



United Nations Development Programme
GLOBAL ENVIRONMENT FACILITY

To: Rafael Asenjo
GEF Executive Coordinator

Date: 10 September 1999

Attn.: **Mr. Richard Hosier, Principal Technical Advisor**

From: Nandita Mongia
GEF Regional Coordinator for Climate Change
RBAP, UNDP

Subject: **Re-Submission of Project Proposal: Philippines: Capacity Building to Remove Barriers to Renewable Energy in Philippines**
PDF B: Total US\$ 355,000 GEF funding - \$265,000 Co-funding - \$90,000

Enclosed is the revised project brief for *Philippines: Capacity Building to Remove Barriers to Renewable Energy in Philippines*. This document reflects the comments provided by GEFSEC

Thank you and best regards.

cc: Mr. Nay Htun
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**UNITED NATIONS DEVELOPMENT PROGRAMME
GLOBAL ENVIRONMENT FACILITY**

PROPOSAL FOR PDF BLOCK B GRANTS

PROJECT NUMBER:

PROJECT TITLE: Capacity Building to Remove Barriers to Renewable Energy in Philippines

REQUESTING COUNTRY: Philippines

ELIGIBILITY: ratified the FCCC in August 1994

GEF FOCAL AREA: Climate Change

GEF FUNDING REQUESTED: US\$ 305,000

CO-FUNDING (IN KIND): US\$ 105,000

EXECUTING AGENCY: Department of Energy (DOE)

NATIONAL IMPLEMENTING AGENCY: Institute for Climate Energy and Environment (ICEE)

GEF IMPLEMENTING AGENCY: UNDP

DURATION: 6 months

BLOCK A GRANT AWARDED: No

I. Summary Project Objectives and Description

Energy Mix: The Philippines is currently heavily dependent on fossil fuels, with imported petroleum products accounting for more than 60% of total energy consumption. Renewable and non-conventional energy sources, excluding large-scale hydro power and geothermal, provide about 30% of the nation's total primary energy (see Table 1). These account for large consumption of fuelwood for household use and commercial activities as well as the traditional in-plant use of bagasse and coconut wastes in sugar milling and oil milling, respectively. Other renewable energy such as solar, wind and micro-hydro provide a very insignificant contribution in the energy mix.

Table 1. Philippine Primary Energy Mix, 1998
(In Million Barrels of Fuel Oil Equivalent, MMBFOE)

Resource	MMBFOE	Percent Share
Indigenous Energy:	93.87	39.3
1. Oil	0.26	0.1
2. Gas	0.02	nil
3. Coal	4.24	1.8
4. Hydro	7.20	3.0
5. Geothermal	13.74	5.8
6. New and Renewable Energy:	68.42	28.7
• Fuelwood (Household & Commercial)	38.33	16.1
• Bagasse	10.13	4.2
• Charcoal	4.38	1.8
• Agriwaste (Cocowaste, ricehull, etc.)	15.48	6.5
• Others (Solar, Wind, etc.)	0.09	nil
Imported Energy:	144.93	60.7
1. Oil	129.94	54.4
2. Coal	14.99	6.3
Total Energy Mix	238.80	100.0

Source: Philippine Energy Plan, 1999-2008

The nation's electric power installed capacity and electricity generations are also dominated by fossil fuels, with oil and coal accounting for more than 60% of the total electricity supply. With the exception of large-scale hydropower and geothermal, development of renewable energy for power in the Philippines has been on a research and pilot demonstration scale.

Table 1. National Installed Capacity and Electricity Generation by Source - 1998

Energy Source	MW	Share	GWh	Share
Oil	5,504	47.4%	19,800	47.0%
Hydro	2,302	19.8%	4,317	10.3%
Coal	1,900	16.4%	9,737	23.1%
Geothermal	1,906	16.4%	8,243	19.6%
Natural Gas	3	Nil	19	nil
Total	11,615	100%	42,116	100%

Source: Philippine Energy Plan 1999-2010 (Department of Energy)

Potential and Status of Renewable Energy: Philippines has substantial renewable energy resources, including solar, wind, micro-hydro, and biomass energy. However, the current installation of renewable energy technologies lags far behind its potential.

The recently completed Wind Energy Mapping Project conducted by NREL (National Renewable Energy Laboratory) indicated that Philippines has a potential of 76 GW of wind resources. However, as of 1997, there were only 8 wind turbine systems operating with a capacity of approximately 100 kW and about 300 operating windpumps.

Being located just above the equator, the Philippines has a vast potential for various solar energy applications. The nation's average solar radiation is 161.7 W/m². Currently, about 3,900 systems of various PV applications are located in the country with an equivalent capacity of 500 kW, including solar home systems (SHS), telecommunications, water pumping, and battery charging. In addition, there is also a large potential market for solar water heaters in the country. At present, there exist more than 400 units of solar water heaters for residential, hotel, and industrial applications.

Likewise, there is immense potential for power generation from abundant agricultural residues. The volume of the residues from rice, coconut, palm oil, sugar, and wood industries has been estimated at 16 million tons annually (EC-ASEAN Cogen Program). Currently, most of these residues are burned for traditional household use, and some of the biomass industries generate heat and power from the residues for their own use. A joint study by the UNDP-WB/ESMAP estimated that the agricultural residues from sugar, rice, and coconut husk could potentially produce 150 MW of excess power for export to the grid.

The Philippines also has rich micro-hydro resources of about 28 MW, while the current installed capacity of micro-hydro is only about 230 kW.

National Priorities and Programs:

The recently finished UNDP/GEF project -- Asia Least-Cost GHG Abatement Strategy (ALGAS) and the preliminary outcomes of the ongoing UNDP/GEF Enabling Activity in the Philippines highlighted the important role of the energy sector can play in reducing future GHG emissions in the Philippines, and identified renewable energy technologies as a priority area in the GHG abatement strategies in the Philippines.

Furthermore, the Philippines Agenda 21 identified the need to develop and utilize renewable energy technologies as the country's priority strategy. The National Action Plan on Climate Change proposed the gradual shift from the current fossil fuel-dominated energy mix towards renewable energy.

The Philippines Energy Plan (PEP) outlines the energy sector blueprint for supporting the Estrada's Administration's overarching objective of economic growth with social equity, led by a dynamic and internationally competitive private sector and supported by an efficient and impartial government. The PEP for the period of 1999-2008 focuses on strategies for achieving the total energization of all barangays in the country by the end of the planning period (the year

2008), including the installation of new and renewable energy systems in the areas that are inaccessible to electricity grid networks.

The PEP projected that the total NRE consumption will increase from 68.4 million barrels of fuel-oil-equivalent (MMBFOE) in 1998 to 80.1 MMBFOE in 2004 and 91.3 MMBFOE in 2008, while the share of NRE in the primary energy mix will decline from 28.7% in 1998 to 25.2% in 2004 and 21.9% in 2008. On the other hand, the NRE share in the power generation mix will increase from current nil to nearly 2% in 2008. It is projected that the total installed capacity to be provided by NRE would reach about 410 MW during the next ten years (1999-2008).

The total investment requirement for such a NRE program is estimated to be 49 billion pesos (\$1.3 billion) during the period of 1999-2008, of which 57% from foreign sources while the rest from domestic private sector and government.

The national new and renewable energy (NRE) policies are to a) pursue large-scale use of NRE systems; b) enhance energy self-sufficiency through continuous exploration, development, and exploitation of indigenous energy resources; and c) encourage greater private sector investment and participation in NRE activities.

The Department of Energy formulated the Non-Conventional Energy Division (DOE-NCED) which identified the overall NRE program to accelerate the development, promotion and commercialization of NRE systems. It comprises four Sub-Programs:

- a) Technology Sub-Program that targets to develop economically viable NRE systems to the levels of technical maturity;
- b) Commercialization Sub-Program that is intended to create a favorable market environment for NRE and to increase private sector investment;
- c) Promotion Sub-Program that aims to increase public awareness and acceptance of NRE systems; and
- d) Area-based/Rural Energy Sub-Program that seeks to institutionalize area-based energy planning and management at the local level.

Currently, national priority in NRE development is to promote off-grid NRE systems to achieve the goal of the Energy Resources for the Alleviation of Poverty (ERAP) program, which aims to improve people's livelihood in the rural areas by providing adequate and sustainable energy services. The ERAP program targets to attain a 90% barangay¹ level electrification by the year of 2004 and 100% electrification by the year 2008, a dramatic increase from present 72% electrification rate².

There are about 10,000 unelectrified barangays in the Philippines. Under the ERAP program, National Electrification Administration (NEA) has estimated that 6,483 barangays will be electrified by the year 2004, to achieve the goal of the ERAP program. Of the 6,483 barangays,

¹ Barangay is a district unit with about 50-200 households in one barangay.

² As a matter of fact, only 45% of the households currently have access to electricity in Philippines, because NEA's definition of one electrified barangay is to connect 10 households with electricity.

4,488 can be connected to the grid, while the rest or about 1,995 can be electrified by utilizing new and renewable energy (NRE) technologies. The target for the year 1999 is to electrify 900 barangays, among which 400 barangays are planned to utilize NRE technologies.

In addition to the ERAP program, a number of legislative measures that are envisioned to ensure a level playing field for the new and renewable energy (NRE) sector has been drafted and proposed. The major legislative actions are Omnibus Electricity Bill and NRE Bill. The Omnibus Bill aims to restructure and privatize the power industry. The passage of the Bill, which is expected by the end of 1999, could benefit the NRE sector, as it shall open up the window to bilateral independent power producers engaged in grid-connected renewable power projects. One major bottleneck, however, is the lack of competitive edge of renewable power projects compared to conventional technologies under a deregulated, competitive market environment for electricity since comparative costs of renewable power projects remain higher than the conventional technologies. The NRE Bill seeks to enhance the rate and scale of utilization of NRE technologies including solar, wind, micro-hydro, ocean energy, and others. Specifically, NRE Bill has incorporated new policy measures that would address the perceived market failure for renewable power projects aside from other proposed institutional and financial incentives to encourage private sector investment. However, policy studies on the impact of these policy measures are essential to ensure proper implementation.

Please see Annex 1 for the detailed description of the national NRE policy framework.

Previous, Ongoing, and Planned Assistance: The Philippines has had a number of foreign assistance in renewable energy field. Most of the previous projects/studies have focused on establishing the technical performance of renewable energy systems, however, did not address barrier-removal activities. In addition, the majority of the demonstration projects usually heavily subsidized consumers to install NRE systems to provide electricity for lighting and small appliances only. These subsidized programs have seriously distorted market, and affected the commercial operation of the private sector participation in the NRE market, such as Rural Energy Service Companies (RESCO). Therefore, these projects led to little sustainability and replication.

In addition to the previous projects, there exist a number of ongoing and planned renewable energy projects/initiatives in the Philippines. This project will complement and build on a number of ongoing technical assistance projects including the USAID/NREL and UNDP/FINESSE projects in Philippines. Please see Annex 1 for the detailed explanation of the activities, gaps, and complementarity of the ongoing and planned projects.

USAID/NREL

USAID/NREL has an ongoing "The Philippines Renewable Energy Project", with funding of \$1.5 million and time period of two years. The NREL project has eight tasks: (1) RET market infrastructure; (2) diesel/wind hybrid to retrofit existing diesel generators/wind farm analysis; (3) biomass assessment; (4) ocean power; (5) rural electrification analysis; (6) policy analysis; (7) Technology Cooperation Agreement Pilot Project/micro-hydro/solar/GIS; and (8) coordination/capacity building.

The majority of the eight tasks in the NREL project are technology driven. The policy task of the NREL project primarily focuses on policy recommendations for power restructuring (Omnibus Bill) and NRE development (fast track recommendations and NRE bill), with an output of recommendations and reports. While this PDF B and the future full project prepared under the PDF B will focus on capacity building and institutional strengthening of key government agencies to reformulate NRE policies, to ensure the institutional and regulatory sustainability for NRE development in the Philippines. Second, the capacity building task in the NREL project primarily provides training in software use, while this project will provide comprehensive capacity building programs to strengthen the policy, information, institutional, financing, market, and standards as well as testing capabilities. Hence, the NREL project and this project are complementary.

UNDP/FINESSE

The UNDP/FINESSE Project will develop and strengthen the technical capability of the Development Bank of Philippines (DBP) in the evaluation and management NRE projects, and generate a pipeline of NRE projects for financing. This UNDP/FINESSE project will provide one of the financing schemes in the form of loans under the Window III Department at DBP for NRE installations. This PDF B and the full project will evaluate existing financing mechanisms, identify the gaps, and further propose other innovative financing schemes and encourage private sector participation in NRE development.

Australia Aid

The Department of Interior and Local Government (DILG) with funding from Australian AID, has been implementing the Municipal Solar Infrastructure Project (MSIP). The project aims to install 1,000 PV systems in 387 barangays in 49 municipalities under the jurisdiction of the Social Reform Agenda (SRA) provinces in the Visayas and Mindanao Main Islands. These villages are expected to have no access to the main grids within the next 10 years. This proposed project could build on lessons learned from the MISIP project.

Swiss AIJ

A Philippine –Switzerland Government project on Renewable Energy Applications on Island Grid shall be executed under the Pilot Phase of Activities Implemented Jointly (AIJ). It aims to establish a baseline experience in developing and utilizing renewable energy resources for power generation to complement existing fossil-based plants such as diesel generator sets and bunker-fired power barges in the island grids. Phase I activity involves the conduct of detailed feasibility studies while the remaining phases shall include actual installation and project monitoring for greenhouse gas emission avoidance measurements.

World Bank

Following the project formulation mission to the Philippines in June 1999, the World Bank is planning a technical assistance and investment project on rural electrification with the Department of Energy. The proposed technical assistance (TA) components would include: (a) market assessment to develop the best matches between resources, technologies and the socio-economic environment of potential markets; (b) pre-investment studies—taking into account the results from market assessment, evaluation and prioritization of potential investments based on technical, economic, financial and lead time criteria; (c) rationalization of regulations and policies (including tariff) to minimize the financial and risk exposure of the Government and

safeguard public interests, while providing an enabling environment for private sector participation to increase reliable electricity supply; and (d) institutional aspects—including the appropriate roles of various players in rural electrification within the overall context of power sector restructuring and privatization in the country. Currently, there is no framework for the investment project formulated yet.

DOE made comments on the World Bank TA proposal on July 5, 1999. DOE pointed out that some of the planned TA activities (such as market assessment, as well as rationalization of policies, regulations, and institutions) are overlapping with the ongoing DOE, NREL and this PDF B project. DOE also recommended the World Bank project to review and complement ongoing and planned NRE efforts in the Philippines, as well as elaborate the activities in more details.

Overall, the planned World Bank project will primarily focus on rural electrification, while this PDF B project aims to promote renewable energy. It is suggested that the World Bank TA project would a) conduct market survey and assessment to complement ongoing efforts by DOE and UNDP/GEF³; b) conduct feasibility studies or pre-investment studies; and c) provide technical training in operation and maintenance of NRE systems. DOE also suggested the World Bank to assist in financing rural electrification to help DOE achieve the goal of the ERAP program. These suggestions would help the planned World Bank project to fit in the overall national policies and plans, as well as complement other ongoing/planned projects.

GTZ

The German Technical Cooperation Agency (GTZ) is also proposing a project to develop and utilize clean energy technologies specifically NRE systems. The first component is adaptation and demonstration of wind energy systems which involves the utilization of wind turbine technology, a viable electrification option for remote rural barangays in the country. The other component is the formulation of standards for solar energy systems and components which will gear on the establishment of quality standards of PV systems and components in the country. This component will complement Activity 7 of this proposed UNDP-GEF project.

Asian Development Bank (ADB)

The Asian Development Bank is preparing a technical assistance project on the Institutional Strengthening of the Energy Sector on Rural Electrification Projects. This planned TA project aims to develop and strengthen the institutional capability of the energy sector in implementing rural electrification program. It proposes series of activities that includes the conduct of training program, institutionalization of financing mechanisms, and establishment of data information center.

Overall, this planned ADB TA project will primarily focus on rural electrification, while this PDF B project aims to promote renewable energy. However, there were some overlapping activities in the ADB project proposal with this PDF B project. After consultation with DOE and

³ Although the DOE's Barangay Profiling Project will conduct profiling surveys in 800-1000 barangays for rural electrification, and this PDF B project will also conduct market surveys in a number of barangays for NRE installations, the World Bank TA project can also conduct market assessment to complement the other efforts, since there are 10,000 non-electrified barangays in the Philippines.

NEDA (National Economics and Development Authority, a national focal point for the ADB and World Bank), the ADB project is currently under revision to complement this PDF B project and the full project.

Spanish Aid

The Department of Agrarian Reform (DAR) has also proposed a project for possible funding assistance by the Government of Spain through the latter's mixed credit financing facility. The project, Solar Power Technology Support Project (SPOT) involves the provision of electricity using solar photovoltaics both for home lighting and community-based services and activities in 74 unelectrified Agrarian Reform Communities (ARCs).

Dutch Aid:

In collaboration with the Netherlands Ministry of Foreign Affairs - Directorate General of International Cooperation, PNOC, CDA, and local NGOs and cooperatives is proposing an Environmental Improvement for Economic Sustainability (EIES). This project aims to install 15,000 solar home systems in unelectrified areas in Regions I, II, and CAR.

Palawan Medium-Size Project

The PDF-B project will further identify linkages and cooperation among donors to remove barriers to promoting renewable energy for the ensuing UNDP-GEF full project. Meanwhile, another UNDP/GEF medium-sized Palawan Alternative Rural Energy and Livelihood Support Project is under preparation. It is intended to specifically demonstrate the viability of the RESCO (Rural Energy Service Company) delivery mechanism of off-grid renewable energy systems, and economic activities of productive use of renewable energy services for rural communities. This RESCO model serving for remote islands would complement with on-grid renewable energy delivery mechanisms to be identified in Activity 5 of the proposed project. Please see Annex 1 and 2 for the complementarity of the PDF B with MSP.

Barriers to Renewable Energy Development:

Because of the existence of a large number of policy, institutional, information, financing, market, and technical barriers to renewable energy development, renewable energy applications have not developed at a large scale in Philippines. The purpose of this proposed PDF activity is to identify the key barriers, to propose activities to remove those barriers, and to prepare a full project brief and document seeking to remove those barriers at a national level.

This PDF is intended to lead to a technical assistance, capacity building, and demonstration projects for financing under **GEF Operational Program 6, "Promoting the Adoption of Renewable Energy by Removing Barriers and Reducing Implementation Costs."**

Based on more than one-year wide consultation with different stakeholders in the Philippines including government agencies, NGO, private sector, academia, and financial institutions through a series of national stakeholder workshops as well as individual meetings starting in March 1998, the barriers seen as critical to hinder the development of renewable energy in the Philippines can be described as follows. Please see Annex 3 and 4 for "Chronology of the

Proposal's Development" and the "Participants' List and Proceedings of the Series National Stakeholder Workshops".

Policy Barriers:

- Limited financial incentive policies to encourage renewable energy development;
- Limited market-oriented renewable energy program at national level. The renewable energy programs in the past are mostly technology-driven and focus on R&D, rather than emphasize promotion and encouragement of commercialization and private sector involvement;
- Utility regulations are not favorable to renewable energy development. There is a lack of standardized power purchase agreement (PPA), and power purchase price from renewable energy power producers are too low;

Institutional Barriers:

- Weak coordination between institutions;
Difficulties in obtaining permit from rural electric cooperatives (REC) to set up renewable projects by the private sector in areas that are under REC franchise;
Tedious and circuitous permit process, particularly for micro-hydro projects;

Information Barriers:

Limited, dispersed and difficult access to information about renewable energy resources, technical/economic information about renewable energy technologies (RET), RET market, barangay socio-economic situations, equipment suppliers, and potential financiers;
Limited awareness of renewable energy in public, industry, utility, financial institutions, and policy-makers;

Financing Barriers:

- Lack of appropriate financing mechanisms for renewable energy;
- Financial institutions are not familiar with and interested in financing renewable energy projects because of perceived high risks and high transaction costs;
- Limited expertise to conduct pre-feasibility studies, analyze market opportunities, and prepare marketable business proposal packages for renewable energy projects;

Market Barriers:

- Limited expertise in business management and marketing skills (including after-sales services);
- Market distortion by the subsidized or grant-based programs. Some grant-based or heavily subsidized solar projects have raised consumers' expectation to receive free solar PVs. This situation has seriously distorted the market, and affected the commercial operation of the private sector in the RET business, such as Rural Energy Service Company (RESCO).

Technical Barriers:

- Limited technical expertise in system design, installation, operation, and maintenance of RET;
- Lack of standards quality control for renewable energy equipment;

- Limited successful model to demonstrate commercial utilization of RET.

The PDF activity will seek to analyze these barriers, and propose a program of development to help remove them.

Project Objectives:

The principal objective of this PDF and the project to be prepared under it is to reduce GHG emissions by identifying and removing the major barriers to the development of renewable energy to replace fossil fuel use in Philippines. Specific objectives are as follows:

- Reduce GHG emissions;
- Provide electric power service to isolated communities that are currently not accessible to electricity, thus improve social equity;
- Reduce heavy dependence on imported oil by utilizing indigenous renewable fuels;
- Facilitate renewable energy market development and promote private sector involvement through provision of financial incentive policies and RESCO support program;
- Establish technical support mechanisms such as Renewable Energy Technology Information Center, and Standard Testing Laboratories;
- Demonstrate the feasibility to link the renewable energy production with productive use;
- Facilitate financing to renewable energy development through setting up innovative financing schemes.

The proposed full project would achieve these objectives by: a) capacity building of government agencies to formulate renewable energy policies; b) information dissemination and public awareness program; c) institutional strengthening to increase coordination between organizations; d) development of market strategy for utilization of renewable energy; e) support program for renewable energy delivery mechanisms; f) innovative financing schemes; and g) development of standards, specification, testing, and certification for the renewable energy industry in the Philippines. The PDF project will carefully prepare and design the details of these activities for the full project, and finalize the full project brief and project document.

II. Activities to be implemented in the PDF:

It is anticipated that the following activities will be undertaken as part of the project preparation work supported by the PDF.

Activity 1: Capacity Building of Key Government Agencies to Formulate Renewable Energy Policies

This activity consists of two components: 1) summarize all the identified policy barriers and existing initiatives to encourage both on-grid and off-grid renewable energy development, and find out the gaps; and 2) identify the key government agencies, evaluate the priority areas for capacity building, and design a capacity building component for the full project.

The first component will evaluate and summarize the results of previous/ongoing studies and workshops to identify barriers to renewable energy development in Philippines, including the results from the two workshops held by UNDP and USAID last year. Then, it will summarize and evaluate all the existing initiatives/studies of renewable energy policies, including the ongoing USAID/NREL and ESMAP policy studies. The objective is to identify the gaps between what needs to be done and what have been done, through a wide consultation with all the stakeholders from the government agencies, private sector, NGOs, utilities, financiers, and communities.

The second component will first identify the key government agencies for the capacity building program, including but not limited to: Department of Energy (DOE), National Power Corporation (NPC), National Electrification Administration (NEA)/Rural Electric Cooperatives (REC), Philippines National Oil Corporation (PNOC), Energy Regulatory Board (ERB), Local Government Unit (LGU), and private utilities.

Then, this component will identify and evaluate the priority areas for the capacity building program to formulate renewable energy policies. The outputs of the first component will become the inputs for this second component. The capacity building program will have some common elements for all the government agencies, including definition of the roles of the government and roles of conventional and renewable energy, formulation of investment guidelines, and removal of market distortion. On the other hand, for each government agency, the capacity building program needs to be further tailored based on the role and responsibility of that agency.

With regard to DOE, for example, there is a need to review the existing new and renewable energy (NRE) programs, and priority areas for the capacity building program would focus on financial incentive policies and creating a favorable market environment to encourage private sector involvement. The objective is to help DOE shift from an NRE- technology dissemination activities to market-based renewable energy policies. The program may also include re-draft of NRE Bill.

For agencies involved in power development, the capacity building program should focus on technical assistance to prepare a transparent and standardized PPA, and set power purchase price from renewable energy producers (linked with Activity 8). The entities should include, among others, NPC, Manila Electric Company, RECs, large industries, and private power utilities. These agencies can therefore learn the experience and lessons from other countries. For DOE, activities shall focus on technical enhancement in reviewing and assessing renewable power projects particularly towards improving the facilitation of accreditation process.

Also, there is a need to enhance the capability of the government and the energy sector to formulate energy pricing policies and mechanisms that would create favorable environment for NRE projects. At present, the ERB is the quasi-judicial agency of the government that reviews and approves the price and rate schedules of electricity as well as the petroleum-derived fuels in the country. The NPC, RECs through NEA, as well as private utilities submit

rate proposals for review and approval through public consultation. On the other hand, DOE handles the coordination and monitoring of the pricing policies as prescribed by the ERB. Thus, the pricing program will therefore be another component of the capacity building activity and shall include DOE, ERB, and NEA, among others.

In addition, there is also a need for technical assistance to local private renewable companies, NPC, NEA, and REC in developing market strategies to develop renewable energy in a business manner (as a RESCO, for example), instead of acting as missionary. The capacity building program to NPC, NEA, and RECs as well as to prospective RESCOs, ANECs and members of private NRE associations such as REAP, BEAP, PSES AND WEAP could also include training on technical expertise to conduct feasibility study and resource assessment for renewable energy, as well as installation and maintenance capabilities of renewable energy equipment.

Once the candidate targets and priority areas of the capacity building program have been established, the activity will identify and review the approaches to the capacity-building programs. For example, the approaches may include: 1) study tours to the leading countries of renewable energy development, such as European countries and US, to learn financial/fiscal incentive policies for renewable energy, and market strategies as well as institutional framework of renewable energy development; 2) training programs, manuals, and models for the identified priorities; and 3) adaptation of these programs to Philippines.

Finally, the activity will incorporate all these elements together, and design a capacity-building component for the full project, including the preparation of an implementation plan.

Activity 2: Information Dissemination and Public Awareness Program

This activity consists of two components: 1) prepare and design a Renewable Energy Technology Information Center; and 2) design a public awareness campaign program.

The first component will a) define the roles of the Information Center; b) identify the type of information that should be included in the database for the Center; c) strengthen the capability of DOE to host the Center; d) identify the needs for capacity building for the Center; and e) design the mechanisms to disseminate the information.

First, this component will define the role of the Center, including to compile database; create and maintain a website; document successful models of renewable energy project in Philippines; and disseminate information.

Then, the component will identify the information needed for the database to be set up at the Center. The preliminary assessment of the information barrier demonstrated that the information should include, but not limited to, a) renewable energy resources; b) technical/economic information about renewable energy technologies (RET); c) government rules, regulations, and permit requirements of renewable energy development; d) RET market; e) barangay social-economic situation; f) equipment suppliers; g) directory of experts, technology providers, consultants; and h) potential financiers. Then, it will identify

and review the gaps between what information is needed and which has already been available.

Next, this component will select an existing institution to host the Center. The criteria to choose such an institution should include: a) basic capabilities of information management and documentation; b) familiarity with renewable energy technologies; c) capacity to disseminate the information; and d) sustainability in terms of full and long-term funding support by the target institutions. Preferably, the institution will provide office space and staff for the Center.

In addition, the component will identify and evaluate the need for capacity building for the Center. This may include: a) GIS capacities; b) internet capabilities; c) establishing operational links with key renewable energy centers in other countries (such as Denmark, Australia, and US); and d) requirement for computer database software and models. Finally, this component will design an institutional mechanism to disseminate the information.

The second component is to design a public awareness campaign for renewable energy. First, this component will identify the target groups for the public awareness campaign. Then it will design a public awareness program, which should be tailored to target different stakeholder groups. Where appropriate, the awareness program will use the network of information dissemination to reach different target groups. This component will also identify and strengthen an institution to conduct the public awareness campaign. A possible candidate may be collaboration between the Philippine Information Agency and Department of Energy.

Activity 3: Institutional Strengthening to Increase Coordination Between Organizations

This activity will 1) identify and review existing initiatives to strengthen institutions; and 2) design an institutional strengthening component for the full project.

Currently, while there are many government agencies involved in renewable energy development, coordination and consolidation of the initiatives by these agencies remain weak. In addition to lack of coordination between agencies, the institutional constraints also include duplicated efforts and competition from the government with the private sector. In response to this bottleneck, a number of multi-sectoral institutions have formed into group to establish the Philippine Renewable Energy Network (REN). REN is considered as a well-balanced networking group consisting of NGOs, people's organizations, academe, private sector, and government agencies. REN acts as the body that coordinates all efforts on the development commercialization of NRE systems and resources in the country. Some other initiatives proposed to establish a multi-sectoral Philippines Council for Renewable Energy.

First, this activity will survey and review the existing initiatives to address coordination problems within the renewable sector. After reviewing the existing initiatives, this activity will design an institutional strengthening program through wide consultation with stakeholders and experience as well as lessons learned from other countries.

Activity 4: Develop Market Strategies for Renewable Energy

This activity will: 1) identify market barriers to renewable energy, and review existing initiatives of renewable energy market assessment; 2) identify market opportunities and conduct market survey for renewable energy; and 3) design a market development strategy component.

This activity will first identify the key market barriers to renewable and review existing initiatives and activities of renewable energy market assessment, including ongoing USAID/NREL market infrastructure study.

Then, this activity will identify and evaluate market opportunities and market size for renewable energy, particularly linkage between renewable energy and productive use, including renewable energy for ice-making (for fishing storage and cold drinks); eco-tourism; health clinics; water pumping; crop drying; sewing machine; and etc.

Next, this activity will choose several regions/provinces to conduct market survey for consumers' ability to pay and willingness to pay for electricity service in unelectrified barangays, based on ongoing DOE study to compile a socio-economic profile for unelectrified barangays and existing information from NEA, the Department of Interior, Local Government, National Anti-Poverty Commission, and National Statistical Office. The selection of the location for the market survey should represent different categories of renewable energy consumers, including top end, upper-middle class, middle class, and the bottom end (poorest). This market survey will become the inputs for Activity 5 (feasibility studies to identify renewable energy delivery mechanism), and Activity 7 (selection of project sites for pilot plants), therefore, provides essential information for the project design.

The results of the market survey and market opportunities assessment should become inputs to the Information Center, and be disseminated in the private sector. Currently, most private companies in Philippines are only involved with trading of renewable energy equipment, rather than actively developing renewable energy market.

Finally, this activity will design a component to remove the market barriers and develop market strategies for the renewable energy for the full project.

Activity 5: Identify Renewable Energy Delivery Mechanisms

This activity is comprised of three components: 1) review and assess different institutional models to deliver renewable energy services; 2) identify the renewable energy delivery mechanism(s) appropriate to Philippines situation; and 3) design a delivery mechanism support program.

The first component will review and assess international experience of different delivery mechanisms for off-grid renewable energy service, including Rural Energy Service Company (RESCO) model. This is achieved through international/national workshops and study tours to learn other countries' experience and lessons.

The second component will conduct feasibility studies, with the outputs from the first component and Activity 4, to identify which delivery mechanism(s) for renewable energy is most appropriate for Philippines situation.

The third component will design the support program for the delivery mechanisms that are identified from the second component. First, this component will design a concession scheme to support the delivery mechanisms. This will include preparation of a minimum technical specification for the bid proposals as well as an information package to be given to potential private entities considering making a proposal to be the first “renewable energy service delivery company”, which could be RESCO or other delivery mechanism.

After designing a concession scheme, this component will identify the training needs for the “renewable energy service delivery company”, including but not limited to: technical training (installation and maintenance); business management and marketing skills (including after-sale service); preparation of financing proposal package, financing arrangement with financial institutions; socio-economic assessment; project development skills; and project feasibility study.

In addition, this component will also select training institutions, and design a capacity building program to establish and institutionalize training facilities that will be able to provide these identified training programs and give certificates to trainees.

Activity 6: Identify Innovative Financing Mechanisms

This activity is comprised of three components: 1) evaluate existing financing mechanisms and identify major barriers to financing both on-grid and off-grid renewable energy projects in Philippines; 2) review and assess a number of possible financing mechanisms for renewable energy projects; and 3) propose and design an appropriate financing mechanism.

The first component will evaluate current mechanisms for project financing and identify key barriers to financing renewable energy projects in Philippines. This component will first compile a complete list of existing funds and financial institutions that provide funding to renewable energy in Philippines, including bilateral and multilateral funds, private funds, government, and banks. This list should be put into the database at the Information Center under Activity 2. Then, it will review and assess the evaluation guidelines and investment criteria of these existing funds to identify the gaps between expectations of lending institutions and expectations of borrowers, and the reasons for difficulties in obtaining financing.

The second component will review and assess a number of financing schemes to support renewable energy projects, from other countries experience and lessons, as well as domestic experience in Philippines from the outputs of the first component. This may include: micro-credit; loan with productive use; small revolving fund; project preparation fund; and risk guarantee fund.

Finally, this activity will work with financial institutions and design a component for the full project to remove the financing barriers, and propose an appropriate sustainable financing scheme for both on-grid and off-grid renewable energy projects in Philippines. This shall also attempt to work out with financial institutions the establishment of a sustainable financing scheme that is best suited to current environment.

This activity will facilitate future financing to renewable energy projects, and is crucial to ensure replication and sustainability of renewable energy development in Philippines.

Activity 7: Develop Standards, Specifications, Testing, and Certification for Renewable Energy Industry

This activity will: 1) identify the major technical problems with regard to the quality of renewable energy equipment in Philippines; and 2) design a standards, specifications, testing, and certification component for the full project.

First, this activity will identify the key quality problems with renewable energy equipment in Philippines. For example, most batteries have a shorter lifetime than labeled, and some universally-designed equipment is not adaptive to specific island climate in Philippines.

This activity will design a component to develop standards, technical specifications, testing and certification for the full project. The activity will include: a) listing of all renewable energy equipment, parts, components and systems that will be involved in this program; b) selection of institutions/laboratories that meet international laboratory standards to host the testing and certification center; c) identification of the needs for capacity building and technical assistance for the selected certification center; d) identification of co-funding sources to strengthen the facilities of the selected center; and e) design of a mandatory certification and labeling program.

Activity 8: Identify Pilot Plants

This activity will: 1) identify the renewable energy technologies, specific project sites, project size, and co-funding sources for the pilot plants; and 2) design a pilot plants component for the full project to demonstrate the barrier-removal package in this project.

Past and on-going projects on NRE systems in the country such as solar homelighting, windpumping and micro-hydro projects are mostly subsidized if not pure dole-outs. Experience has shown that demonstration projects should focus on: the development of standard practices on the assessment of capacity to pay by the project beneficiaries; the establishment of standard repayment schemes and the benchmarking for the level of subsidies; and concessionary rates of interests that could be coupled with renewable projects in the rural areas.

Furthermore, the selection of demonstration technologies should be consistent with national new and renewable energy (NRE) development priority. It is suggested that the demonstration projects should consist of one large-scale grid-connected renewable energy

project, such as large-scale wind farm or biomass cogeneration; several off-grid projects, such as solar, wind, hydro, and biomass gasifier.

Then, this activity will design a pilot demonstration project component. The objective of the pilot plants is to demonstrate how the barrier-removal activities will be applied in renewable energy projects; therefore, the design of the pilot demonstration projects should link with Activities 1-7. With regard to the on-grid renewable demonstration project(s), for example, technical assistance will be needed to prepare a transparent and standardized power purchase agreement with NPC, linked with Activity 1. If carefully prepared, this can serve as a model for future grid-connected renewable projects. The off-grid renewable demonstration projects, on the other hand, should link the renewable energy production with productive use applying the results from the market strategies developed in Activity 4, and utilize the renewable energy delivery mechanism identified in Activity 5. In addition, the Information Center in Activity 2 will provide the needed information package for the pilot plants, and the financing mechanism identified in Activity 6 will help financing for the pilot plants.

Activity 9: Project Formulation Workshop, Project Brief and Document Preparation

This activity will lead to a workshop with all the stakeholders to disseminate the outputs of the above eight activities, build up national and local support for long term sustainability of the project, and combine the activities to a full renewable energy development project. Resource mobilization activities/consultation meetings with other donors and private sector will also be conducted to leverage GEF funding. A final full project brief for GEF approval and a full project document for project implementation will be produced.

Activity 10: Develop a Framework for Future Cooperation

This activity will hold a consultative process to develop a framework for future cooperation in the renewable energy sector. The consultations should result in an output or outcome of a Medium-Term Outlook or Plan for Renewable Energy in the Philippines.

The previous activities (Activity 1-9) will provide a road map for the Government of the Philippines to identify the priorities and steps needed to remove key RE barriers in the Philippines. This activity will provide an overview on all the activities to be undertaken in the RE section in the Philippines, not only UNDP, the World Bank, and the ADB, but also the bilaterals. It will then explain how different interventions are interlinked and coordinated. This framework will help DOE and other government agencies oversee the future multilateral and bilateral activities in the RE sector, to the extent that they are involved in the process.

This activity will also provide the framework for M&E of overall GEF impact over the medium term. It would therefore include impact forecasts and indicator frameworks to verify the achievement of projected changes over the medium term.

III. Outputs to be produced under the PDF

The main outputs to be produced under this PDF will be:

Output 1.1: A report documenting the key policy barriers, existing policy initiatives, and the gaps specific to renewable energy development in Philippines;

Output 1.2: A report documenting the design of the capacity building to formulate renewable energy policies component.

Output 2.1: A report documenting the design of the Renewable Energy Information Center component;

Output 2.2: A report documenting the design of the public awareness campaign component.

Output 3.1: A report documenting the design of the institutional strengthening component.

Output 4.1: A report documenting the key market barriers to renewable energy, and summary of existing initiatives of renewable market assessment;

Output 4.2: An information package, including the process and results of the market survey and assessment of market opportunities for renewable energy development, to be available for the private sector;

Output 4.3: A report documenting the design of the market development strategy component.

Output 5.1: Assessment of different renewable energy delivery mechanisms;

Output 5.2: Feasibility studies of the renewable energy delivery mechanisms appropriate for Philippines situation;

Output 5.3: Recommendations of a support program for the renewable energy delivery mechanism.

Output 6.1: Assessment of existing financing mechanisms and financing barriers;

Output 6.2: Assessment of a number of possible financing mechanisms for renewable energy projects;

Output 6.3: A proposal to set up a financing mechanism for renewable energy projects in Philippines to be given to potential financiers/donors.

Output 7.1: A report documenting the design of the project component to develop standards, specifications, testing, and certification for the renewable energy industry.

Output 8.1: Identification of pilot plants.

Output 9.1: GEF Project Brief for the Proposal

Output 9.2: Draft UNDP Project Document.

Output 10.1: A Medium-Term Plan for Renewable Energy in the Philippines to oversee and coordinate future multilateral and bilateral activities in the RE sector.

Output 10.2: An indicator framework for M&E.

IV. Proposed Budget for PDF Activities (US Dollar)

Activities	GEF Contribution	DOE Contribution	ICEE Contribution	Total
1. Capacity Building to Formulate Policy	20,000	10,000	5,000	30,000
2. Information Dissemination and Public Awareness Program	16,000	5,000	10,000	31,000
3. Institutional Strengthening	22,000	5,000	10,000	37,000
4. Develop Market Strategies	40,000			40,000
5. Identify Delivery Mechanisms	40,000			40,000
6. Identify Innovative Financing Mechanisms	30,000	5,000	5,000	40,000
7. Standards, Testing and Certification	25,000	10,000		35,000
8. Identify Pilot Plants	15,000	5,000	10,000	30,000
9. Project Formulation, Project Brief and Document preparation	47,000	5,000	5,000	57,000
10. Develop Framework for Future Cooperation	40,000	10,000	5,000	55,000
11. Miscellaneous				10,000
Documentation	7,000			
Sundry	3,000			
Total	305,000	55,000	50,000	410,000

V. Eligibility

The Government of Philippines ratified the UN Framework Convention on Climate Change in August 1994. The project is aimed to reduce GHG emissions by identifying and removing the major barriers to the development of renewable energy to replace fossil fuel use in Philippines. Therefore, it is eligible under GEF OP6, "promoting the adoption of renewable energy by removing barriers and reducing implementation costs."

VI. Implementation Arrangement

The PDF-B project shall be executed by the Non-Conventional Energy Division, Department of Energy (DOE-NCED). The DOE-NCED shall ensure the delivery of the project outputs and the judicious use of the project resources. It will provide the mechanism and technical inputs necessary to integrate the results of the various activities and to prepare the project brief and project document. The Institute of Climate, Energy and Environment (ICEE) shall be the implementing agency of the project and will work closely with the DOE-NCED to produce the various PDF-B outputs.

A Policy Advisory Group (PAG) shall be created to provide policy and technical advice. The PAG shall be composed of members from the Renewable Energy Network, DOE, ICEE, NEDA,

DENR GEF Focal Point, IACCC and UNDP. The PAG shall meet at least three times during the PDF-B project and shall endorse the project brief and project document to UNDP-GEF.

DOE-NCED will take a lead in the Policy Advisory Group (PAG), in conjuncture with ICEE. The project implementation will broaden the participation of other groups through Renewable Energy Network (REN), which is a well-balanced networking group consisting of NGOs, private sector, people's organization, academia, and government agencies. REN acts as the body that coordinates all efforts on the development and commercialization of NRE systems and resources in the Philippines. Please see Annex 5 for the membership list of REN.

The Project Management Office (PMO) shall be based at the ICEE, as the project's implementing agency. The project shall hire a full-time Project Coordinator, a technical specialist and a secretary/bookkeeper to be hired from PDF-B fund. The PMO is also responsible for overall financial management of UNDP-GEF project funds. DOE and ICEE shall designate a Project Director and a Project Co-Director, respectively, who will be in-charge of overall project coordination and shall co-manage the PMO operations.

The detailed M&E plan for the PDF B project will be developed during the project document stage. The outcomes and lessons learned from the Medium-Size Project – Palawan New and Renewable Energy and Livelihood Support Project -- will be monitored and evaluated by the Affiliated Non-Conventional Energy Center (ANEC) in Palawan under the DOE, and fed into the proposed national full project prepared under this PDF B.

VII. Justification for PDF B Grant

PDF support is required to identify and define the scope of activities and the steps to be undertaken to ensure effective implementation of a full scale GEF project that would identify and remove barriers to renewable energy in Philippines. The PDF activities would set in place a complete package of a) capacity building; b) information dissemination; c) institutional strengthening; d) market-based renewable energy delivery mechanisms; and e) innovative financing mechanisms; which will ensure the future replication and sustainability of the project.

VIII. Time Table

Activities	1	2	3	4	5	6
1. Capacity Building	x	x				
2. Information Dissemination	x	x				
3. Institutional Strengthening		x	x			
4. Develop Market Strategies	x	x	x			
5. Identify Delivery Mechanisms			x	x	x	
6. Innovative Financing Mechanisms			x	x	x	
7. Standards, Testing, and Certification			x	x		
8. Identify Pilot Plants				x	x	
9. Project Brief and Document					x	x

List of Annexes

ANNEX 1	Draft Document on Renewable Energy Framework in the Philippines
ANNEX 2	Response to GEFSEC Comments
ANNEX 3	Chronology of the Proposal's Development
ANNEX 4	Participants' list and Proceedings of the Series Stakeholder Workshops
ANNEX 5	Membership List of Renewable Energy Network

Palawan New and Renewable Energy and Livelihood Support Project -- Project Planning Matrix

Summary	Objectively Verifiable Indicators	Means/Sources of Verification	Important Assumptions
Development Goal The project is aimed to reduce the long-term growth of CO ₂ emissions through removing barriers to commercial utilisation of renewable energy systems to substitute for the use of diesel generators in Palawan.	<ol style="list-style-type: none"> 1. Decreased diesel consumption for rural electrification; 2. Increased annual installed capacity and share of renewable energy power systems for rural electrification; 3. Increased income of villagers from livelihood support activities of renewable energy use; 4. Commercial operation of renewable energy systems by the Renewable Energy Service Company (RESCO) 	<ol style="list-style-type: none"> 1. Data of diesel consumption for rural electrification from surveys and calculations 2. Data on annual installed capacity and share of renewable energy systems for rural electrification from surveys 3. Data on villagers' income and capability to pay for the renewable energy services from surveys and bill collections 4. Consumers' satisfaction of the services delivered by RESCO through consumer surveys 	<ol style="list-style-type: none"> 1. The Rural Electric Cooperatives are willing to allow the RESCO to provide renewable services within their franchise 2. The RESCO is able to charge and collect a fee for the renewable energy services delivered to cover its costs within existing legal and policy framework 3. Renewable energy services can be provided for productive use; 4. Reliable data from surveys and reports
Project Purpose <ol style="list-style-type: none"> 1. To reduce GHG emissions; 2. To promote commercialization of renewable energy for rural electrification to replace diesel; 3. To reduce consumption and imports of petroleum products; 4. To promote commercial operation of renewable energy systems by RESCO; 5. To improve people's livelihood through productive use of renewable energy; 6. To reduce local health and environmental impacts from diesel consumption 	<ol style="list-style-type: none"> 1. Increased installation and share of rural electrification by renewable energy 2. Decreased diesel consumption and import for rural electrification; 3. Commercial RESCO set up to deliver renewable energy services to all the non-electrified households in Palawan; 4. Increased income of villagers; 5. Reduced local air pollution from diesel consumption 	<ol style="list-style-type: none"> 1. Data on annual installed capacity and share of renewable energy systems for rural electrification from surveys 2. Data of diesel consumption and import for rural electrification from surveys and calculations 3. Number of non-electrified villages using renewable energy services through surveys 4. Consumers' satisfaction of the services delivered by RESCO 5. Data on villagers' income and capability to pay for the renewable energy services from surveys and bill collections 6. Reduced local air pollution from measurements 	<ol style="list-style-type: none"> 1. The Rural Electric Cooperatives are willing to allow the RESCO to provide renewable services within their franchise 2. The RESCO is able to charge and collect a fee for the renewable energy services delivered to cover its full costs within existing legal and policy framework 3. Renewable energy services can be provided for productive use; 4. There is high demand for RESCO services; 5. Reliable data from surveys and reports

<u>Outputs</u>			
<ol style="list-style-type: none"> 1. Increased capacity and recognition of renewable energy and RESCO at the local government level; 2. A range of financial incentives established; 3. A revised Provincial Energy Master Plan; 4. Increased public awareness of renewable energy systems and RESCO; 5. Increased information and services provided to potential investors in renewable energy; 6. A commercial and sustainable RESCO delivery mechanism set up to provide renewable energy services in Palawan; 7. A risk-sharing mechanism established to buy down the risks for the RESCO. 	<ol style="list-style-type: none"> 1. Increased interests in and funding allocation on renewable energy from local governments; 2. Financial incentive policies established for renewable energy developers; 3. Increased share of renewable energy in the revised Provincial Energy Master Plan; 4. Increased public interest and demand for renewable energy systems; 5. Easy access to information and local contacts for renewable energy developers; 6. Increased technical backup available to operators of renewable energy systems; 7. Financial self-sustaining of the RESCO 8. The RESCO will provide reliable renewable energy services on a commercial basis; 9. Cost reduction in renewable energy systems; 10. Increased consumers' capability to pay from the economic activities of renewable energy services; 11. Increased installation of renewable energy systems to all the non-electrified households. 	<ol style="list-style-type: none"> 1. Data on funding allocation from local governments; 2. Financial incentive policies for renewable energy; 3. Revised Provincial Energy Master Plan; 4. Data on annual installed capacity and share of renewable energy systems for rural electrification from surveys 5. Number of non-electrified villages using renewable energy; 6. Increased investment in renewable energy from private sector; 7. Consumers' satisfaction of the services delivered by RESCO through consumer surveys; 8. Less renewable energy systems broken down; 9. The balance sheet of the RESCO 10. Costs of renewable energy systems; 11. Data on villagers' income and capability to pay for the renewable energy services from surveys and bill collections 	<ol style="list-style-type: none"> 1. The RESCO will be able to charge and collect a fee to recover their full economic costs 2. The expected revenues from natural gas will come 3. The financial incentive policies and Provincial Master Plan will be implemented and will not change 4. Improved information and services on renewable energy will promote investment in renewable energy systems from the private sector 5. Renewable energy services can be provided for productive use; 6. The demand for rural electrification services and consumers' satisfaction will determine the fees charged and quality of the services delivered by the RESCO 7. Trained technical staff will remain in position 8. The costs of renewable energy systems will drop with the increasing economy of scale 9. Reliable data from surveys and reports

<u>Activities</u>			
<ol style="list-style-type: none"> 1. Build Capacity for Local Government Units and Rural Electric Cooperatives 2. Public Awareness Campaign on Renewable Energy 3. Establish a Renewable Energy Development Center 4. Design a Risk Sharing Mechanism to Support Renewable Energy Service Company (RESCO) 	<ol style="list-style-type: none"> 1. Increased government funding allocation to renewable energy systems; 2. A range of financial incentives provided to RESCO; 3. Increased share of renewable energy in the revised Provincial Energy Master Plan; 4. Increased public interest and demand for renewable energy systems; 5. Increased information and services available to the potential renewable energy developers; 6. Strengthened link between local governments, RESCO, and local communities; 7. The RESCO will provide reliable renewable energy services on a commercial basis; 8. Financial self-sustaining of RESCO; 9. Cost reduction in renewable energy systems; 10. Increased consumers' capability to pay from the economic activities of renewable energy services; 11. Increased installation of renewable energy systems to all the non-electrified households. 	<ol style="list-style-type: none"> 1. Data on funding allocation from local governments; 2. Financial incentive policies and revised Provincial Energy Master Plan; 3. Data on annual installed capacity and share of renewable energy systems for rural electrification from surveys 4. Number of non-electrified villages using renewable energy; 5. Increased consumer confidence of renewable energy power systems for rural electrification through consumer surveys 6. Increased investment in renewable energy from private sector; 7. Consumers' satisfaction of the services delivered by RESCO through consumer surveys; 8. The balance sheet of the RESCO 9. Costs of renewable energy systems; 10. Data on villagers' income and capability to pay for the renewable energy services from surveys and bill collections 	<ol style="list-style-type: none"> 1. Consumers' willingness and capability to pay is high enough to cover the full economic costs of RESCO 2. The expected revenues from natural gas will come 3. Trained staff will remain in position 4. Improved information and services on renewable energy will promote investment in renewable energy systems from the private sector 5. Renewable energy services can be provided for productive use; 6. The demand for rural electrification services and consumers' satisfaction will determine the fees charged and quality of the services delivered by the RESCO 7. The costs of renewable energy systems will drop with the increasing economy of scale 8. Reliable data from surveys and reports

PDF-B Philippines Barrier Removal-Renewable Energy				
Activity 1 Capacity Building				
National Consultant 1	3,000	1.5 months	4500	
National Consultant 2	3,000	1 month	3000	
Local travel			2000	
Workshops/Seminars			6500	
				16000
Activity 2 Information Dissemination				
National Consultant 3	3000	1.5 months	4500	
National Consultant 4	3000	1.5 months	4500	
Local travel	3000		3000	
				12000
Activity 3 Institutional Strengthening				
Subcontract 1			10000	
Workshops/Seminars			10000	
				20000
Activity 4 Develop Market Strategies				
National Consultant 5	3000	2 months	6000	
Subcontract 2			30000	
Local Travel			4000	
				40000
Activity 5 Identify Delivery Mechanisms				
International Expert 1	500	20 days	10000	
DSA	170	25 days	4250	
International Travel			3500	
Study Tour			13250	
National Consultant 6	3000	2 month	6000	
Local Travel			3000	
				40000
Activity 6 Innovative Financing Mechanism				
International Expert 2	500	15 days	7500	
DSA	170	20 days	3400	
International Travel			3500	
National Consultant 7	3000	3 months	9000	
Workshop/Seminars			6600	
				30000
Activity 7 Standards, Testing and Certification				
Subcontract 3			9000	
				9000
Activity 8 Identify Pilot Plants				
National Consultant 8	3000	1 months	3000	
Local Travel			2000	
Feasibility Study			18,000	
Workshop/Seminars			2000	
				25000
Activity 9 Project Formulation, Resource Mobilization, Project Brief and Project				
International Expert 3	500	30 days	15000	
DSA	170	40	7000	
International Travel			4000	
Project Formulation Workshop			6000	

Resource Mobilization Meetings/Workshops			7000	
				39000
Activity 10 Develop a Framework for Future Cooperation				
National Consultant 9	3000	2 months	6000	
National Consultant 10	3000	2 months	6000	
Local Travel			3,000	
Consultations/Workshops			25,000	
				40000
Project Management and Coordination			34,000	
				34000
Project Coordinator		8,200		
Technical Specialist		4,200		
Admin Assistant		2,500		
Equipment		5,000		
Supplies		4,500		
Communication		4,500		
Reproduction		5,100		
			305000	305000
International Experts				47150
National Experts				52500
International Travel				11000
Domestic Travel				17000
Sub-Contract A				10000
Sub-Contract B				30000
Sub-Contract C				9000
Feasibility Study				18000
Workshops/Seminars				56100
Study Tour				13250
Resource Mobilization/Co-Financing				7000
Project Coordination and Management				34000
				305000

Annex 1: Draft Document on Renewable Energy Framework in the Philippines

1. National New and Renewable Energy Framework

1.1 Institutional and Policy Framework for New and Renewable Energy in the Philippines

1.1.1 Government Agencies and Baseline Policy Framework

Department of Energy (DOE) supervises three key government agencies for energy program implementation: National Power Corporation (NPC), National Electrification Administration (NEA), and Philippines National Oil Company (PNOC).

Department of Energy (DOE)

DOE has the mandate to supervise, coordinate, and manage all plans and activities of the government in the development, exploration, and utilization of energy resources. Under the DOE, the Non-Conventional Energy Division (NCED) is responsible for formulating and implementing a program for the accelerated development of new and renewable energy (NRE) resources and promotion of its application.

The overall NRE policies are to a) pursue large-scale use of NRE systems; b) enhance energy self-sufficiency through continuous exploration, development, and exploitation of indigenous energy resources; and c) encourage greater private sector investment and participation in NRE activities. Currently, national priority in NRE development is to promote off-grid NRE systems to achieve the goal of the Energy Resources for the Alleviation of Poverty (ERAP) program, which will be described in details in Section 1.2.

The national NRE strategies include:

- a) Intensify research, development, and demonstration of techno-feasible and socio-environmentally acceptable NRE systems;
- b) Institutionalize area-base energy planning and management for NRE systems;
- c) Encourage a favorable market environment of manufacturers/suppliers and users of NRE systems;
- d) Intensify promotion of commercially-viable NRE systems such as solar and wind;
- e) Continue adaptive research and development for less-advanced technologies such as ocean thermal energy conversion, tidal, wave, fuel cells, and municipal solid wastes.

The overall NRE program at DOE-NCED is to accelerate the development, promotion and commercialization of NRE systems. It comprises four Sub-Programs:

- a) Technology Sub-Program that targets to develop economically viable NRE systems to the levels of technical maturity;
- b) Commercialization Sub-Program that is intended to create a favorable market environment for NRE and to increase private sector investment;

- c) Promotion Sub-Program that aims to increase public awareness and acceptance of NRE systems; and
- d) Area-based/Rural Energy Sub-Program that seeks to institutionalize area-based energy planning and management at the local level.

The Affiliated Non-Conventional Energy Centers (ANECs) take the lead in the DOE's promotion and commercialization of NRE at the regional and provincial level. There are 20 strategically located ANECs based in all the regions to provide technical support and local presence of the DOE's NRE programs.

National Power Corporation (NPC)

NPC is in charge of power generation and transmission, and is currently under restructuring and privatization. NPC sells power at Energy Regulatory Board (ERB)-regulated wholesale price to distributors, or directly-connected large industries. The total installed capacity of NPC is about 6 GW (additional 4.5 GW from IPPs), of which 52% of oil; 20% from hydro; 15% from geothermal; and 13% from coal. The grid currently has excessive capacity.

There is a lack of standardized power purchase agreement (PPA) for renewable power producers. The power purchase price for renewable power producers is as low as 1.36 P/kWh (or 3.4 cent/kWh), set by the least avoided cost approach. NPC has a subsidized solar battery charge program, managed by the community cooperatives, and consumers pay 140 P/month (\$3.7/month). The government has been providing about 800 million pesos (US\$20 M) subsidy per year to NPC for rural electrification, mostly for diesel schemes.

National Electricity Administration (NEA)

NEA is in charge of rural electrification. It supervises and finances distributors – 119 Rural Electric Cooperatives (REC), 17 private utilities, and 9 government-owned utilities. As all the areas in the Philippines are under the franchise of RECs, the private investors, who want to set up stand-alone renewable systems in one area, will need permit from the local REC, under the condition that the REC do not have any plans to extend the grid to this area within the next 10 years. Consumers pay about 3.5-6 P/kWh (9-15 cent/kWh) for electric power, one of the highest in Asia.

Began in 1992, NEA has implemented the Rural Photovoltaic Electrification Project, with the financial assistance from GTZ. The GTZ-NEA project has installed 2300 solar PV systems in the Philippines. GTZ provided 9 million pesos (US\$225,000) grant, and NEA provided matching fund as loan to set up a revolving fund for solar PV installations.

Other Government Agencies

Philippines National Oil Company-Energy Research and Development Center (PNOC-ERDC) is in charge of renewable RD&D. Department of Science & Technology (DOST) is also responsible for renewable R&D. Energy Regulatory Board (ERB) sets up energy pricing and tariff.

1.1.2 Needs for Improvement of NRE Policy and Institutional Framework

As shown above, the baseline policy and institutional framework is insufficient for NRE development in the Philippines. The existing national NRE policy framework has limited market-oriented renewable energy programs and limited financial incentive policies to encourage renewable energy development. The national renewable energy policies and programs in the past have been mostly technology-driven, rather than promotion of commercialization and private sector involvement. In addition, utility regulations are not favorable to grid-connected renewable energy development.

Furthermore, each institution has its own NRE programs, but there lacks coherent coordination between different institutions in the baseline NRE institutional framework. It is also difficult for the private sector to obtain permit from rural electric cooperatives (REC) to set up renewable projects in the areas that are under REC franchise. In addition, the process to obtain permits and licenses for NRE projects is tedious and circuitous, particularly for micro-hydro projects.

Because of these policy and institutional barriers, renewable energy applications have not developed at a large scale in the Philippines. The PDF B and the full project prepared under the PDF B will address these barriers, primarily through Activity 1 and 3. Hence, the NRE policy framework will be further reformulated and strengthened during the implementation process of the PDF B and the full project, and the outputs of the PDF B and the full project will provide effective market-oriented NRE policy framework for the Philippines.

1.1.3 NGO and Private Sector

Philippines Renewable Energy Network (REN) is a well-balanced networking group consisting of NGOs, private sector, people's organization, academia, and government agencies. REN acts as the body that coordinates all efforts on the development and commercialization of NRE systems and resources in the Philippines. Please see attached membership list of REN.

Renewable Energy Association of the Philippines (REAP) is an association of private companies engaged in supplying and manufacturing renewable energy products and services. To further address the needs and concerns of the sector, REAP has coordinated the establishment of the Philippines Solar Energy Society (PSES), Biomass Energy Association (BEAP), and the Wind Energy Association of the Philippines (WEAP).

1.2 ERAP Program

The “ERAP” program (Energy Resources for the Alleviation of Poverty) aims to improve people’s livelihood in the rural areas by providing adequate and sustainable energy services. The ERAP program targets to attain a 90% barangay¹ level electrification by the year of 2004 and 100% electrification by the year 2008, a dramatic increase from present 72% electrification rate². Currently, the national priority for rural electrification and NRE development is to achieve the goal of the ERAP program.

There are about 10,000 unelectrified barangays in the Philippines. Under the ERAP program, National Electrification Administration (NEA) has estimated that 6,483 barangays will be electrified by the year 2004, to achieve the goal of the ERAP program. Of the 6,483 barangays, 4,488 can be connected to the grid, while the rest or about 1,995 can be electrified by utilizing new and renewable energy (NRE) technologies. The target for the year 1999 is to electrify 900 barangays, among which 400 barangays are planned to utilize NRE technologies. Table 1 shows the plans and budgets for each government agency to achieve such a goal in the fiscal year 1999.

Table 1. Government Plans for ERAP Program, FY99

	Number of Barangays	Million Pesos
NEA: Subsidy	503	200 (\$5.3 million)
GTZ/NEA	80	20 (\$530,000)
NPC: Internal Fund	19	3 (\$80,000)
DOE	200	128.5 (\$3.4 million)
Total	802	351.5 (\$9.4 million)

Note: The 503 barangays will be connected to the grid by NEA, while the other 300 barangays will be provided with NRE technologies. Compared to the 1999 target of electrification of 900 barangays, there are currently no funding sources to deliver electricity to the rest 100 barangays.

1.3 Philippines Energy Plan (1999-2008)

The Philippines Energy Plan (PEP) outlines the energy sector blueprint for supporting the Estrada’s Administration’s overarching objective of economic growth with social equity, led by a dynamic and internationally competitive private sector and supported by an efficient and impartial government. The PEP for the period of 1999-2008 focuses on strategies for achieving the total energization of all barangays in the country by the end of the planning period (the year 2008), including the installation of new and renewable energy systems in the areas that are inaccessible to electricity grid networks.

The government electrification programs through NEA and in cooperation with other government agencies seek to achieve 90% electrification of all barangays by 2004 and

¹ Barangay is a district unit with about 50-200 households in one barangay.

² As a matter of fact, only 45% of the households currently have access to electricity in Philippines, because NEA’s definition of one electrified barangay is to connect 10 households with electricity.

then 100% electrification by 2008. The new and renewable energy-based systems will be installed in the areas that are not technically and economically feasible to connect to the main electric grids. Considering the relatively high costs of NRE systems may not be entirely recoverable from the users, some form of government support will be required. Offers of technical and financial assistance and joint implementation from industrialized countries may be considered.

PEP projected that the total NRE consumption would increase from 68.4 million barrels of fuel-oil-equivalent (MMBFOE) in 1998 to 80.1 MMBFOE in 2004 and 91.3 MMBFOE in 2008, while the share of NRE in the primary energy mix would decline from 28.7% in 1998 to 25.2% in 2004 and 21.9% in 2008. On the other hand, the NRE share in the power generation mix will increase from current nil to nearly 2% in 2008. It is projected that the total installed capacity to be provided by NRE would reach about 410 MW during the period of 1999-2008.

The total investment requirement for such a national NRE plan is estimated to be 49 billion pesos (\$1.3 billion) during the period of 1999-2008, of which 57% from foreign sources while the rest from domestic private sector and government.

1.4 National Action Plan

The recently finished UNDP/GEF project -- Asia Least-Cost GHG Abatement Strategy (ALGAS) and the ongoing UNDP/GEF Enabling Activity in the Philippines highlighted the important role of the energy sector can play in reducing future GHG emissions in the Philippines, and identified renewable energy technologies as a priority area in the GHG abatement strategies in the Philippines.

Furthermore, the Philippines Agenda 21 identified the need to develop and utilize renewable energy technologies as the country's priority strategy. The National Action Plan on Climate Change proposed the gradual shift from the current fossil fuel-dominated energy mix towards renewable energy.

1.5 NRE Regulatory Framework

In addition to the ERAP program, a number of legislative measures that are envisioned to ensure a level playing field for the new and renewable energy (NRE) sector has been drafted and proposed. The major legislative actions are Omnibus Electricity Bill and NRE Bill. The Omnibus Bill aims to restructure and privatize the power industry. The passage of the Bill, which is expected by the end of 1999, could benefit the NRE sector, as it shall open up the window to bilateral independent power producers engaged in grid-connected renewable power projects. One major bottleneck, however, is the lack of competitive edge of renewable power projects compared to conventional technologies under a deregulated, competitive market environment for electricity since comparative costs of renewable power projects remain higher than the conventional technologies.

The NRE Bill seeks to enhance the rate and scale of utilization of NRE technologies including solar, wind, micro-hydro, ocean energy, and others. Specifically, NRE Bill has incorporated new policy measures that would address the perceived market failure for renewable power projects aside from other proposed institutional and financial incentives to encourage private sector investment. However, policy studies on the impact of these policy measures are essential to ensure proper implementation.

2. Previous/Ongoing/Planned Activities in Renewable Energy

The Philippines has had a number of foreign assistance in renewable energy development. Most of these, however, are demonstration projects. These foreign-assisted demonstration projects usually heavily subsidized consumers to install NRE systems to provide electricity for lighting and small appliances only. These subsidized programs have seriously distorted market, and affected the commercial operation of the private sector participation in the NRE market, such as Rural Energy Service Companies (RESCO). Most of the previous/ongoing projects have focused on establishing the technical performance of renewable energy systems, however, did not address barrier-removal activities. Therefore, these projects led to little sustainability and replication.

In addition to the previous projects, there exist a number of ongoing and planned renewable energy projects/initiatives in the Philippines, in addition to the UNDP/GEF renewable energy projects. Most of these ongoing and planned renewable energy projects, however, are distinct from and complementary with the UNDP/GEF PDF B and the full project, as explained below. Only one or two planned projects have a few overlapping activities with other ongoing projects and the UNDP/GEF project. We made some suggestions for these activities to be complementary rather than duplicating. Table 2 and 3 list a summary of previous, ongoing, and planned activities as well as gaps in renewable energy at the national level and in Palawan respectively.

The proposed full UNDP/GEF project prepared under this PDF B is expected to be a technical assistance to build capacities to remove barriers to renewable energy in the Philippines (about \$4-5 million), and investment project for several pilot plants to demonstrate how the barrier-removal package will be applied in renewable energy systems.

2.1 Previous/Ongoing Activities

UNDP/FINESSE

UNDP/FINESSE has an ongoing “Technical Assistance to the Development Bank of the Philippines for the FINESSE Project” (DBP). The project will develop and strengthen the technical capability of the DBP in the evaluation and management of NRE projects, and generate a pipeline of renewable energy projects for financing. This US\$929,070 project started implementation in 1999.

The UNDP/FINESSE project has identified three mini-hydro projects for possible funding by DBP Window III: a) 10-MW mini-hydro power plant in Cotabato (Philippine

— Manna Jaira Development Corporation); b) 7-MW mini-hydro power plant in Bubunawan River, Bukidnon (Bubunawan Power Company, Inc.); and c) 2-MW mini-hydro power plant in Hitoma River, Caramoran, Catanduanes. In addition, this project, in coordination of DOE, also plans to provide loans for Palawan to install PV systems for 400 households in 2 barangays, with loan guarantee from the provincial government.

This project will provide one of the financing schemes in the form of loans under the Window III Department at DBP for NRE installations. The UNDP/GEF PDF B and the full project will evaluate existing financing mechanisms, identify the gaps, and further propose other innovative financing schemes and encourage private sector participation in NRE development.

USAID/NREL:

USAID/NREL has an ongoing “The Philippines Renewable Energy Project”, with funding of \$1.5 million and time period of two years. The project has eight tasks: (1) RET market infrastructure; (2) diesel/wind hybrid to retrofit existing diesel generators/wind farm analysis; (3) biomass assessment; (4) ocean power; (5) rural electrification analysis; (6) policy analysis; (7) Technology Cooperation Agreement Pilot Project/micro-hydro/solar/GIS; and (8) coordination/capacity building.

— The majority of the eight tasks in the project are technology driven. The policy task of the NREL project primarily focuses on policy recommendations for power restructuring (Omnibus Bill) and NRE development (fast track recommendations and NRE bill), with an output of recommendations and reports. While the UNDP/GEF PDF B and the full project will focus on capacity building and institutional strengthening of key government agencies to reformulate NRE policies, to ensure the institutional and regulatory sustainability for NRE development in the Philippines. Second, the capacity building task in the NREL project primarily provides training in software use, while the UNDP/GEF project will provide comprehensive capacity building programs to strengthen the policy, information, institutional, financing, market, and standards as well as testing capabilities. Hence, the USAID/NREL and the UNDP/GEF PDF B project are NOT overlapping, rather complementary.

ESMAP:

ESMAP has started a policy study of power restructuring and renewable energy in the Philippines. But no information on the status and results of the study is available.

IFC/GEF

IFC/GEF proposed a US\$7-8 million (US\$4 million from GEF under OP 7) project to install 1 MW grid-connected solar PV, in conjunction with an existing 7 MW hydro plant, in the distribution network of CEPALCO, a private utility, on the island of Mindanao in the Philippines. As shown in the national NRE policies and plans, however, current national priority is to promote off-grid NRE to achieve the goal of the ERAP program.

Swiss Pilot AIJ:

A Philippine – Switzerland Government project on Renewable Energy Applications on Island Grid (\$12 million) shall be executed under the Pilot Phase of Activities Implemented Jointly (AIJ). It aims to establish a baseline experience in developing and utilizing renewable energy resources for power generation to complement existing fossil-based plants such as diesel generator sets and bunker-fired power barges in the island grids. Phase I activity involves the conduct of detailed feasibility studies while the remaining phases shall include actual installation and project monitoring for greenhouse gas emission avoidance measurements.

Australia Aid:

The Department of Interior and Local Government (DILG) with funding from Australian AID, is implementing the Municipal Solar Infrastructure Project (MSIP). The project aims to install 1,000 PV systems in 387 barangays in 49 municipalities under the jurisdiction of the Social Reform Agenda (SRA) provinces in the Visayas and Mindanao Main Islands. These villages are expected to have no access to the main grids within the next 10 years. The total project cost is estimated to be \$28.8 million.

The Davao Solar Photovoltaic (PV) Electrification Project, which began in 1995, aims to install 500 solar home systems for household and community applications in the province of Davao Oriental. The project will also determine the economic viability of solar PV for remote area electrification and establish a sustainable implementation structure to manage and operate the PV systems. The Business Center Davao, a local NGO has been tapped to implement the project, with fund assistance from the DOE (P9M) and Australian government (P10.9M).

The German Technical Cooperation Agency (GTZ)

GTZ provided 9 million pesos (US\$240,000) grant, with matching funds from NEA as loan to set up a revolving fund at the rural electric cooperatives (RECs). This project has installed 2300 solar PV systems in the Philippines.

2.2 Planned Activities

World Bank:

After the project formulation mission to the Philippines in June 1999, the World Bank is proposing a technical assistance (\$650,000) and investment project (\$280 million) on rural electrification with the Department of Energy. The proposed Rural Electrification Project would support the implementation of the National Energy Plan through two main components: a) judicious investment support to provide selected rural areas with reliable electricity supply in a sustainable manner, including, as appropriate environmentally friendly renewable energy; and b) technical assistance and training for capacity building to improve the sector performance and to support an enabling environment to promote private sector participation.

The World Bank has made a preliminary project proposal for the TA project, but has not yet formulated a framework for the investment project. The proposed technical assistance (TA) components would include: (a) market assessment to develop the best matches between resources, technologies and the socio-economic environment of potential markets; (b) pre-investment studies—taking into account the results from market assessment, evaluation and prioritization of potential investments based on technical, economic, financial and lead time criteria; (c) rationalization of regulations and policies (including tariff) to minimize the financial and risk exposure of the Government and safeguard public interests, while providing an enabling environment for private sector participation to increase reliable electricity supply; and (d) institutional aspects—including the appropriate roles of various players in rural electrification within the overall context of power sector restructuring and privatization in the country.

DOE made comments on the World Bank TA proposal on July 5, 1999. DOE pointed out that some of the planned TA activities (such as market assessment, as well as rationalization of policies, regulations, and institutions) are overlapping with the ongoing DOE, NREL and UNDP/GEF projects. DOE also recommended the World Bank project to review and complement ongoing and planned NRE efforts in the Philippines, as well as elaborate the activities in more details.

Overall, the planned World Bank project will primarily focus on rural electrification, while the UNDP/GEF project aims to promote renewable energy. It is suggested that the World Bank TA project would a) conduct market survey and assessment to complement ongoing efforts by DOE and UNDP/GEF³; b) conduct feasibility studies or pre-investment studies; and c) provide technical training in operation and maintenance of NRE systems. DOE also suggested the World Bank to assist in financing rural electrification to help DOE achieve the goal of the ERAP program. These suggestions would help the planned World Bank project to fit in the overall national policies and plans, as well as complement other ongoing/planned projects.

Asian Development Bank (ADB):

Upon ADB's request, DOE drafted a TOR for a technical assistance project on the Institutional Strengthening of the Energy Sector on Rural Electrification Project, with funding sources from ADB, in June 1999. This planned ADB TA proposal (\$600,00) aims to develop and strengthen the institutional capability of the energy sector in implementing rural electrification program. It proposes series of activities that includes the conduct of training program, institutionalization of financing mechanisms, and establishment of data information center.

Overall, this planned ADB TA project will primarily focus on rural electrification, while the UNDP/GEF project aims to promote renewable energy. However, there were some overlapping activities in the ADB project proposal with the UNDP/GEF project. After

³ Although the DOE's Barangay Profiling Project will conduct profiling surveys in 800-1000 barangays for rural electrification, and the UNDP/GEF PDF B project will also conduct market surveys in a number of barangays for NRE installations, the World Bank TA project can also conduct market assessment to complement the other efforts, since there are 10,000 non-electrified barangays in the Philippines.

consultation with DOE and NEDA (National Economics and Development Authority, a national focal point for the ADB and World Bank), the ADB project is currently under revision to complement the UNDP/GEF project. It is suggested that the revised ADB TA project would a) conduct training program in rural electrification management; b) set up NRE information distribution network; and c) set up a Foreign-Assistance Office within DOE-NCED to coordinate foreign assistance NRE projects. Thus, the revisions will help the planned ADB TA project well complement the UNDP/GEF project.

The German Technical Cooperation Agency (GTZ)

GTZ is also proposing a project to develop and utilize clean energy technologies specifically NRE systems. The first component is adaptation and demonstration of wind energy systems which involve the utilization of wind turbine technology, a viable electrification option for remote rural barangays in the country. The other component is the formulation of standards for solar energy systems and components which will gear on the establishment of quality standards of PV systems and components in the country. This component will complement Activity 7 of the UNDP/GEF project.

Spanish Aid:

The Department of Agrarian Reform (DAR) has also proposed a project for possible funding assistance by the Government of Spain (\$50 million) through the latter's mixed credit financing facility. The project, Solar Power Technology Support Project (SPOT) involves the provision of electricity using solar photovoltaics both for home lighting and community-based services and activities in 74 unelectrified Agrarian Reform Communities (ARCs).

Dutch Aid:

In collaboration with the Netherlands Ministry of Foreign Affairs - Directorate General of International Cooperation, PNOC, CDA, and local NGOs and cooperatives is proposing an Environmental Improvement for Economic Sustainability (EIES). This project aims to install 15,000 solar home systems in unelectrified areas in Regions I, II, and CAR. The total project cost is estimated to be P410.7 M, or \$11 million.

DOE

DOE has conducted preliminary Rapid Rural Appraisals (RRA) for 100 barangays in the nation, with 650,000 pesos (\$17,000) from DOE. In addition, DOE is planning to fund additional P4.9M (\$130,000) on a Barangay Profiling Project to conduct surveys at 800-1000 barangays in a) social economic profile; b) physical characteristics; c) energy demand and supply; d) development plans; and e) electrification status and plans.

JICA

This planned project seeks to install NRE hybrid systems for mini-grid. The total project cost is estimated to be \$7.3 million, with 60% grant and 40% loans.

World Bank/AIJ

This planned project will first conduct feasibility studies in three provinces (\$200,000), and then install NRE investment projects.

UNDP/JEMA/E7

In July 1999, UNDP/JFMA/E7 initiated a renewable energy project in Palawan to install 5 kW solar/wind hybrid systems for 50 households in Sitio Sicud, Candawaga, Rizal of Palawan, in conjuncture with ANECs from DOE.

**Table 2. Summary of Previous/Ongoing/Planned Activities and Gaps
At National Level**

Donors/Funders/Project Name	Activities	Gaps/Comments
PREVIOUS / ONGOING		
UNDP/FINESSE: Technical Assistance to the Development Bank of the Philippines (DBP) Project (\$929,070)	1) Set up a NRE core group at the Window III in DBP 2) Capacity building of the NRE core group 3) Set up a revolving fund 4) Generate a NRE pipeline	The project will provide one of the financing schemes in the form of loans from DBP for NRE development. The UNDP/GEF project will evaluate existing financing schemes, identify gaps, and further propose other financing schemes and encourage private sector participation in NRE development.
USAID/NREL: Philippines Renewable Energy Project (\$1.5 million)	1) Market infrastructure 2) Diesel/wind hybrid 3) Biomass assessment 4) Ocean power 5) Rural electrification model 6) Policy analysis 7) TCAPP/GIS 8) Coordination	1) The NREL project is primarily technology-driven; 2) Policy task mainly focuses on recommendations on power restructuring and NRE development; 3) Capacity building task mainly provides technical training; 4) The UNDP/GEF project will build capacity for key govt. agencies to reformulate NRE policies to ensure the institutional sustainability.
ESMAP	?	DOE is not clear about the status and results of this study.
GTZ-NEA (Phase I): \$480,000	GTZ provided 9 million pesos (US\$240,000) grant, with matching funds from NEA as loan to set up a revolving fund at rural electric cooperatives (RECs). This project has installed 2300 solar PV systems in the Philippines.	Phase I of the GTZ-NEA project has completed. The revolving fund was not quite successful, partly due to the misuse of funds by the RECs. The proposed UNDP/GEF project can learn the lessons from the GTZ-NEA project with regard to the financing schemes.
Australia Aid – Department of Interior and Local Government (DILG): Municipal Solar Infrastructure Project (MSIP): \$28.8 million	Began in 1997, this ongoing project aims to install 1000 solar PV systems in 387 barangays in 49 municipalities under the jurisdiction of the Social Reform Agenda provinces.	Most of the demonstration projects so far are heavily subsidized NRE programs. These projects 1) have distorted the market, and resulted in a market barrier for private sector participation; 2) primarily provide lighting service only, instead of linking to productive use and livelihood support activities; 3) lack viable mechanisms for sustainability and replication.

Australia Aid – DOE: Davao Solar PV Electrification Project (20 million pesos, or \$530,000)	Began in 1995, this ongoing project aims to install 500 solar home systems for household and community applications in the province of Davao Oriental.	
Swiss Pilot AIJ Project: Renewable Energy Applications on Island Grid (\$12 million)	<ol style="list-style-type: none"> 1) Site selection and feasibility studies 2) Install renewable energy systems for island grids 3) Monitor GHG reductions 	This project will provide a model for private sector involvement in NRE. However, there still exist a number of unsolved problems in the international climate change negotiations for large-scale replication of AIJ modality.
IFC/GEF:CEPALCO Distribution Generation PV Power Plant (\$4 million from GEF under OP7)	This project aims to install 1 MW grid-connected solar PV, in conjuncture with an existing 7 MW hydro plant, in the distribution network of CEPALCO.	Current national priority is to promote off-grid NRE to achieve the goal of the ERAP program.
PLANNED		
World Bank: Rural Electrification Project	<p>TA (\$650,000) and Investment (\$280 million).</p> <p>TA includes:</p> <ol style="list-style-type: none"> 1) Market assessment 2) Pre-investment studies 3) Rationalization of policies and regulations 4) Institutional roles <p>Currently, there is no framework for the investment project yet.</p>	DOE made comments on this TA proposal on July 5. Most of the planned TA activities (market assessment, policy, and institution components) duplicate ongoing DOE, NREL, and UNDP/GEF projects. DOE also recommended the World Bank TA project to review and complement ongoing/planned NRE efforts, and elaborate the activities in more details. It is suggested that the TA project would a) conduct market assessment; b) conduct feasibility studies; and c) provide technical training. DOE recommended the investment project would assist DOE in financing rural electrification to achieve the goal of the ERAP program.
Asia Development Bank: Institutional Strengthening of the Energy Sector on Rural Electrification	<p>TA (\$600,000)</p> <ol style="list-style-type: none"> 1) Training program 2) Innovative financing schemes 3) Data information center 	This planned ADB project would primarily focus on rural electrification, while the UNDP/GEF project is to promote renewable energy. There are some overlapping activities. This ADB project proposal is currently under revision to complement and co-fund the UNDP/GEF project. It is suggested that the ADB project would a) provide management training; b) set up NRE information distribution network; and c) set up a Foreign-Assistance Office within DOE-NCED.

GTZ-DOE: Development and Use of Clean Energy Resources	<ol style="list-style-type: none"> 1) Formulate standards for solar PV systems and components 2) Wind resources assessment 3) Demonstration of wind power systems 	<ol style="list-style-type: none"> 1) This primarily is a demonstration project; 2) Task 1 (standards for PV) complements the UNDP/GEF project.
GTZ-NEA (Phase II)	NEA proposed to replenish funding for the GTZ-NEA project Phase I. The Phase II will build on the lessons learned at Phase I. NEA plans to adopt the similar financing schemes to set up a revolving fund at NEA (instead of at RECs) for solar projects.	This planned project will continue to be a subsidized solar program.
Spanish Aid – Department of Agrarian Reform (DAR): Solar Power Technology Support Project (SPOTS): \$50 million	This project aims to install solar PV systems in 138 barangays of 74 non-electrified Agrarian Reform Communities.	These planned activities are primarily demonstration projects with heavily subsidized NRE programs. These projects will
Dutch Aid: Environmental Improvement for Economic Sustainability Project (EIES): \$11 million	This project targets to install 15,000 solar home systems in four regions.	<ol style="list-style-type: none"> 1) further distort the market, and cause a market barrier for private sector participation; 2) primarily provide lighting service only, instead of linking to productive use and livelihood support activities; 3) lack viable mechanism for sustainability and replication.
JICA: \$7.3 million	This project seeks to install NRE hybrid systems for mini-grid.	
World Bank/AIJ	<ol style="list-style-type: none"> 1) Conduct feasibility studies in three provinces (\$200,000) 2) NRE investment projects 	This planned project will provide a model for private sector involvement in NRE. However, there still exist a number of unsolved problems in the international climate change negotiations for large-scale replication of AIJ modality.
DOE: Rapid Rural Appraisals (RRA) and Barangay Profiling Project (5.55 million pesos, or \$150,000)	<p>DOE has conducted preliminary RRA in 100 barangays, and will conduct a more detailed barangay profiling survey at 800-1000 barangays in</p> <ol style="list-style-type: none"> 1) Socia-economic profile 2) Physical characteristics 3) Energy demand and supply 4) Development plans 5) Electrification status and plans 	This project will provide essential information as inputs for the market assessment and information center for the UNDP/GEF project, as well as lay foundation for establishment of RESCO model and other financing schemes at the national level.

Table 3. Summary of Previous/Ongoing/Planned Activities and Gaps in Palawan

Donors/Funders/Project Name	Activities	Gaps/Comments
Spanish Aid – Philippines Rural Reconstruction Movement	This completed project installed 200 households with a solar home system for 2 lights and a small appliance in El Nido.	This demonstration project heavily subsidized solar home systems in El Nido, seriously distorted the market, and did not lead to sustainability and replication.
UNDP/JFMA/E7	This planned project aims to install 5 kW solar/wind hybrid systems for 50 households in Palawan	This is a primarily demonstration project. It will provide electricity for lighting only and no linkage to productive use.
UNDP/FINESSE-DBP-DOE	The UNDP/FINESSE DBP project has identified a NRE pipeline, which includes several NRE projects in Palawan. In collaboration with DOE, DBP plans to provide loans to set up 400 solar home systems for 2 barangays and a 7 MW mini-hydro project in Palawan, with the loan guarantee from the provincial government.	This planned project will provide one of the financing schemes in the form of loans from DBP for NRE development. The UNDP/GEF MSP aims to promote private sector involvement to set up a RESCO for NRE.
DOE: Rapid Rural Appraisals (RRA) and Barangay Profiling Project in Palawan	DOE has conducted preliminary RRA for 40 barangays in Palawan, and will conduct a more detailed barangay profiling survey for 139 barangays in Palawan	This project will provide essential information for the establishment of RESCO model in Palawan.

3. Comprehensiveness and Wide Consultation with Stakeholders

The barriers that are identified and listed in the PDF B brief are the outcomes of wide consultations with different stakeholders in the Philippines including government agencies, NGO, private sector, academia, and financial institutions through a series of national stakeholder workshops as well as individual meetings starting in March 1998. Please see attached “Chronology of the Proposal’s Development”.

After a year consultation with different stakeholders and a series of national stakeholder workshops, we think the barriers identified in the PDF B brief are comprehensive in scope. The PDF B implementation process itself will further identify some more detailed barriers such as market and financing barriers (i.e. Activity 4-6), and design a barrier-removal component for the full project prepared under this PDF B.

As shown in the “Chronology of the Proposal’s Development”, in March 1998, UNDP Manila sponsored and organized a national renewable energy workshop entitled “Building a Common Renewable Energy Agenda: A National Conference” to identify all the barriers to renewable energy in the Philippines. The workshop had wide consultation with representatives from DOE, ANECs, NPC, NEA, PNOC, DOST, DENR, IACCC,

NEDA (National Economics and Development Authority), DBP, REAP (Renewable Energy Association of the Philippines), BEAP, WEAP, PEI (Preferred Energy Inc.), NREL, PRRM (Philippines Rural Reconstruction Movement), UP Solar Lab, USAID, GTZ, BP Solar, IIEC (International Institute of Energy Conservation), ICEE, SIBAT (Well Spring of Science and Technology), Manila Observation, and Green-peace. This workshop identified comprehensive barriers and constraints to renewable energy in the Philippines, and laid the foundation for the PDF B proposal.

In March, 1999, a UNDP/GEF project formulation mission came to the Philippines holding stakeholder workshops and individual meetings with a) different government agencies: Undersecretary Cyril del Callar of DOE, DOE-NCED, NPC, NEA, PNOC, DENR, IACCC, and ERB; b) NGOs and private sector: Renewable Energy Network, PEI, ICEE, REAP, Shell International Renewables Ltd., Community Power Corporation, Sunlight Power International etc., Synenergy Power Corporation, CRREE (Center for Renewable Resources and Energy Efficiency); c) financial institution: Development Bank of the Philippines (DBP); and d) international donors and funding agencies: USAID/NREL and ADB. Then, the PDF B project brief has undergone several revisions by DOE and ICEE.

Please find the attached participant lists for the series of stakeholder workshops held between March 1998 and March 1999.

4. Inter-linkage Between the MSP and PDF B

4.1 System boundaries

The PDF B and the full project prepared under the PDF B will promote both grid-connected and off-grid renewable energy development at the national level, while the MSP only focuses on mini-grid and off-grid NRE development at the provincial level in Palawan.

4.2 Inter-linkage between the MSP and PDF B

- 1) The MSP will provide a RESCO model for private sector participation, financing of NRE systems, and linkage between renewable energy and livelihood support for future replication nationwide. Most of the renewable energy projects so far are demonstration projects that are heavily subsidized NRE programs and lack of sustainability. The MSP will be a showcase and example for sustainable NRE development model with active private sector involvement and public-private partnership at provincial scale, which is also consistent with national NRE policy. The outcome of the MSP will provide experience and lessons learned for replication of RESCO model and public-private partnership across the country. The outputs of the MSP will become the inputs for Activity 4-6 for the PDF B and the full project.
- 2) The MSP is consistent with the national Energy Resources for the Alleviation of Poverty (ERAP) program to provide rural electrification through environmentally friendly renewable energy resources, as well as poverty alleviation through linking

productive use and livelihood support activities with renewable energy. Please see the "Draft Framework Document" for detailed explanation of national NRE policies and ERAP program.

- 3) The MSP is consistent with national NRE program – the area-based and rural energy sub-program, which encourages energy planning and management at the local level. The outcome of the MSP will also provide models as well as lessons learned for other local government units to integrate NRE into the Provincial Energy Master Plan.
- 4) The MSP is consistent with the national decentralization and devolution policy that aims to build capacity at the local government unit level through capacity building of Palawan provincial government to formulate NRE plans.
- 5) Palawan has representative characteristics for large-scale use of mini-grid and off-grid NRE applications, because it has low electrification rate (only 35% of the barangays are electrified) and most households are remotely scattered. In addition, Palawan is not included in the national power grid plan by the National Power Corporation.
- 6) The Palawan government has a demonstrated commitment to environmental protection, and has been discouraging investment from large-scale polluting industries in Palawan. Thus, it is a natural and ideal place for small-scale NRE applications.
- 7) The PDF B and the full project prepared under the PDF B will provide the national policy and regulatory framework to ensure the sustainability and replication of the MSP across the country.
- 8) Timing issue: Both the provincial government and the private sector have already taken steps for NRE development in Palawan, and are under the time constraint to expect the funding from the proposed UNDP/GEF MSP coming soon to support their NRE activities.
 - First of all, there is a high political will and support to develop renewable energy in Palawan from the governor Socrates, who wants renewable energy applications to happen in Palawan before he completes his 2nd term by the year 2001. Since the Governor has been very supportive of this MSP project and will be the key in its implementation, we would like to see the major portions of this project carried out within his term.
 - Secondly, Palawan provincial government is expecting to receive US\$200 million revenue per year from the production and sales of natural gas in Palawan, starting in year 2001. It is important to start the capacity building, awareness campaign, and pilot renewable projects now, so when the expected revenue comes, the provincial government will spend it on renewable energy development.
 - Thirdly, the private sector – Shell International Renewables Ltd. / Community Power Corporation -- are eager to set up a RESCO in Palawan to provide renewable energy services to remote communities currently without access to electricity. They are planning to do their feasibility study soon with the funding assistance from UNDP/GEF MSP and set up their first village RESCO in Palawan this year. It would be more effective if the MSP could implement and coordinate the activities with theirs within this year.
 - Combining the full project prepared under the PDF B with the MSP is not acceptable by the project proponent, and will further delay the timetable, due to

the long GEF full project cycle and more complicated implementation arrangement at the national level.

5. Project Monitoring and Evaluation

The detailed M&E plan for the PDF B project will be developed during the project document stage. The M&E plan for the MSP is included in the MSP brief, and the indicators for M&E have been developed with the Log Framework Approach in the Project Planning Matrix (PPM). For example, the Indicators for the expected market changes can be measured by the number of household installations of renewable energy systems and amount of private sector investment flowing into the renewable energy sector in the Philippines.

In addition to the normal UNDP M&E procedure applied to the MSP, the outcomes and lessons learned from the MSP will also be monitored and evaluated by the Affiliated Non-Conventional Energy Center (ANEC) in Palawan under the DOE, and fed into the proposed national full project prepared under the PDF B, which will be executed by DOE.

In the end, this “Draft Document on Renewable Energy Framework in the Philippines” will be further refined during the implementation process of the PDF B project.

**Annex 2: Response to GEFSEC Comments on the PDF B Brief – Capacity Building
to Remove Barriers to Renewable Energy in Philippines**
August 6, 1999

1. Conformity with GEF Program and Policies

1.1 Evidence of Country Ownership

First of all, this PDF B project concept was proposed by Institute of Climate Energy and Environment (ICEE) and Department of Energy (DOE) in August 1998, and endorsed by Department of Environment and Natural Resources (GEF focal point) in September 1998. In July, 1999, the Department of Energy (DOE), Department of Environment and Natural Resources (DENR), and Inter-Agency Committee on Climate Change (IACCC) again wrote letters to UNDP Manila to demonstrate their strong support, commitment, and endorsement of the proposed UNDP/GEF PDF B project.

The PDF B project proposal was conceptualized as early as February 1999 under the overall direction of DOE. In March 1999, upon DOE's request, a UNDP/GEF mission came to Philippines. The mission held a series stakeholder workshops and individual meetings with a) various government agencies: Undersecretary Cyril del Callar of DOE, Department of Energy – Non-Conventional Energy Division (DOE-NCED), National Power Corporation, National Electricity Administration, Philippines National Oil Company, DENR, ICEE, IACCC, and Energy Regulatory Board; b) NGOs and private sectors: Renewable Energy Network, Preferred Energy Inc, Renewable Energy Association of the Philippines, Shell International Renewables Ltd., Community Power Corporation, Sunlight Power International, Synenergy Power Corporation, and Center for Renewable Resources and Energy Efficiency; c) financial institutions: Development Bank of Philippines; and d) international donor and funding agencies: ADB and USAID/NREL. Then, the PDF B project brief has undergone several revisions by DOE and ICEE. Please see attached "Chronology of the Proposal's Development".

With regard to the national priorities, the recently finished UNDP/GEF project -- Asia Least-Cost GHG Abatement Strategy (ALGAS) and the preliminary outcomes of the ongoing UNDP/GEF Enabling Activity in the Philippines highlighted the important role of the energy sector can play in reducing future GHG emissions in Philippines, and identified renewable energy technologies as a priority area in the GHG abatement strategies in Philippines.

Furthermore, the Philippines Agenda 21 identified the need to develop and utilize renewable energy technologies as the country's priority strategy. The National Action Plan on Climate Change proposed the gradual shift from the current fossil fuel-dominated energy mix towards renewable energy.

1.2 Potential Global Environmental Benefits of Project

Not relevant to PDF B. The potential global environment benefits of the full project will be estimated in the full project brief, which will be the output of the PDF B.

1.3 Conformity with GEF Public Inv

Please note that NCED is the Non-Conventional Energy Division under Department of Energy. It is a solely government agency that has the mandate to formulate and implement a program for the accelerated development of new and renewable energy (NRE) resources and promotion of its application.

DOE-NCED will be the executing agency for the PDF B project, and will take a lead in the Policy Advisory Group (PAG), in conjuncture with ICEE (Institute of Climate Energy and Environment). The project implementation will broaden the participation of other groups through Renewable Energy Network (REN), which is a well-balanced networking group consisting of NGOs, private sector, people's organization, academia, and government agencies. REN acts as the body that coordinates all efforts on the development and commercialization of NRE systems and resources in Philippines. Please see attached membership list of REN. There is no overlapping membership problem of the project implementation arrangement.

Please note that the project implementation arrangement is already far more advanced than usually required at the project brief stage, and will be elaborated in more details during the project document stage.

There are several workshops to be held under different activities during the PDF B implementation process. Please refer to the description of each activity for the topics of the workshops. As explained above, the project implementation process will ensure the full consultation with different stakeholders, as the project formulation process did.

2. Appropriateness of GEF Financing

Not relevant to PDF B. To ensure the financial sustainability of the full project that will be prepared under the PDF B, the project will a) identify financing mechanisms (Activity 6); b) identify renewable energy delivery mechanisms; and c) develop market strategies for renewable energy development in the Philippines. We think these activities during the PDF B and the future full project implementation process will be sufficient to address the financial modality and sustainability issues.

3. Coordination with Other Institutions

3.1 Collaborative Arrangement with other institutions

We are aware that there exist a number of ongoing and planned renewable energy projects/initiatives in the Philippines, in addition to the UNDP/GEF renewable energy projects. The proposed full project prepared under this PDF B is expected to be a technical assistance project to build capacities to remove barriers to renewable energy in Philippines (about \$4-5 million) and investment project for several pilot plants to demonstrate how the barrier-removal package will be applied in renewable energy systems.

Please see the "Draft Framework Document" for the detailed description and matrix of the activities, gaps, and comments of the previous, ongoing, and planned renewable energy projects in Philippines. We are listing several major ongoing and planned renewable projects as following to demonstrate the distinctions and complementarity of these projects with the UNDP/GEF PDF B project.

- 1) USAID/NREL: USAID/NREL has an ongoing Philippines Renewable Energy Project (\$1.5 million), with eight major tasks. Most of the tasks in the project are technology driven. The policy task of the NREL project primarily focuses on policy recommendations for power restructuring (Omnibus Bill) and NRE development (fast track recommendations and NRE bill), with an output of recommendations and reports. While the UNDP/GEF PDF B and the full project will focus on capacity building and institutional strengthening of key government agencies to reformulate NRE policies, to ensure the institutional and regulatory sustainability for NRE development in Philippines. Second, the capacity building task in the NREL project primarily provides training in software use, while the UNDP/GEF project will provide comprehensive capacity building programs to strengthen the policy, information, institutional, financing, market, and standards as well as testing capabilities. Hence, the USAID/NREL and the UNDP/GEF PDF B project are NOT overlapping, rather complementary.
- 2) ADB: Upon ADB's request, DOE drafted a TOR for a technical assistance project in capacity building of DOE, with funding sources from ADB, in June 1999. The planned ADB TA proposal (\$600,00) will primarily focus on rural electrification, while the UNDP/GEF project aims to promote renewable energy in Philippines. There were some overlapping activities in the ADB project proposal (such as set up innovative financing mechanism). However, after consultation with DOE and NEDA (National Economics and Development Authority), the ADB project is currently under revision to complement the UNDP/GEF project. DOE suggested the revised ADB TA project will a) conduct training program in rural electrification management; b) set up NRE information distribution network; and c) set up a Foreign-Assistance Office within DOE-NCED to coordinate foreign assistance NRE projects. Thus, the planned ADB TA project and the UNDP/GEF project will be well complementary.
- 3) World Bank: The World Bank launched a project formulation mission to Philippines in June 1999, and proposed a technical assistance (\$650,000) and investment project (\$280 million) on rural electrification with the DOE. The World Bank has a

preliminary project proposal for the TA project, but has not yet formulated a framework for the investment project. DOE made comments on the World Bank TA proposal on July 5, 1999. DOE pointed out that some of the planned TA activities (such as rationalization of policies and regulations) are overlapping with the ongoing NREL project and UNDP/GEF project. DOE also recommended the World Bank project to review and complement ongoing and planned NRE efforts in Philippines, as well as elaborate the activities in more details. It is suggested that the World Bank TA project would 1) conduct market survey and assessment to complement ongoing DOE's Barangay Profiling Project (as the DOE's project will conduct barangay survey in only 800-1000 barangays, while there are 10,000 unelectrified barangays in Philippines); 2) conduct feasibility studies or pre-investment studies; and 3) provide technical training in operation and maintenance of NRE systems. DOE also suggested the World Bank to assist in financing installations of NRE systems to help DOE achieve the goal of the ERAP program.

3.2 Complementarity of MSP with PDF B

- 1) The MSP will provide a RESCO model for private sector participation, financing of NRE systems, and linkage between renewable energy and livelihood support for future replication nationwide. Most of the renewable energy projects so far are demonstration projects that are heavily subsidized NRE programs and lack of sustainability. The MSP will be a showcase and example for sustainable NRE development model with active private sector involvement and public-private partnership at provincial scale, which is also consistent with national NRE policy. The outcome of the MSP will provide experience and lessons learned for replication of RESCO model and public-private partnership across the country. The outputs of the MSP will become the inputs for Activity 4-6 for the PDF B and the full project.
- 2) The MSP is consistent with the national Energy Resources for the Alleviation of Poverty (ERAP) program to provide rural electrification through environmentally friendly renewable energy resources, as well as poverty alleviation through linking productive use and livelihood support activities with renewable energy. Please see the "Draft Framework Document" for detailed explanation of national NRE policies and ERAP program.
- 3) The MSP is consistent with national NRE program – the area-based and rural energy sub-program, which encourages energy planning and management at the local level. The outcome of the MSP will also provide models as well as lessons learned for other local government units to integrate NRE into the Provincial Energy Master Plan.
- 4) The MSP is consistent with the national decentralization and devolution policy that aims to build capacity at the local government unit level through capacity building of Palawan provincial government to formulate NRE plans.
- 5) Palawan has representative characteristics for large-scale use of mini-grid and off-grid NRE applications, because it has low electrification rate (only 35% of the barangays are electrified) and most households are remotely scattered. In addition, Palawan is not included in the national power grid plan by the National Power Corporation.

- 6) The Palawan government has a demonstrated commitment to environmental protection, and has been discouraging investment from large-scale polluting industries in Palawan. Thus, it is a natural and ideal place for small-scale NRE applications.
- 7) The PDF B and the full project prepared under the PDF B will provide the national policy and regulatory framework to ensure the sustainability and replication of the MSP across the country.
- 8) Timing issue: Both the provincial government and the private sector have already taken steps for NRE development in Palawan, and are under the time constraint to expect the funding from the proposed UNDP/GEF MSP coming soon to support their NRE activities.
 - First of all, there is a high political will and support to develop renewable energy in Palawan from the governor Socrates, who wants renewable energy applications to happen in Palawan before he completes his 2nd term by the year 2001. Since the Governor has been very supportive of this MSP project and will be the key in its implementation, we would like to see the major portions of this project carried out within his term.
 - Secondly, Palawan provincial government is expecting to receive US\$200 million revenue per year from the production and sales of natural gas in Palawan, starting in year 2001. It is important to start the capacity building, awareness campaign, and pilot renewable projects now, so when the expected revenue comes, the provincial government will spend it on renewable energy development.
 - Thirdly, the private sector – Shell International Renewables Ltd. / Community Power Corporation -- are eager to set up a RESCO in Palawan to provide renewable energy services to remote communities currently without access to electricity. They are planning to do their feasibility study soon with the funding assistance from UNDP/GEF MSP and set up their first village RESCO in Palawan this year. It would be more effective if the MSP could implement and coordinate the activities with theirs within this year.
 - Combining the full project prepared under the PDF B with the MSP is not acceptable by the project proponent, and will further delay the timetable, due to the long GEF full project cycle and more complicated implementation arrangement at the national level.

4. Responsiveness to Comments and Evaluations

4.1 Monitoring and Evaluation (M&E)

The detailed M&E plan for the PDF B project will be developed during the project document stage. The M&E plan for the MSP is included in the MSP brief, and the indicators for M&E have been developed with the Log Framework Approach in the Project Planning Matrix (PPM).

In addition to the normal UNDP M&E procedure applied to the MSP, the outcomes and lessons learned from the MSP will also be monitored and evaluated by the Affiliated Non-Conventional Energy Center (ANEC) in Palawan under the DOE, and fed into the

proposed national full project prepared under the PDF B, which will be executed by DOE.

5. Other Technical Comments

5.1 Description of Barriers

Please refer to the PDF B brief (page 6-7) for a detailed description of all the major barriers and problems facing renewable energy development in Philippines. As explained earlier in Section 1.1, identification of these barriers are the outcomes of wide consultation with different stakeholders in Philippines including government agencies, NGO, private sector, academia, and financial institutions through a series of national stakeholder workshops and individual meetings starting in March 1998. Please see attached “Chronology of the Proposal’s Development”.

After a year consultation with different stakeholders and a series national stakeholder workshops, we think the barriers identified in the PDF B brief are comprehensive in scope. The PDF B implementation process itself will further identify some more detailed barriers such as market and financing barriers (i.e. Activity 4-6), and design a barrier-removal component for the full project prepared under this PDF B.

As shown in the “Chronology of the Proposal’s Development”, it is worth mentioning that the barriers identified in the PDF B brief also build on the national renewable energy workshop entitled “Building a Common Renewable Energy Agenda: A National Conference” in March, 1998 sponsored and organized by UNDP Manila. The objective of the workshop is to identify all the barriers to renewable energy in Philippines. This stakeholder workshop had participants from DOE, ANEC (Affiliated Non-Conventional Energy Centers), NPC, NEA, PNOC, DOST (Department of Science and Technology, DENR, IACCC, NEDA (National Economics and Development Authority), DBP, REAP (Renewable Energy Association of Philippines), PEI, NREL, PRRM (Philippines Rural Reconstruction Movement), UP Solar Lab, USAID, GTZ, BP Solar, IIEC (International Institute of Energy Conservation), ICEE, SIBAT (Well Spring of Science and Technology), Manila Observation, and Green-peace. This workshop identified comprehensive barriers and constraints to renewable energy in Philippines, and laid the foundation for the PDF B proposal.

Please find the attached participant lists for the series of stakeholder workshops held between March 1998 and March 1999. In addition, the “Draft Framework Document” gives the detailed institutional arrangement and roles for different institutions in the NRE field in Philippines.

5.2 Determination of system boundaries and quantitative indicators of NRE trends and investment

System boundaries: The PDF B and the full project prepared under the PDF B will promote both grid-connected and off-grid renewable energy development at the national

level, while the MSP will only focus on mini-grid and off-grid NRE development at provincial level in Palawan.

The National Energy Plan projected that the share of NRE in the primary energy mix will decline from 28.7% in 1998 to 25.2% in 2004 and 21.9% in 2008, while the total NRE consumption will increase from 68.4 million barrels of fuel-oil-equivalent (MMBFOE) in 1998 to 80.1 MMBFOE in 2004 and 91.3 MMBFOE in 2008. On the other hand, the NRE share in the power generation mix will increase from current nil to nearly 2% in 2008. It is projected that the total installed capacity to be provided by NRE would reach about 410 MW during the next ten years (1999-2008).

The total investment requirement for such a NRE program is estimated to be 49 billion pesos (\$1.3 billion) during the period of 1999-2008, of which 57% from foreign sources while the rest from domestic private sector and government.

5.3 Determination of activities to address the market barriers

Activities 1, 2, 4, 5, 6, 7, and 8 in the PDF B project brief addressed the identified market barriers.

- 1) Activity 1 will build capacities of the key government agencies to reformulate market-oriented NRE policies, and not to have the subsidized program that will distort the market. This activity will also provide technical assistance to NPC and ERB to prepare a transparent and standardized PPA, and set power purchasing price for renewable energy. In addition, this activity will also build capacities and raise the awareness for Rural Electric Coopeatives (REC), local private companies, and government agencies in developing market strategies and building public-private partnership to promote NRE.
- 2) Activity 2 will provide the essential information and services for the private sector investment and participation in NRE development. The public awareness campaign will also address the market barriers.
- 3) Activity 4 will specifically develop market strategies and remove market barriers for NRE.
- 4) Activity 5 and 6 will identify the market-oriented NRE delivery mechanisms and financing mechanisms for NRE.
- 5) Activity 7 will develop standards, testing, and certification to build consumers' confidence in the NRE systems, and correct the market distortions of low quality NRE systems.
- 6) Activity 8 will demonstrate how the market barriers will be removed through Pilot Plants.

5.4 Forecasting direct local benefits

Not relevant to PDF B. Comments 5.4 – 5.6 will be addressed in the full project brief, which will be the output of the PDF B.

5.5 Assessment of life-cycle costs and benefits

Not relevant to PDF B

5.6 Forecasting and quantitative description of future RE share after the project and global environmental benefits

Not relevant to PDF B

5.7 Development of M&E plan

Please refer to the response in Section 4.1.

CONFERENCE PROCEEDINGS

**Building a Common Renewable
Energy Agenda:
A National Conference**

March 25-27, 1998
Batangas City, Philippines

Convened by the

Institute of Climate, Energy and Environment
International Institute for Energy Conservation
Manila Observatory
Preferred Energy, Inc.
Department of Energy
Department of Environment and Natural Resources

In Partnership with

BP Solar
Philippine National Oil Company
Philippine Rural Reconstruction Movement
Renewable Energy Sources
Renewable Energy Association of the Philippines
Sibol ng Agham at Teknolohiya

With Grant Assistance from the

Interagency Committee on Climate Change
United Nations Development Programme

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EXECUTIVE SUMMARY

Background

Renewable energy has been introduced in the Philippines more than two decades ago and yet there is still a huge potential to disseminate the technologies widely. Several studies and workshops have been organized to identify and address the barriers of renewable energy implementation but until now the industry is still facing the same challenges.

The primary goal of the conference is to develop a constituency for renewable energy. It is envisioned that it will lead to the formation of a national network of private, government, non-government and people's organizations that will serve as a vehicle to accelerate the implementation of renewable energy technologies in the country.

The Philippine Energy Plan (1998-2030)

The Philippine Energy Plan (PEP) envisions that the future energy supply will be adequate, reliable, and affordable to industries to enable them to provide continuous employment and low-cost goods and services, and to the ordinary citizens to enable them to achieve a decent lifestyle. Its goal is that energy will be produced and used in a manner that promotes sustainable development in the utilization of the country's natural resources but at the same time maintain the country's overall economic competitiveness. The programs primarily include the intensified exploration of indigenous energy sources; the privatization of energy companies and agencies; the full implementation of demand-side management; and the rationalization of electricity prices.

Sectoral Workshop on New and Renewable Energy Resources

The Subic Workshop's vision is that new and renewable energy (NRE) systems will be technically and economically viable, socially acceptable, reliable, accessible, affordable and environmentally sustainable contributing to the country's economic growth and enhancing the quality of life of the Filipinos.

There is a need to recognize value of renewable energy beyond energy mix contributions and to amend the Implementing Rules and Regulations for private power projects to remove unintentional barriers to renewable energy project development. It is necessary to amend the policy on large-scale uses of renewable energy and to jump-start renewable energy project development. It is also important that more appropriate financing mechanisms be developed. There also should be a constant dialogue among sector participants particularly regarding policy issues and new project development.

Constraints to an Expanded and Accelerated Use of Grid-Connected Biomass, Geothermal, and Mini-Hydro Power Generation

The study revealed that there was a lack of clear policies in the energy sector and that there was difficulty in establishing private power contracts. In the Omnibus Energy bill, the option for

mini-geothermal is not included. This should be considered as the Philippines is unique in that there are small scale geothermal resources in the islands. There is also a need to assess what the prospects are in the Philippines in NRE. Furthermore, the study indicates that the role of renewable energy (RE) will be marginal and future demand may not be substantially reduced if energy management and efficiency are not focused on in the energy development plan of the country. Then, the contribution of NREs will be larger in the future power generation mix.

Highlights of the Case Studies

The Philippines is perhaps unique in the number and diversity of renewable energy projects that have been implemented. There is a great opportunity to step back, learn about past experiences, and learn from their lessons. As preparation for this conference, five case studies were commissioned to investigate the barriers and constraints to renewable energy and recommendations for solutions.

There are recurring common themes across the case studies. It is seen that the markets that are dependent on government programs are artificial markets and may not be sustainable. Government-supported programs, such as those that involve subsidies to the end-user, may distort the private sector market and drive the private sector out of business.

While there is a need for government action, policies are likely to be more carefully crafted when feedback from various stakeholders is assessed. Although there have been renewable energy projects in the country, there has not been a sustainable dissemination for renewable energy.

Workshop Outputs

For the workshops, five working groups were organized to discuss issues and recommendations, to formulate workplans and to identify the best practices in the implementation of new and renewable energy systems. The groups focused on the following: policy; institutional; market and technological development; financing; and sustainability.

1. Policy

Issues	Recommendations
Traditional policy, planning and implementation process have not successfully tapped NRE for developmental objectives.	Promote a paradigm-shift that would advocate NRE policy, planning and implementation processes to be: <ul style="list-style-type: none"> • participative • need-driven • market-based • anchored on developmental objectives

2. Institutional/Organizational

Issues	Recommendations
Loose inter-agency coordination and duplication of efforts	<ul style="list-style-type: none"> • conduct constant dialogue among stakeholders especially in policy issues

Low priority of NREs by some LGUs	<ul style="list-style-type: none"> • information and education campaign • promote the integration of energy concerns into MDIP/PDIP
Inadequate monitoring and feedback of organizations involved in NRE	<ul style="list-style-type: none"> • install and institutionalize a monitoring and control system

3. Market and Technological Development

Issues	Recommendations
Lack of local competence and management competence for entrepreneurs	<ul style="list-style-type: none"> • Strengthen and develop institutions • Provide management training
Lack of quality control measures	<ul style="list-style-type: none"> • Set standards
Lack of testing and verification	<ul style="list-style-type: none"> • Accreditation of testing laboratories
Lack of markets and inadequate market knowledge	<ul style="list-style-type: none"> • Research markets for size and preferences of end-user • Government/private sector participation in market promotion
Diluted development efforts in many technologies	<ul style="list-style-type: none"> • Prioritize based on local needs and market interest
Lack of coordination	<ul style="list-style-type: none"> • DOE should be lead agency to orchestrate renewable energy program with REAP as lead private group
Inadequate and dispersed technical information and limited technical know-how in certain technologies	<ul style="list-style-type: none"> • Identify and consolidate sources of information, key players
Lack of users' and decision-makers' awareness of renewables	<ul style="list-style-type: none"> • Launch vigorous information campaign

4. Financing

Recommendations	Action Points
Partnerships	<ul style="list-style-type: none"> • Identification of Financing Institutions on Renewable Energy and possible channels of credit
Setting up of a Mechanism for: <ol style="list-style-type: none"> 1. Seed Fund Management 2. Guarantee Fund Management 3. Rediscounting Window 4. Project packaging and management 5. Grassroots organization and networking 	<ul style="list-style-type: none"> • Fund Sourcing • Preparation of project proposals • Set-up Organizational Structures/Linkages • Set-up of Various Funds • Fund-Use Mechanism • Set-up Pre-Investment Support Fund from Income of Guarantee Fund • Set-up Database and Networking Mechanism

5. Sustainability

Issues	Recommendations
1. Minimal participation and contribution from stakeholders in planning process	<ul style="list-style-type: none"> • Intensive social preparation and ensure ownership by beneficiaries • Intervention must be according to the needs of the beneficiaries
2. Lack of local competence	<ul style="list-style-type: none"> • Develop institutional capabilities
3. Unclear delineation of roles and responsibilities of agencies involved in the NRE Sector	<ul style="list-style-type: none"> • Create a committee to handle NRES matters. • Draft a working paper to clarify issue on the role of NCED vis-à-vis the Executive Order on OSW.

INTRODUCTION

A. BACKGROUND

Renewable energy has been introduced in the Philippines more than two decades ago and yet there is still a huge potential to widely disseminate the technologies. Several studies and workshops have been organized to identify and address the barriers of implementing renewable energy systems. Recent global and national developments in the energy sector emphasize the need to hasten the shift from conventional to renewable energy development.

The shift to renewable energy started with 1970s and 1980s oil crises caused by oil shortages resulting from conflicts in the Middle East. It was further fueled by the publication of scientific findings revealing that the increasing accumulation of greenhouse gases in the atmosphere was mainly due to the burning of fossil fuels. In late 1980s and early 1990s, nuclear, hydroelectric and coal-fired power plant projects encountered strong opposition from host communities because of environmental threats. Last December, more than 120 countries agreed to the Kyoto Protocol on Climate Change, giving a clear signal that the world would head towards a fossil-fuel less energy future. These challenges faced by the fossil-fuel energy has accelerated the development of renewable energy in the country.

The Energy Plan and the Long-term Development Plan of the government recognizes the role of renewable energy in the attainment of the country's sustainable development -- it is the panacea to the environmental problems from energy production. The government also addresses the need for electric power to support economic development, particularly in the rural areas. Despite the macro-level government policies and other opportunities for accelerated introduction of renewable energy systems, the industry is still facing obstacles in terms of policy implementation, market strategies and lack of end-user appreciation of the systems.

In light of the need for an environmental-friendly energy development, a multi-stakeholder gathering is necessary in order to define the short- and long-term renewable energy thrusts in the country and to formulate action plans. The conference is timely as it would provide the incoming set of national and local policy-makers a national renewable energy agenda that the government can pursue.

B. OBJECTIVES

The primary goal of the conference is to develop a constituency for renewable energy. It is envisioned that it will lead to the formation of a national network of private, government, non-government and people's organizations that will serve as a vehicle to accelerate the implementation of renewable energy technologies in the country.

The conference opened with the organizers and sponsors welcoming the participants. The participants were introduced after an overview of the program. A leveling of the participants' expectations and familiarization with conference program and processes was also conducted.

THE STATE OF RENEWABLE ENERGY IN THE PHILIPPINES

A. The Philippine Energy Plan (1998-2030)

It is envisioned in the Philippine Energy Plan (PEP) that in the future, energy supply will be adequate, reliable, and affordable to industries to enable them to provide continuous employment and low-cost goods and services, and to the ordinary citizens to enable them to achieve a decent lifestyle. Energy will be produced and used in a manner that promotes sustainable development in the utilization of the country's natural resources but at the same time maintain the country's overall economic competitiveness.

Among its missions is the formulation of clear policies, plans, and responsive plans and programs; the intensive development of indigenous energy sources; effective coordination of downstream energy activities; judicious conservation and efficient utilization of energy; provision of benefits for host communities and the close coordination and cooperation between government agencies and the private sector.

Its goals are to ensure the availability of an energy supply at competitive, affordable and reasonable prices accompanied by a socially and environmentally compatible infrastructure. The policies in the PEP are the following:

- enhance energy self sufficiency;
- diversify sources of energy;
- pursue large scale use of NREs;
- provide reliable and efficient supply of energy;
- promote judicious and efficient use of energy;
- encourage greater private sector investment and participation;
- promote the adoption of environment-friendly systems;
- integrate social and environmental concerns in energy planning; and
- develop energy information systems for planning and decision-making.

The programs involve the intensified exploration of indigenous energy sources; utilization of natural gas for power development; the privatization of energy companies and agencies; the full deregulation of downstream industries; the full implementation of demand-side management; and the rationalization of electricity prices. The strategies include the use clean coal technology; enhancement of the utilization of gas and geothermal sources; increased share of hydro, geothermal and NRE (solar, ocean, wind, biomass) sources in the energy mix; the accelerated use of waste converted to energy; and the prioritization of renewable energy for electrical generation. The compliance with DENR environmental standards and the monitoring of oil spills and CO₂ emissions are also included.

In the PEP, there are five scenarios for the future power generation mix. The first is the transition to clean coal technology and the second includes the conversion of waste to energy. For these two scenarios, the contribution of NREs will be minimal. While in the third option which is the pole-vaulting scenario involving the export of energy, the NRE contribution will be about thirty-six percent. The fourth and fifth scenarios are the ASEAN grid and the ASEAN gas pipeline for natural gas importation, respectively. In the last two options, the contribution of NREs will also be minimal.

The issues facing the Department of Energy now are the following: the handling of NREs; integration of the National Integrated Protected Areas System (NIPAS) into the PEP; and making the PEP consistent with Philippine Agenda 21 -- balancing certain economic factors to come up with a sustainable energy future.

B. Sectoral Workshop on New and Renewable Energy Resources

Subic, Zambales April 10-11, 1997

Grace Yeneza, Preferred Energy, Inc.

The Subic Workshop's vision is that new and renewable energy (NRE) systems will be technically and economically viable, socially acceptable, reliable, accessible, affordable and environmentally sustainable, contributing to the country's economic growth and enhancing the quality of life of the Filipinos. Its mission is to promote the commercial use and provide timely delivery of NRE systems that are technically and economically viable, socially adaptable, reliable, accessible, affordable and environmentally sustainable.

The workshop reviewed the current situation of renewable energy in the Philippines and assessed the constraints that discouraged the full development and commercialization of renewable energy technologies. The workshop output includes the vision, mission, goals, and strategies to address the issues affecting renewable energy development and utilization. The workshop produced policy recommendations, program interventions and action agenda necessary for both government and private sector to implement the goals and strategies for the advancement of the renewable energy sector in the country.

The following were the major conclusions made during the workshop:

1. Lack of success stories indicates that renewable energy project development needs immediate attention and help.
2. Need to shift focus from technology-orientation to market-orientation.
3. Need to enhance project participation of target recipients as early as possible.
4. Need to recognize value of renewable energy beyond energy mix contributions.
5. Need to amend the Implementing Rules and Regulations for private power projects to remove unintentional barriers to renewable energy project development.
6. Need to work closely with locally-active commercial operators to find out what assistance is needed based on actual field conditions.
7. Need to amend the policy on large-scale uses of renewables.
8. Need to jump-start renewable energy project development by offering clear project opportunities with standard terms and conditions.

9. Need to develop more appropriate financing mechanisms that can provide the flexibility. These should include: project preparation; project implementation (loan and/or equity); and end-use levels
10. Need for constant dialogue among sector participants particularly as regards policy issues and new project development.

C. Constraints to an Expanded and Accelerated Use of Grid-Connected Biomass, Geothermal, and Mini-Hydro Power Generation
Jerome Wiengart , Winrock International

The study revealed that there was a lack of clear policies in the energy sector and that there was difficulty in establishing private power contracts. It pointed out that in the Omnibus Energy bill, the option for mini-geothermal is not included. This should be considered as the Philippines is unique in that there are small-scale geothermal resources in various islands. There is also no support for private sector participation in the bill.

There is also a need to assess what the prospects are for ocean power in the Philippines in NRE where millions of dollars have already been spent by the developed countries without any commercial energy systems evolving from the research. There may be other commercial options that may be more efficient. These NRE options such as wind and solar have already been commercialized in the past 20 years, what is needed now is to determine whether the country's research and development resources should still be spent on new technologies and to what extent.

Furthermore, the study indicates that the role of renewable energy (RE) will be marginal if energy management and efficiency is not given attention in the energy development plan of the country. For instance, if energy efficiency becomes part of the policies in designing industrial and commercial and even residential infrastructure then the growth in power demand may be slowed without compromising economic growth. This has been demonstrated in the last 20 years in the OECD countries. In a lower demand scenario, the contribution of NREs will then be larger in the future power generation mix.

With regard to off-grid power systems, the private sector participation is may be enhanced And the challenge for the government is to design policies to attract and sustain private sector investments. There are still about 4 million households without power throughout the countryside.

D. Discussion

A question was raised on the activities that followed the Subic workshop. It was stated that after the conference, there was an agreement to continually coordinate in an informal gathering -- a "kapihan" was held for the first three months with the sponsorship of the Philippine National Oil Company (PNOC) but with so many other activities, attendance decreased.

In response to a question regarding financing, it was pointed out that the main concern was how to bring these projects to a level that the banks will consider financing them. Preferred Energy, Inc. (PEI) has identified programs in this regard: pre-investment support for project

preparation which involve feasibility studies for micro-hydro; village power fund which provides an alternative financing mechanism that would be accessible to smaller projects; and the preparation of a non-traditional financing portfolio for NGOs and POs who want to come up with their own energy systems. The goal is to empower communities to decide what energy systems and financial mechanisms are appropriate for their area.

The preliminary output of the wind-mapping project of Winrock and PEI was presented using computer-generated maps done by the National Renewable Energy Laboratory (NREL). The first output showed wind power density and wind speed using upper air and surface meteorological station data. The initial maps show encouraging results. The wind energy atlas which is expected out of the project will help identify areas where wind energy projects are possible.

CASE STUDY PRESENTATIONS

A. Highlights of the Case Studies

The Philippines is perhaps unique in the number and diversity of renewable energy projects that have been implemented. There is a great opportunity to step back, learn about past experiences, and learn from their lessons. Throughout the world, there is a tendency of the renewable energy community to put new projects in the ground rather than evaluate why past projects succeeded or failed. Projects may not be further improved without the careful evaluation and monitoring of the present and the past. As preparation for this conference, five case studies have been commissioned to investigate the barriers and constraints to renewable energy and recommendations for solutions.

Organizational and Institutional Case study

Olegario Serafica, Renewable Energy Association of the Philippines

This case study discusses organizational and institutional constraints to renewable energy development. While there are many government agencies involved in renewable energy, there is no single recognized and empowered body that is responsible. In addition, coordination between agencies is needed, aside from monitoring and feedback. And, there is a need to further build the network.

Some of the key constraints in the Philippines are lack of coordination, competition from government with the private sector, and the contrast in speed and participation with which an energy bill or executive order can be approved.

Policy Case Study

Bert Dalusung, Preferred Energy Investments

The three case studies shed light on renewable energy policies of the Philippine government. Although there are policy pronouncements, places and projects that ostensibly promote renewable energy development, the end result has not been successful. The first case study shows that the production sharing system, which was patterned after the coal and oil industry,

— has failed in geothermal energy development. And it argues that this system should not be also be applied to the renewable energy industry.

The second case study focuses on whether efforts should be directed to large- or small- scale renewable energy systems. It discusses how renewable energy fits well with the development needs of about half the population of the Philippines, to provide their basic needs and economic development. While large-scale renewables should not be ignored, policies should not only be directed to large-scale renewable energy because these policies could end up hurting small-scale renewable energy dissemination.

The third case study focuses on the new Executive Order 462, and questioned it from grounds of definition, constitutionality, and the goal of enabling private sector investments through production-sharing agreements which has not even worked in geothermals. Lack of public participation in policy development may result in misdirected and short-sighted policies.

Market/Technical Case Study

Laurie Navarro, Energy Research and Development Center-Philippine National Oil Company

— This study discusses marketing and technology issues from experiences in PNOC's 10-year involvement in the Decentralized Energy Systems Project. The key market barriers identified include the inadequate training of end-users, marketing towards end-users that do not want or may not be able to afford the product, lack of financing, lack of awareness, government distortion of markets, and dependence upon government markets. Some of the key technical barriers include the complexity of products, absence of standards, lack of good after-sales service, and lack of government support in the way of funding, favorable policies, incentives.

Financial Mechanism Case Study

Hermenegildo Bautista, Development Bank of the Philippines (DBP)

— The financial case studies used examples from the DBP's Window III for renewable energy. Burias Island was their first Window III project and it failed. It failed not only because of the typhoons that wiped out the affordability of their customer base, but more importantly, the borrower was not given the proper financial and technical training to manage the project effectively. The project suffered from inferior quality of locally supplied components and when components such as the battery failed, people stopped paying.

DBP learned from these mistakes in developing a later project, Belance Solar. This project also suffered from typhoons, but the DBP verified that the systems were properly installed. Prompt payment incentives were given in the form of reduced interest rates and when payments did not come in, a careful evaluation was done in order to restructure the project.

Sustainability Case Study

Vicky Lopez, SIBAT

— This study dealt with the issue of sustainability involving community-based development projects. It focused on community applications of micro-hydro, solar home systems (SHS), photovoltaic (PV) water pumping, and small biogas systems. The initial results included an

extensive survey and case study to evaluate the sustainability of projects that have been in the field for some 5-10 years. These results show that the three most critical issues are technical support, organizational preparation, and affordability. SIBAT has found that a needs- and client-oriented approach is the key to success in micro-hydro projects.

B. Discussion

There are recurring common themes across these case studies. It is seen that the markets that are dependent upon government programs are artificial markets and may not be sustainable in the long run and that government-supported programs, such as those that involve subsidies to the end-user, could distort the private sector market and drive the private sector out of business.

It seemed clear from conference discussions that government subsidies for certain brand equipment to end-users would hurt private sector suppliers of other brands. A question was raised regarding which regulatory or incentive-based policies should be used. Another asked if the government should involve renewable energy community participation in policy development? While there is a need for government action, policies are likely to be more carefully crafted when feedback from various stakeholders is assessed.

Markets suggested as targets for renewable energy include grid-connected markets that might help offset global warming and reduce dependence upon imported energy; and rural electrification markets that provide poorer, rural populations with basic energy services to help them develop economically. It was pointed out that there is a need to determine the extent of the subsidies that would be used. Questions were also raised whether the private sector should be making a profit from electrifying poor rural people and if they did not make a profit, could the market be sustained.

Although there have been renewable energy projects in the country, there has not been a sustainable dissemination for renewable energy. Other infrastructures, such as telecommunications or conventional power, are established on a very large scale so that enough customers can be served and costs can be low. In the implementation of a renewable energy project, several factors need to be considered. These include:

- should rural electrification be implemented in the same way as traditional infrastructure;
- what is the critical project size for sustainable dissemination to occur;
- are current projects too small for sufficient infrastructure and awareness to be built; or
- is there a need for a completely new and innovative approach.

WORKSHOP OUTPUTS

Five working groups were organized, namely:

- | | |
|------------------|--------------------------------------|
| Workshop Group 1 | Policy |
| Workshop Group 2 | Institutional |
| Workshop Group 3 | Market and Technological Development |
| Workshop Group 4 | Financing |
| Workshop Group 5 | Sustainability |

The tasks of the working groups were:

1. To identify issues confronting NREs;
2. To formulate recommendations, action points, workplans and project briefs for the NREs;
3. To identify best practices and factors in NREs.

1. Policy

Issues	Recommendations
Traditional policy, planning and implementation process have not successfully tapped NRE for developmental objectives -- they have hampered NRE implementation by diverting efforts and encumbering NRE with mismatched objectives and inappropriate performance measures	Promote a paradigm-shift that would advocate NRE policy, planning and implementation processes to be: <ul style="list-style-type: none">• participative• need-driven• market-based• anchored on developmental objectives

2. Institutional/Organizational

Issues	Recommendations
Loose inter-agency coordination and duplication of efforts	<ul style="list-style-type: none">• conduct constant dialogue among stakeholders especially in policy issues• DOE should create a multi-sectoral council• Identify role of key players
Low priority of NREs by some LGUs	<ul style="list-style-type: none">• information drive• education and training• promote the integration of energy concerns into MDIP/PDIP
Inadequate monitoring and feedback of organizations involved in NRE	<ul style="list-style-type: none">• install and institutionalize a monitoring and control system

3. Market and Technological Development

Issues	Recommendations
Lack of local competence	<ul style="list-style-type: none">• Strengthen and develop institutions, e.g., ANECs, RECs
Lack of quality control measures	<ul style="list-style-type: none">• Set standards for clarification, verification and consumer protection
Lack of testing and verification of manufacturer claims	<ul style="list-style-type: none">• Accreditation of testing laboratories
Lack of markets Inadequate market knowledge	<ul style="list-style-type: none">• Research markets for size and preferences of end-user• Government/private sector participation in market promotion
Diluted development efforts in many technologies	<ul style="list-style-type: none">• Prioritize based on local needs and market interest
Lack of coordination	<ul style="list-style-type: none">• DOE should be lead agency to orchestrate renewable energy program with REAP as lead private group
Inadequate and dispersed technical information	<ul style="list-style-type: none">• Identify and consolidate sources of information, key players
Lack of users' and decision-makers' awareness of renewables	<ul style="list-style-type: none">• Launch vigorous information campaign
Management competence of entrepreneurs	<ul style="list-style-type: none">• Provide management training

Issues	Recommendations
Limited technical know-how (e.g. design) in certain technologies (e.g., hydro)	<ul style="list-style-type: none"> • Experts training

4. Financing

Recommendations	Action Points
<i>Partnerships</i> Big Brother - Small Brother	<ul style="list-style-type: none"> • Identification of Financing Institutions* on Renewable Energy (Big Brothers) • Identification of areas of cooperation (Financing Institution*) e.g. collection, financing • Financing Institutions* and possible channels of credit • Signing of joint area of cooperation
<i>Setting up of a Mechanism for:</i> 1. Seed Fund Management 2. Guarantee Fund Management* 3. Rediscounting Window 4. Project packaging and management 5. Grassroots organization and networking	1. Fund Sourcing (e.g. UNDP-GEF, USAID, DOE-IPP Fund, etc.) 2. Preparation of project proposals 3. Set-up Organizational Structures/Linkages 4. Set-up of Various Funds 5. Fund-Use Mechanism * Explore also possibility of utilizing existing guarantee fund mechanism for RE • Organize/Create Group who will undertake discussions with Guarantee Institutions. • Identify signatories for needed agreement • Finalization of Agreement with Guaranteeing Institutions • Set-up Pre-Investment Support Fund from Income of Guarantee Fund • Set-up Database and Networking Mechanism

5. Sustainability

Issues	Recommendations
Minimal participation and contribution from stakeholders in planning process	<ul style="list-style-type: none"> • Intensive social preparation to avoid "dole-out" mindset and ensure ownership by beneficiaries • Intervention must be according to the needs of the beneficiaries and not on resources or existing technologies.
Lack of local competence	<ul style="list-style-type: none"> • Develop institutional capabilities (pursue human resources development at the ground level)

Issues	Recommendations
Unclear delineation of roles and responsibilities of agencies involved in the NRE Sector	<ul style="list-style-type: none"> • Create a committee to handle NRES matters. • Draft a working paper on how DOE should handle NRES. This is envisioned to clarify issue on the role of NCED vis-à-vis the Executive Order on OSW.

The conference ended with the participants formulating plans for the formation of the RE network. They also formulated a resolution adopting the action plan generated in the conference. The organizers thanked the participants for their contribution to the conference.



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