 7.2 Describe provisions made by the project to ensure compliance with applicable safeguard policies.

Agreement with DOE and DBP regarding implementation of the agreed environmental and social policy framework will ensure compliance with the relevant safeguard policies. Tender documents for subprojects will include environmental management clauses

## F. Sustainability and Risks

### 1. Sustainability:

The project design carefully incorporate best practice and lessons learned from similar projects, and avoids the major weaknesses of previously unsustainable approaches of "business as usual" that are top down, and rely heavily on government funding and monopolistic approaches to service delivery. Instead, care has been taken to incorporate the following guiding principles included in the Bank's policy paper entitled "Rural Energy and Development": (i) provide for consumer choice – inform consumers of choices of affordable energy sources and enable the consumers to choose the most cost-effective solution; (ii) ensure cost-reflective pricing and avoid unnecessary subsidies – as a minimum, full cost recovery for O & M cost; (iii) overcome the high upfront cost barrier (e.g. through targeted subsidies for the poor, affordable credit mechanisms, lower-cost-equipment; and lower service standards to meet the needs of low-demand consumers); (iv) encourage local participation; and (v) implement good sector policies.

#### 1a. Replicability:

The APL is designed to support the implementation of difficult, long-term solutions through new business approaches. Phasing of the APL generally follows the "horizontal expansion" model to progressively adapt and expand the earlier successful approaches to include new areas and cohorts in other parts of the country.

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

Risk	Risk Rating	Risk Mitigation Measure
<b>From Outputs to Objective</b>		
Regulatory risks, notably timeliness and adequacy in approval for tariff adjustments and universal charge for subsidy in off grid electrification	H	upstream consultations with ERC; TA for rural electrification regulation; market assessment results on consumers' willingness to pay incorporated in policy design; strategic communications on reforms and consumer education
Consumer willingness to pay for new electricity services through SHS or mini-grids	S	market assessment, including existing energy expenditures of households, provide benchmarks for setting affordable tariffs; stakeholder consultations and self selection by consumers in choices of service; output-based grants (from the government and GEF) as well as consumer credits for SHS to reduce up-front capital cost
<b>From Components to Outputs</b>		
Insufficient interest of private sector to invest in mini-grid market packages	H	Mitigation of regulatory risks as noted above; early and close consultations with key stakeholders and investment promotion workshops/roadshows; flexibility in Bank loan to support lower risk project components
Inadequate participation of MFIs for the	S	Possible DBP lending to a wholesale MFI,

SHS subcomponent		capability building of MFIs, vendor finance scheme through partnerships between SHS suppliers and MFIs; GEF partial risk guarantee of SHS end-users
Inadequate participation of ECs and SHS suppliers	M	Consultations with ECs and SHS suppliers revealed their interest in participation; DBP already has a track record of lending to 15 ECs; 14 companies expressed interest in the SHS subcomponent and provided their business concept/plan to DOE
Project implementation delays	S	Quality at entry assurances; front loading of capacity building activities, including program implementation support
Inadequate local counterpart funding	S	Agreement with the government on adequate and timely provision of local counterpart funding; adequate financial capacity of subproject sponsors as a selection criterion for subloan support
<b>Overall Risk Rating</b>	<b>H</b>	The overall high risk rating reflects the uncertainties of market response to the pilot schemes for decentralized electrification, while the risk of the EC grid subcomponent is substantially lower. The APL instrument allows the country and the Bank to test out approaches and proto-type design before scaling up. In the event of unsatisfactory implementation, performance triggers for subsequent phases of the loan would limit the downside risks and provide an exit strategy for the country and the Bank.

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

The overall project risks are considered high due to the uncertainties related to the creation of new markets and greenfield investments in decentralized electrification, while the risk of the EC grid subcomponent, with existing market and operations, is substantially lower. On balance, the overall project risks are considered manageable. As indicated by the robust economic returns noted above, the potential payoff of the pilot schemes for decentralized electrification could be high while the risks will be mitigated through a unique combination of the following measures:

- Adoption of a long-term, programmatic, phased approach; the purpose of the proposed APL1 is not only electrification coverage but also learning by doing through testing and refining market-based approaches for decentralized electrification, thus significantly reducing the risks of future large-scale operations. As well, the requirement of the APL for triggers for subsequent phases provide an exit strategy for both the Bank and the borrowers to limit downside risk exposure on individual subcomponents and the overall project;
- the Rural Power Program will support the active creation of a broad-based market in delivering rural electrification services by new players from the private sector, encompassing initiatives involving both grid and off grid options: investment management contracts (IMCs) at selected ECs; SPUG



privatization; greenfield mini-grid development; and solar home systems. The risk of a weak or non-existent supply response from the private sector is mitigated by the following design aspects: (a) development of an effective output-based subsidy mechanism; (b) development of a clear regulatory framework for private sector participation (PSP) in rural electrification; (c) minimizing market entry costs, including through detailed market assessment and transaction preparation; (d) facilitating partnerships between local and national private sector groups (including NGOs); (e) developing a pool of potential transaction candidates -- from EC/IMCs, SPUG operations, and greenfield mini-grids -- that enable selectivity in what is brought to the market; and (f) the marketing strategy and transaction process for PSP in rural electrification employs two key approaches to garnering bids. First, the transaction task force and its advisors will use a screening process -- relying on market assessments and financial modelling -- to pick good projects from among a pool among the electric cooperatives, SPUG, and greenfield opportunities. Second, once this initial screening is done, a two-step sale process will be used. Step one will be a non-bidding round, with release of proposed bid package to the qualified bidders so that comments, concerns, and questions may be offered from the private sector. Step one will have been preceded by marketing efforts such as information conferences and (potentially) a mini-road show. Step two will be release of a revised, final bid package on which qualified bidders will bid;

- government commitment demonstrated by up-front actions to put in place an enabling policy framework for power sector reform;
- heavy reliance on market-based delivery mechanisms and self selection by participating municipalities and local communities;
- stakeholder participation and strategic communications on reforms and consumer education;
- front-loading of capacity-building and institutional support which are specifically designed to complement each other to bridge specialized skill gaps, thereby promote the sustainability of the investments supported under the project; and
- to reduce the overall portfolio risk of rural electrification subprojects, there is no earmarking of Bank loan for individual subcomponents and DBP will have the flexibility to maximize funding for quick wins and lower risk subcomponents.

### **3. Possible Controversial Aspects:**

## **G. Main Conditions**

### **1. Effectiveness Condition**

Satisfactory legal opinions on the legal agreements for this project

#### **A. Loan Agreement**

1. Cross effectiveness with Guarantee and GEF Grant Agreement
2. Adoption by DBP its Operational Manual and Financial Management Manual for this project
3. The signing of a Memorandum of Agreement, between DOF and DBP, reflecting the agreed financial arrangements regarding: (i) the coverage of the foreign exchange risk and its related fee to be paid by DBP; (ii) the guarantee by GOP of IBRD loan to DBP; and (iii) the formula for the application of a floor lending rate by DBP to sub-borrowers, satisfactory to the Bank.
4. Creation of the Project Supervisory Committee and Technical Working Group for the project

**B. Grant Agreement**

1. Adoption by DOE GEF Operational Manual and financial management system for this project
2. The signing a Memorandum of Agreement, between DOE and DBP, for the implementation of the capacity building component for DBP on RET, satisfactory to the Bank.

**Conditions for Negotiations**

1. Finalization of a Letter of Sector Development Program by the Government of the Philippines
2. Letter from DOE confirming that sufficient counterpart funding will be made available from its current budget for counterpart funding for CY 2003
3. Strengthening of PMO at DBP to cover this project
4. Letter from DOE to indicate its commitment to create PMO satisfactory to the Bank

**Condition of Board Presentation**

1. Adoption by DOE and DBP their respective Project Implementation Plan and environmental and social policy framework for this project

**2. Other [classify according to covenant types used in the Legal Agreements.]****Legal Covenants**

1. DBP shall set pricing of subloans based on market related rates and a floor price as set forth in the Operational Manual
2. DBP and DOE shall ensure that rural electrification subprojects, which receive sub-loans and sub-grants, respectively, under the project, comply with the environmental and social policy framework
3. DBP shall: (a) appraise and approve all subprojects that are technically feasible, financially viable, and environmentally sound in accordance with the pertinent eligibility criteria set forth in the DBP Operational Manual; and (b) make subloans that meet the pertinent eligibility criteria set forth in the DBP Operational Manual and in accordance with the Borrower's credit criteria and procedures and on the terms and conditions set forth in the DBP Operational Manual.
4. DOE shall: (a) appraise and approve all GEF-assisted subprojects that are RET, technically feasible, financially viable, and environmentally sound in accordance with the pertinent eligibility criteria set forth in the GEF Operational Manual; and (b) make GEF subgrants that meet the pertinent eligibility criteria set forth in the GEF Operational Manual and on the terms and conditions set forth in the GEF Operational Manual.
5. DBP/DOE shall implement the project in accordance with the Project Implementation Plan satisfactory to the Bank.
6. DBP shall prepare and furnish to the Bank a financial management staffing plan for the DBP-PMO, satisfactory to the Bank, by September 30, 2004, and carry out such plan by November 30, 2004.
7. DBP and DOE shall furnish to the Bank (i) quarterly progress reports within 60 days after the end of each quarter commencing at the quarter that ended on 12/31/03; and (ii) a mid-term review report by March 31, 2006.
8. DOE shall provide updated report and annually review with the Bank progress of implementation for the Rural Power Program, including the time-bound reform action plan and Missionary Electrification Development Plan.

**Financial Covenants**



1. The Government shall make adequate annual provisions and releases of adequate funds for meeting its share of funding under the project in a timely manner.
2. DBP shall take all actions within its power to distribute annual dividend on its regular shares only after adequate provision have been made for, inter alias, taxes, loan loss provisions, and adjustments to its equity caused by within year inflation.
3. DBP shall, by December 31, 2003, take all the necessary steps to ensure that the percentage of its Net Past Due Loans (NPD, defined as net past due loans minus provision for possible loan losses) in its retail loan portfolio will not exceed the industry average of the past three consecutive fiscal years for commercial banks in the Philippines, and thereafter maintain or improve its position within the industry of its NPD loans rate.
4. DBP shall maintain the following financial indicators: (I) ratio of risk assets to equity, as defined by the BSP, of not more than 8:1; (ii) liquid assets will not be less than 45% of its short-term liabilities; and (iii) positive profit in real terms.

## H. Readiness for Implementation

- ☐ 1. a) The engineering design documents for the first year's activities are complete and ready for the start of project implementation.
- ☒ 1. b) Not applicable.
- ☐ 2. The procurement documents for the first year's activities are complete and ready for the start of project implementation.
- ☒ 3. The Project Implementation Plan has been appraised and found to be realistic and of satisfactory quality.
- ☐ 4. The following items are lacking and are discussed under loan conditions (Section G):

## I. Compliance with Bank Policies

- ☒ 1. This project complies with all applicable Bank policies.
- ☐ 2. The following exceptions to Bank policies are recommended for approval. The project complies with all other applicable Bank policies.

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Selina Wai Sheung Shum  
**Team Leader**

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Junhui Wu  
**Sector Manager**

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Robert V. Pulley  
**Country Director**

**Annex 1: Project Design Summary**  
**PHILIPPINES: Rural Power Project**

Hierarchy of Objectives	Key Performance Indicators	Data Collection Strategy	Critical Assumptions
<p><b>Sector-related CAS Goal:</b> Develop and use electricity infrastructure, particularly in the provinces, to improve living standards and contribute to poverty alleviation</p> <p><b>Global Environment Goal:</b> Achieve greenhouse gas (GHG) reductions</p>	<p><b>Sector Indicators:</b> Socio-economic benefits accrued to households and barangays due to increased use of electricity</p> <p>Quantity of CO2 emissions avoided through scaling up and replication of pilot RET projects and successful RET market development in the country</p>	<p><b>Sector/ country reports:</b></p> <ul style="list-style-type: none"> <li>Government of Philippines (GOP) social and economic reports</li> <li>DOE/NEA electrification reports</li> <li>DENR/DOE reports</li> </ul>	<p><b>(from Goal to Bank Mission)</b></p> <ul style="list-style-type: none"> <li>Electrification is an important input to poverty alleviation in rural areas</li> <li>Greenhouse gas (GHG) mitigation programs protect the global environment</li> </ul>
<p><b>Program Purpose:</b> To meet the needs of rural communities for adequate, affordable and reliable energy services in an efficient and sustainable manner.</p> <p>The Development Objective will be achieved in 4 phases over a period of about 14 years</p> <p><b>APL1:</b> <b>APL1:</b> Transform ECs, pilot private sector-led decentralized rural electrification mechanisms, build capacity in key agencies and private sector. <b>APL2-4:</b> Scale up decentralized electrification and grid expansion, investment in ECs willing to reform and conduct associated TA</p>	<p><b>End-of-Program Indicators:</b> <b>At end of APL Program:</b></p> <ul style="list-style-type: none"> <li>All barangays and about 90 percent of households have access to electricity services.</li> <li>About 85 % of ECs supported are financially viable (satisfactory debt service coverage) with improvements in reduction in both system loss reduction and frequency of service interruptions</li> </ul>	<p><b>Program reports:</b></p> <ul style="list-style-type: none"> <li>GOP social and economic reports</li> <li>Surveys in electrified areas in selected provinces</li> <li>EC reports</li> <li>NEA report</li> <li>Quarterly monitoring &amp; progress reports</li> <li>Supervision mission reports</li> </ul>	<p><b>(from Purpose to Goal)</b></p> <ul style="list-style-type: none"> <li>Transformation of ECs is key to adequate, affordable and reliable electricity in most rural areas</li> <li>Living standards of offgrid populations will be improved by access to even basic electricity services</li> </ul>
<p><b>GEF Operational Program:</b>  Mitigate global climate change caused by greenhouse</p>	<p><b>Outcome / Impact Indicators:</b> <b>At end of APL Program</b></p> <ul style="list-style-type: none"> <li>about 200,000 tons of</li> </ul>	<ul style="list-style-type: none"> <li>Quarterly/Annual monitoring &amp; progress</li> </ul>	<ul style="list-style-type: none"> <li>Removal of market barriers to RETs</li> </ul>

gas (GHG) emissions through wider user of clean energy technologies	CO2 emission avoided per year <ul style="list-style-type: none"> <li>policy, financing and information barriers to RET use substantially reduced or eliminated</li> </ul>	reports <ul style="list-style-type: none"> <li>Environmental Management Plan (EMP) monitoring reports</li> <li>Supervision mission reports</li> <li>DOE/NEA electrification reports</li> <li>DBP Reports</li> </ul>	increases usage and thereby reduces GHG emissions
<b>Project Development Objective:</b> <b>APL1:</b> <ul style="list-style-type: none"> <li>test and demonstrate viable business models that maximize leverage of public resources with private investment for decentralized electrification.</li> <li>support transformation of ECs through institutional and operational improvements</li> <li>avoid CO2 emission</li> </ul>	<b>Outcome / Impact Indicators:</b> <ul style="list-style-type: none"> <li>at least 2 new private sector-operated minigrids</li> <li>at least 4 solar PV companies accredited and doing business in rural areas</li> <li>At least 70 % of ECs supported are financially viable (as indicated by debt service coverage ratio of at least 1 time) by end of APL1</li> <li>at least 20,000 tons of CO2 emission avoided per year by end of APL1</li> </ul>	<b>Project reports:</b> <ul style="list-style-type: none"> <li>Quarterly monitoring &amp; progress reports</li> <li>Supervision mission reports</li> </ul>	<b>(from Objective to Purpose)</b> <ul style="list-style-type: none"> <li>Sufficient participation by subproject sponsors, including ECs, private investors and others</li> <li>Consumer willingness to pay sustained through economic development</li> <li>Market barriers to wider RET use correctly identified</li> </ul>
<b>Output from each Component:</b> Private sector-established minigrids and commercially operated solar PV systems improve electricity access in offgrid barangays  Participating ECs improve operational efficiency and quality of service.  Partial credit guarantee fund improves participation by financing institutions  Offgrid and renewable energy	<b>Output Indicators:</b> <ul style="list-style-type: none"> <li>at least 10,000 new customers in rural areas provided with mini-grid electrical connection or individual RET services</li> <li>participating ECs have achieved operational improvements as indicated by reduction in both system loss reduction and frequency of service interruptions</li> <li>guarantee fund established and operating</li> <li>rules and regulations for</li> </ul>	<b>Project reports:</b> <ul style="list-style-type: none"> <li>Quarterly monitoring &amp; progress reports</li> <li>Supervision mission reports</li> <li>DOE/UNDP-DSSC reports</li> <li>Market package feasibility reports, bidding documents</li> <li>DBP reports</li> <li>Audited financial reports of participating ECs</li> <li>Rolling business plans/financial projections of</li> </ul>	<b>(from Outputs to Objective)</b> <ul style="list-style-type: none"> <li>Business models are sufficiently attractive to private sector</li> <li>ERC approves adequate levels of tariffs in a timely manner</li> <li>Adequate finds from universal charge are made available for the off-grid electrification component in a timely manner</li> </ul>

<p>policies and strategies integrated into RE plan</p> <p>Capacity building of involved agencies and participating companies in RET</p> <p>Livelihood/productive uses of energy promoted actively</p>	<p>subsidy allocation and tariff setting issued</p> <ul style="list-style-type: none"> <li>● at least 150 staff of public and private entities participated in RET TA and training activities.</li> <li>● about 10 new productive applications initiated in pilot areas</li> </ul>	<p>participating ECs</p>	
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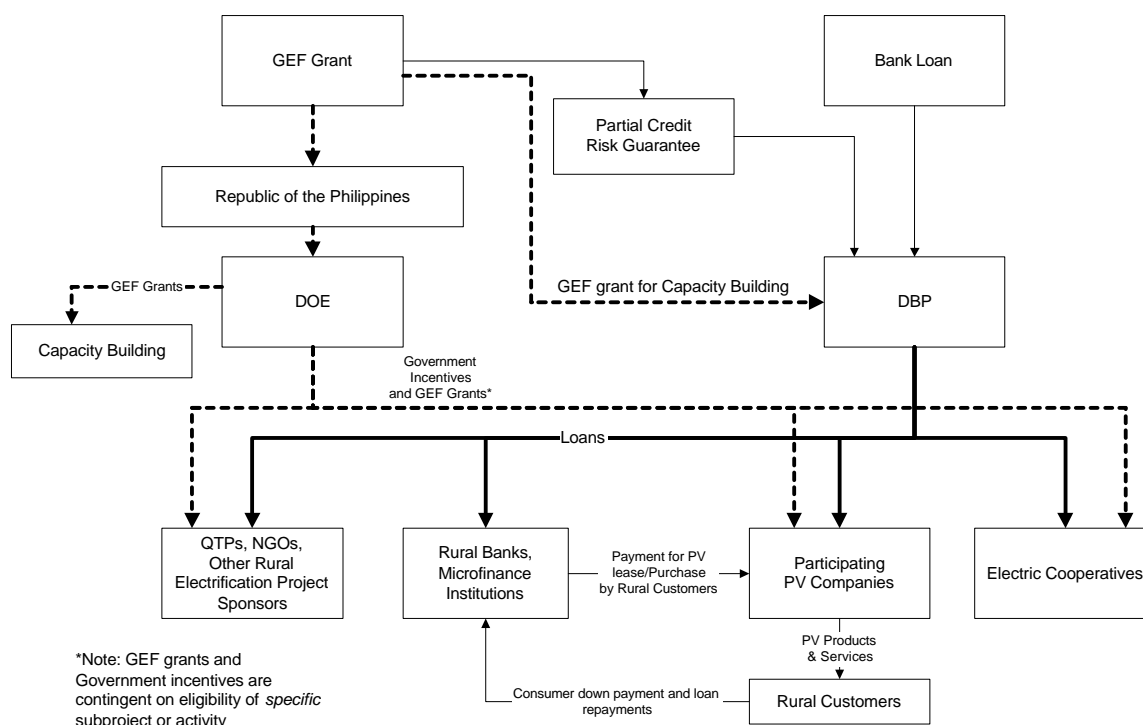
## **Annex 2: Detailed Project Description**

### **PHILIPPINES: Rural Power Project**

The project would support the implementation of reforms and priority investments to meet the needs of rural communities for adequate, affordable and reliable energy services in an efficient and sustainable manner. This would include support for both increased access to electricity services and transformation of electric cooperatives (ECs) to more viable, commercial entities, consistent with the Electric Power Industry Reform Act and Executive Order (EO) 119 on Restructuring Program for ECs. The components of APL1 include: (a) rural electrification subprojects; (2) partial credit guarantee fund; and (c) capacity building. The rural electrification component would provide loan financing for grid upgrading investments by selected ECs, and for offgrid pilot subprojects implemented by the private sector. The partial credit guarantee component, with seed money provided by the GEF, would improve access to long-term credit by suppliers and users of renewable energy systems. The capacity building component would finance with GEF grants a comprehensive range of renewable energy market-barrier reducing activities, including improvement of policy formulation and project management capabilities by the various energy agencies, financial intermediaries and private participants; reduction of investment risks through more detailed characterization of energy investment packages, and provision of market development assistance to private participants in the project.

#### **Overall Implementation Arrangements**

The DBP is the borrower of the rural electrification loan and will onlend the proceeds to eligible sub-borrowers, mainly the ECs, private energy service companies and microfinance institutions. The DOE will provide oversight for technical and policy aspects of the entire project and will manage the application of GEF grant funds for all purposes. Both institutions will organize within their respective structures a separate project management office to take charge of the day-to-day operations of their respective subcomponents. The funds flow arrangement is schematically illustrated below:



## Organization of the DBP-PMO

The Program Management Department of DBP oversees the Project Management Office (PMO) for this project, as well as the Financial Management Unit and Procurement Unit. The above two units will be responsible for financial management and procurement, respectively, for this project as well as the Bank-financed LGU Water Project. DBP staff who are handling lending for the power and renewable energy will expand their scope of work to cover this project. DBP staff will be supplemented by technical consultants for specialized skills in both conventional energy and renewable energy subproject appraisal and supervision.

## Organization of the DOE-PMO

An interagency Project Supervisory Committee (PSC), to be chaired by DOE, with memberships from national oversight agencies (NEDA, DOF) and DBP will be organized to provide policy direction, guidance and oversight supervision for policy and institutional reforms supported by the Project. A Technical Working Group (TWG) acts as the Secretariat of the PSC and ensures coordination at the working level of all tasks involving different agencies.

The DOE-PMO will administer the GEF grant and oversee the overall policy and technical aspects of the project. It will provide technical secretariat support to the PSC and TWG, and ensure effective coordination of activities of the various organizations involved in the implementation of project components as well as manage and supervise the different activities and tasks under the project. Substantial capacity building support for the PMO would be financed by the GEF grant. DOE has indicated its intention to hire the UNDP-Development Support Service Center (DSSC), to assist DOE-PMO in project management, procurement, financial management and disbursement for the GEF grant under the project.

## Project Implementation Schedule

APL1 will be implemented over a period of 5 years. During the first two years, most of the activities will involve pre-construction activities, including conclusion of subloan agreements with DBP, bidding and contract awards. In particular, the transaction advisor for the mini-grid market packages will assist DOE in the preparation of bidding documents and award of contract is scheduled for 2004. The relatively slow start in terms of projected investment and related loan disbursement in APL1 is based on experience in similar projects in other countries, and the need for field-testing and fine-tuning the business models for scale-up in latter phases when the investments would be larger.

## **By Component:**

### **Project Component 1 - US\$16.00 million Rural Electrification Subprojects**

A line of credit, totaling \$9.9 million of Bank loan, would be set up at the DBP to help finance rural electrification subprojects. Subject to the criteria of subproject selection (Annex 12), these subprojects could include the following: (a) EC grid subcomponents; (b) decentralized electrification subcomponent, including small scale energy generation and mini-grids as well as stand-alone renewable energy systems. To minimize the DBP's portfolio management risks, there will be no earmarking of loan funds for individual subcomponents, thus allowing for maximum flexibility.

#### ***EC Grid Subcomponent***

The ultimate objective of this subcomponent is to attain the transformation of marginally viable ECs into competitive, efficient and financially viable organizations through Project assistance in the following areas:

- *Management and institutional strengthening* : (i) developing and implementing a performance based compensation incentive system to motivate the EC's Board of Directors, management and employees; and (ii) developing and implementing objective and transparent selection criteria for hiring and promoting managers, employees and election of boards of directors;
- *Setting the platform for EC financial self-sufficiency* : (i) developing an investment strategy to seek financially viable investments and prioritize capital expenditures based on financial rate of return; and (ii) achieving profitability by maximizing operational efficiencies and revenues; and
- *Improving operating efficiencies and customer service quality* : (i) reducing operating costs by reducing technical and non-technical losses and improving worker productivity through financially viable investments; and (ii) improving customer service quality, supply system reliability and power quality through financially viable investments.

The existing distribution system infrastructures at various ECs have been suffering from under-investments in up-grading and rehabilitation, to the point where connection of any additional customers to the system would result in adverse effects on power quality, seriously compromising supply system reliability for existing customers. Under this sub-component, the Project would support financially and technically viable EC investments that would remove major supply system constraints and allow anticipated customer growth. The financial and technical support may cover the following aspects:

- *upgrading/rehabilitation of the existing systems and acquisition of existing subtransmission systems* to reduce system losses, improve operating efficiency and enhance reliability of services;
- *removal of local constraints in the power distribution system* to capture new consumers within the grid service areas, and



- *institutional strengthening* to address the lack of needed hardware, software, motor vehicles, tools and equipment to transform utility management and improve employee productivity.

Feasibility studies on a pipeline of 10 potential EC subprojects have been substantially completed.

### ***Decentralized Electrification Subcomponent***

Unelectrified offgrid populations that could not be served economically through grid extension may be served through a decentralized power network, in the case of concentrated customers, and individual or stand-alone power supplies, such as photovoltaic (PV) power systems, in the case of dispersed customers. APL1 will support the piloting of innovative public/private partnerships in electricity service provision through decentralized minigrids, as well as the commercial dissemination of PV systems. The basic strategy is to identify business opportunities in offgrid electrification, provide financial incentives with output-based subsidies and market development support, and have private players compete for the package. The subsidies—minimized through competition—are needed because most offgrid investments are not financially viable; no private investor or provider will want to participate in a money losing venture. The subsidies are preferably one-time up-front investment subsidies and not subsidies on tariffs or recurring O & M costs.

#### **Small scale energy generation and minigrids.**

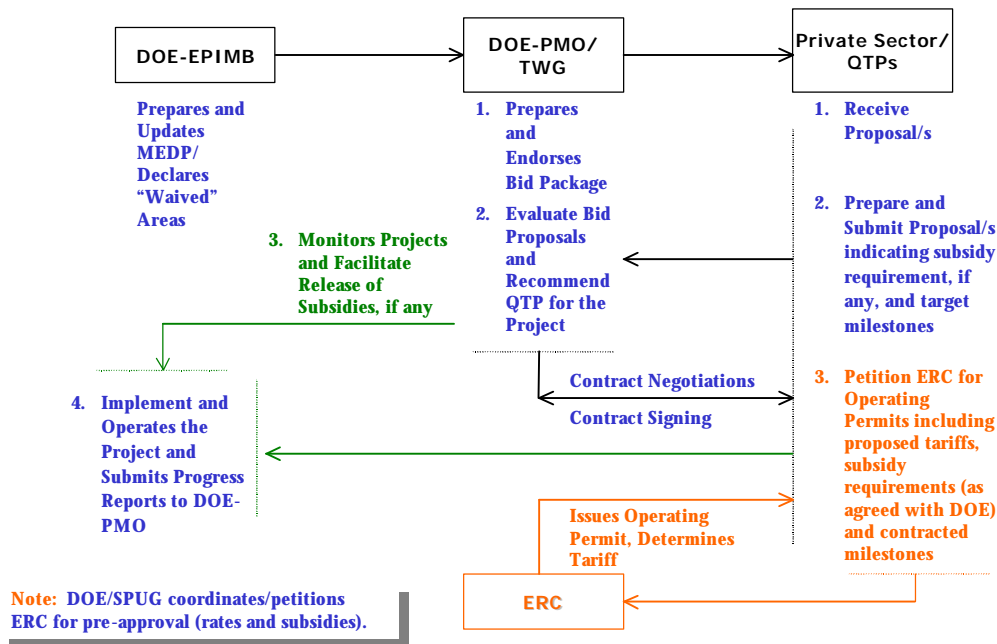
Two types of investments will be supported:

(a) *Small-scale energy generation.* Investments in mini-hydro or other renewable energy generation to supply mini-grids or isolated grids are expected to take place first in grids with a sufficient load to immediately absorb much of the potential generation available from the renewable resource. These will include displacing existing SPUG diesel generating serving isolated EC franchise areas grids with 24-hour service, greenfield sites where there is an identified industrial/commercial load which could immediately use much of the energy output, or greenfield sites dominated by residential loads where a cost-effective extension to a grid is available for sale of excess power. In greenfield sites where the primary and immediate loads are residential, low initial capacity utilization (due to low loads in the early years and demand occurring mainly at night, load factors may be only around 20-30 percent), will make diesel generation more cost-effective than the mini-hydro plants with higher upfront investment costs.

(b) *Mini-grid market packages.* The candidate sites will be chosen from areas that the ECs do not consider suitable for grid extension in the foreseeable future. The least cost technical solution is then designed and the financial requirements determined. Investment will on the establishment of the power plant and the network. If subsidy is needed, the indicative amount is estimated that would enable the private investor/service provider to obtain an acceptable return.

In both instances, subsidy requirements will be minimized through bidding, where the winner is selected based on the lowest capex subsidy requested, for a set tariff, or on the lowest tariff offered, for a set amount of capital investment subsidy. Bidding criteria details will be developed with the assistance of transaction advisor. The bidding process and award of the operating and subsidy contract is illustrated in the flowchart below. Through a consultant pre-investment study, several candidate market packages have been analyzed for the initial phase of the project. Two—Palawan and Davao del Sur—are emerging as the most attractive in terms of market size and manageable subsidy requirements.

## OPERATING AND SUBSIDY CONTRACT PROCESS



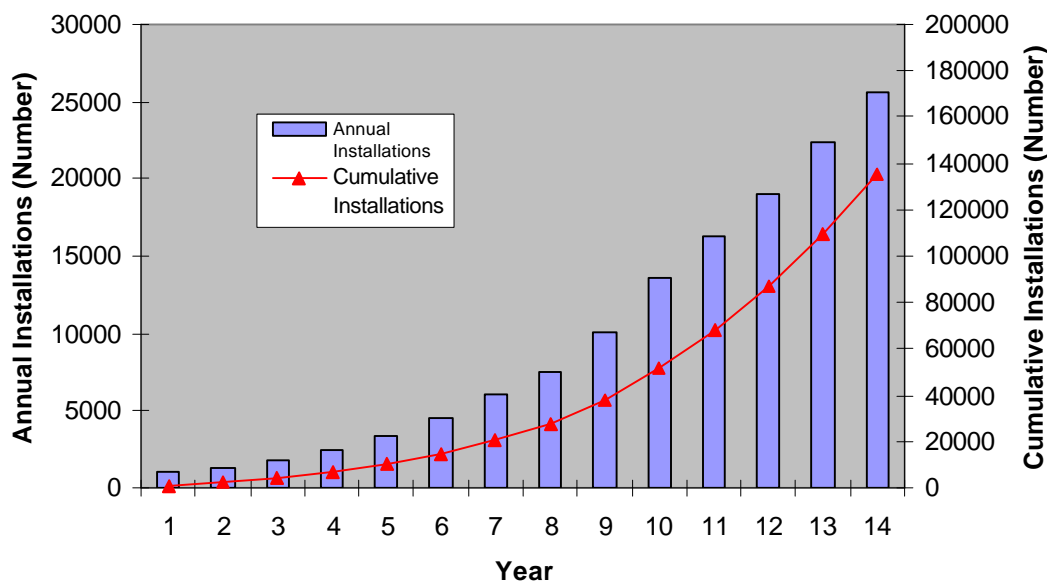
### Stand-alone Renewable Energy Systems

The purpose of this sub-component is to provide a mechanism for rural consumers, who are unlikely to gain access to grid electricity services, either from the main grid or mini-grids, to obtain affordable electricity services through off-grid means. According to NEA, in 2000 there are presently over 2.5 million households that have no access to grid electricity. Even when 100 percent of barangay are electrified, NEA estimates that about 1 million households are likely to be too dispersed and/or too far from the grid to be receive grid service. Majority of these households are likely to be in energized barangay, but are uneconomical to be served by the grid network. These consumers are candidates for accessing funding provided under the Project.

Technology options include: (a) the solar PV subcomponents would include individual solar home systems, community or commercial sector applications including battery charging stations, schools, health clinics and other social institutions, community water supply, offices, shops, restaurants and other commercial facilities; (b) small “wind home” systems of about 300W; (c) pico-hydro units of 200-500W capacity, and others. Although these are all eligible for financing, it is expected that solar PV systems will initially be the main focus of commercial dissemination activities.

A *Solar Credit Line* will be established at DBP to permit microfinance institutions (MFI) and rural banks to offer credit to households or other consumers to purchase PV systems. The products and associated after-sales services would be provided by qualified private companies and NGOs. To enhance affordability, particularly to the poorest households, system costs to users will be reduced by a combination of GEF grants and government subsidies. GEF grants will be provided as well to participating companies to cost-share promotional and other market development activities.

Experience in similar Bank projects in other countries indicates that programs of this type start slowly and accelerate only after capacity is built and confidence in the product and business model have been established. Accordingly, during the 5-year APL1, a modest target of 10,000 consumers is projected. The indicative, total cost of the Solar Credit Line during APL1 is estimated at about \$6.6 million. Projected installations of SHS over the full APL period are presented below:



#### **Project Component 2 - US\$1.00 million** **Partial Credit Guarantee Fund**

One of the key barriers for renewable energy development is the lack of medium and longer term commercial debt financing, which is in turn attributable to the stringent collateral requirements of the commercial banks. This has already been recognized in the UNDP-GEF project for Capacity Building to Remove Barriers to Renewable Energy Development (CBRED) in the Philippines, which includes a Loan Guarantee Fund, but does not cover solar PV. Under this project, a GEF-financed partial credit risk guarantee fund would be established to provide grant funds to financiers of renewable energy technology (RET), notably solar PV, to partially cover loan losses incurred in the provision of loans to RET purchasers and suppliers. As it is more efficient and effective for the two funds to be consolidated under one execution agency and one Project Management Office (PMO) at DOE, UNDP would be the implementation agency for the GEF trust fund for this component. Design of a finance and risk sharing mechanism for solar home systems, notably the establishment of a partial credit guarantee fund, has recently been completed by UNDP consultants.

Key criteria for the design of the credit guarantee scheme include the following: (a) the program should address market barriers and market conditions, and support financing that is matched to the economics of RET projects and the customers' ability to pay; (b) meet the lending and investment criteria of financial intermediaries; (c) meet the specific needs and business objectives of the other key parties, namely the RET project sponsors and suppliers and the customers; and (d) achieve a reasonable leverage of the loan

guarantee fund, be easily administered and managed, and be replicable and commercially sustainable.

In summary, the design of the appropriate risk sharing and credit enhancement mechanism for RET has to balance the interests and objectives of all parties. The key parties include RET suppliers, financial intermediaries [wholesale banks and micro-finance institutions (MFI)], and household customers. The partial credit guarantee fund will adopt a portfolio approach to reduce risk through diversification among a large number of consumer loans. The fund will cover part of the loan losses in case of defaults, net of realized collateral value of the RET systems. As an example, 50% of the loan loss would be recovered through repossession and resale of a solar home system (SHS), while the remaining 50% would be shared among the guarantee fund (65%); the lender (25%) and SHS dealer (10%).

The potential for the sustainability and replication of the guarantee fund can come from the following possibilities which will be promoted in program design and operation and supported by capacity building activities under the project: (a) performance of guaranteed loans is satisfactory and the fund is financially self-sustaining; and (b) lenders come to understand and accept RET credit risks and lend without guarantees; the program will seek to recruit and engage new commercial lenders in the RET market.

### **Project Component 3 - US\$ 9.60 million**

#### **Capacity Building Component**

This component would be financed by GEF to foster the reduction of market barriers to the commercialization of RETs suitable for offgrid electrification through a comprehensive range of activities to (i) build capacity of DOE, DBP and selected public and private sector entities (including participating financial intermediaries, RET system suppliers, ECs, and NGOs) on selected RET matters, including appraisal, selection, procurement, and supervision related to RET subprojects; (ii) foster the reduction of investment risks in the rural power sector by carrying out surveys and assessments of rural electricity services market including RETs; and applying the findings of such surveys and assessments; and (iii) developing and implementing policies on energy tariffs and subsidies, regulation, and integration of RETs in the missionary electrification program, including the provision of computer hardware and software. Taking into account the lessons learned from similar projects in other countries, the technical assistance component to reduce market barriers to the commercialization of RETs would be front-loaded during the first phase of APL. The planned capacity building activities and their budgets for this project (APL1) and the overall APL program are presented in Annexes 3 and 13, respectively.

The work program would include the following activities:

- ***Market Monitoring Activities Coordination.*** The Program supports market monitoring for RETs. This will include collecting retail and supplier price information, conducting consumer focus groups, conducting annual sample surveys in the Project area, and reviewing customer satisfaction information from the results of end-user verifications and other sources.
- ***Public Information Program.*** The Program supports activities that develop objective information on product quality, performance, prices, warranties, and consumer protection measures, using radio, TV and newspaper ads, etc.
- ***Business Development Support.*** The Program supports activities that provide assistance to PCs to adopt conventional business practice, and expand their business operations. This includes training, and technical assistance to PCs and other to improve in the following areas: (a) financial management, contract management, accounting and auditing; (b) development of sales and after-service networks; (c) product

development and quality control; (d) marketing (surveys, promotion, small demonstrations) and business development; and, (e) industry association/accreditation as well as a Quick Response Support Facility (QRSF) to permit the PCs to obtain cost-shared grant support for business development. The DOE-PMO will design specific criteria for support that will be provided under each activity.

- ***Support to PCIs on Strengthening the Off-grid Systems Financing.*** Financing through the PCIs is of critical importance in increasing affordability by end-users of RET equipment. GEF grant funds will support activities to strengthen the PCIs credit provision capabilities. Eligible activities include, development of credit financing approaches, monitoring and evaluation of credit schemes, local workshops and meeting of PCIs to share experiences, and others.
- ***Sub-Project Development.*** Technical assistance grants may be provided for sub-project development, including sub-project site identification, community preparation, feasibility studies, financing arrangements and actual implementation.
- ***DOE-PMO Support.*** Technical assistance and training, and project implementation support services would be provided to the DOE-PMO to strengthen its capability in: (a) project management, including financial management, accounting, contract management and grant processing, establishment of a verification system, and others; (b) monitoring and evaluation of project performance, and c) updating of policies and strategies.

### **Annex 3: Estimated Project Costs**

#### **PHILIPPINES: Rural Power Project**

The total project cost is currently estimated at about \$26.7 million. The financing plan is summarized as follows:

- Proposed Bank loan of \$10 million.
- GEF co-financing totaling \$10 million, of which \$9 million of the trust fund will be implemented by the Bank, and the balance, \$1 million, by UNDP for the partial credit guarantee fund.
- Government funding for this project is estimated at about \$3.4 million to cover the following:
  - (a) output based grants (\$2.2 million) for provision of electricity in remote and unviable areas through universal charge for missionary electrification. As noted above, DOE is in the process of developing an interim Missionary Electrification Development Plan (MEDP), with the assistance of consultants, that would provide the basis for the ERC to approve the universal charge for financing eligible projects; and
  - (b) taxes related to the capacity building component (\$1.2 million)
- DBP funding is estimated at about \$0.2 million to cover the counterpart funding, notably taxes, related to the capacity building component
- Private sector/consumers contribution estimated at about \$3.2 million.

### Project Cost and Financing Plan: APL1

Components	IBRD	GEF: IBRD	GEF: UNDP	Govern-ment	DBP	Consumers/ Private	Total
<b>1. Investment Component</b>							
-- Small scale power generation and/or minigrid	0.5	0.1		1.3		0.7	2.5
-- Stand-alone Renewable Energy Systems	3.0	1.0		0.9		1.8	6.7
-- Partial Credit Risk Guarantee Fund			1.0				1.0
-- EC Transformation	6.4	0.0				0.7	7.1
<b>Total Investment Component</b>	9.9	1.1	1.0	2.2	0.0	3.2	17.4
<b>2. Technical Assistance</b>							
-- Removal of NRE market barriers	0.0	7.9		1.2	0.2		9.3
<b>Total TA</b>	0.0	7.9		1.2	0.2		9.3
<b>3. Front-end Fees</b>	0.1						0.1
<b>GRAND TOTAL</b>	10.0	9.0	1.0	3.4	0.2	3.2	26.7



## Capacity Building and Implementation Support for RET

Components	Total	GEF	Govt & DBP
<b>Department of Energy (DOE)</b>			
<i><b>Policy Development and Planning</b></i>			
o Policy Support	0.4	0.3	0.1
o Integration of Renewable Energy into the Missionary Electrification	0.6	0.5	0.1
<i><b>Implementation Support</b></i>			
o Renewable Energy Program management support	0.7	0.6	0.1
o Project Subsidy Fund Allocation and Compliance	0.5	0.4	0.1
o Capacity Building for participating gov't agencies	0.6	0.5	0.1
o Capacity Building/project preparation for Solar PV Companies, MFIs & other RET developers/stakeholders	1.0	0.8	0.2
o Monitoring and Evaluation of the project	0.7	0.6	0.1
<i><b>Institutional Strengthening</b></i>			
o Improve ERC's regulatory function for off-grid services - capacity building for	0.6	0.5	0.1
o Livelihood /productive uses promotions	0.7	0.6	0.1
o New Market Package Preparation TA	1.4	1.2	0.2
<i><b>QTP Contract Monitoring Support</b></i>			
o Capacity Building and Technical Support for contracting QTP & capacity	0.6	0.5	0.1
o Monitoring and Evaluation, contract supervision	0.5	0.4	0.1
<i><b>DBP Support and PMO-managed TA</b></i>			
o Capacity building on technical appraisal of RET subprojects	0.7	0.6	0.1
o Promotions	0.5	0.4	0.1
<b>TOTAL TECHNICAL ASSISTANCE COST</b>	<b>9.4</b>	<b>7.9</b>	<b>1.5</b>

## **Annex 4: Cost Benefit Analysis Summary**

### **PHILIPPINES: Rural Power Project**

#### **Summary of Benefits and Costs:**

Illustrative examples of the cost benefit analysis of the proposed rural electrification subprojects are summarized below. Detailed analyses are available in the project files. The economic rates of return (ERRs) indicated are based on conservative assumptions. Commonly recognized benefits of electrification that have not been quantified in the ERR calculations include the following: (a) Income effects: for example, traders in India who used solar lanterns at their roadside stalls found that the quality of lighting and absence of kerosene fumes attracted more customers during the main early evening business hours, with 50% increases in their daily income (*India Renewable Resources Development Project ICR*); (b) Educational benefits: the Philippines survey data shows that members of electrified households attain about two years more formal education than their non-electrified counterparts, resulting in earnings increases of \$37-\$45/household (*Rural Electrification and Development in the Philippines: Measuring the Social and Economic Benefits*, ESMAP Report 255/02, May 2002); and (c) the health and environmental benefits associated with electrification (reduction in burn injuries, and indoor pollution levels from kerosene lighting). Indeed, in the Philippines, there have been many reports of deaths in fires caused by kerosene lamps, particularly among the poorest families.

#### **I. EC Grid Subcomponent**

Rural electricity cooperatives are exempt from taxes, and therefore the economic and financial flows for capital expenditures are the same.

##### **(a) ILECO II**

The existing distribution system infrastructure at ILECO II has reached the limits of its capacity, to the point where connection of any additional customers to the system is resulting in adverse effects on power quality and is seriously compromising supply system reliability for all existing customers. The proposed subproject would include a series of financially and technically viable investments that would remove major supply system constraints and allow anticipated customer growth through rural electrification. The investment plan will involve expenditures (including contingencies) of approximately P 205 million (US \$ 4 million). The key benefits of the proposed investment plan include:

- (i) Supply system capacity upgrades that would permit connection of approximately 17,000 additional customers to the system by the year 2012. These additional customers represent a 35% increase in rural electrification levels that would be otherwise achievable without the benefit of this investment plan.
- (ii) Significant improvements in reliability and power quality for all existing ILECO II customers
- (iii) 30% reduction in technical and non-technical system losses from their current level of 13.5% to 9.5%
- (iv) Significantly lower tariffs for all ILECO II customers with project implementation than without the project

- (v) Significant productivity gains that would help improve the quality of service to all customers, while reducing administrative, operating and maintenance costs by approximately 5%.
- (vi) Retirement from service of approximately 1000 rotten wood poles, that are at the end of their useful life and represent a serious threat to public safety
- (vii) Replacement of approximately 10,000 defective revenue meters, which if not replaced in a timely manner, would have serious adverse impact on non-technical losses in the future.

### ***Economic Rate of Return (ERR)***

The economic benefits of the project derive from efficiency savings in operation, the reduction of power distribution system losses, and the ability to serve additional customers relative to the no project case. A minimum valuation of willingness to pay (WTP) and related economic benefits may be taken as the current tariff (at P5.95/kWh, in constant Pesos), the baseline ERR is estimated at about 23% (in real terms). In addition, there are benefits to reliability of supply that have not been monetized.

The above WTP value is likely to be a significant underestimate as it does not include any consumer surplus. Survey results of energy expenditures of unelectrified households in the Philippines show that the average WTP for the first 300 kWh of consumption of a newly electrified household to be about P15/kWh. If this value is applied to the first 300kWh for annual consumption of newly electrified consumers served by Ileco II as a result of the project, the ERR increases to about 34%.

The main risk is higher than estimated capital costs. However, the switching value for capital cost escalation is 2.45, implying that the hurdle rate would still be achieved even if actual capital costs were more than double those estimated, which is quite improbable.

### ***Financial Rate of Return (FRR)***

The FRR, in nominal terms, but assuming constant nominal (and therefore declining real) tariff for incremental sales is estimated at about 13%. The above assumption of no tariff adjustments throughout the project life is very conservative. When the tariff and incremental energy purchases are inflated at the same rate as inflation (assumed at 4% p.a.), the project return increases to about 20%.

## **(b) ILECO III**

The existing distribution system infrastructure at ILECO III is expected to reach the limits of its capacity by the year 2004, to the point where connection of any additional customers to the system would result in adverse effects on power quality and seriously compromise supply system reliability for all existing customers. The proposed subproject would include a series of financially and technically viable investments that would remove major supply system constraints and allow anticipated customer growth through rural electrification initiatives. The investment plan for this subproject will involve expenditures (including contingencies) of approximately P 93 million (US \$ 1.8 million). The key benefits of the proposed investment plan include:

- (i) Supply system capacity upgrades that would permit connection of approximately 16,000 additional customers to the system by the year 2016, as indicated in Chart 1. These additional customers represent a 55% increase in rural electrification levels that would be otherwise achievable without the benefit of this investment plan.
- (ii) Significant improvements in reliability and power quality for all existing ILECO III customers
- (iii) 25% reduction in technical and non-technical system losses from their current level of

13.5% to 10.4%

(iv) Significantly lower tariffs for all ILECO III customers with project implementation than without the project

(v) Significant productivity gains that would help improve the quality of service to all customers, while reducing administrative, operating and maintenance costs by approximately 5%.

(vi) Retirement from service of approximately 1000 rotten wood poles, that are at the end of their useful life and represent a serious threat to public safety

(vii) Replacement of approximately 5,000 defective revenue meters, which if not replaced in a timely manner, would have serious adverse impact on non-technical losses in the future.

### ***Economic Rate of Return (ERR)***

The economic benefits of the project derive from efficiency savings in operation, the reduction of power distribution system losses, and the ability to serve additional customers relative to the no project case. A minimum valuation of WTP and related economic benefits may be taken as the current tariff (at P6.9/kWh, in constant Pesos), the baseline ERR is estimated at about 34% (in real terms). As in the case of Ileo II, the WTP and related economic benefits for Ileo III are likely to be underestimated.

While the resulting ERR is clearly very sensitive to the assumption made, results of sensitivity analysis indicated that the switching value is 4.22 Peso/kWh – which is significantly below the general tariff of grid-connected customers. The risk of this project being uneconomic by virtue of overestimating the economic benefits is therefore very small. A further risk is higher than estimated capital costs. However the switching value for capital cost escalation is 2.34, implying that the hurdle rate would still be achieved even if actual capital costs were more than double those estimated, which is quite improbable.

### ***Financial Rate of Return (FRR)***

The FRR, in nominal terms, but assuming constant nominal (and therefore declining real) tariff for incremental sales is 23%. The above assumption of no tariff adjustments throughout the project life is very conservative. When the tariff and incremental energy purchases are inflated at the same rate as inflation (assumed at 4%), the FRR increases to about 32%.

## **II. Mini-Grid Market Packages**

Unelectrified off-grid populations that cannot not be served economically through grid extension consist of two types of markets: concentrated and dispersed. The concentrated markets are best served by connecting them to a centralized power supply, such as diesel or mini-hydro, thus creating an isolated or independent mini-grid system. These are the targets for investment in the mini-grid component. The preinvestment study for the mini-grid market packages included detailed analyses of alternative options, including mini-hydro (for those baraguays with adequate hydrology). The dispersed market will be targeted for electrification with stand-alone PV systems. The breakeven point between mini-grid and individual solar home systems is a general function of load density.

### **BENEFITS**

The minimum valuation of benefits can be taken as the replacement costs of energy expenditures that mini-grid electrification would displace. The table below shows the survey data on monthly energy

expenditure by income group, which serves as this baseline.

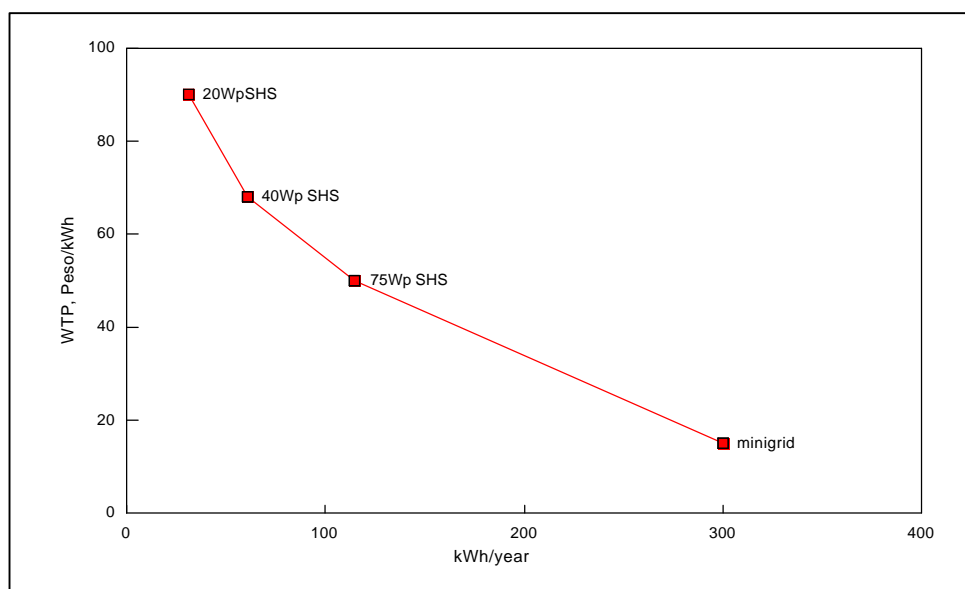
The financial analysis assumes that the (unsubsidized) tariff is limited to P15/kWh, and that the household energy demand is 25 kWh/month, i.e. that the monthly household energy bill is P375/month. For Palawan, this is seen (Table 2) to correspond to the monthly average household (HH) expenditure of the poorest group (annual income less than P 40,000), and therefore represents a conservative assumption, given higher monthly energy expenditures of the non-poor. P15/kWh is also the observed WTP for HH connected to small diesel gensets.

### Monthly energy expenditure by income group

Market Package Area	Energy Source for Lighting and Small HH Appliances	Range of Annual HH Income (PhP)			
		₱ 40,000	40K – 60K	60K – 80K	³ 80,000
<b>PALAWAN</b>		Monthly Energy Expense			
Roxas	Lighting: Primarily kerosene; connections to privately-owned diesel gensets,	373	407	440	≥474
Taytay	solar PV, charged batteries	374	411	475	≥539
San Vicente	Small Household appliances: connection to privately-owned gensets	-	128	593	≥1,060
El Nido		351	398	445	≥492
<b>DAVAO DEL SUR</b>		Monthly Energy Expense			
Malita	Lighting: Primarily kerosene; connection to privately-owned gensets, charged batteries	125	147	170	≥193
Don Marcelino	Small Household Appliances: connection to privately-owned gensets, charged batteries	130	233	335	≥438
Jose Abad Santos		121	221	420	≥620

However, the solar homes analysis (below) shows that the willingness to pay for the initial tranche of electricity for lighting and TV-viewing is substantially higher. The first tranche of consumption provided by small 20Wp photovoltaic systems has an implied WTP of as much as P98/kWh (based on the kerosene displaced for the equivalent service); the next tranche (represented by the incremental WTP for a 40Wp system) is P45/kWh, and the next tranche (for 75Wp SHS system) is P24/kWh. To reach an average P15/kWh for 300kWh/year (25 kWh/month) therefore implies a WTP for the remaining tranche of P10.25/kWh. These estimates are the basis for the curve shown below. This shows the (decreasing) average WTP as a function of (increasing) total average consumption per household.

### Demand Curve



### Economic Rate of Return

With these assumptions, the baseline economic rates of return (ERR) are as shown in the table below (together with estimated economic generating costs, and the average WTP assuming a WTP for the main tranche at P10.25/kWh). The ERR for El Nido (Palawan), and Jose Abas Santos (Palawan) are significantly below the hurdle rate. Whether their inclusion in a combined market package is warranted is based on social equity considerations, and is a question of the extent to which cross-subsidies are deemed desirable and affordable by the government.

### Baseline estimates of ERR

	ERR	generating cost		WTP
		UScents/kWh	Peso/kWh	
Roxas	32.6%	15.0	7.6	15.0
ElNido	11.2%	19.1	9.8	14.3
SanVicente	19.7%	18.1	9.2	14.9
Taytay	25.6%	16.1	8.2	14.6
Palawan combined	28.2%	15.3	7.8	14.7
JoseAbasSantos	8.9%	21.6	11.0	15.5
Malita	25.1%	16.3	8.3	15.5
Davao combined	20.6%	17.6	9.0	15.5

### Sensitivity analysis

The sensitivity of the ERR to three key input assumptions was examined by a switching values analysis for the following input assumptions:

- increases in the world oil price (displayed as the year 2010 world oil price)
- increases in capital cost
- decreases in the willingness to pay (of the last tranche that is valued at 10.25 peso/kWh)

As shown in the table below, for the municipalities that are economic in the base case, the switching values are unlikely to be achieved. In the case of capital costs, only in San Vicente is there an appreciable risk (the hurdle rate being achieved with a 30.2% capital cost increase bringing the ERR down to 15%). For last tranche of consumption (from 115 to 300 kWh), the WTP values are all in the range of 7.0 - 9.0 peso/kWh, which are substantially below the observed WTP for power from small diesel generators. Similarly the oil price would need to increase to levels above 33\$ (again except San Vicente) which is seen by almost all experts as quite unlikely (as a sustained annual average price). That does not of course exclude brief periods of very high prices (as during the 1990/91 Gulf War, or briefly in 2001, or as may well occur again in the event of a new war in Iraq). But these are short-lived manifestations of market volatility, not sustainable changes in long-term prices.

**Switching Values**

	world oil price	capcost	WTP
	[\$/bbl]	[%increase]	[P/kWh]
<b>Economic (in the base case)</b>			
Roxas	50.6	119.7%	7.0
SanVicente	29.8	30.2%	9.2
Taytay	40.2	69.5%	7.6
Palawan combined(including El Nido)	45.4	88.0%	7.6
Malita	42.7	66.7%	8.7
Davao Combined (including Jose Abas Santos)	33.5	35.7%	8.7
<b>Uneconomic (in the base case)</b>			
ElNido	11.7	-22.0%	11.2
JoseAbasSantos	5.6	-35.4%	12.1

For the two uneconomic municipalities (El Nido and Jose Abas Santos), the changes required to bring the ERR to the hurdle rate are highly improbable – e.g., in the case of El Nido, a capital cost decrease of 22%, or an oil price of \$11.7/bbl.

### **Trade-offs between Tariffs and Subsidies**

Under the pre-investment study for mini-grid market packages at Palawan and Davao, minimum financial performance indicators required by the project sponsors are assumed to be 20% return on equity and 1.2 times debt service coverage ratio. The results of sensitivity analysis indicated that depending on the levels of tariffs, the subsidy requirement (if any) would vary substantially.

### **III. Solar Home System Subcomponent**

The economic analysis of the solar home system (SHS) component of the project shows high economic returns. Under conservative assumptions, the ERR for the first phase (APL-I), which has a target of 10,000 systems, is estimated at about 48% (in real terms).



The analysis is based on a breakdown of the total by size of system (matched to a particular household income level). For each case, the financial rate of return (FRR) has been calculated from the consumer's perspective; the ERR calculation is estimated under three sets of assumptions (a) avoided costs, in which the economic costs of the PV system are compared against the economic costs of the energy expenditures (kerosene, battery charging, etc) that the PV system replaces; (b) estimating benefits as the gains in consumer surplus; and (c) adding carbon reduction benefits to the consumer surplus benefits. The results are summarized below.

### ***FRR and ERR***

	FRR Consumer perspective	ERR Benefits at avoided economic costs only	ERR Benefits based on increase in consumer surplus	ERR Consumer surplus benefits <i>plus</i> GEF grant as benefit
20Wp systems	160%	15.4%	<b>45%</b>	50.4%
40WP systems	17.4%	11.4%	<b>46.6%</b>	56.4%
75Wp systems	1.6%	8.7%	<b>32.2%</b>	38.5%
Entire programme			<b>44.6%</b>	53.2%

### **Main Assumptions:**

Avoided costs, including (a) kerosene lamps, candles and torch cells for lighting, dry cells; and (b) rechargeable batteries for TV and radio, provide a lower bound for the economic benefits, because they do not account for the fact that the PV system provides a greater level of service: for example, a 20Wp system is capable of providing 10 times as many lumen-hours as the kerosene lamp(s) it replaces. The PV system assumed varies according to income group: 20Wp for the poorest, 40Wp for the poor, and 75Wp for the non-poor.

The expenditure information for estimating the avoided costs is available from a detailed survey of non-electrified households (*Rural Electrification and Development in the Philippines: Measuring the Social and Economic Benefits*, ESMAP Report 255/02, May 2002). There is considerable variation in expenditure among households in each income category. In the poorest group, 98% of households use kerosene for lighting, but only 5.1 % use car batteries. Nevertheless, for that group of households that do use such batteries, annual energy expenditure will increase by P1,893 per year, greater than the expenditure for kerosene (P675/year). These households therefore devote a substantial proportion of their total annual income for energy, and are the households that would be the most likely candidates for the small (20Wp) PV systems. During the APL-I period, the target is only 2,000 systems for this size category, as against 90,301 households in this income group that incur the high cost of batteries, plus another 81,113 households that subscribe to local generator services. It is assumed that a household would use one or the other, but not both, since the data suggest that the annual cost of subscription to a local generator (P896 in the poorest group) is significantly below that of the car battery alternative (P1,893). This implies a modest market penetration assumption of 2.2% of those households using batteries. The corresponding market penetration assumption in the poor and non-poor groups is 9.5% and 1.5%, respectively. The risk of having overestimated market penetration assumptions is small.

### **Capital grant subsidy**

GEF grant, averaging \$2/Wp, will help defray the high up-front cost of market development. In addition, transparent government subsidy is proposed to target the poor households as follows: P8,000 for 20Wp

systems, P5,000 for 40Wp systems, and zero for systems higher than 40Wp. These subsidy levels reflect the perception that it is the poorest households, and therefore 20Wp systems, that are most worthy of subsidy support. For the poorest households, even though the estimated FRR is high, the first year cash flow is projected to be negative even at the P8,000 subsidy level and assuming only 5% downpayment. The proposed subsidy scheme, coupled with the availability of consumer loans, are designed to remove the barrier of high up-front capital cost the the poor consumers. This is consistent with the OED recommendations to increase access to electricity (*Rural Electrification in Asia: A Review of Bank Experience, June 1994, and Rural Electrification: A Hard Look at Costs and Benefits; OED Précis, May 1995*).

The low consumer-based financial rate of return for the non-poor (looking only at replacement costs) is offset by their high willingness to pay for the very much greater level of service of the larger PV-systems, as observed in almost all other countries with similar projects (as e.g. in India and Sri Lanka). Moreover, if the willingness-to-pay for such systems does not offset the low FRR, the non-poor households can always buy the smaller 40Wp systems, whose FRR at 17% is satisfactory.

#### Illustrative Example of Monthly Payments

PV System Size	Wp	20	40	75
Unit Cost	US\$	331	484	710
Unit Costs	Peso	16,881	24,684	36,210
Downpayment	10%		2,468	3,621
	5%	844		
Government Grant		8,000	5,000	-
GEF Grant (Peso per watt) <50Wp	P 128/Wp	2,550	5,100	5,738
for > 50 Wp	P 077/Wp			
Loan balance		5,487	12,116	26,852
Interest rate (per annum)	24%			
Repayment (years)	5			
<b>Annual Payment for 5 years</b>	<b>Peso</b>	<b>1,999</b>	<b>4,413</b>	<b>9,781</b>
<b>Monthly Payment for 5 years</b>	<b>Peso</b>	<b>158</b>	<b>349</b>	<b>772</b>

#### Sensitivity analysis / Switching values of critical items:

The result of net economic benefit is robust with respect to input assumptions in the plausible range. The following risk factors were examined:

- Increases in capital costs
- Market penetration assumptions
- Demand curves for TV viewing and lumens
- Oil prices
- Life of the PV systems

As indicated in the table below, a switching values analysis shows that increases in initial cost, problems in system performance, and assumptions about the shape of the demand curve pose relatively small risks to achieving the project benefits. With 10,000 systems as the goal for APL-I, the risks of having overestimated market size is small (requiring sales to 2.2%, 9.5% and 1.5% of poorest, poor and non-poor households, respectively, that use batteries for radio/TV, or 1.1%, 4.75% and 0.75%, respectively, of households that use either batteries or are connected to small diesel generators).

### Switching Values, 20Wp system

	base value (as in Table 14 )	switching value	ERR at switching value
capital cost (equipment)	7300	38690	15%
Q(TV) as viewing-hours/day	3.2	.28	15%
Q(PV), as lumen-hours/day	1120	140	33%

Sensitivity analysis was undertaken with pessimistic assumptions for *all* these major inputs together: a 25% capital cost increase for PV system equipment *and* a 30% reduction in lumen-output *and* a 30% reduction of TV viewing hours. These assumptions taken together reduce the ERR to 26.8%, still comfortably above the hurdle rate of 15%. This analysis suggests that despite the various uncertainties, the economic benefits of the solar PV system are robust for the case of the 20Wp systems that are targeted at the poorest households.

### Risk Analysis

The robust economic returns indicated by the sensitivity analyses and switching values were validated by a risk analysis. Since 40Wp systems are assumed to account for the bulk of the installations, the analysis is for this system size class. The probability of the ERR falling below 15%, the hurdle rate, is less than 1%. The average ERR of the 1000 trials is about 48% (as opposed to 47% using “most likely” (median) estimates of assumptions).

**Annex 5: Financial Summary**  
**PHILIPPINES: Rural Power Project**  
**Illustrative Examples of Projected EC Finances**

**A. IIECO II**

<b>Key Assumptions</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Domestic Inflation		4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Average energy cost P/kWh	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85
Average retail price P/kWh	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95
Consumer Growth Rate	5.6%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
kWh/Consumer Growth Rate	4.4%	2.0%	1.9%	1.6%	1.2%	0.9%	0.9%	0.8%	0.3%
Total Number of Customers	45,027	47,053	49,170	51,383	53,695	56,110	58,636	61,275	64,034
Energy Sales (MWh)	58,528	62,397	66,414	70,546	74,599	78,689	82,936	87,324	91,535
kWh/Customer (kwh/year)	1,300	1,326	1,351	1,373	1,389	1,402	1,414	1,425	1,429
System Losses (%)	13.7%	13.7%	12.5%	11.9%	10.6%	9.8%	9.0%	9.7%	9.6%
Energy for own use	223	237	253	268	284	299	315	332	348
Energy Purchase (MWh)	68,078	72,616	76,150	80,385	83,766	87,563	91,463	97,058	101,642
<b>Projected Cash Flows</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
<b>Revenues</b>									
Sale of Energy	348,244	371,260	395,164	419,749	443,862	468,201	493,469	519,578	544,634
Less: Uncollectible Revenue	6,965	7,425	7,903	8,395	8,877	9,364	9,869	10,392	10,893
Net Operating Revenue	341,279	363,835	387,261	411,354	434,985	458,837	483,599	509,186	533,741
Other Operating Revenue	12,760	13,604	14,479	15,380	16,264	17,156	18,082	19,038	19,956
Total Operating Revenue	354,040	377,439	401,740	426,734	451,249	475,992	501,681	528,225	553,698
<b>Operating Expenses</b>									
Power Purchases	262099	279573	293178	309480	322498	337117	352133	373672	391324
O&M costs	18400	20462	21856	24155	25324	26609	36274	39217	42402
Administration Expenses	45967	47328	48724	50155	51624	53130	55255	57465	59764
Total Operations	326466	347363	363757	383791	399446	416855	443662	470353	493489
Depreciation	22253	23731	32061	38373	39800	41284	42827	42827	42827
Interest	6167	10552	18722	23110	24577	26121	25592	23055	20501
Operating Margin	-845	-4208	-12800	-18540	-12575	-8268	-10400	-8011	-3120
Non-operating Revenues (Net)	180	180	180	180	180	180	180	180	180
Net Margin (Profit/Loss)	-666	-4028	-12620	-18360	-12395	-8088	-10221	-7832	-2940
Changes in working capital	68658	69936	70634	72246	75089	60227	63466	67370	70712
Excl interest, maturing L/T debt	3209	2793	3336	3171	3401	3278	2962	2872	2960
<b>Internal Cash for debt service</b>	<b>24545</b>	<b>27462</b>	<b>34826</b>	<b>39952</b>	<b>48581</b>	<b>56039</b>	<b>55237</b>	<b>55179</b>	<b>57428</b>
<b>Capital Expenditure and External Financing</b>									
<b>Capital Expenditure.</b>									
Capital Expenditure (DBP Project)		85,510	70,174	15,861	16,496	17,155	-	-	-
Additional EC Capital Expenditure for	16433	7,089	7,704	8,375	9,100	9,885	10,753	11,684	12,703
<b>External Financing</b>									
Proposed DBP Loan		76959	63157	14275	14846	15440	0	0	0
Customer Contributions	2196	2393	2904	3035	3171	3623	3789	3959	4139
<b>Debt Service Payments</b>									
Interest - Existing	6167	5935	5698	5440	5159	4887	4539	4218	3880
- DBP Loan		4618	13024	17670	19418	21235	21053	18837	16621
Principal - Existing	4006	3776	4014	4271	4552	4682	3904	3782	3489
- DBP Loan							18468	18468	18468
Total Debt Service	10173	14329	22736	27382	29129	30803	47964	45305	42457
<b>Debt Service Ratio (Times)</b>	<b>2.4</b>	<b>1.9</b>	<b>1.5</b>	<b>1.5</b>	<b>1.7</b>	<b>1.8</b>	<b>1.2</b>	<b>1.2</b>	<b>1.4</b>

## B. ILECO III

Key Assumptions	2002	2003	2004	2005	2006	2007	2008	2009	2010
Domestic Inflation		4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Average energy cost P/kWh	4.03	4.03	4.03	4.03	4.03	4.03	4.03	4.03	4.03
Average retail price P/kWh	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70
Consumer Growth Rate	5.3%	4.8%	4.7%	4.8%	4.8%	4.3%	4.3%	4.3%	4.3%
kWh/Consumer Growth Rate	4.7%	2.4%	2.4%	1.7%	1.6%	1.3%	1.1%	0.7%	0.5%
Total Number of Customers	24,353	25,515	26,713	27,991	29,333	30,585	31,893	33,258	34,683
Energy Sales (MWh)	29,544	31,706	34,000	36,248	38,610	40,771	42,999	45,172	47,325
kWh/Customer (kwh/year)	1,213	1,243	1,273	1,295	1,316	1,333	1,348	1,358	1,364
System Losses (%)	13.5%	12.8%	12.4%	11.7%	11.0%	10.4%	10.4%	10.4%	10.4%
Energy for own use	118	127	136	145	154	163	172	180	189
Energy Purchase (MWh)	34,291	36,511	38,961	41,219	43,574	45,674	48,170	50,604	53,016
Projected Cash Flows	2002	2003	2004	2005	2006	2007	2008	2009	2010
<b>Revenues</b>									
Sale of Energy	197,942	212,432	227,802	242,859	258,687	273,163	288,091	302,649	317,074
Less: Uncollectible Revenue	11,617	12,468	13,370	14,254	15,183	16,032	16,908	17,763	18,609
Net Operating Revenue	186,325	199,964	214,432	228,605	243,504	257,131	271,183	284,886	298,465
Other Operating Revenue	3,991	4,283	4,593	4,897	5,216	5,508	5,809	6,102	6,393
Total Operating Revenue	190,316	204,247	219,025	233,502	248,720	262,638	276,992	290,989	304,858
<b>Operating Expenses</b>									
Power Purchases	138,192	147,140	157,014	166,112	175,603	184,066	194,123	203,933	213,653
O&M costs	18043	19649	20777	22359	23567	24946	26990	29197	31917
Administration Expenses	20670	21282	21910	22553	23214	23891	24846	25840	26874
Total Operations	176904	188071	199701	211024	222383	232903	245960	258970	272444
Depreciation	13354	13354	16317	17683	19182	19673	20183	20183	20183
Interest	5300	7202	10144	12149	13471	14006	13642	12366	11072
Operating Margin	-5242	-4379	-7136	-7355	-6316	-3943	-2793	-530	1160
Non-operating Revenues (Net)	3020	3020	3020	3020	3020	3020	3020	3020	3020
Net Margin (Profit/Loss)	-2222	-1359	-4116	-4335	-3296	-923	227	2490	4180
Changes in working capital	27008	25795	24965	23121	21661	11870	9825	7618	4865
Excl interest, maturing L/T debt	2931	-1028	-1016	-1240	-1223	-1522	-1955	-2175	-2449
<b>Internal Cash for debt service</b>	13501	20224	23360	26738	30580	34278	36007	37213	37883
<b>Capital Expenditure and External Financing</b>									
<b>Capital Expenditure.</b>									
Capital Expenditure (DBP Project)		38,396	19,524	21,412	7,007	7,287	-	-	-
Additional EC Capital Expenditure for	11036	3,933	4,215	4,677	5,107	4,955	5,384	5,844	6,344
<b>External Financing</b>									
Proposed DBP Loan		34557	17572	19271	6306	6558	0	0	0
Customer Contributions	2274	1809	1865	2383	2503	2335	2439	2546	2658
<b>Debt Service Payments</b>									
Interest - Existing	5300	5129	4943	4737	4524	4288	4036	3771	3488
- DBP Loan		2073	5201	7412	8946	9718	9606	8595	7584
Principal - Existing	2477	2648	2833	2649	3252	3489	3331	3421	3453
- DBP Loan							8426	8426	8426
Total Debt Service	7777	9850	12978	14798	16722	17495	25399	24213	22951
<b>Debt Service Ratio (Times)</b>	1.7	2.1	1.8	1.8	1.8	2.0	1.4	1.5	1.7

## **Annex 6(A): Procurement Arrangements**

### **PHILIPPINES: Rural Power Project**

#### **Procurement**

All procurement under the project, including the GEF grant, will follow the Bank's Guidelines. Procurement will be undertaken by the project's implementing agencies as follows:

- The Development Bank of the Philippines (DBP)
- The Department of Energy (DOE)
- Eligible sub-borrowers of rural electrification subprojects

DBP and DOE will supervise the implementation of the project through their respective Program Management Offices (PMO). DBP will be the borrower for the rural electrification subproject component and will on-lend the loan proceeds to eligible sub-borrowers, including: (a) small scale energy generation and/or mini grids sub-borrowers which are expected to be mainly private investors selected through competitive bidding, while other qualified sponsors, including LGUs and ECs, may also participate in this component; (b) solar PV suppliers from the private sector; (c) microfinance institutions for providing consumer loans for the purchase of solar PV systems, and (d) satisfactorily performing ECs for grid system development. In addition, GEF-financed capacity building on RET will be implemented by DOE, except for a portion of GEF grant (\$1 million) which would be implemented by DBP for its own capacity building on RET.

**Summary of the Assessment of the Agencies' Procurement Capacities.** World Bank staff undertook the assessment of the project's implementing agencies during the appraisal stage of the project. The procurement assessments (in project files) were fully discussed and agreed with the agencies in February 2003, and the general findings conform to those of the Country Procurement Assessment Report (CPAR). Overall risk assessment for the project: average risk category.

*The Development Bank of the Philippines (DBP).* The assessment found that although they are implementing one on-going Bank-funded project (LGUWSP-APL2), they are not fully involved in the procurement process, as this is being done by the Local Government Units (LGUs). For this project, they will mainly be responsible for Component 1, Rural Electrification Subprojects, where they will be selecting a consultant who will be assisting them in the management of the project, with procurement on the subprojects handled by participating ECs, LGUs and other subproject sponsors. For this procurement activity, the risk assessment of DBP is considered to be low.

*The Department of Energy (DOE).* The assessment found that the proposed PMO for the project will only be formed for this project and hence has no prior experience in procurement on Bank-funded project. However, this PMO will include staff that are not only currently involved in the implementation of the on-going PHRD and GEF grants, but were also involved in the selection of the consultants for these grants. The assessment, however, concluded that DOE will still require the expertise of a Procurement Specialist who is very experienced on Bank procurement, to help them facilitate all the required procurement on the project. Risk assessment of DOE is considered to be average. DOE has indicated its intention to hire the UNDP-Development Support Service Center (DSSC) as its administrative agent, to assist DOE-PMO in project management, procurement, financial management and disbursement for the GEF grant under the project.

**Conflicts between the Procurement Procedures of the Government of the Philippines and the World**

## **Bank**

The Country Procurement Assessment Report (CPAR) for the Philippines was completed in June 2002, and it assessed the procurement risk as average. The Philippines' Public Procurement System, through its various laws, rules and regulations, adhere to the principle of competition and are intended to promote fairness, economy, efficiency and transparency. However, there are certain rules and regulations, and procedures, which may not fully support these principles in procurement transactions. Also, there are serious weaknesses in the implementation of the system which led to: (a) cumbersome procurement processes and unnecessary delays; (b) inadequate capacity of implementing agencies; (c) ineffective oversight; (d) high incidence of rebidding; and (e) lack of accountability.

In recent years, the conflicts with the Bank's Procurement Guidelines for works and goods and the Consultants' Guidelines have been eliminated through the amendments made to national bidding laws, rules and regulations. The amendments invariably mandate that "for contracts financed partly or wholly with funds from international financing institutions, the corresponding loan/grant/credit agreement between the government and the concerned IFI shall prevail." Most recently, an "Act Providing for the Modernization, Standardization and Regulation of the Procurement Activities of the Government and for Other Purposes", otherwise known as Republic Act No. 9184, was approved into law by the President of the Republic of the Philippines. The waiver provisions mentioned above are found in this R.A. No. 9184.

In addition, any remaining conflicts related to national competitive bidding are fully addressed in Schedule 5 of the Loan Agreement, Annex to Schedule 3 of the GEF Trust Fund Grant Agreement, and in Annex to Schedule 1 of the GEF Project Agreement.

## **Procurement Methods (Table A)**

**1. Rural Electrification Subprojects:** about US\$17 million. Procurement under the rural electrification subprojects will be undertaken by the participating private entities (e.g., ECs) in accordance with established local private sector or commercial practices, which are acceptable to the Bank. Local government units (LGUs), if qualified, will also be allowed to request for loans for the purpose of this component, and procurement will follow the following procedures. For contracts estimated to cost the equivalent of less than \$500,000 for LGUs, national competitive bidding (NCB) will be used, up to an aggregate amount of \$1,000,000; and for contracts estimated to cost the equivalent of \$50,000 or less will be procured through either national shopping procedures or procurement of small works, wherein contracts will be awarded on the basis of quotations received from at least three qualified suppliers or contractors, up to an aggregate amount of \$800,000. There is no International Competitive Bidding (ICB) envisioned for the project, however if in the future, the LGU sub-borrowers propose a subproject with an estimated cost of US\$500,000 or above, ICB should be the method to be followed, using the Bank's applicable Standard Bidding Documents (SBDs). Contracts to be issued for subprojects are expected to be generally in the range of US\$10,000 to US\$100,000. The LGUs capabilities are also expected to be strengthened by securing the necessary TA for this purpose.

In the procurement of the subprojects, the Beneficiary LGUs shall use the Bank's applicable Standard Bidding Documents (SBDs) for all ICB contracts, and for non-ICB contracts, the LGUs shall use bidding documents to be prepared by DBP for use on this project, based on World Bank standard documents.

**2. Goods for DOE and DBP:** about US\$540,000. Goods to be procured under the GEF-funded Capacity Building component includes computer equipment and peripherals, office equipment (photocopiers, drafting equipment, etc), software, books and manuals, etc. needed to set up a good database filing and retrieval system, and enhance the analytical capability of the PMOs of DOE and DBP. National competitive bidding (NCB) will be used for contracts estimated to cost the equivalent of more than US\$50,000; and for contracts estimated to cost the equivalent of US\$50,000 or less, will be procured



though national shopping procedures. Bidding documents acceptable to the Bank will be used.

**3. Consultant's Services and Training for DOE and DBP:** about US\$7.4 million, of which \$0.8 million will be implemented by DBP for TA and training in RET activities, and the balance (\$6.6 million) by DOE for capacity building on RET. World Bank standard documents will be used. Quality- and Cost-Based Selection (QCBS) procedures will be followed in the hiring of consulting firms with contracts estimated to cost the equivalent of US\$100,000 or more. In some cases, and as may be appropriate, Quality-Based Selection (QBS) method will be used for capacity building activities for RET. Consultancy services and/or service providers for training, with contracts estimated to cost less than US\$100,000 equivalent may be procured through selection based on consultant's qualifications (CQ) in accordance with the provisions of the Consultant Guidelines; or through single-source selection (SSS), with the Bank's prior agreement, in accordance with the provisions of the Consultant Guidelines. Specifically, sole-sourcing arrangement for UNDP-DSSC to assist the DOE-PMO in project management, procurement, financial management and disbursement is justified on the following grounds: (a) the arrangement will facilitate streamlining of procedures at DOE and allow for efficient project implementation; (b) the assignment is small in terms of contract value which is estimated to be less than \$300,000 and this is considered economical in relation to the work program; and (c) DSSC has a track record with DOE -- it has been playing the similar role in the implementation of two on-going GEF projects and DOE is satisfied with DSSC's performance. Given the synergies between these ongoing GEF projects and the Rural Power Project, DSSC has a clear comparative advantage over alternative consultants. Individual consultants meeting the requirements set forth in the Consultant Guidelines will be procured under contracts awarded in accordance with the provisions of the Consultant Guidelines. Consultant's services that may be required by the LGUs in the implementation of the subprojects will be selected based on consultant's qualifications, while consultants' services that may be required by the ECs and other private sector sub-borrowers will be selected through established private sector or commercial practices acceptable to the Bank.

**4. Incremental Operating Costs for DOE and DBP:** about US\$370,000 to be funded by the GEF Grant. This includes expenditures for the cost of office supplies, maintenance of equipment, rental of facilities, and travel of project staff, but excluding salaries of project staff.

Procurement methods (Table A)

**Table A. Project Costs by Procurement Arrangements**  
(US\$ million equivalent)

Expenditure Category	Procurement Method				
	ICB	NCB	Other	N.B.F.	Total Cost
1. Subprojects	-	0.8	11.4	5.0	17.2
	-	(0.8)	(9.1)	(0.0)	(9.9)
2. Goods	-	-	-	0.6	0.6
	-	-	-	(0.0)	(0.0)
3. Consultant Services	-	-	-	7.4	7.4
	-	-	-	-	-
4. Training				0.9	0.9
5. Incremental Operating Cost	-	-	-	0.5	0.5
	-	-	-	-	-
6. Front-end Fee	-	-	0.1	-	0.1
	-	-	(0.1)	-	(0.1)
<b>TOTAL</b>	-	0.8	9.2	16.9	26.7
	-	(0.8)	(9.2)	(0.0)	(10.0)

Note:

(1) N.B.F. – Not Bank Financed (includes components (2), (3) and (4) to be funded under the GEF grant following Bank procedures)

(2) Figures in parenthesis are the amounts to be financed by the Bank loan.

**Table A1: Consultant Selection Arrangements**  
(US\$ million equivalent)

Consultant Services Expenditure Category	QCBS	QBS	SFB	SSS	CQ	Other	N.B.F.	Total Cost <sub>1</sub>
<b>A. Firms</b>	0.56 (0.49)	0.53 (0.46)	0.00 (0.00)	0.27 (0.27)	2.88 (2.51)	0.00 (0.00)	0.00 (0.00)	4.24 (3.73)
<b>B. Individuals</b>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	2.69 (2.29)	0.00 (0.00)	3.13 (2.57)
<b>Total</b>	0.56 (0.49)	0.53 (0.46)	0.00 (0.00)	0.27 (0.27)	2.88 (2.51)	2.69 (2.29)	0.00 (0.00)	7.37 (6.30)

<sup>1</sup> Including contingencies

QCBS = Quality- and Cost-Based Selection

QBS = Quality-based Selection

SFB = Selection under a Fixed Budget

SSS = Single-Source Selection

CQ = Selection Based on Consultants' Qualifications

Other = Selection of individual consultants (per Section V of Consultants Guidelines)

N.B.F. = Not Bank-financed

NOTES:

1. Figures in parenthesis are amounts to be financed by GEF grant
2. Each contract for firms selected using QCBS/QBS is not likely to exceed \$350,000 per contract.
3. Each contract for firms selected using CQ procedures are estimated not to exceed \$100,000 per contract.
4. More than 75% of individual consultants are expected to be selected using competitive selection process detailed in Section V of Consultants Guidelines.

**Prior Review Thresholds (Table B)**

**(a) Thresholds for Procurement Methods for Subprojects and Prior Review by DBP**

For private sector sub-borrowers:

- all goods/works contracts equivalent to \$1 million or more
- all consultants contracts with firms equivalent to \$100,000 or more
- all individual consultants contracts equivalent to \$50,000 or more
- all contracts for the purchase of secondhand subtransmission facilities, regardless of the estimated cost

For LGU sub-borrowers:

- all ICB contracts
- the first NCB contract under each subproject
- all contracts for goods/works equivalent to \$200,000 or more
- the first NS or Small Works contract under each subproject
- all consultants contracts with firms equivalent to \$100,000 or more
- all individual consultants contracts equivalent to \$50,000 or more.

<b>Expenditure Category</b>	<b>Contract Value Threshold (US\$ thousands)</b>	<b>Procurement Method</b>	<b>Contracts Subject to Prior Review by DBP (US\$ millions)</b>
1. Goods and works			
(a) Private sector sub-borrowers	$\geq 1,000$	ICB	All contracts
(b) LGU sub-borrowers	$\geq 500$	ICB	All ICB contracts & contracts equal to or greater than \$200,000 and First NS or SW contract for each subproject
	$\geq 50$ but $< 500$	NCB	
	$< 50$	NS/SW	
2. Consultant's Services and Training			
(a) Private sector sub-borrowers	$\geq 100$ for firms $> 50$ for individuals	Private sector commercial practices	All contracts All contracts
(b) LGU subprojects	$\geq 100$ for firms	QCBS/QBS	All contracts
	$\geq 50$ for individuals	CQ	All contracts
	$< 50$ for individuals	IC	

**(b): Thresholds for Procurement Methods for DOE and DBP and Prior Review by the Bank**

1. The procedures set forth in the Guidelines shall apply to:

- the first contract of DOE and DBP, respectively, for goods under the Capacity Building component, procured either through NCB or NS procedures (regardless of cost)
- all contracts for goods/works estimated to cost the equivalent of US\$200,000 or more
- all contracts for consultants services equivalent to US\$100,000 or more for firms and US\$50,000 or more for individuals
- all contracts procured through single-source selection, if any.

2. With respect to all contracts not governed by prior review, the procedures set forth in the Guidelines shall apply. Ratio shall be 1:5

<b>Expenditure Category</b>	<b>Contract Value Threshold (US\$ thousands)</b>	<b>Procurement Method</b>	<b>Contracts Subject to Prior Review (US\$ millions)</b>
1. Goods	$\geq 50$	NCB	First contract for (a) DOE; and (b) DBP, respectively, regardless of cost, and all contracts equal to or greater than

	< 50	NS	\$200,000 (0.1)  first contract for (a) DOE; and (b) DBP, respectively (0.01)
2. Consultant's Services and Training	≥ 100 for firms	QCBS/QBS/SS	1.35
	< 100 for firms ≥ 50 for individuals	CQ	2.88
	> 50 for individuals	IC	

Total value of contracts subject to prior review: US\$4.94 million

Overall Procurement Risk Assessment: Average

Frequency of procurement supervision missions proposed: One every 6 months (includes special procurement supervision for post-review/audits)

Post Review: All contracts for goods, works and services shall be subject to post review by the Bank in accordance with procedures set forth in the Guidelines; and all contracts not subject to prior review shall be subject to post review by DBP in accordance with procedures set forth in the Operations Manual.

## Annex 6(B): Financial Management and Disbursement Arrangements PHILIPPINES: Rural Power Project

### Financial Management

#### 1. Summary of the Financial Management Assessment

##### Country Issue

There are no items in the action plan of the 2002 Country Financial Accountability Assessment (CFAA) that could significantly have impact on the project. Following is one current issue that is relevant to the Project:

Project Accounting – The New General Accounting System (NGAS) Project Accounting module has not yet been completed. This is a computerized module and is scheduled to be completed by June, 2003. the NGAS presently being used by the DBP has a regulatory Chart of Accounts for COA(Commission on Audit, the Supreme Audit Institution for the Philippines) and BSP's (Bangko Sentral ng Pilipinas, Central Bank of the Philippines) use. Thus, there is a need for DBP to set up its own Project accounting system reflecting the components and major activities of the project. This in effect would make the Project generate two sets of reports, the regulatory and the project financial management reports. Thus, computerization of project financial reporting is desirable. A strong financial management arrangements for the project is needed most especially on adequate staffing.

##### Risk Analysis

Risk on the project is considered to be on the overall **Moderate**. Following are the risks, its rating and the mitigating measures:

<i>Inherent Risk</i>	<i>Risk Assessment</i>				<i>Mitigating Measures</i>
	<i>H</i>	<i>S</i>	<i>M</i>	<i>N</i>	
Country :			x		
Project Accounting			x		PMO-FM Group has been formed to prepare separate books of accounts for the project and to prepare the Project Financial Monitoring Report.
<i>Overall Inherent Risk</i>			x		
<i>Control Risk</i>					
1. Implementing Entity			x		PMO with separate FM function already established.
2. Funds Flow			x		Cash from the Bank goes directly to Project.
3. Staffing			x		Project FM staff on board already. To increase in volume requires.
4. Accounting Policies and Procedures			x		
5. Internal Audit		x			Internal Audit to cover Project.
6. External Audit			x		
7. Reporting and Monitoring			x		Agree on the Financial Monitoring Report to be submitted.
8. Information Systems			x		Computerize Project FM later.
<i>Overall Control Risk</i>			x		
<div style="display: flex; justify-content: space-between; padding: 0;"> <span>H – High</span> <span>S – Substantial</span> <span>M – Moderate</span> <span>N – Negligible or Low</span> </div>					

## Strengths and Weaknesses

The **strengths** of the Financial Management system for the project are:

1. The DBP, being a Government Financial Institution (GFI) lends its **Institutional Strength as a Universal Bank** to the Project in terms of its processes, policies, controls and geographical reach.
2. Being a Government Owned and Controlled Corporation (GOCC), it is **less subject to budget limitations** as its funds come from the profitability of its operations rather than from budget ceilings established by the government for agencies.
3. The **Top Management's Commitment to implement** the Project, provides the necessary logistical and organizational for the Project.
4. The **Organization of a separate Project Management organization with its corresponding FM Unit** ensures that, in addition to DBP entity support, the project is focused on by a dedicated set of staff both on the operational and financial side

The **weaknesses** of the financial management system of DBP and the project are identified as follows:

<i>Action</i>	<i>Responsible person</i>	<i>Completion Date</i>
1. The RMOs and branches shall be actively involved in the implementation of the project and that it is made part of their key result areas. Key result areas of RMOs and branches shall be submitted to the Bank.	DBP Management	Before effectiveness.
2. The FM staffing shall be increased after a year or when the volume of transactions justify. DBP will adopt an FM staffing plan satisfactory to the Bank	DBS-EVP	November 2004
3. ECs will be supervised periodically and will be asked to submit agreed financial reports periodically, on a quarterly basis. Screening criteria for the ECs should take this into consideration including the required financial ratios.	PMI	During implementation
4. Finalized FM Manual for the Project shall be submitted to the Bank.	PMI	Before effectiveness.
5. Require the internal audit to include Bank projects in their internal audit review.	DBS-EVP	Starting in the first year of the Project implementation

The foregoing weaknesses is addressed by the following Action Plan:

### ***Supervision Plan***

*Objective and nature* – The FM supervision of the project shall be undertaken periodically to ensure that the loan proceeds are used only for the purpose for which it was granted, with due regard to economy, efficiency and the attainment of the project's objectives. This normally addresses the following:

- a. The mitigation or compensating procedures that have been undertaken by the project on the risks and weaknesses identified during the assessment or in the previous supervision;
- b. Ensuring that the FM system agreed is being maintained or further strengthened;
- c. That the FMRs are being submitted on a timely basis and that the disbursements are on track; and
- d. That there is adequate and timely budget appropriation and releases.



*Coverage* – The scope of the supervision should cover the entire project financial management arrangements. The magnitude and level of detail of the review of the components, implementing agencies involved and geographic areas is left to the professional judgment of the FM Specialist. It is suggested that the following aspects of FM be covered in the supervision:

1. Maintenance of an adequate Financial Management System, including the implementation of the NGAS, in the Implementing Agencies.
2. Review of SOEs on a sampling basis.
3. Timeliness of FM reporting.
4. System of funds flow and cash planning.
5. Discussion with COA Auditor on the progress of audit, significant findings and audit requirements of the Bank.
6. Subproject visits and checking of financials as well as physical progress.

*Frequency and duration* – The project should be supervised periodically, at least every 6 months. Based on the nature of the work required under the Bank's policy and depending on the status of the project's financial management and the action plans, the duration of the supervision may be from 1 to 3 weeks. Certain FM issues may be addressed outside of the regular semi-annual supervision by conducting a 2 to 3-day visit.

*Staffing* – The supervision shall be conducted by an FMS. A review will be conducted to determine the adequacy of FM staffing to determine whether additional number of staff will be required.

The following FMRs shall be submitted:

1. **Financial Report :**  
Statement of Sources and Uses of Funds – Using the current format of the current Physical and Financial Status Report but should be in Financial terms which should at least include Current and Cumulative column. In addition, Receipts should be added before the use of funds and Fund balance should be added at the end. This should have a top sheet condensed report where everything is the same except that under the uses of funds the amounts shall just be by components. This will be submitted on a quarterly basis.
2. **Physical Progress Report** – Use the current report, Physical & Financial Status Report which has breakdown by component and sub component. The financial column must be linked to the Financial Reports in term of the figures reflected. This will be submitted on a quarterly basis.
3. **Procurement Report** – Current report on Annual Procurement Plan with addition of forecast and status in terms of stage and amount. This will be submitted on a semi annual basis.

## **2. Audit Arrangements**

The external auditors of DBP are the Commission on Audit (COA) auditors who are the State Auditor. Throughout the implementation of this project, timely annual audit reports, issued by an independent auditor, on the financial statements of DBP and the Project and on the Project's SA and SOEs/PMRs together with the auditor's detailed comments on DBP's and the project's financial management system will be required to be submitted to the Bank not later than 6 months after the end of DBP's fiscal year. Similarly, DOE will send to the Bank, no later than 6 months after the end of DOE's fiscal year, audit reports on the project and the Project's SA and SOEs for the GEF grant.

## **3. Disbursement Arrangements**

Withdrawals of the loan and grant funds would be through the submission of duly signed Withdrawal Application and Statement of Expenditures (SOEs). DBP and DOE have the option to replace it with report-based disbursement in due course. All expenditures will have adequate supporting documents. Attachments of supporting document to the SOEs will be based on threshold limits for SOEs without attached supports. The Withdrawal Applications will be supported by SOEs for:

- Civil Works below \$200,000 equivalent per contract;
- Goods below \$200,000 equivalent per contract;
- Consulting firms' contracts below \$100,000 equivalent per contract;
- Contracts for individual consultants below \$50,000 per contract; and
- Training, workshops, study tours and incremental operating costs

All other Withdrawal Applications will be supported by full documentation and signed contracts.

Retroactive financing will be provided under the project for up to \$1 million of the Bank loan and \$500,000 of the GEF grant to finance urgently needed eligible expenditures incurred before loan signing and after March 1, 2003.

### Allocation of loan proceeds (Table C)

#### (A) Allocation of IBRD Loan Proceeds

Expenditure Category	Amount in US\$ (million)	Financing Percentage
1. Subloans/subsidiary loans for rural electrification subprojects	9.9	100% of amounts disbursed
2. Front-end fee	0.1	100%
<b>TOTAL</b>	<b>10.0</b>	

#### (B) Allocation of GEF Grant Proceeds

Expenditure Category	Amount in US\$ (million)	Financing Percentage
1. Subgrants for rural electrification subprojects	1.60	100% of amounts disbursed
2. Consultants' Services, training	4.39	
Firms		87%
Individuals		82%
Tax exempt organizations		100%
3. Training, workshops and study tours	1.15	100%
4. Goods	0.55	100% of foreign expenditures
		100% of local expenditures (ex-factory cost) and
		90% of local expenditures for other items procured locally
5. Incremental Operating Costs	0.42	80%
6. Unallocated	0.89	
<b>TOTAL</b>	<b>9.00</b>	

### Use of statements of expenditures (SOEs):

#### Special account:

Funds flow for the project would be from the Bank to a Special Account (SA). DBP would open two separate SAs for the Bank loan and GEF grant, and DOE would open an SA for the GEF grant in a commercial bank acceptable to the Bank.

Under the Bank loan, initial authorized allocation for the SA would be \$500,000. Authorized allocation would be increased to \$1 million when the aggregate amount of withdrawals from the loan plus all outstanding special commitments is at least \$3 million.

Under the GEF grant, authorized allocation for DOE and DBP would be US\$200,000 and US\$50,000,

respectively.

Disbursements shall be based on the agreed eligibility/financing percentage in the Loan and Grant Agreements. Disbursements under the project shall comply with the World bank's policies and procedures on disbursement and financial management as reflected in its Disbursement Handbook and Project Management Manual. No advances shall be allowed to be paid from the SA. Reimbursements from the SA shall be only for eligible and duly supported expenditures.

**Annex 7: Project Processing Schedule**  
**PHILIPPINES: Rural Power Project**

<b>Project Schedule</b>	<b>Planned</b>	<b>Actual</b>
<b>Time taken to prepare the project (months)</b>		
<b>First Bank mission (identification)</b>		09/14/2000
<b>Appraisal mission departure</b>		02/03/2003
<b>Negotiations</b>		07/15/2003
<b>Planned Date of Effectiveness</b>		01/31/2004

**Prepared by:**

Philippine Department of Energy and Development Bank of the Philippines

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Rene Manuel	Procurement Specialist
Maya Villaluz	Operations Officer: Environment
Joseph Reyes	Operations Officer: Financial Management
Presly Abella	Operations Officer: Financial Management
Karin Nordlander	Lead Legal Counsel
Beth Lin	Legal Counsel
Patricia Miranda	Legal Counsel
Ernesto Terrado	Consultant - Renewable Energy
Wolfgang Mostert	Consultant - Policy and Regulation
Shawn Otal	Consultant - Power Engineer
Peter Meier	Consultant - Project Economics
Arie Chupak	Consultant - Financial Intermediaires
Richard Hansen	Consultant - SHS business planning
Ines Bagadion	Consultant - Social Safeguard
Bernard Baratz	Consultant - Environment
Carla Sarmiento	Program Assistant
Angelique Plata	Team Assistant
Charles Feinstein	Lead Energy Specialist, Peer Reviewer

Vijay Jagannathan Saud Siddique	Sector Manager, Peer Reviewer Principal Investment Officer (IFC), Peer Reviewer
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## **Annex 8: Documents in the Project File\***

### **PHILIPPINES: Rural Power Project**

#### **A. Project Implementation Plan**

Project Implementation Plan and Operations Manual, DOE and DBP\*

#### **B. Bank Staff Assessments**

1. Rural Power Sector Policy Note\*
2. Economic/financial analyses\* (a) mini-grid subcomponent; (b) solar home system (SHS) subcomponent; and (c) EC grid subcomponent
3. Technical report on proposed EC grid subcomponent\*
4. Procurement assessment\*
5. Financial management assessment\*
6. GEF Project Brief\*

#### **C. Other**

1. Summaries of consultations with civil society\*
2. Proceedings of participatory project design planning workshop\*
3. Summaries of donors consultation meetings\*
4. Rural Power Sector Strategy Study\*
5. Strengthening the Non-Conventional and Rural Energy Development Program in the Philippines: A policy Framework and Action Plan (ESMAP, August 2001)\*
6. Market Assessment
7. Resource Assessment
8. Preinvestment study for off grid electrification: mini-grid market packages\*
9. Feasibility study for Investment Management Contract\*
10. Preinvestment study for EC transformation\*
11. Proceedings from workshop on sharing of lessons learned in SHS financing programs\*
12. Interim Missionary Electrification Development Plan\*
13. Rural Electrification and Development in the Philippines: Measuring the Social and Economic Benefits (ESMAP, May 2002)\*
14. Rationalization of Subsidy Policy for Rural Electrification\*
15. Electric Power Industry Reform Act (EIRA); and Implementation Rules and Regulations of EIRA\* [also available on DOE website ([www.doe.gov.ph](http://www.doe.gov.ph))]
16. The Philippine Energy Plan (2003-2012)
17. Renewable Energy Policy Framework (DOE, June 2003)\*

\*Including electronic files

## Annex 9: Statement of Loans and Credits

### PHILIPPINES: Rural Power Project

26-Mar-2003

Project ID	FY	Purpose	Original Amount in US\$ Millions			Cancel.	Undisb.	Difference between expected and actual disbursements <sup>a</sup>	
			IBRD	IDA	GEF			Orig	Frm Rev'd
P071007	2003	Second Agrarian Reform Communities Devel	50.00	0.00	0.00	0.00	50.00	0.00	0.00
P073488	2003	ARMM Social Fund	33.60	0.00	0.00	0.00	33.60	0.17	0.00
P077012	2003	KALAHI-CIDSS PROJECT	100.00	0.00	0.00	0.00	97.00	-3.00	0.00
P069916	2002	PH-2nd Social Expenditure Management	100.00	0.00	0.00	0.00	92.88	-2.45	0.00
P069491	2002	PH-LGU URBAN WATER APL2	30.00	0.00	0.00	0.00	30.73	4.54	0.00
P057731	2001	PH-Metro Manila Urban Transport	60.00	0.00	0.00	0.00	55.97	3.15	0.00
P066069	2001	LAND ADMIN & MANAGEMENT	4.79	0.00	0.00	0.00	3.28	1.82	0.00
P066509	2001	PH-MMURTRIP-Bicycle Nwk	0.00	0.00	1.30	0.00	1.25	0.28	0.00
P065113	2000	PH-SOCIAL EXPENDITURE MGMT	100.00	0.00	0.00	0.00	28.02	28.02	0.00
P039019	2000	PH-First Nat'l Rds Improve.	150.00	0.00	0.00	0.00	103.48	58.82	0.00
P059933	2000	COASTAL MARINE	0.00	0.00	1.25	0.00	1.14	1.60	0.00
P058842	2000	MINDANAO RURAL DEV	27.50	0.00	0.00	0.00	20.48	16.57	0.00
P057598	1999	RURAL FINANCE III	150.00	0.00	0.00	0.00	76.76	70.10	0.00
P048588	1999	PH-LGU FINANCE & DEV.	100.00	0.00	0.00	40.00	54.53	37.77	0.29
P004566	1998	PH-EARLY CHILD DEV.	19.00	0.00	0.00	0.00	9.91	7.91	0.00
P004595	1998	COMMUNITY BASED RESO	50.00	0.00	0.00	12.00	24.56	31.00	17.23
P004576	1998	PH-WATER DISTRICTS DEV.	56.80	0.00	0.00	0.00	27.07	44.87	23.34
P004602	1997	PH-THIRD ELEMENTARY EDUCATION	113.40	0.00	0.00	20.10	57.82	72.26	34.77
P004613	1997	WATER RESOURCES DEVE	58.00	0.00	0.00	16.27	12.32	28.59	3.03
P037079	1997	AGRARIAN REFORM COMM	50.00	0.00	0.00	0.00	2.39	-2.31	0.00
P040981	1997	PH-SECOND SUBIC BAY	60.00	0.00	0.00	23.85	13.44	37.28	5.30
P004571	1996	TRANS GRID REINFORCE	250.00	0.00	0.00	45.52	54.03	84.21	58.33
P004611	1996	PH-MANILA SEWERAGE II	57.00	0.00	0.00	20.90	26.97	47.87	38.87
Total:			1620.09	0.00	2.55	178.63	877.66	569.09	181.15



PHILIPPINES  
STATEMENT OF IFC's  
Held and Disbursed Portfolio  
Jun 30 - 2002  
In Millions US Dollars

FY Approval	Company	Committed				Disbursed			
		IFC				IFC			
		Loan	Equity	Quasi	Partic	Loan	Equity	Quasi	Partic
1980/82/89/90/94/95	AACT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2001/02	APW Trade	0.63	0.00	0.00	0.00	0.63	0.00	0.00	0.00
1996	All Asia Growth	0.00	4.00	0.00	0.00	0.00	4.00	0.00	0.00
1996	All Asia Manager	0.00	0.04	0.00	0.00	0.00	0.04	0.00	0.00
1996	AllAsiaVen Mgmt	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00
2000	Asian Hospital	7.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
2002	Banco de Oro	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1997	Bataan P/E	29.82	0.00	10.00	116.55	29.82	0.00	10.00	116.55
1998	Drysdale Food	13.46	0.00	0.00	10.00	11.66	0.00	0.00	8.80
2002	Eastwood	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2001	Filinvest	22.00	0.00	0.00	0.00	16.00	0.00	0.00	0.00
1979/90	General Milling	0.00	0.65	0.00	0.00	0.00	0.65	0.00	0.00
1998	H&Q PV III	0.00	5.76	0.00	0.00	0.00	5.76	0.00	0.00
1989	H&QPV-I	0.00	0.61	0.00	0.00	0.00	0.61	0.00	0.00
1993	H&QPV-II	0.00	1.16	0.00	0.00	0.00	1.16	0.00	0.00
2000	MFI MEP	0.00	0.12	0.00	0.00	0.00	0.12	0.00	0.00
2001	MNTC	46.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1970/72/00	Mariwasa	10.50	0.00	3.00	0.00	10.50	0.00	3.00	0.00
1993/94	Mindanao Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2001	PIATCO	50.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00
2002	PSMT Philippines	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1993	Pagbilao	30.00	10.00	0.00	3.00	30.00	10.00	0.00	3.00
1992	Pilipinas Shell	0.00	1.56	0.00	0.00	0.00	1.56	0.00	0.00
2000	PlantersBank	13.50	0.00	8.71	0.00	13.50	0.00	8.71	0.00
1998	Pryce Gases	13.00	0.00	0.00	5.00	13.00	0.00	0.00	5.00
2000	SME.com	0.00	0.21	0.00	0.00	0.00	0.12	0.00	0.00
2000	STRADCOM	12.00	0.00	8.00	0.00	0.10	0.00	8.00	0.00
1995	Sual Power	27.19	17.50	0.00	140.05	27.19	17.50	0.00	140.05
1999	UPPC	20.00	0.00	10.00	0.00	20.00	0.00	10.00	0.00
1992	Union Cement	0.00	5.63	0.00	0.00	0.00	5.63	0.00	0.00
1994	Walden Mgmt	0.00	0.05	0.00	0.00	0.00	0.05	0.00	0.00
1994	Walden Ventures	0.00	1.27	0.00	0.00	0.00	1.27	0.00	0.00
Total Portfolio:		352.60	48.57	39.71	324.60	177.40	48.48	39.71	273.40
FY Approval	Company	Approvals Pending Commitment							
		Loan	Equity	Quasi	Partic				
2001	AEI	1.00	0.00	0.00	0.00				
2002	Eastwood	0.00	0.00	3.00	0.00				
2002	PTF-HSBC	10.00	0.00	0.00	0.00				
1994	MINDANAO RISK MG	0.46	0.00	0.00	0.00				
2000	Asian Hospital	0.00	0.00	0.00	5.00				
2000	LTO Project	4.00	0.00	0.00	20.00				
2001	PEDF	1.50	0.00	0.00	0.00				
2002	All Asia Life	0.00	0.00	0.11	0.00				
2002	LSPP	0.00	0.00	0.19	0.00				
2002	BDO-RSF	20.00	0.00	0.00	0.00				
2002	Planters - MS	15.00	0.00	0.00	0.00				

Total Pending Commitment:	51.96	0.00	3.30	25.00
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## Annex 10: Country at a Glance

### PHILIPPINES: Rural Power Project

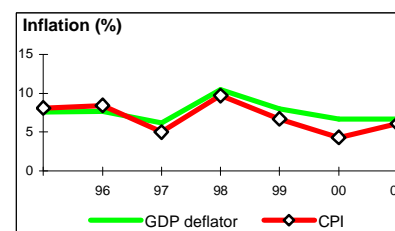
POVERTY and SOCIAL	Philippines	East Asia & Pacific	Lower-middle-income	Development diamond*			
2001							
Population, mid-year (millions)	77.0	1,826	2,164				
GNI per capita (Atlas method, US\$)	1,050	900	1,240				
GNI (Atlas method, US\$ billions)	80.8	1,649	2,677				
Average annual growth, 1995-01							
Population (%)	2.0	1.1	1.0				
Labor force (%)	2.6	1.3	1.2				
Most recent estimate (latest year available, 1995-01)							
Poverty (% of population below national poverty line) 1/	26	..	..				
Urban population (% of total population)	59	37	46				
Life expectancy at birth (years)	69	69	69				
Infant mortality (per 1,000 live births)	31	36	33				
Child malnutrition (% of children under 5)	32	12	11				
Access to an improved water source (% of population)	87	74	80				
Illiteracy (% of population age 15+)	5	14	15				
Gross primary enrollment (% of school-age population)	117	107	107				
Male	..	106	107				
Female	..	108	107				
KEY ECONOMIC RATIOS and LONG-TERM TRENDS				Economic ratios*			
	1981	1991	2000	2001			
GDP (US\$ billions)	35.6	45.4	74.7	71.4			
Gross domestic investment/GDP	27.5	20.2	17.6	18.0			
Exports of goods and services/GDP	23.8	29.6	56.3	49.3			
Gross domestic savings/GDP	24.1	17.2	24.0	19.4			
Gross national savings/GDP	..	19.6	30.3	26.0			
Current account balance/GDP	-5.8	-1.9	11.3	6.3			
Interest payments/GDP	2.3	3.2	3.2	3.5			
Total debt/GDP	58.3	71.5	67.4	73.3			
Total debt service/exports	33.6	23.0	13.7	18.7			
Present value of debt/GDP	..	..	67.9	..			
Present value of debt/exports	..	..	103.0	..			
	1981-91	1991-01	2000	2001	2001-05		
(average annual growth)							
GDP	1.3	3.5	4.0	3.4	4.6		
GDP per capita	-1.1	1.4	2.1	1.5	2.6		
Exports of goods and services	4.4	7.0	17.7	-3.2	5.3		
STRUCTURE of the ECONOMY					Growth of investment and GDP (%)		
	1981	1991	2000	2001			
(% of GDP)							
Agriculture	24.9	21.0	15.9	15.2			
Industry	39.2	34.0	31.1	31.2			
Manufacturing	25.5	25.3	22.6	22.4			
Services	35.9	45.0	52.9	53.6			
Private consumption	67.1	72.9	63.2	68.4			
General government consumption	8.8	9.9	12.8	12.2			
Imports of goods and services	27.2	32.6	50.2	47.4			
	1981-91	1991-01	2000	2001			
(average annual growth)							
Agriculture	1.2	1.8	3.3	3.9			
Industry	-0.5	3.5	3.9	1.9			
Manufacturing	0.8	3.3	5.6	2.2			
Services	3.1	4.4	4.4	4.3			
Private consumption	2.5	3.9	1.2	2.1			
General government consumption	1.4	3.3	-1.1	-0.9			
Gross domestic investment	-1.1	3.3	2.3	4.3			
Imports of goods and services	5.1	6.8	4.0	0.5			

Note: 2001 data are preliminary estimates.

\* 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.

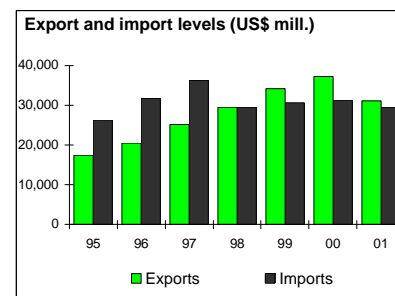
## PRICES and GOVERNMENT FINANCE

	1981	1991	2000	2001
<b>Domestic prices</b>				
(% change)				
Consumer prices	..	18.7	4.3	6.1
Implicit GDP deflator	11.7	16.5	6.7	6.7
<b>Government finance</b>				
(% of GDP, includes current grants)				
Current revenue	..	17.7	15.6	15.5
Current budget balance	..	1.9	-0.7	-0.8
Overall surplus/deficit	..	..	-4.1	-4.0



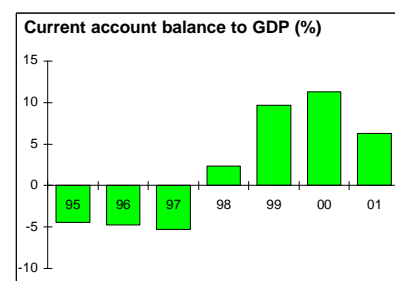
## TRADE

	1981	1991	2000	2001
(US\$ millions)				
Total exports (fob)	..	8,839	37,295	31,243
Electronics/Telecom	..	..	22,178	16,800
Garments	..	..	2,563	2,400
Manufactures 2/	..	6,432	33,989	29,301
Total imports (fob)	..	12,051	31,386	29,546
Food	..	493	1,400	1,369
Fuel and energy	..	1,784	3,877	3,542
Capital goods	..	2,952	12,161	11,665
Export price index (1995=100)	..	..	..	..
Import price index (1995=100)	..	..	..	..
Terms of trade (1995=100)	..	..	..	..



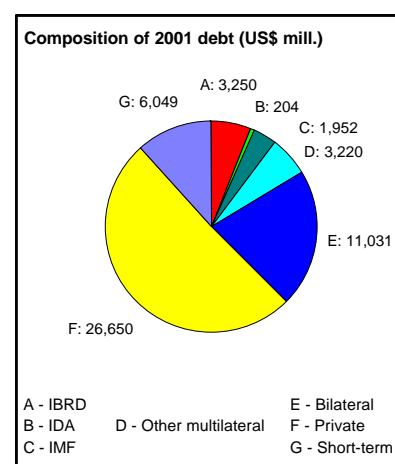
## BALANCE of PAYMENTS

	1981	1991	2000	2001
(US\$ millions)				
Exports of goods and services	7,513	12,367	41,267	34,394
Imports of goods and services	9,554	13,855	36,484	33,586
Resource balance	-2,041	-1,488	4,783	808
Net income	-527	-208	3,212	3,268
Net current transfers	507	827	437	423
Current account balance	-2,061	-869	8,432	4,499
Financing items (net)	1,496	2,972	-8,852	-4,588
Changes in net reserves	565	-2,103	420	89
<b>Memo:</b>				
Reserves including gold (US\$ millions)	..	4,470	14,911	15,549
Conversion rate (DEC, local/US\$)	7.9	27.5	44.2	51.0



## EXTERNAL DEBT and RESOURCE FLOWS

	1981	1991	2000	2001
(US\$ millions)				
Total debt outstanding and disbursed	20,786	32,451	50,382	52,356
IBRD	1,330	4,073	3,627	3,250
IDA	41	135	207	204
Total debt service	2,971	3,398	6,758	7,776
IBRD	126	622	573	491
IDA	0	2	5	6
Composition of net resource flows				
Official grants	70	293	157	..
Official creditors	777	797	28	-239
Private creditors	726	-146	245	-99
Foreign direct investment	172	544	2,029	..
Portfolio equity	0	0	290	..
World Bank program				
Commitments	0	566	255	90
Disbursements	448	386	162	120
Principal repayments	38	310	352	312
Net flows	410	76	-190	-192
Interest payments	89	314	225	185
Net transfers	322	-239	-415	-377



**Additional GEF Annex 11: Letter of Sector Development Program  
PHILIPPINES: Rural Power Project**

**7 March 2003**

**MR. ROBERT VANCE PULLEY**

Country Director,  
The World Bank  
23rd Floor, Taipan Place Building  
Emerald Avenue, Ortigas Center  
Philippines

Dear **Mr. Pulley**:

**Re: Rural Power Program/Project  
Letter of Sector Development Program**

To achieve the overarching objective of poverty alleviation, the government's medium term plan is anchored on balanced economic growth with social equity. Towards this end, rural electrification is a flagship program of the Department of Energy (DOE) which aims to improve the quality of life in rural areas through the provision of adequate, affordable and reliable energy services, in partnership with the private sector.

Our goal is to achieve 100% barangay electrification by 2006 and 90% household electrification by 2017. To achieve our vision for the sector, we are committed to the implementation of a long term Rural Power Development Program in a holistic and sustainable manner. The recently enacted Electric Power Industry Reform Act (EPIRA) of 2001 would provide the overall framework for structural reform towards the development of an open and competitive power sector in the Philippines. Consistent with the EPIRA, we have already put in place an enabling policy framework for reforms in the rural power sector. The challenge, however, is in the implementation of the strategy and action plan.

It is in this context that we place high priority on the proposed Rural Power Development Program. A summary of this Program and the key reform actions we are committed to implement are attached. The reform framework covers the following priority areas:

- a) rationalization of tariff and subsidy policy;
- b) rationalization of franchise areas by opening up areas that cannot be served by the Distribution Utilities to qualified third parties;
- c) strengthening of electric cooperatives (ECs) and segmented financing strategy to maximize private investments;
- d) restructuring of the National Electrification Administration (NEA); and
- e) privatization of the existing assets/operations of the Small Power Utilities Group (SPUG) of the National Power Corporation (NPC).

Both the targets for electrification and the timeline for reform action plan will be monitored and revised, as appropriate, to reflect changed circumstances over time. An Adaptable Program Loan (APL) from the World Bank, co-financed with the Global Environment Facility (GEF) for the renewable energy component,

is proposed to provide us with phased and sustained support for the implementation of our long term Rural Power Development Program.

Under the first phase of this Program, the Rural Power Project would support priority investments in two subsectors: (i) ***EC grid component*** aimed at improving the efficiency, reliability and affordable of their services and their transformation towards financial self-sufficiency, consistent with Executive Order No. 119 on Restructuring Program for ECs; and (ii) ***decentralized electrification component***, including small scale energy generation, mini-grids or “market packages” and stand-alone renewable energy systems. The objective is to accelerate electrification through piloting of public/private partnership business models for remote areas that are not financially viable for grid extension, consistent with the EPIRA provision for missionary electrification. Successful implementation of these pilot projects would be scaled up and expanded geographically in subsequent phases of the Program.

The APL is expected to be implemented in four phases, over a period totaling about 14 years. As triggers for approval of APL2, we would like to propose the following performance indicators:

1. Satisfactory implementation of reforms in the rural power sector that are critical for the success of the Project, as evidenced by (a) the issuance of a regulatory framework for the provision of electricity by qualified third party in areas unserved by the Distribution Utilities; and (b) issuance of DOE circular governing rationalization of subsidy for solar PV systems;
2. about 50% of disbursement of APL1, and substantial commitment of the remaining loan balance; and
3. for the EC grid subcomponent, about 70% of participating ECs achieve satisfactory financial performance, as indicated by their debt service coverage ratios of at least 1 time.

It is further proposed that specific triggers for proceeding to the next phase of the APL support for each of the sub-components, whether on grid or off-grid, be made independent from each other. This will ensure flexible sequence of investment projects working towards the program purpose.

We look forward to the continued collaboration with the World Bank and GEF.

Very truly yours,

(signed)

Jose Isidro Camacho  
Secretary  
Department of Finance

(signed)

Vincent S. Perez, Jr.  
Secretary  
Department of Energy

## **Attachment A**

### **The Philippines: Rural Power Sector Development Program**

#### **A. Sectoral Challenges**

The goal of the Philippine Department of Energy is to achieve 100% electrification of all barangays by year 2006. To date, considerable progress has been made in the acceleration of barangay electrification. However, some 5,200 barangays remain unelectrified as of 2002. Many of these remaining non-electrified barangays are in remote areas, characterized by low load density and highly dispersed population, thereby rendering grid extension to these areas as non-viable. Even in barangays that are considered energized, a good number of the population are unable to readily access electricity mainly due to their distance from existing backbone lines and related high connection costs.

The cost of providing services to rural households is expected to increase as consumers become more remote and disperse. The National Electrification Administration (NEA) estimates that due to cost considerations, only about 70% of the remaining non-electrified barangays are likely to be connected to the grid. The balance shall be served by decentralized electrification methods such as individual or mini-grid systems. In the light of the financial and institutional constraints in the rural power sector, the government realizes that meeting this ambitious target would not be easy. Hence, the need to implement new mechanisms and approaches to overcome these barriers.

#### **B. Electric Power Industry Reform and Policy Framework**

The structural reforms in the energy sector are governed by the Electric Power Industry Reform Act (EPIRA) of 2001. The EPIRA stipulates the declared policy of the state to (i) accelerate total electrification of the country; (ii) ensure the quality, reliability, security and affordability of the supply of electric power; (iii) enhance the inflow of private capital and broadening the ownership base of the industry; (iv) assure socially and environmentally compatible energy sources and infrastructure; and (v) to promote the utilization of indigenous and new and renewable energy (NRE) in power generation. Likewise, our goals of sustainable development are embodied in the National Economic and Development Authority (NEDA) Medium Term Development Program

The DOE's "O Ilaw" Program (gift of light) is the umbrella program on rural electrification. It encompasses all electrification projects being undertaken by the DOE's attached agencies, i.e., NEA [through the Electric Cooperatives (ECs)], Philippine National Oil Company (PNOC) and National Power Corporation (NPC). But clearly, using the conventional strategies of on-grid electrification and relying on limited government resources are not sufficient. Hence, the program was expanded to include an "adopt a barangay" campaign, which was launched to generate support from private donors (i.e., independent power producers) to assist in financing the rural electrification program. To some extent, this has helped to accelerate the program, but still insufficient to meet its requirements. Innovative means of reaching more barangays, such as using decentralized approaches and attracting new players are viewed as practical solutions that could be more effective.

### **C. The Rural Power Program and Reform Action Plan**

The Rural Power Program is considered vital to the national program to reduce poverty and spur economic development. The program intends to accelerate the electrification of the remaining unenergized barangays in the country by year 2006.

To achieve this formidable goal, the DOE shall have to broaden its approach to rural electrification. The O'Ilaw Program shall promote cost effective use of NRE for power generation and tap the private sector to provide technical and managerial expertise and financial resources. Electricity will be provided using the least cost technology option, i.e., conventional line extension for barangays which are close to the grid or installation of appropriate NRE technologies and/or hybrid systems for off-grid and isolated/island barangays using non-conventional delivery mechanism. Consistent with EPIRA, the provision of electricity in remote and unviable areas that the franchised utilities are unable to serve shall be opened to qualified third parties. The DOE shall prepare a Missionary Electrification Development Plan (MEDP) annually that shall embody the framework for how government and the private sector can collaborate to achieve the set goals of the program through effective leveraging of limited public sector resources. Moreover, ECs will develop and implement performance improvements and reform programs to enhance operational efficiency and services in already connected areas.

It is recognized that there is no quick fix; it would take some time to effect new ways of doing business and a transitional period would have to be allowed for the transformation of ECs and gradual buildup of private investment in the sector. Thus, a dual track of public and private funding is envisioned for the sector. Further, policy reforms have to be effected to facilitate the transformation. Toward this end, the DOE and its attached agencies are committed to the implementation of a Reform Action Plan, which identified the following priority action areas:(See Attachment C for Time-Bound Reform Action Plan).

- Rationalization of tariff and subsidy policy;
- Rationalization of franchise areas and opening up areas that are not served by the Distribution Utilities to qualified third parties;
- Strengthening of Electric Cooperatives (ECs) and segmented financing strategy to maximize private investments;
- Restructuring of NEA, and
- Privatization of the existing assets/operations of the Small Power Utilities Group (SPUG) of the National Power Corporation (NPC).

#### **Up-Front Actions**

A range of up-front actions has recently been put in place to implement the above policy and institutional reforms. Among these are reform actions that are already mandated by the EPIRA, including, (i) establishment of a competitive power structure; (ii) establishment of technical specifications in the Distribution Code and standards for service, performance and financial capability of distribution utilities; and (iii) rationalization of EC Franchises, including opening up to private sector participation.



In addition, a series of policy directives has been issued aimed at strengthening the NEA and ECs. These include the following:

- Executive Order (EO 119) on NEA and EC restructuring, with the implementation rules on EC loan condonation as provided by the EPIRA;
- NEA Board issued guidelines for the submission by ECs of a Performance Improvement Program (PIP) and/or a Rehabilitation and Efficiency Plan (REP) to prepare ECs to operate and compete under the deregulated electricity market, and to strengthen the technical and managerial capability and financial viability of rural ECs.
- NEA policy authorizing ECs to avail loans from other sources, including collateral sharing; this is essential for the ECs to tap new sources of long-term commercial funding and
- NEA Board approval of the implementation framework for investment management contract (IMC) as an innovative mechanism to bring in private risk capital to rehabilitate and improve technical and institutional operations of ECs without recourse to the government.

### **Segmented EC Financing Strategy**

Consistent with our policy of fiscal prudence, we are committed to the implementation of a segmented financing strategy of ECs to maximize private financing, including: (a) graduation of better performed ECs from public sector funding for financially viable investments; and (b) public sector funding to focus on (i) financially viable investments for the transformation of marginal ECs that are not able to tap private funding; and (ii) expansion investments of financially viable entities, including but not limited to ECs. (see Attachment D)

### **Refocused Role of the NEA**

In compliance with E.O. 119 and 138, NEA will implement institutional and financial restructuring to better perform under the new business environment. Specifically, consistent with the provision of E.O. 138 to rationalize directed credits, NEA will limit lending to marginal ECs using its own internal cash generation and may provide emergency financial assistance to ECs hit by typhoon or other natural calamities. NEA will also implement a segmented EC financing strategy noted above, part of which, will be the piloting of the IMC program in five ECs. Consistent with the provisions of EPIRA, NEA's refocused role will include: (a) technical and institutional oversight of the operations and performance improvements of ECs to enable them to operate and compete effectively under a competitive market. In extreme cases of poor EC management/performance, the remedial actions will continue to include temporary takeover of EC management by NEA; (b) renewal of EC franchises until the reversion of this mandate to Congress in 2006; (c) administration of subsidies from Congressional appropriation for line expansion by ECs; and (d) guarantee of ECs in power purchase from the spot market. In addition, the potential role of NEA in credit enhancement for selected ECs will be explored under the ongoing TA. Building on earlier studies, the detailed restructuring program of NEA is being developed with the assistance of PHRD-financed consultants to align its refocused role with adequate resources to restore the financial health of NEA within the government's policy framework for fiscal prudence. Displacement of personnel may be unavoidable in the course of the

NEA restructuring. For a smooth transition, the agency will have to implement a change management program for its employees including an awareness campaign, skills upgrading/re-tooling and early retirement incentives.

### **Rationalization of Tariff and Subsidy Policy**

As electrification work progresses towards more remote areas, the costs of extending electrification services also increases, both in terms of capital cost and operating overheads. Conversely, the capacity to pay of people in these areas are generally lower than their urban counterparts, requiring higher subsidies than before. Hence, it is critical at this point, to develop a cost effective, output-based and sustainable subsidy policy for rural electrification. This policy shall be applied to all types and sources of subsidies by the government in a coherent and integrated manner. The subsidy policy should be able to support the strategy of maximum private sector participation and reduced government exposure, including in areas where Small Power Utilities Group (SPUG) of the NPC operates. The rationalization of the sector's subsidy policy is currently being developed with the assistance of consultants and scheduled for completion by May 2003.

### **Privatization of Existing Assets/Operations of SPUG**

SPUG has been responsible for the investment and operation of power generation and sub-transmission for island grids and isolated areas. EPIRA-IRR [Rule 13, Section 3(b)] calls for SPUG to bring its functions to commercial viability on an area –by-area basis at the earliest time and encourage private sector participation. With the assistance of the World Bank, we will develop a regulatory framework and options for private sector participation in SPUG's operations. It is recognized that the privatization of SPUG's existing assets is dependent on, among others, the rationalization of tariff to reflect the actual cost of electricity and willingness to pay of consumers.

### **D. The Proposed Adaptable Program Loan**

The support from The World Bank shall accelerate the implementation of the aforementioned paradigm shift as well as test new approaches to address the old problems and face new challenges through heightened public-private partnerships. For this, the learning by doing approach is viewed as most appropriate. Hence, an Adaptable Program Loan (APL) from the Bank would provide us the flexibility of implementation based on agreed targets and progress toward set goals.

The APL shall provide flexible tranches of funding, to finance high priority, cost-effective investments for expansion of access to electricity services as well as rehabilitation of existing power distribution systems over a period of about 14 years. These include small to medium scale off-grid electrification projects to provide basic energy services to households, public service centers and infrastructures, as well as productive use applications and sub-transmission requirements in support of our goal of providing reliable supply of energy in a sustainable manner.

During the first phase of the APL, we shall pilot new business approaches to bring in new

players to participate in our program to provide services to unserved areas. This component will encourage private firms to finance and operate decentralized energy systems to serve contiguous but far-from-the grid areas given some level of support from government through the provision of output based subsidy. The decentralized electrification component would include both mini or micro-grid systems and stand-alone renewable energy systems, notably solar PV systems, for dispersed households. In parallel, efforts to transform the operations of marginal ECs towards financial self-sufficiency over the longer term will also be supported. A number of ECs are also targeted for transformation towards financial sufficiency with the ability to tap commercial funding. The indicative cost for Phase 1 APL is about \$37.8 million. This includes \$20 million in IBRD financing and \$10 million grant from the Global Environment Facility (GEF) to support investment buy-downs and technical assistance to remove renewable energy development barriers and about \$7.8 million in counterpart funding from the private investors, consumers and the government.

Subsequent phases of the APL will provide for expanding the geographic coverage of the rural electrification program by scaling-up workable models for decentralized electrification and EC transformation. The indicative APL program cost and financing plan is summarized in Attachment B.

#### **E. Implementation Arrangement**

The DOE shall be the oversight agency for technical and policy aspects of the entire project. It shall execute the GEF grant-financed component for removal of market barriers for the commercialization of new and renewable energy (NRE). The Development Bank of the Philippines (DBP) shall be the borrower on record for the proposed World Bank loan and shall execute the relending program to the various beneficiaries. Each of these agencies shall organize within their respective structures a separate Project Management Office (PMO) to take charge of the day-to-day operations of their respective sub-components. The PMOs shall be staffed by organic personnel to be assisted by short-term consultants.

An inter-agency Project Supervisory Committee (PSC) to be chaired by DOE with memberships from national oversight agency (NEDA, DOF, DBM) will be organized to provide policy direction, guidance and oversight supervision for the policy and institutional reforms supported under the project. The PSC shall be supported by a Secretariat that would be composed of DOE, DBP, NEA, SPUG, etc. to ensure coordination of activities among organizations involved in the implementation of various tasks, performing liaison tasks with oversight agencies.

#### **F. Project Monitoring and Evaluation**

The monitoring indicators of the proposed project are proposed to be in three categories. The first will deal with traditional indicators addressing access and performance-related issues such as number of connections, barangay served, system losses, collection performance, debt service coverage and other technical and financial performance ratios. The second category will be related to measure of GHG mitigation, including the scale of renewable energy technology mobilization, fossil fuel displaced, and expanded scope of the RET commercial sector. The third category will deal with more fundamental social and economic impact of rural electrification. As part of project preparation, baseline

socio-economic data, including average household income and monthly expenditures on energy consumption, have been collected through household surveys under various studies.

Attachment B

**PHILIPPINES: RURAL POWER PROJECT  
Program Summary and Proposed Triggers for APL**

***Development Objectives:***

The objective of the decentralized electrification component is to accelerate rural electrification through a paradigm shift from dependence on government funding through testing new approaches to address the old problems and face new challenges through heightened public-private partnerships. Successful mechanism(s) shall be scaled up during the succeeding phases of the APL. In addition, the on-grid component is directed towards transformation of participating ECs towards financial sufficiency.

***Indicative Program Cost and Financing***

The proposed APL, with an indicative total amount of about \$160 million, would assist the country implement the priority reforms and investments necessary to substantially improve the state of the rural power sector. Phasing of the APL generally follows the "horizontal expansion" model to progressively adapt and expand the earlier successful approaches to include new areas and cohorts in other parts of the country. The proposed APL has been designed with manageable "bite size" modules, to be rolled out in four phases over a period of about 14 years. The implementation period of each phase will be five years. The phases will be staggered, with commencement of the next phase one or two years prior to the completion of the current phase. By the end of the APL program, it is envisioned that 90% of the ECs would have become financially self-sufficient and about 90% of the households would have access to electricity. An indicative phasing of the APL targets is summarized below. The indicative targets for APL3-4 are tentative, and will be subject to a full appraisal process.

Components	IBRD	GEF	Government	Consumers/ Private Sector	Total	APL1	APL2	APL3	APL4
<b>1. Investment Component</b>									
1.1 small scale power generation/minigrids	4.1	0.5	14.5	3.6	22.7	2.5	8.7	7.6	3.9
1.2 Stand-alone Renewable Energy Systems	69.7	7.8	5.0	18.2	100.7	6.6	12.7	30.5	50.8
1.3 Partial Credit Risk Guarantee Fund		3.4			3.4	1.0	1.0	1.0	0.4
1.4 EC Transformation	83.8	0.0	0.0	9.3	93.1	17.9	28.3	30.9	16.0
<b>Total Investment Component</b>	<b>157.5</b>	<b>11.6</b>	<b>19.5</b>	<b>31.2</b>	<b>219.9</b>	<b>28.1</b>	<b>50.7</b>	<b>70.0</b>	<b>71.1</b>
<b>2. Technical Assistance</b>									
2.1 Market barrier reduction for RETs	0.0	18.3	3.2	0.0	21.6	9.3	5.3	4.1	2.8
2.2 Conventional energy subloans	0.8				0.8	0.2	0.2	0.2	0.2
<b>Total TA</b>	<b>0.8</b>	<b>18.3</b>	<b>3.2</b>	<b>0.0</b>	<b>22.4</b>	<b>9.5</b>	<b>5.5</b>	<b>4.3</b>	<b>3.0</b>
<b>3. Front-end Fees</b>	<b>1.6</b>				<b>1.6</b>	<b>0.2</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>
<b>GRAND TOTAL</b>	<b>160</b>	<b>30.0</b>	<b>22.8</b>	<b>31.2</b>	<b>243.9</b>	<b>37.8</b>	<b>56.6</b>	<b>74.8</b>	<b>74.7</b>

## APL 1

The Project shall have the following key components:

- a) Decentralized electrification
  - Small scale energy generation and Qualified Third Parties to participate in off-grid rural electrification and mini-grids;
  - Stand alone renewable energy systems
- b) On-grid component:
  - Transformation of ECs towards financial self sufficiency
- c) Technical assistance & training
  - Capacity building to include:
    - (a) reduction of market barriers to commercialization of renewable energy technologies (RETs) for off-grid electrification; and
    - (b) conventional energy subproject appraisal/supervision.

## Proposed Performance Triggers

- (a) Performance indicators proposed as triggers for approval of APL2:

- Implementation, satisfactory to the Bank, of reforms in the rural power sector, as evidenced by (a) the issuance of a regulatory framework for the provision of electricity by qualified third party in areas unserved by the Distribution Utilities; and (b) issuance of DOE circular governing rationalization of subsidy for solar PV systems.
- About 50% of disbursement of APL1; and substantial commitment of the remaining loan balance
- For the EC grid subcomponent, about 70% of participating ECs achieve satisfactory financial performance, as indicated by their debt service coverage ratios of at least 1 time.

Similar to the condition of disbursement for a multi-component project, it is proposed that *specific triggers for proceeding to the next phase of APL support for each of the subcomponents, whether on grid or off-grid, be made independent from each other*, since the trigger for one subcomponent is not critical for the successful implementation of the other subcomponents. Thus, for an individual phase of the APL, the project components could comprise one or both subsectors.

(b) Indicative triggers for approval of APL2 to APL3 are as follows:

- About 50% of disbursement of APL2 and substantial commitment of the remaining Bank loan balance
- Satisfactory implementation of the decentralized electrification component, as indicated by the following: (a) stand alone renewable energy system subcomponent – of the total prevailing target for SHS sold, about 100% completion for APL1 and about 25% for APL2; and/or b) mini-grid subcomponent – at least one new contract awarded to a private operator; and of the total prevailing target connections, about 100% completion for APL1, plus about 25% for APL2.
- For the EC grid subcomponent, about 70% of participating ECs achieve satisfactory financial performance, as indicated by their debt service coverage ratios of at least 1 time.

(c) Indicative triggers for approval of APL3 to APL4 are as follows:

- About 50% of disbursement of APL3 and substantial commitment of the remaining Bank loan balance
- Satisfactory implementation of the decentralized electrification component, as indicated by the following: (a) stand alone renewable energy system subcomponent – of the total prevailing target for SHS sold, about 100% completion for APL1 and APL2, plus about 25% for APL3; and/or b) mini-grid subcomponent – at least one new contract awarded to a private operator; and of the total prevailing target connections, about 100% completion for APL1 and APL2, plus about 25% for APL3.
- For the EC grid subcomponent, about 70% of participating ECs achieve satisfactory financial performance, as indicated by their debt service coverage ratios of at least 1 time.

## Indicative Household Electrification Targets

	<b>APL1</b>	<b>APL2</b>	<b>APL3</b>	<b>APL4</b>
<b>Mini-Grid</b>				
-Target connections: by phase	8,000	13,500	14,500	14,000
-Cum. target connections	8,000	21,500	36,000	50,000
-Trigger for next APL		11,000	22,600	
<b>SHS</b>				
-Target connections: by phase	10,000	18,000	40,000	67,000
-Cum. target connections	10,000	28,000	68,000	135,000
-Trigger for next APL		14,500	35,000	

## TIME-BOUND REFORM ACTION PLAN

ACTION PLAN		TIME FRAME												AGENCIES				MILESTONES (▲\	REMARKS	
		DONE	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	DOE	NPC	NEA			ERC
A.	TARIFF & SUBSIDY RATIONALIZATION																			
A.1	Rationalization of tariffs for missionary electrification (SPUG)																			
	a. Fuel cost adjustment	◆														+		+	Approved by ERB (September 2000).	Implementation staged from September 2000 to August 2001.
	b. Adjustment of basic rate				◆											+		+	ERC Provisional Approval in Order dated December 20, 2002.	Provisional rate approved; confirmation within twelve (1) months from issuance of Provisional Order.
	c. Power purchase adjustment				>>>&gt															











## Categorization of ECs

EC Category	Characteristics	Size	Comments
Type A	Creditworthy, financially self-sufficient	Baseline: about 30 ECs (25% of total ECs)	Increased autonomy, phasing out of public sector financing.  Long term target: increase to about 90% of total ECs.
Type B	Critical mass (size and density), high margins, high potential efficiency gains (high losses/low collection)	Baseline: about 10 ECs (8% of total ECs)	Phase out public sector financing using IMC model Long term target: Convert all to Type A
Type C	Marginal viability, unable to attract private financing at present	Baseline: about 44 ECs (37% of total ECs)	Public sector lending or credit enhancement.  Long Term Target: Convert all to Type A
Type D	Operating in low density and disadvantaged areas	Baseline: about 35 ECs (29% of total ECs)	Smart subsidy from government.  Long term target: decrease to about 10% of total ECs.

## Segmented Financing Strategy At A Glance

	<b>Financially viable investment</b> (e.g. upgrading, sub-transmission)	<b>Expansion: grid &amp; off-grid for ECs &amp; new players</b> (minimum smart subsidy)
<b>A. Financially self-sufficient project sponsors (a) ECs; and (b) non-ECs in areas waived by Ecs</b>	Private sector as first resort; public/donors debt financing as last resort	Public sector financing (debt & subsidy) to crowd in private sector investment
<b>B. Investment Management Contract (IMC) candidates</b>	Private sector: IMC investor	IMC investor as the first resort; public sector financing if return to IMC investor not sufficient to crowd in other private investors for unserved areas waived by ECs
<b>C. Marginal ECs : With potential to turnaround but unable to attract private financing</b>	Public sector debt financing and/or credit enhancement, subject to commitment to change	Public sector financing (debt & subsidy) to crowd in private sector investors for unserved areas waived by ECs.
<b>D. Disadvantaged ECs for missionary electrification</b>	Smart subsidy from government	Smart subsidy from government.

## **Additional GEF Annex 12: Onlending Rates and Eligibility Criteria for Subloans/Subgrants PHILIPPINES: Rural Power Project**

### **I. Bank Loan**

#### **Onlending Rates**

DBP would offer two interest rate options to Project sub-borrowers: (a) a variable rate; and (b) a fixed rate, with a market-related, stepped-up pricing, based on the Weighted Average of Interest Rate (WAIR) for 91 days Treasury Bills (T-Bill), as follows:

- (a) **The Variable Rates** would be based on WAIR for 91 days T-Bill plus 1%. To mitigate the lag problem, the prevailing variable rates for an interest rate period would be based on the WAIR of T-Bill for the first three weeks of the month prior to the period. To allow close to market pricing of new loans, reset of pricing would be done on a monthly basis. Although once loans are established, interest rate would normally be reset quarterly.
- (b) **The Fixed Lending Rates** would be based on the WAIR of T-Bills rate plus a premium of 2% fixed for the first 5 years, and WAIR of T-Bills plus 3%, fixed from the 6th year up to the 15th year.
- (c) **Floor Rate.** To ensure that both the Guarantor and the Borrower are appropriately covered for their risks, the floor price formula will comprise the Bank rate plus guarantee fee plus Foreign Exchange Coverage Fee plus DBP's minimum spread. The current floor rate is 9%.

The above rates would be amended as required in agreement with the Bank and the government. The pricing mechanism will be subject to review by the government, DBP and the Bank, at least once a year, or as the need arises, and any changes to the mechanism are subject to agreement among DBP, the Bank and the government. The Bank suggested that the government consider adoption of a market reference rate which would be related to the Treasury Bonds with duration of 5 years. This reference rate would be applied to all the Government Financial Institutions (GFIs) and, as much as possible, to all Government lending programs. The government acknowledged that the above market reference rate may be more appropriate than 91 days Tbill for the pricing of long term loans. The Secretary of Finance has indicated his desire for a review to study how to go forward towards the direction of market in pricing long term loans and risks being assumed by the government. However, this review may take some time. Moreover, this is a complex subject that would require discussions and agreement with the GFIs and donors involved before the change of market reference rate could be implemented across the board. An understanding has been reached with the government that it will carry out the review and will discuss with the Bank the results.

#### **Eligibility Criteria for Subproject Beneficiaries, PFIs, and Subprojects**

##### **I. Eligibility Criteria for Subproject Beneficiaries**

###### **A. Type A Beneficiaries**

An eligible Type A Beneficiary shall be a RESCO, QTP, NGO, cooperative other than Electric Cooperatives, or LGU which:

- a) is established, organized, and operating in accordance with the laws of the Republic of the Philippines;
- b) has a business plan for implementing a Type A Subproject satisfactory to DBP;
- c) provides annual, audited accounts, satisfactory to DBP, which demonstrate that the entity is financially sound;
- d) has a projected debt service coverage ratio based on forecast cash flows, as defined by DBP, of at least 1 time;
- e) has at least one year of operational experience, or access to expertise satisfactory to DBP, in small-scale energy generation and/or power distribution; and
- f) if an LGU, has received resolutions passed by its municipal council and mayor enabling the LGU to participate in the Project and to execute a Type A Subloan Agreement with DBP, satisfactory to DBP.

#### B. Type B Beneficiaries

An eligible Type B Beneficiary shall be an RET supplier or RET purchaser which meets the respective criteria set forth below:

- 1. if an RET supplier, which:
  - a) is established, organized, and operating in accordance with the laws of the Republic of the Philippines;
  - b) has a business plan for implementing a Type B Subproject, acceptable to DBP, which demonstrates that:
    - i. the RET systems it sells would meet the project technical specifications as set forth in Part \_\_\_\_\_ TM to provide of this Operational Manual;
    - ii. its operations would be commercially viable
    - iii. it has made arrangements to increase its sales either by expanding its service network or by increasing marketing efforts in existing market areas;
    - iv. it will abide by adequate consumer protection plans, including a returns policy, warranties and adequate after-sales service networks;
    - v. it has a system to provide data required for project monitoring by the DBP-PMO; it would retain documentation for the full period of the warranty of each system sold; and it would allow access for representatives of the DBP-PMO to its customer data base, including records of sales, installations, collections, repairs and warranties; and
    - vi. if LGU infrastructure grant funds are to be utilized, a Sangguniang Bayan (SB) (Municipal Council) / Panlalawigan (Provincial Council /Panlungsod (City Council) resolution stipulates the LGU's expression of interest and confirms the LGU's financial support.
  - c) provides annual, audited accounts, satisfactory to DBP, which demonstrate that the supplier is financially sound;
  - d) has a projected debt service coverage ratio based on forecast cash flows, as defined by the PFI making the relevant Type B Subloan, of at least 1 time;
  - e) has at least one year of operational experience in market development for RET systems and/or the sales and installation of RET systems; and
  - f) if a solar PV supplier, (i) is accredited by DOE as eligible to receive a GEF Subgrant under the Project and (ii) agrees in writing to abide by the competitive code of norms as set forth in the DOE Operational Manual for solar PV suppliers for dealing with customers, employees, and other suppliers,

including the provision of product and service information, and participation in open competition; and  
2. if an RET purchaser, which:

is an individual, household, group of households, enterprise, school, or community organization with its residence or residences or place of business in a rural area of the Republic of the Philippines, or an LGU which comprises one or more rural Barangays;

if an LGU or enterprise, has a projected debt service coverage ratio based on forecast cash flows, as defined by the PFI making the relevant Type B Subloan, of at least 1 time; and

if an LGU, has received resolutions passed by its municipal council and mayor enabling the LGU to participate in the Project and to execute a Type B Subloan Agreement with the relevant PFI, satisfactory to the PFI.

### C. Type C Beneficiaries

An eligible Type C Beneficiary shall be an Electric Cooperative which:

- a) is a private-sector-owned corporation (i) organized pursuant to Chapter III of the NEA Charter, Presidential Decree No. 269, or (ii) if formed or registered under the Philippine non-Agricultural Co-operative Act prior to the NEA Charter, Presidential Decree No. 269, converted into an Electric Cooperative pursuant to Chapter III of the NEA Charter, in each case for the purposes of supplying, and of promoting and encouraging the fullest use of, electric service on area coverage basis at the lowest cost consistent with sound economy and the prudent management of the business of such corporation;
- b) has a business plan for implementing a Type C Subproject satisfactory to DBP;
- c) provides annual, audited accounts, satisfactory to DBP, which demonstrate that the corporation is financially sound;
- d) has a projected debt service coverage ratio based on forecast cash flows, as defined by DBP, of at least 1 time; and
- e) has obtained the approval and certification of the NEA, pursuant to Section 16(i) of the NEA Charter, to enable it to receive a Type C Subloan pursuant to the terms of a Type C Subloan Agreement with DBP.

### D. Type D Beneficiaries

An eligible Type D Beneficiary shall be a private sector entity or LGU which:

- a) is established, organized, and operating in accordance with the laws of the Republic of the Philippines;
- b) has a business plan for implementing a Type D Subproject satisfactory to DBP;
- c) provides annual, audited accounts, satisfactory to DBP, which demonstrate that the entity or LGU is financially sound;
- d) has a projected debt service coverage ratio based on forecast cash flows, as defined by DBP, of at least 1 time;
- e) has at least one year of operational experience, or access to expertise satisfactory to DBP, in the relevant field of experience for the subproject proposal;
- f) if an LGU, has received resolutions passed by its municipal council and mayor enabling the LGU to participate in the Project and to execute a Type D Subloan Agreement with DBP, satisfactory to DBP;
- g) if an EC, has obtained the approval and certification of the NEA, pursuant to Section 16(i) of the



NEA Charter, to enable it to receive a Type D Subloan pursuant to the terms of a Type D Subloan Agreement with DBP; and

h) meets other eligibility criteria as may be determined by DBP and the Bank to be appropriate for the relevant subproject proposal.

## **II. Eligibility Criteria for Participating Financial Institutions**

A Participating Financial Institution (PFI) shall be a financial intermediary established, organized, and operating in accordance with the laws of the Republic of the Philippines, including a micro-finance institution, commercial bank, rural bank, thrift bank, credit cooperative, and credit NGO, which:

- a) has experience satisfactory to DBP, [which in the case of a non-bank PFI shall be a minimum of three consecutive years,] **[Please clarify. What about other PFIs?]** in managing and implementing a micro-finance program;
- b) has qualified and experienced management and personnel in sufficient numbers, and adequate systems and procedures, to enable the PFI to be an efficient and reliable purveyor of retail credit;
- c) has adopted an audit manual or other written internal controls adequate to ensure its sound financial management;
- d) if a bank PFI, meets the following criteria:
  - i. Capital Adequacy, Asset Quality, Management Earnings, Liquidity and Sensitivity (CAMELS) to Risk rating is at least 3;
  - ii. Percentage of DOSRI not to exceed limits set by BSP;
  - iii. no loan arrearages with other banks including BSP;
  - iv. not suspended from rediscounting from BSP/LBP;
  - v. past due loans + items under litigation not more than the industry average plus 2%, but not to exceed 25% as of the latest quarterly report released by BSP;
  - vi. not deficient in loan loss provision/valuation reserves;
  - vii. ratio of acquired assets to total assets is not more than the industry average plus 2%, but not to exceed 15%;
  - viii. positive results of operations in the last preceding calendar year;
  - ix. not deficient in bank reserves for the last six months preceding the filing of application;
  - x. Ratio of Accrued Interest Receivables to Surplus (Free) + Undivided Profits is less than 100%;
  - xi. the bank is owned and managed by the same persons at least for the last two (2) years;
  - xii. no derogatory information gathered on the officers and directors of the bank;
  - xiii. compliance with BSP Circular 283 (May 17, 2001) on Corporate Governance
- e) if a non-bank PFI, meets the following criteria:
  - i. minimum of 500 clients;
  - ii. no adverse borrowing record for the past three (3) years based on creditor's rating;
  - iii. institution must clearly express in its vision and mission statements a distinct commitment to reach low-income clients;
  - iv. at least seventy-five percent (75%) of the number of active clients have loans of P25,000.00 and below;
  - v. annual conduct of an external audit that shows enforcement of internal control policy, systems and procedures and absence of fraud from management and/or board for the last three (3) years;
  - vi. written operations manual which includes administrative and credit program systems and procedures and clearly defines levels of authority and accountability, job descriptions, and micro-finance program systems and procedures;
  - vii. Management Information Systems which include regular and timely reports on the loan portfolio

including repayment, loans outstanding and aging of loans; capital build-up report including the number of accounts, amount outstanding, and withdrawals; income statement, balance sheet, cash flow statement; outreach report including the number of active clients; and at least a one-year operating plan and budget for micro-finance program(s);

viii. existing and enforced policy on write-off and loan loss provision; and

ix. performance satisfactory to DBP, as quantitatively measured, with respect to collection efficiency, sustainability, capital adequacy, and liquidity.

### **III. Eligibility Criteria for Subprojects**

#### **A. Type A Subprojects**

A Type A Subproject shall be a rural electrification subproject, to be carried out by a Type A Beneficiary, which:

- a) improves the reliability, efficiency, and/or safety of rural power supply, increases rural power supply, and/or increases access to electricity services by underserved rural customers, by financing small-scale energy generation and/or power distribution through mini-grids or micro-grids utilizing conventional energy or RET systems;
- b) finances investments (including capital expenditures, working capital to increase levels of production and/or sales, and capitalized interest during construction, but excluding the purchase of or compensation for land or secondhand facilities), technical assistance, and/or training;
- c) is technically feasible as indicated by feasibility studies or equivalent documentation satisfactory to DBP; and
- d) is financially viable as indicated by projected incremental cash flows and/or cost/benefit analysis.

#### **B. Type B Subprojects**

A Type B Subproject shall be a rural electrification subproject, to be carried out by a Type B Beneficiary, which:

- 1. in the case of a Type B Subproject carried out by an RET supplier:
  - a) improves the reliability, efficiency, and/or safety of rural power supply, increases rural power supply, and/or increases access to electricity services by underserved rural customers, by financing market development for RET systems, and/or sales and/or installation of RET systems;
  - b) finances investments (including capital expenditures, working capital to increase sales, and capitalized interest during construction, but excluding the purchase of or compensation for land or secondhand facilities), technical assistance, and/or training;
  - c) is technically feasible as indicated by feasibility studies or equivalent documentation satisfactory to the PFI; and
  - d) is financially viable as indicated by projected incremental cash flows and/or cost/benefit analysis.
- 2. in the case of a Type B Subproject carried out by an RET purchaser:
  - a) improves the reliability, efficiency, and/or safety of rural power supply, increases rural power supply, and/or increases access to electricity services by underserved rural customers, by financing the purchase and/or installation of an RET system;
  - b) finances the purchase and installation of an RET system; and
  - c) is technically feasible as indicated by a certification from the entity which will install the RET

system.

C. Type C Subprojects

A Type C Subproject shall be a rural electrification subproject, to be carried out by a Type C Beneficiary, which:

- a) improves the reliability, efficiency, and/or safety of rural power supply, increases rural power supply, and/or increases access to electricity services by underserved rural customers, by (i) improving power supply system safety, reliability, efficiency and power service quality for existing customers, through rehabilitation and capacity upgrades of the existing supply system (including purchase of secondhand subtransmission facilities); (ii) removing supply system constraints; (iii) encouraging institutional development of Electric Cooperatives, and (iv) providing the necessary hardware, software, motor vehicles, tools, and equipment to improve employee productivity, safety, and efficiency of customer service provision;
- b) finances investments (including capital expenditures, working capital to increase levels of production and/or sales, capitalized interest during construction, and purchase of secondhand subtransmission facilities, but excluding the purchase of or compensation for land or previously Bank-financed secondhand subtransmission facilities), technical assistance, and/or training;
- c) is technically feasible as indicated by feasibility studies or equivalent documentation satisfactory to DBP; and
- d) is financially viable as indicated by projected incremental cash flows and/or cost/benefit analysis.

D. Type D Subprojects

A Type D Subproject shall be a rural electrification project, other than a Type A Subproject, Type B Subproject, or Type C Subproject, which shall be carried out by a Type D Beneficiary and which:

- a) improves the reliability, efficiency, and/or safety of rural power supply, increases rural power supply, and/or increases access to electricity services by underserved rural customers;
- b) finances investments (including capital expenditures, working capital to increase levels of production and/or sales, and capitalized interest during construction, but excluding the purchase of or compensation for land or secondhand facilities), technical assistance, and/or training;
- c) is technically feasible as indicated by feasibility studies or equivalent documentation satisfactory to DBP;
- d) is financially viable as indicated by projected incremental cash flows and/or cost/benefit analysis; and
- e) meets other eligibility criteria as may be determined by DBP and the Bank to be appropriate for the relevant subproject proposal.

## II. GEF Grant

GEF grant funds will be made available to eligible rural electrification subprojects and to technical assistance (TA) activities by the DOE and the DBP that are geared towards reduction of market barriers to the wider adoption of renewable energy. These TA activities are designed to strengthen capacity of the DOE-PMO and the DBP-PMO, as well as other project participants, such as private sector implementers of subprojects. For example, integration of RET matters into the Missionary Electrification Development Plan (MEDP) of the DOE is supported through the grant-funded establishment of the additional hardware and software needed to complete the existing central IT database system. In the case of the DBP, the establishment of a similar IT system to integrate the DBP-PMO's financial management and procurement responsibilities in the Project with the existing DBP network will be grant financed. The full list of eligible TA and capacity building activities are in the respective Project Implementation Plans (PIPs) of the DOE and the DBP. GEF support for these non-subproject activities is based on the general categories of approved technical assistance shown in Table 7 of Annex 13.

The GEF grants available to Renewable Energy Technology-related investments are in the form of "incremental cost" financing of capital costs (as in the case of PV systems where it could be shown that the economic cost is higher than continuing to use traditional fuel alternatives) and financing of technical assistance/capacity building activities designed to reduce market barriers to the commercialization of RETs. All RET-related investments are eligible for GEF grant funded Technical Assistance (TAs), e.g., cost shared feasibility studies, but only subprojects with demonstrated economic incremental costs could be considered for grant funded investment support on a case-by-case basis, with prior approval by the WB.

### Eligible Sub-Projects for Small-scale Energy Generation and Mini-grids

The following type of subprojects executed by Qualified Third Parties (QTPs), Non-Governmental Organizations (NGOs), and ECs may qualify for loans and/or GEF grant/government subsidies under this sub-component:

- ***Generation Expansion/Retrofit/Rehabilitation in Existing Small Power Utilities Group (SPUG)/Isolated EC Area.*** This includes expansion, rehabilitation or displacement of existing SPUG diesel generation facility that provides service to an island, and/or isolated EC franchise areas min-grids with generation facilities utilizing renewable energy source/s.
- ***Greenfield Investment in Areas with High Load Potential.*** This involves investments that could be connected to an identified load that could immediately use much of the energy output to improve the viability of the project.
- ***Greenfield Investment for Cluster of "Waived Areas."*** These are investments in least cost electrification solutions in clustered areas waived by the ECs, for which partial subsidies from the government will be made available on a competitive basis.
- ***Community-based Greenfield Investment.*** These are investment initiatives by organized local communities with assistance from NGOs or other parties to provide energy services for community use, whether using renewable energy, hybrid systems, or diesel systems.

Subproject opportunities in the above categories would be open to QTP developers (including ECs

that are not incumbent in the subject area) if the specific area or potential subproject has been waived by the EC holding the franchise or declared by the DOE as open to any interested third parties. Aside from upgrading, expansion and rehabilitation subprojects by the ECs that are eligible for Project support, the ECs are also free to identify small-scale energy generation and minigrid subprojects in the above categories in their own franchise areas and propose them for financing assistance to the DBP and the DOE. Subprojects that use RETs are eligible for GEF grants for TA and for investment support based on incremental cost principles, regardless of the proponent. However, an EC is not eligible to receive government subsidy for a financially viable subproject in its franchise area. Non-viable subprojects considered priority for social and other reasons are eligible for government subsidies. These include community-based greenfield investments which are generally in remote, impoverished areas with low load demand. These subsidized subprojects would need to be opened up to all interested parties for competitive bidding. The type and amount of government incentives or subsidies for this type of subproject will be determined by the DOE on a case to case basis.

GEF grant assistance for decentralized mini-grid sub-projects that use RET is primarily to test, monitor and evaluate the following types of experience:

- Technical operating characteristics of the RET or hybrid;
- Validity of pre-project resource assessment methodologies;
- Requirements and costs of maintenance;
- Incremental costs of renewable energy sources relative to diesel (including hybrids);
- Institutional/business models for financing, ownership, operations, and billing;
- Social/policy arrangements for connections, tariffs, non-payments, consumption allocation;
- Social welfare and economic benefits; and
- Roles and potential contributions of non-governmental and community organizations

#### **Eligibility Criteria for the QTPs (Type A Sub-Projects)**

- (i) For small-scale generation/mini-grid sub-projects, the QTP must comply with the following:
  - Registered with the Philippines Securities and Exchange Commission, or in the case of an ECs, registered with the National Electrification Administration (NEA);
  - Developed a Business Plan acceptable to DOE and the World Bank;
  - Showed proof of its technical capability to implement and operate the proposed investment and operation in a sustainable manner;
  - Submitted, among others, duly certified/authenticated copies of annual audited accounts which demonstrates the company's financial capability to provide equity into the proposed project; and

- Secured an operating permit from the Energy Regulatory Commission (ERC) and willingness to comply with the performance standards set forth by the ERC.
- (ii) For community-based sub-projects, the proponent/sponsor, whether a community organization, NGO, cooperative or any other entity must comply with the following:
  - Registered with the Securities and Exchange Commission or any duly authorized government institution (e.g. CDA, DSWD, etc.);
  - Showed/demonstrated the technical and economic feasibility of project being proposed, i.e., sufficiency of resource, sustainability of operation, etc.;
  - Provided DOE proof of the willingness of the community to participate in the proposed undertaking; and
  - Showed incremental economic cost justifications, if requesting GEF grant assistance for investment.

## **Stand-Alone Renewable Energy Systems**

### **(a) Solar PV Subproject**

#### **Grant Eligibility Criteria**

##### *Eligible PV Companies*

Qualifications as a PC are as follows:

- Registration with the Securities and Exchange Commission or, in the case of ECs, registration with NEA and have at least one (1) year track record of sales operation in PV technology;
- Submission to DOE-PMO of the duly signed Letter of Undertaking

##### *Eligible Markets*

All sales by PCs to households, public and private establishments in rural and off-grid areas, will be eligible for grant as long as the PCs meet all qualification requirements with respect to specified technical standards, provision of responsive sales and service, etc.

##### *Sales with Grants from Other Sources*

The Project is intended to support competitive commercial market development. Grants under the Project will not be paid for PC sales that already benefited from other local or foreign grant/subsidy sources.

### **(b) Other Eligible Stand-Alone RETs**

Other small-scale non-PV RETs that are considered commercial-ready may also be considered for grant

assistance. They include: (i) RETs for individual use, such as pico-hydro units , wind home systems , etc.; and (ii) RETs for community use or to power productive applications, such as wind turbines, biomethanation systems and others.

DOE will consider proposals for non-PV RETs for individual use (first case described above) only if they involve marketing of multiple units through existing PCs or new companies. Proposals for single installations are ineligible. New companies must be accredited following procedures similar to those for PV PCs.

#### ***Amount of GEF TA Grant***

- ***Cost-shared Feasibility Study Grant.*** This grant is in the form of cost-share financing, available to private entrepreneurs or entities that are looking to invest in off-grid renewable energy power projects but require partial support to undertake feasibility studies. Grant amount is 50% of feasibility study cost not to exceed US\$10,000 per company.
- ***Project Preparation Grant.*** This is an output-based grant available to any independent consultant, NGO or entity for assistance rendered to project sponsors, i.e., private entrepreneur or a community, in the preparation of its community-based/serving energy project. Grant amount is up to 95% of sub-project preparation cost but not to exceed US\$6,000.

A sub-project developer may qualify for one or both of the above-described grants but may avail of only one grant for any eligible subproject.

- ***Grant for Achievement of Economic Benefit Target.*** Additionally, up to US\$2,000 may be awarded by the DOE-PMO to a private entity/NGO for demonstrated success of an economic benefit target/livelihood activity that was agreed upon during preparation of a community-based energy subproject.

#### ***Grant Assistance for Solar PV Systems***

In APL 1, grants from the GEF and the Government will be made available to the PCs for eligible PV products sold to consumers, subject to audit and verification of the installations. Upgrades shall not qualify for grants. No grants will be made available to installations that have received grant or subsidy support from other Local and/or Central Government/Foreign-assisted Programs.

#### **GEF Grant**

- ***Use by Individual Household/Single Establishment.*** For 20 to 50 Wp systems: US\$2.50 per Wp. For systems 50 to 100 Wp: US\$1.50 per Wp. No GEF grants are available for units larger than 100 Wp. When two or more systems are procured, only one system will be qualified for the grant and the subsidy will be based on the configuration of the smaller system, or up to the specified upper limit for the grant. Only one GEF grant will be provided to a household, institution or commercial establishment.
- ***Community Applications.*** PV arrays for battery charging stations, schools, health clinics and other social institutions, and community water supply (solar pumps) are eligible for a GEF grant of US\$1.50 per Wp, up to a maximum of US\$450.

The above GEF grant amounts are applicable to systems installed in APL1 and are based on an average of US\$2 per Wp. The grant gradually declines to an average of US\$0.50 per Wp (Reference: Year 2002 dollars) by APL 4.

#### Government Subsidy

The Government subsidy is provided only to household end-users, in accordance to the following schedule:

- For 20 to 30 Wp PV systems: PhP 8,000 per system.
- For 31 to 50 Wp PV systems: PhP 4,000 per system.

The Government subsidy shall be passed on by the PCs to the end-user in the form of discounts. Each household is entitled to receive only one Government subsidy. The DOE-PMO shall set up a monitoring system to ensure that system prices are reasonable and that the Government subsidy is properly passed on to the end-users as intended.

The GEF grant, on the other hand, is intended for market development and expansion activities and it is left to the PCs' discretion what part, if any, is passed on to the end-users.



## **Additional GEF Annex 13: GEF Incremental Costs and Benefits Summary**

### **PHILIPPINES: Rural Power Project**

#### **The Baseline**

The baseline, without this project, consists of the activities being undertaken by the Government of Philippines in conjunction with external assistance. The implication is that in the baseline there will be little, if any, private sector-led, commercially-oriented development and field implementation of renewable energy technologies in the rural areas, i.e., the large-scale potential for use of renewable energy technologies for decentralized rural electrification will be exploited only on a limited basis. As a result, the unelectrified rural consumers will continue to use fossil fuels – diesel, kerosene, dry cell batteries, and batteries charged by conventional AC power – to meet their energy needs, with attendant greenhouse gas (GHG) emissions.

#### **The Alternative (The Project)**

The focus of the APL is to promote decentralized rural electrification, using renewable energy technologies where appropriate. This will consist of :

- (i) off-grid power generation, using a variety of renewable resources, including technologies that are readily applicable in the Philippines in the near future, as well as those that may become applicable during the course of the APL. Efforts will be made to promote renewable energy power generation where renewable power is the only or main source, i.e., for small independent grids, as well as where it complements existing generation sources, i.e., sale of power into existing diesel-based grids; and
- (ii) stand-alone systems, such as solar home systems (SHS).

In order to achieve a large programmatic impact, going beyond the investments supported by the proposed project, the overall approach, consistent with GEF Operational Program 6, is to reduce the barriers constraining commercially-oriented renewable energy development. As a result, a significant proportion of unelectrified rural consumers will *switch from fossil fuels to renewable energy resources* to meet their energy needs, with *attendant reductions in greenhouse gas (GHG) emissions*.

#### **Incremental Cost Summary**

With regard to the GEF-related components of the proposed program, the baseline and GEF alternatives are described below:

##### **Investment Component 1 – Off-grid renewable energy power generation**

In the **Baseline case**, there are two possible activities: *one*, in some locations, the rural consumers would not receive any conventional AC power, and would continue to use kerosene/battery-based systems for lighting and battery-based systems, and *two*, in other locations, the rural consumers would receive conventional AC power from fully-diesel based grids.

In the **GEF Alternative**, the power supply would be from either fully renewable energy based generation or from hybrid systems in which diesel-based generation has a secondary role to play. As indicated above, the

renewable technologies to be supported would depend upon the location as well evolving local and international developments in various renewable technologies. In every case, the renewable energy technology supported would be the least-cost renewable option, taking account of the differences in the degree of the maturity and reliability.

The economic costs of the GEF-supported independent mini-grids will depend upon technical site-specific factors, the scale of the system, the least-cost renewable energy technology, expected international trend of cost decline. In addition, the baseline economic costs will also depend upon a different set of site-specific factors. In other words, for independent grids, the incremental costs will vary according to site, technology and timing. For this reason, it is appropriate to develop a set of *per kW* “generic” incremental cost estimates that would be applicable, on average, to the specific site-projects as they are developed. Based on the available data for the market packages to be included in APL1, it is estimated that the average incremental cost, based on a net present value basis, of decentralized renewable energy power generation is about \$600 per kW at present, and that it would decline over time to about \$250 per kW during APL4.

**Table 3. Summary table for off-grid power generation**

	<b>APL1</b>	<b>APL2</b>	<b>APL3</b>	<b>APL4</b>	<b>Total</b>
Installed kW all types	3,000	4,500	9,000	13,500	30,000
No. households served, all types	8,000	13,500	14,500	14,000	50,000
<b>Installed kW RET/hybrids</b>	300	750	1,500	2,450	5,000
Ave. GEF grant, \$/kW	600	500	375	250	
Total GEF grant, \$ millions	0.18	0.38	0.56	0.61	1.73
Total Investment all types, \$ millions	6.6	9.9	19.8	29.7	60.0

## **Investment Component 2 – Stand-alone Renewable Energy Systems**

In the **baseline case**, the rural consumers would use a combination of kerosene for lighting, dry battery cells for mobile lighting and radios, and some battery charging for appliances such as black-and white TV sets. In the **GEF alternative**, the consumers would switch to solar home systems (SHS).

As in the case of independent grids, the incremental costs of SHS are also expected to vary by location – regional differences as well differences between electrified and unelectrified barangays –scale of the system, and timing. At the same time, it is increasingly common practice in World Bank-GEF supported projects to provide GEF grants for SHS on a simplified administrative basis, e.g., a uniform grant for all the regions, frequently denominated a *per Wp* basis.

Based on the available data for the market packages to be included in APL1, it is estimated that the average incremental cost, based on a net present value basis, is about \$ 2/Wp; this is similar to estimates developed for neighboring Asian countries such as Indonesia. Further, it is expected that the incremental cost would decline over time to about \$ 0.5 per Wp during APL4 (see Table 4 below for an illustrative example).

<b>Table 4 PV Installation and Trend in Cost and GEF Support</b>					
	<i>Number</i>	<i>MWp</i>	<i>In Constant 2002 \$/Wp</i>		
			<i>Av. Cost</i>	<i>GEF Grant</i>	
<b>APL1</b>	10,000	0.4	12.7	2.0	
<b>APL2</b>	18,000	0.9	10.7	1.8	
<b>APL3</b>	40,000	2.5	9.2	1.2	
<b>APL4</b>	67,000	4.6	7.1	0.5	
<b>TOTAL</b>	135,000	8.4	8.6	1.0	

The proposed GEF grant would be leveraged with government subsidies and consumer financing to make the PV systems affordable to rural households. Government subsidy policy for the rural electrification, currently being developed with the assistance of consultants, will define how this overall subsidy is going to be channelled in terms of price support to the individual systems, that is the “20 Wp” (15-25 WP); “40 Wp” (33-45 Wp); and “60 Wp” (50-65 WP). It is expected that the government’s subsidy policy will award price support to the systems according to their expected price elasticity of demand, thereby achieving maximum impact in terms of market expansion. It is, therefore, expected that the subsidy to the smallest system, in terms of subsidy per Wp will be much higher than for the larger systems.

With support to capacity building and business development support provided by the project to participating companies and financial intermediaries, it is expected that about 0.7 MWp of SHS capacity would be installed during APL1, with an incremental cost of about \$1.4 million; this capacity would serve about 15,000 consumers. Overall, during all the phases, about 8.7 MWp of such capacity would be installed, with an aggregate incremental cost of about \$ 10.9 million, and about 145,000 total consumers.

**Table 5. Solar PV Illustrative Investments & Financing (in US Million \$)**

	Consumer Payments	Govt Subsidy	GEF Grant	Consumer & dealer loans	PV dealers equity	Total Cost
APL1	0.5	0.9	0.9	3.0	1.3	6.6
APL2	1.0	1.2	1.5	7.1	1.9	12.7
APL3	2.6	1.7	2.9	20.4	2.9	30.5
APL4	4.7	1.2	2.5	39.2	3.3	50.8
Total	8.7	5.0	7.8	69.7	9.5	100.7

### **Investment Component 3 – Partial Risk Guarantee Fund**

One of the key barriers for renewable energy development is the lack of adequate commercial debt finance. This has already been recognized in the proposed UNDP-GEF project, which includes a Loan Guarantee Fund, but does not cover solar PV; this forms the **baseline** for this project. In the **GEF alternative**, it is proposed to develop a partial risk guarantee fund that is expected to focus on solar pv under the APL1. During subsequent phases of the APL, successful pilot schemes for non-solar RETs emerging from the UNDP-GEF project would be replicated. Given the relatively innovative nature of this fund, its nature and scope will be developed during the course of further project preparation as well as first few months of project implementation. It is proposed to set aside \$ 3.4 million for this fund over the entire APL, with \$ 1.0 million each during APL1-3, and \$ 400,000 in APL4. In case, these resources are not utilized during APL1-APL3, the funds will be used during APL4 to provide investment support for further renewable energy development.

## Technical Assistance Component

There are five entities which must play key roles in order to stimulate large-scale, commercially-oriented renewable energy development in the Philippines: the Department of Energy, National Electrification Administration, Energy Regulatory Commission, financial institutions including the Development Bank of the Philippines and other commercial banks, and potential private sector providers. In the **baseline case**, these agencies, particularly the government agencies, will receive some capacity building support from a variety of sources. Along with the counterpart funds of these agencies, it is estimated that a total of about \$5 million (excluding support under UNDP/GEF capacity building project) will be spent for capacity building and other technical assistance activities over the full APL period.

It is recognized that UNDP/GEF project “*Capacity Building To Remove Barriers To Renewable Energy Development In The Philippines*” will strengthen the capability of the Philippine renewable energy sector in developing renewable energy, in general, through various capacity building activities. The proposed project is complementary to the UNDP/GEF project that aims to strengthen the capability of the Philippine renewable energy sector in developing renewable energy, in general, through various capacity building activities. Specifically, the full UNDP/GEF project components include: a) strengthening the capacity of the GOP agencies to enact and implement sound new and renewable energy (NRE) policies; b) providing information for targeted audiences to build an NRE market; c) creating a "one-stop-shop" market service center for preparing and promoting NRE projects; d) increasing coordination among organizations concerned with NRE; e) improving the quality of NRE technologies and systems through assistance with standard setting; and f) assisting the market penetration of NRE in remote, off-grid communities by providing incentives for innovative market delivery and financing mechanisms. Specifically, the UNDP/GEF project has identified three financing mechanisms for NRE projects that will be demonstrated as effective means of overcoming barriers namely, project preparation fund, loan guarantee fund and micro-finance fund. These mechanisms are intended for non-solar energy systems such as biomass, micro/mini-hydro and wind. The Dutch government under the “Environmental Improvement for Economic Sustainability” (EIES) project shall co-finance the funding of solar energy projects. The EIES project intends to install 15,000 solar home systems (SHS) in Regions I, II and CAR. On the other hand, the proposed WB/GEF project targets to serve 200,000 households nationwide through SHS at the end of APL. Further, the proposed GEF support for technical assistance and training under the Rural Power Project focuses bridging the skill gaps critical for the design and implementation of the policies and investments to be supported under the APL.

In the **GEF alternative**, such supporting activities crucial to the successful implementation of the various project components would be expanded substantially, with a total cost estimated to amount to about \$21.5 million over the full APL period. The incremental cost would be about \$18 million, of which about \$8 million is expected to be utilized in APL1 alone (see Table 7).

**Table 7: Technical Assistance: RET Market Barrier Reducing Activities**

Components	Total	Baseline	GEF	APL1	APL2	APL3	APL4
Department of Energy (DOE)							
<b><i>Policy Development and Planning</i></b>							
o Policy Support (Policy Studies in subsidy, regulation, tariff with respect to off-grid services)	0.9	0.1	0.8	0.4	0.2	0.2	0.1
o Integration of Renewable Energy into the Missionary Electrification Development Plan	1.4	0.2	1.2	0.6	0.4	0.2	0.2
<b><i>Implementation Support</i></b>							
o Renewable Energy Program management support	1.6	0.2	1.4	0.7	0.3	0.3	0.3
o Project Subsidy Fund Allocation and Compliance	1.2	0.2	1.0	0.5	0.2	0.2	0.2
o Capacity Building for participating govt agencies	1.1	0.2	0.9	0.6	0.2	0.2	0.1
o Capacity Building/project preparation for Solar PV Companies, MFIs & other RET developers/stakeholders	1.7	0.3	1.4	1.0	0.3	0.3	0.2
o Monitoring and Evaluation of the project	1.4	0.2	1.2	0.7	0.3	0.3	0.2
<b><i>Institutional Strengthening</i></b>							
o Improve ERC's regulatory function for off-grid services - capacity building for regulator *	1.4	0.2	1.2	0.6	0.6	0.2	0.0
o Livelihood /productive uses promotions	1.4	0.2	1.1	0.7	0.4	0.2	0.1
o New Market Package Preparation TA	3.1	0.5	2.7	1.4	1.3	0.5	0.0
<b><i>QTP Contract Monitoring Support</i></b>							
o Capacity Building and Technical Support for Contract Management, Supervision etc. of Qualified Third Party Projects,including RETs	0.9	0.1	0.8	0.6	0.2	0.1	0.0
o Monitoring and Evaluation	1.1	0.2	0.9	0.5	0.2	0.2	0.2
<b><i>DBP Support and PMO-managed TA</i></b>							
o Capacity building on technical appraisal of RET subprojects	3.1	0.5	2.6	0.7	0.9	0.8	0.7
o Promotions	1.3	0.2	1.1	0.5	0.4	0.3	0.2
<b>TOTAL TECHNICAL ASSISTANCE COST</b>	<b>21.6</b>	<b>3.2</b>	<b>18.4</b>	<b>9.4</b>	<b>5.6</b>	<b>4.0</b>	<b>2.6</b>

\*Baseline costs include funds from the Government, local private sources, existing bilateral funds and funds from the Bank loan.

**Table 8: Incremental Cost Matrix**

	<b>Baseline</b>	<b>Alternative</b>	<b>Increment</b>
<b>Domestic Benefits</b>	<p>Rural and off-grid market grows, albeit slowly, and primarily with diesel.</p> <p>Limited development of private power and PV business models or acumen.</p>	<p>Stimulation of business entry into private power service for grid and isolated applications.</p> <p>Energy costs decline and availability improves, with linkages to productive use</p>	<p>Barriers (information, financial, etc.) to commercial development are reduced.</p> <p>Successful demonstration projects lead to a wide range of alternative technologies and business models.</p> <p>Technology improvements in renewable energy production enhances competition with fossil fuel sources.</p>
<b>Global Environmental Benefits</b>	None, rural energy development relies primarily on diesel and unsustainable use of traditional fuels w/ low efficiencies	Significant offset of GHG emissions through range of renewable technology options..	500,000 t of carbon avoided
<b>Cost by Component</b>			Cost reduction for range technologies in rural dev country setting and long programmatic APL strategy
(million US\$)			
<b>Phase 1</b>			
C1 – Off-Grid	2.4	2.5	0.1
C2 – Solar PV	5.7	6.7	1
C3 – Partial Risk	0	1	1
Guarantee Fund			
TA, M & E	1.5	9.4	7.9
<b>Subtotal Phase 1</b>	<b>9.6</b>	<b>19.6</b>	<b>10</b>
<b>Phases 2-4<sup>1</sup></b>			
C1 – Off-Grid	59.9	61.5	1.6
C2 – Solar PV	85.5	95	9.5
C3 – Partial Risk	0	2.4	2.4
Guarantee Fund			
TA, M & E	0.38	6.9	6.52
<b>Subtotal Phases 2-4</b>	<b>145.8</b>	<b>165.8</b>	<b>20</b>
<b>GEF Incremental Costs</b>	<b>155.4</b>	<b>185.4</b>	<b>30.0</b>

Notes: 1. These are indicative estimates. Incremental costs for Phases 2-4 will be calculated during preparation of these phases and will be subject to GEF Secretariat review and approval.  
2. Totals are for renewable energy investments only and do not include other project investments. Therefore, these totals are a subset of total project cost.

**Mainstream Financing** – World Bank funds, Government funds, and increasingly by the local private

investment – cover the bulk of the significant investment costs of the project, which represents a high level of financial leverage for GEF funds. GEF support is on a declining basis over time.

**Possible Use of Non-Grant Modalities.** The project includes a Contingent Grant Fund for solar pv investments (other renewable energy investments will be covered under a UNDP project). The details of the functioning of this Fund will be determined during the course of further project preparation, and possibly in the first few months of implementation.

## **Benefits**

**Global Environmental Benefits.** Based on conservative capacity factors for off-grid renewable energy power generation, the estimated annual carbon displacement comes to about 1,000 tons per MW-year, or 30,000 tons of carbon per MW over a 30 year life. For the 5 MW in the APL, this comes to 154,000 tons carbon. Similarly, one watt of solar capacity installed should displace about 8.5 kg of carbon dioxide over a 15 year lifetime, resulting in estimated displacement of about 346 tons overall. This leads to a carbon displacement of about 500, 000 in the program.

**Domestic Benefits.** The domestic benefits will accrue to households and small and medium enterprises (SMEs) that are directly served, whether by independent grids or solar pv systems. Further, indirect domestic benefits will also flow to households who receive improved service from public institutions such as health clinics and schools that will be served under this project. The estimates of the SMEs served directly in this manner as well the indirect benefits accruing from public institutions will be developed during project preparation, particularly as the details of the market packages are developed.

International as well as local experience indicates that the financial viability of renewable energy projects increases considerably when SMEs and public institutions become consumers, they usually provide daytime load, which complements the evening household demand. Further, the SMEs ability to pay is usually higher than that of households; this is also the case for public institutions, provided the energy services provided are sufficiently reliable and support high-value activities.

In other words, the accrual of domestic benefits is a key element of the sustainability of programs whose focus is global environmental considerations. However, it is clear that promotional efforts are required for the SME benefits to realized, and close collaboration is required with public institutions for their benefits to be realized – both of these aspects are provided for in this project.

## **Sustainability**

One of the key factors promoting sustainability in this project is the focus on private-sector led commercially-oriented renewable energy development, while utilizing judiciously designed subsidies to take account of relatively lower rural incomes and affordability. The private sector's interest in cost reductions – to increase their profits – increases the sustainability of the long-term development program, while appropriate technical standards ensure the consumers get adequate and appropriate service. These cost reductions can result from market aggregation, which lowers the transaction costs for each installed PV systems, increases the procurement leverage of companies providing rural PV equipment and services and lowers the unit costs for maintenance, repair, and replacement. Such aggregation is one of the central objectives of the proposed project

The phasing strategy of the APL also enhances the sustainability of the program. The relatively slow start in terms of investment in APL1 provides an opportunity for field-testing and fine-tuning the business models for

scale-up in APL2-APL4, when the investments would be larger. Further, the GEF grants for both investment and technical assistance have been designed with a declining trend, so that the reliance on external support declines over time.

### **Monitoring and Evaluation, and Dissemination**

Project performance indicators are in three general categories. The first deals with measures of access improvement and performance-related factors such as number of new minigrid systems established, number of connections made, number of barangays electrified, number of PV systems installed, debt service coverage ratio achieved by an electric cooperative, system losses and other measures of technical and financial performance. The second category deals with policy, social and economic measures of achievement, such as promulgation of a new regulatory framework, income improvement in a community as a result of electrification, and other outcomes. The third category deals with levels of GHG mitigation achieved, that in turn is related to the extent of commercialization of RETs achieved.

Routine monitoring of project performance in the first category will be carried out by the DOE-PMO, assisted by consultants and external agencies such as NGOs, as needed. The first source of data and information on project performance will be the periodic reports required to be submitted by the different participants. These include:

- reports from minigrid operators to PMO on its compliance with agreed procedures and targets, including number of connections made;
- report from participating PV companies on number of sales and installations, equipment failures, payment defaults, etc
- report from participating ECs on achievement or non-achievement of agreed upon technical and financial performance targets.

Monitoring of performance in the second category will be conducted by the PMO naturally through its position at the DOE and its role as manager of the technical assistance component of the Project. Integration of offgrid and renewable energy strategies into the country's rural electrification plan, for example, involves the commissioning of consultant studies on tariff and subsidy issues, and the identification of priority offgrid "market packages". With respect to social and economic impacts, the PMO is also in a position to commission socioeconomic surveys, such as consumer satisfaction surveys in areas that have been provided with solar home systems. Baseline data and information for this purpose have been obtained through socioeconomic surveys conducted at preparation.

Measurements of GHG mitigation will be conducted by external experts, who would estimate these values by considering the number, capacities and operational performance of renewable energy installations established through the Project.

The PMO will design a plan for periodic evaluation of the results of the monitoring procedure, specific to each of the project component, to analyze why intended results were/were not achieved, to assess specific causal contribution of activities to results, and to obtain lessons learned. The results of the evaluations would feed back into project implementation.

The Project monitoring and evaluation plan has a budget of \$1.1 million for the full APL, of which



\$900,000 is financed by the GEF. About \$0.5 million of the total budget for M&E is earmarked for APL1.

