



Capacity Building to Remove Barriers to Renewable Energy Development (CBRED) is a joint project of the Department of Energy, United Nations Development Program and the Global Environment Facility. CBRED Project aims to reduce greenhouse gas emissions by the removal of major barriers to RE that will lead to the development and widespread utilization of RE systems and application.



A Guidebook on Renewable Energy Project Development & Packaging



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LIST OF ACRONYMS

ANEC—Affiliated Non-Conventional Energy Center
 BDC—Barangay Development Council
 CBO—Community-Based Organization
 CBRED—Capacity Building to Remove Barriers to RE Development
 CDM—Clean Development Mechanism
 CER—Certified Emission Reduction
 DBP—Development Bank of the Philippines
 DENR—Department of Environment and Natural Resources
 DOE—Department of Energy
 DTI—Department of Trade and Industry
 EC—Electric Cooperative
 ECC—Environmental Compliance Certificate
 EIS—Environmental Impact Statement
 FPIC—Free Prior and Informed Consent
 GEF—Global Environment Facility
 GHG—Greenhouse Gas
 IEE—Initial Environmental Examination
 IOU—Investor Owned Utility
 IP—Indigenous People
 IRR—Internal Rate of Return
 LBP—Land Bank of the Philippines
 LGU—Local Government Unit
 LGUGC—LGU Guarantee Corporation
 NCIP—National Commission on Indigenous Peoples
 NEDA—National Economic Development Authority
 NGO—Non-Government Organization
 O&M—Operation and Maintenance
 OSW—Ocean, Solar, Wind
 PCC—Pre-Commercial Contract
 PNCC—Pre-Negotiated Commercial Contract
 PPF—Project Preparation Fund
 PRA—Participatory Rural Appraisal
 RE—Renewable Energy
 RESCO—Renewable Energy Service Company
 SLUP—Special Land Use Permit
 TRANSCO—National Transmission Corporation
 TSA—Transmission Service Agreement
 UNDP—United Nations Development Programme

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1. INTRODUCTION

Access to electricity is vital to the economic development of a country. With electricity, a nation has one of the most vital resources to cause the implementation of various activities to uplift the quality of life of its people. Rural folks, in particular, will benefit from electric power in terms of improved income, literacy, health, equity and security. Electricity provides access to communication and information, especially for those in rural areas who do not have access to the print medium. Electricity is a complementary input to infrastructure (e.g., communication, transportation, water supply) vital to sustainable development.

Based on reports from the Department of Energy, there remains about 2,419 unelectrified barangays in the Philippines as of October 2006, of which about 640 barangays are suited for decentralized RE technologies.

2. PHILIPPINE RENEWABLE ENERGY RESOURCE POTENTIAL

The Philippines is an archipelago blessed with abundant renewable resources. There are bright prospects and good opportunities for renewable energy (RE) development, utilization, and commercialization in the country brought about by fast technological developments locally and internationally.

Estimates of RE resource potential in the Philippines include:



76,600 MW from wind energy resource



an annual potential average of 5.0–5.1 kWh/m²/day from solar radiation



over 900 MWe from biomass resources



170,000 MW ocean energy resource



10,500 MW from hydropower

3. OBJECTIVES

This Guidebook aims to provide prospective RE project developers with a practical road map to assist them in project development and packaging, avail of incentives and secure financial assistance in the process.

The Philippine RE Bill

The Department of Energy aggressively promotes the development and use of RE systems through the RE Bill. The RE Bill which is expected to be approved into law in 2007, is envisioned to pave the way for the widespread development and use of RE resources in the country through the institutionalization of fiscal and non-fiscal incentive packages for RE investments. Some features of the RE Bill include:

- ✓ Renewable Portfolio Standards which imposes sourcing a minimum amount of RE-based energy for all electricity suppliers
- ✓ Minimum RE generation in off-grid areas
- ✓ Value-added tax zero rating, net metering, duty-free importation of RE equipment, income tax holiday and other fiscal incentives
- ✓ Green energy option to accelerate open access to RE-based power plants

4. THE RE PROJECT DEVELOPMENT AND PACKAGING PROCESS

Development of an RE project involves several steps and activities a project developer must go through to make projects happen. These activities are divided into two (2) phases:

Phase 1: PRE-INVESTMENT PHASE. This phase starts from project planning and covers feasibility study, engineering design, financial closure, permitting activities and related documentation and agreements.

Phase 2: IMPLEMENTATION PHASE. This phase involves procurement, site preparation, construction/installation, commissioning, operation of the facility, actual implementation of the business plan, as well as monitoring and evaluation of the business and the project's performance.

4.1. PRE-INVESTMENT PHASE

Specific activities under the pre-investment phase include:

- ➊ Assess the target site
- ➋ Identify your partners for the project
- ➌ Prepare the business plan
- ➍ Finance your business plan

OTHER CONSULTING FIRMS/GROUPS

Applied Energy Corporation
75-14 Don Mariano Marcos Ave., North Fairview, Quezon City
☎938-2989
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Auburn Consultants
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Carbon Finance Solutions (CaFiS)
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KLIMA—Climate Change Center
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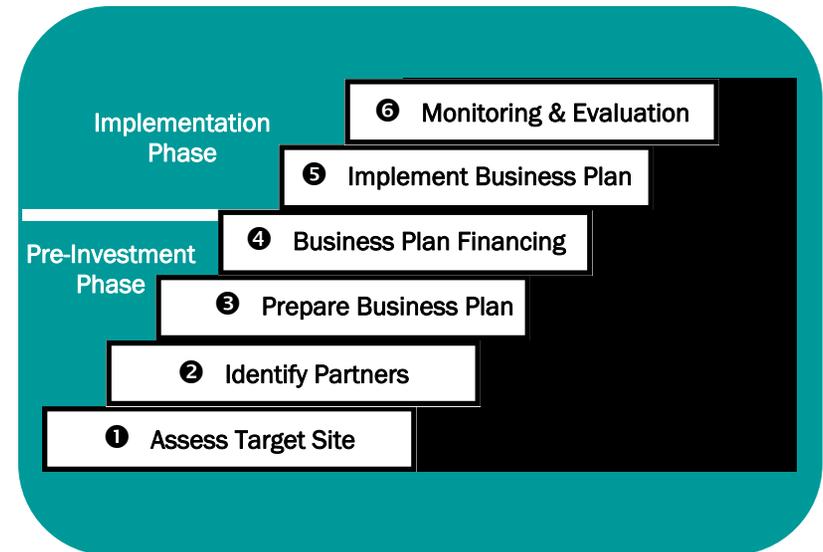
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WIND PUMP

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Appropriate Technology Center, Department of Agricultural Engineering,
College of Agriculture, Central Philippine University, Lopez Jaena St.,
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4.1.1. Assessing the target site

The first step in project development is to choose your target site, define its needs, and evaluate the available resources and the area's capacity to sustain your project.

A good starting point in choosing your site is the DOE database which may be accessed at www.doe.gov.ph. The website lists several areas with good potential for wind, solar, or hydro projects.

The following are possible sources of baseline information for target site assessment :

LGU: Information available are on current energy uses and level of energization, socio-economic characteristics and activities of a barangay/community, as well as LGU development initiatives including electrification program, and applicable local laws (e.g. land use). Fiscal incentives and local fund sources can be obtained from the Local Planning and Development Office of the LGU.

DOE-ANECs: DOE-Affiliated Non-Conventional Energy Centers (ANECs) are colleges or universities supporting the DOE in the promotion and development of RE projects at the local level. Information on successes and failures of past projects whether energy-related or not may be provided by the ANECs. Experiences in the implementation of RE technologies which have been tried in the communities may also be provided by the ANECs. Appendix 3 of this Guidebook lists the ANECs all

NGOs and People's Organizations: They provide services in conducting community organizing either for free or for a fee.

NEDA: The regional offices of the National Economic and Development Authority can provide socio-economic information and development plans at the municipality level.

EC or IOU: Information on proposed or ongoing electrification plans for a target site may be obtained from local electric franchise holders such as electric cooperatives (ECs) or investor owned utilities (IOUs).

Once you have chosen your site, several assessment activities must be done including:

Needs and Market Assessment

The purpose of the needs and market assessment is to determine the target market's existing and prospective energy-related needs, how these needs are currently being served, and how these needs could be addressed by the proposed RE project. The target market's willingness and capacity to pay is also assessed as input to tariff setting.

The socio-economic profile of the locality is a good source of background information for the market assessment. The socio-economic profile of an area could be obtained from the Municipal or Provincial Planning and Development Office, or the provincial or regional office of the National Economic Development Authority (NEDA).

The needs and market assessment considers the following parameters:

- Number of potential customers and their types of use, i.e. household, commercial, public, etc.
- Location of consumers
- Potential end uses or range of applications for electricity in the target site, e.g. lighting, heating, drying, refrigeration, water pumping, livelihood
- Expected duration and schedule for using electricity
- Existing energy /fuel sources (e.g. kerosene, battery, candle, generator, etc.) and frequency of use
- Current cost per month of existing energy/fuel sources paid by consumers
- Consumers' capacity to pay
- Current sources of income of consumers

Outputs of the needs and market assessment include energy end-use and willingness to pay analyses, and energy consumption and load identification analyses.

APPENDIX 2. Partner Institutions in RE Project Development

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Gendiesel Philippines, Inc.
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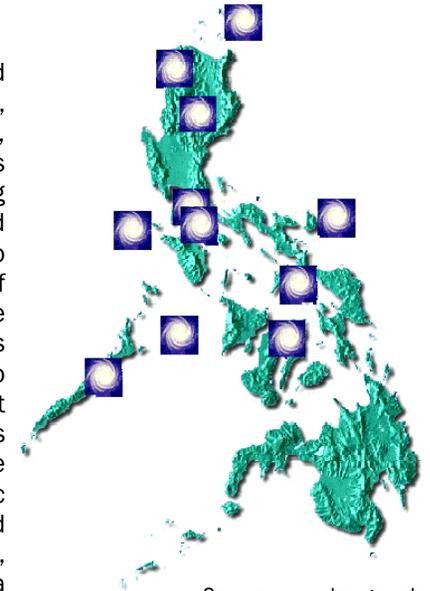
Physics Research - Engineering and Consulting
102 Cantonville, San Isidro, Talisay City, Cebu
☎491-7169

APPENDIX 1. Additional References for RE Project Development and Packaging

1. www.doe.gov.ph
2. **Guidebook for Developing Sustainable Rural Renewable Energy Services**, Department of Energy, April 2001. A copy of this guidebook may be downloaded from www.doe.gov.ph
3. **Compendium of EPIRA and other Related Rules and Regulations**, available from the Electric Power Industry Management Bureau, Department of Energy
4. **Compendium of Existing and Potential Financing Windows for RE Projects**, available from the CBRED-Project Management Office, Department of Energy
5. **Mini-Hydro Power Development Manual**, available from Renewable Energy Management Division, Department of Energy

☑ Resource Assessment

An assessment of the identified project site is then conducted, defining the site's accessibility, peace and order conditions, access to infrastructure, etc. and validating its resource potential. For wind power projects, it is necessary to do site visit for confirmation of signs of flagging, accessibility and presence of infrastructure for logistics support, among others. For hydro projects, a pre-feasibility study must have been completed. It is important to check the period of the year during which the hydrologic data were collected. Year-round data is preferred. At the least, summer period hydrologic data should be available as initial reference.



Source: www.doe.gov.ph

The resource assessment considers the following parameters:

- Potential sources of electricity in the target site, i.e. solar, hydro, wind, biomass
- Location of these resources relative to the potential consumers
- Availability of these resources
- Possible sites for the RE installation
- Distinctive geophysical landmarks (mountain, hill, cliff, ravine) and environmental conditions (typhoon, flood, erosion) that may constrain the construction of the RE installation

Outputs of the resource assessment include resource and village maps, and resource availability analysis.

☑ Technology Assessment

A technology assessment identifies the available technology options that fit the characteristics of existing RE resources and the applications that are needed by the target users. All costs related to acquiring and operating the technology options are identified.

The technology assessment considers the following parameters:

- Technology options for electrification of the target site based on the resource assessment

- ⇒ Corresponding benefits and costs of each option
- ⇒ Least cost technical option based on the following:
 - Technology—solar, wind, ocean, hydro, biomass, hybrid
 - Design—individual or centralized
 - Capacity/Scale—number of kw or MW
 - Grid reference—off-grid, on-grid, mini-grid
- ⇒ Potential technology suppliers and their location
- ⇒ Terms for supplying the technology
- ⇒ Local capability for servicing the technology

Output of the technology assessment is a cost-benefit analysis of technology options.

Activities/Parameters to Consider in the Conduct of Hydropower Project Development Studies

- Reconnaissance**
- Pre-feasibility Study**
 - Determine location of weir, headrace line, forebay, penstock, powerhouse, substation, tie line, and access road
 - Preliminary surveys
 - Hydrologic analysis
 - Cost estimates
 - Economic/financial analysis
 - Integration and recommendations
- Feasibility Study**
 - Detailed topographic survey of the project site
 - Environmental studies/social acceptance
 - Detailed geologic investigation and mapping
 - Comprehensive hydrologic study including establishment of gaging station, gage calibration and daily monitoring of flows, theoretical hydrologic calculations of stream flow generation, and rainfall runoff modeling
 - Power market study
 - Design
 - Cost estimates
 - Comprehensive economic and financial study with sensitivity analysis
 - Integration and recommendations

Aspects to Monitor

Indicators	Description
Activity schedules and milestones	Important dates and activities to be completed; deadlines to be met.
Costs and expenditures	Estimates of how much you need to operate efficiently and reports of your actual expenses
Production and sales	Projections and actual figures of amount of energy service provided by your business and your revenues.
Market behavior	Market growth and change in demand patterns; consumer feedback.
Technical efficiency	Operating efficiency of your RE facility in terms of reliability and stability

Source: Guidebook for Developing Sustainable Rural Renewable Energy Services, Department of Energy, April 2001.

4.2. IMPLEMENTATION PHASE

4.2.1. Business Plan Implementation

After securing financing for your business plan (discussed in Section 4.1.4), you are now ready to implement your project.

Two important aspects of implementation need to be considered:

➔ Installation/construction of your RE facility

This involves the preparation of the project site for construction or installation of facilities, plant, or structures, including the necessary civil works. The detailed design and engineering works, procurement of necessary equipment, and actual construction of the facility is also undertaken in this step.

➔ Community and livelihood development

It is important to sustain the interest and participation of the community in your project. Forming community associations such as multi-purpose cooperatives, initiating capacity and skills building for community livelihood activities, and providing financial and/or marketing assistance to the community contribute to the success of your project.

4.2.2. Project Monitoring and Evaluation

During the operation of the business, it is important to undertake a systematic monitoring of the progress of the operations, ensure compliance with legal requirements (e.g. conditionalities of the ECC and other pertinent laws that govern the project's implementation), and contractual obligations with financing institutions.

Why Monitor Your Business Operations?

- ➔ You must do a reality check! You need to determine if you are still on track with your business goals.
- ➔ You must be flexible and responsive! You may need to adjust plans and programs as needed, including decisions on marketing, pricing, and payment collection schemes.
- ➔ You must be efficient and effective! You need to show to your partners that you are using your business resources properly and responding well to consumer needs.
- ➔ You must build credibility! You need to evaluate your critical success and failure factors so that others can learn from them.

Source: Guidebook for Developing Sustainable Rural Renewable Energy Services, Department of Energy, April 2001.

Activities/Parameters to Consider in the Conduct of Wind Power Project Pre-feasibility and Feasibility Study

Pre-feasibility Study

- Site Selection
 - Wind resource
 - Land use and/or ownership
 - Proximity to grid connection points
 - Access
 - Type of terrain
 - Protected areas
 - Typhoon-prone areas
- Initial consultation with local government units and landowners
- Securing permits in installing a meteorological mast

Feasibility Study

- Wind measurement campaign to validate the wind resource potential
 - Equipment selection
 - Tower
 - Anemometer
 - Wind vane
 - Temperature sensor
 - Data logger
 - Installation and commissioning
- Data analysis
- Wind atlas generation and micro-siting to predict the energy yield of the proposed project using several modeling techniques
- Market analysis
- Financial and economic analysis
 - Identifying and selecting financing sources
 - Profitability criteria
 - Investment cost
 - Operation and maintenance cost
 - Fiscal incentives
 - Carbon credits
- Grid interconnection
 - System impact study
 - Power quality requirements
 - Capacity/strength of electric grid
 - Grid code requirements

4.1.2. Identify your partners for the project

It is important to identify the potential partners in your project, discuss with them their roles, organize them, and prepare them to participate proactively in the project.

The following activities must be considered for this step:

Partner identification—Seek, approach, and enjoin potential project partners. These partners may include the LGU, the beneficiary community, the electricity franchise holder, community-based organizations (CBOs), and potential funding institutions/investors.

Collective planning—Discuss with partners their interests, commitments, and risks in the project/business enterprise and incorporate these in the preparation of the business plan.

Social preparation—Organize the beneficiary community and prepare them collectively to accept the responsibilities of hosting, patronizing, owning, or managing an RE facility.

Technology education—Train the beneficiary community on the technical and economic requirements and limitations of using RE technology and how to effectively handle them.

SOCIAL PREPARATION

The following are suggested activities for soliciting the support of local communities to the project and eventually engaging them in the project's implementation.

Preliminary Social Investigation

Prior to the conduct of any study on the proposed project site, project developers must inform key local officials of the objectives of the proposed project. Aside from local officials, community leaders such as elders and heads of indigenous people (IP), must also be oriented. The following activities will also enable the research team to identify locals who may assist the study.

- **Engage a local to be your guide.** A local will be able to easily take you to specific places and show you alternate routes particularly in remote areas. A guide will also be very helpful in places where a vernacular is used as the primary language.
- **Pay a courtesy call to local officials, including the mayor, key local government officials and barangay captains.** Explain your proposed project and the activities you will be conducting to local officials and solicit their support. The support of local officials, this will facilitate your research and information-gathering.

Enhancing Project Viability through the Clean Development Mechanism

The Clean Development Mechanism (CDM) is the only financing mechanism under the Kyoto Protocol where developing countries can participate to reduce greenhouse gas (GHG) emissions. CDM allows emission reduction projects that assist developing countries in achieving sustainable development and that generate 'certified emission reductions' (CERs) for use by investing countries or companies. It aims to assist developing countries in achieving sustainable development by promoting environment-friendly investment from industrialized country governments and businesses. The resulting CERs can then be used by industrialized countries to help meet their emission reduction targets. CERs earned from CDM projects may be exchanged with other corporations or national governments. A company that has earned CERs may also choose to bank them so they can be traded in post Kyoto commitments.

Renewable energy and energy efficiency projects displace carbon intensive electricity and/or heat generation. Grid-based or off-grid projects that displace more carbon intensive coal and diesel fuels generate more CERs than those that displace natural gas. Projects that capture methane and greenhouse gases other than CO₂ produce more CERs since the global warming potential of methane and other gases are several times higher than that of carbon dioxide. For instance, more CERs are generated by methane capture projects such as biogas since the global warming potential of methane is 21 times higher than carbon dioxide.

The effect of CER cash flow on project IRRs vary by project type. The table below shows the impact of CERs on IRRs in selected projects.

Country	Project	IRR w/o CERs (%)	IRR w/ CERs (%)	Change in IRR (%)
Morocco	Wind power	12.7	14.0	1.3
Costa Rica	Hydro	7.1	9.7	2.6
Brazil	Biomass	8.3	13.5	5.2

The impact of CERs on wind power project IRR is relatively small (few % increase) while it is substantially important for fugitive methane capture projects.

Source: CDM Information and Guidebook, 2nd edition, Unep Risø Centre on Energy, Climate and Sustainable Development, Risø National Laboratory, Roskilde, Denmark, June 2004.

Existing Incentives for Renewable Energy Projects

- ✓ Lower or zero tax duty rates for imported RE products/devices

RE Product/System	Description	Tax Duty
Solar photovoltaic systems	Solar cells, solar panels	0%
Solar water heater	Flat plate collectors/ solar collectors	0%
Direct combustion/ Gasification/ Pyrolysis	Generators, heat exchangers, condensers, engines, turbines, separators, furnaces, etc.	3%
Wind turbine generators	Rotor blades and pitch bearings	3%
	Brake system, yaw drive	3%
	Gear box	3%
	Inverter w/ PCU	3%
	Towers	3%

- ✓ Board of Investments Investment Priority Incentives
 - income tax holiday for the first 4 to 6 years
 - additional reduction for local labor expense
 - additional reduction for major infrastructure investments
 - employment of foreign nationals
- ✓ Omnibus Investments Code
 - tax duty exemption on imported capital equipment and its accompanying spare parts
 - income tax holiday not exceeding 8 years, and other duty and tax exemptions
- ✓ Mini-Hydro Law
 - income tax holiday for the first 7 years of operation
 - VAT exemption on sale of power
 - tax and duty exemption on capital equipment
- ✓ Ocean, Solar, Wind (OSW) Law
 - DOE to assist proponents to receive priority investment status, secure land areas, and allow for cost recovery of assessment and study costs

Source: www.doe.gov.ph

- **Secure the Mayor's permit to conduct site visits.**
- **Organize a meeting with the Barangay Development Council (BDC) and present the proposed project.** Inform the BDC of the proposed project and its benefits to the barangay. Assess if there are any conflicting projects in the area.
- **Administer Key Informant Interview with respected leaders in the community.** Meet with respected leaders in the community, including leaders of indigenous people (IP). Determine if the project site is important in the practice of IP's rituals/customs or if it is an important livelihood area.
- **Conduct Focused Group Discussions with key sectors in the barangay (women, elderly, entrepreneurs, farmers, etc.)** Meet with key sectors in the barangay and discuss the proposed project. These discussions will also provide you the opportunity to gather preliminary information necessary to your project.
- **Arrange subsequent consultation meetings with leaders of existing NGO's, Farmers' Associations, Cooperatives, etc.**

☐ Deepening Social Investigation

After introducing the project to key local officials and leaders of the community, a more detailed study of the community is necessary to gather information about the community. These will be necessary in determining potential effects to the environment and people. The locals' perception of the project will also be important in determining the viability of your project.

- **Map the barangay/s.** Guided by a local, walk-thru the barangay/s affected by your project and sketch a map indicating communities and important landmarks.
- **Secure demographic and socio-economic data.**
- **Conduct a Participatory Rural Appraisal (PRA).** You may engage a local community organization or NGO to conduct the PRA. A PRA is a method of learning about a community where outsiders facilitate local people in analyzing information, practicing critical self-awareness, sharing knowledge about their lives and making decisions on the direction of the development of their community and the utilization of their resources.
- **Use PRA resource maps to redefine GPS maps.**
- **Convene a general assembly meeting to validate PRA data.** Present the results of the PRA to the community and make necessary refinements/adjustments suggested by the community.
- **Furnish the mayor and the BDC copies of the PRA report.**
- **Make a list of prospective local leaders.**

- **Produce a manifesto of resolution indicating the groups interested in availing the services to be offered by your project.** This will provide you a good picture of your products' market.

☐ **Conduct of Renewable Energy Resource Assessment**

Necessary clearances must be obtained prior to the assessment of RE resources. Locals may be involved in the conduct of the assessment.

- **Seek barangay clearance to undertake resource assessment.**
- **Mobilize local groups who will join as volunteers in the resource assessment team/survey team.** You may engage individuals or groups to assist you in the conduct of the resource assessment. Locals have the advantage of being more knowledgeable about the site.
- **Provide logistical support to the Survey Team.** Ensure that your survey team is well equipped to conduct the survey so that time and money are not wasted.

☐ **Construction, Operation and Maintenance of RE System**

The project may assist local communities around the project site by engaging local laborers. This will further elicit support to the project from the locals.

- **Solicit from the local officials recommendations for the labor force necessary in the installation, construction, Operation and Maintenance (O&M) of the RE system.** Local officials will be more knowledgeable of available and reliable work force for your project.
- **Conduct training on the installed RE system and its O&M.** Train local laborers to operate and maintain the installed system, including minor troubleshooting procedures. Staff/operators must also be trained on safety measures in operating the installed RE systems.
- **Hire local labor during actual construction and commissioning of equipment.** Hiring local labor will provide assistance to the communities around your project area. Also, local labor is generally more cost-efficient.

Local staff may be engaged in the operation and maintenance of the system (if investor will express interest of handling over O&M responsibilities to a local cooperative, NGO or other CBOs). Local staff who will take over the O&M of the RE system must be well trained on the RE system and must be skilled in troubleshooting common problems. It is advisable to have a technical staff available in case of major technical problems.

Source: Guidebook for Developing Sustainable Rural Renewable Energy Services, Department of Energy, April 2001.

Loans

LBP—The Land Bank of the Philippines provides loan assistance for RE projects. Its Environment Unit is in-charge of implementing the Bank's financing packages for RE technologies. It has established an RE Core Group tasked to promote and implement its RE lending programs. Visit their website at www.landbank.com.

DBP—The Development Bank of the Philippines is implementing a financing program for hydro, biomass, wind, solar energy, and solar PV for telecommunication. Visit their website at www.devbankphil.com.ph.

Rural Banks—Rural banks are also potential sources of co-financing particularly if the business is integrated with livelihood components.

Commercial Banks—Depending on the viability of the proposed RE projects, private commercial banks may be interested to finance the project.

Overseas Banks—For private sector proponents, certain international funding sources for co-financing may be approached, including the World Bank's International Finance Corporation. More details are available on their website at www.ifc.org.

A "Compendium of Existing and Potential Financing Windows for Renewable Energy Projects" is available from the CBRED-Project Management Office, Department of Energy.

DOE's Fund Facilities

The Department of Energy has established three (3) fund facilities aimed to address specific financing barriers to RE development and use through the assistance of the Global Environmental Facility (GEF) and the United Nations Development Programme (UNDP). These funds are the following:

- **Project Preparation Fund (PPF)**—a loan fund to assist RE project developers in project preparation activities such as the conduct of feasibility study and loan proposal packaging. The PPF provides a zero interest loan for eligible project preparation activities of up to a maximum of 50% of the total cost.
- **Loan Guarantee Fund (LGF)**—a partial loan guarantee mechanism for RE projects in remote, off-grid locations where proponents lack in collateral required by financing institutions. The maximum guarantee coverage it gives is 85% of the total loan amount.
- **Micro Finance Fund (MFF)**—a loan financing mechanism for off-grid or small-scale power projects at concessionary rates or long-term financing

More details on these fund facilities are available from the Department of Energy.

4.1.4. RE Project Financing

The starting point in any RE project financing is the project proposal. This is presented to potential financing sources. Aside from your own funds or equity, some financing sources are shown below:

Private Sector Financing

RESCOs—These are privately owned RE service companies that establish, operate, or manage RE-based enterprises in selected sites. The existing RESCOs in the country are currently partnering with NGOs and community-based organizations in implementing local investment projects.

LGUGC—The LGU Guarantee Corporation is a private guarantee institution that is majority owned by the Bankers Association of the Philippines with DBP as its partner. LGUGC helps LGUs obtain private sector loans or sell their bond flotations through its enhancement of LGU loan obligations. LGUGC also manages guarantee programs funded by multilateral agencies and facilities such as the CBRED Project's Loan Guarantee Fund funded by the GEF through the UNDP. This LGF provides partial guarantee of up to a maximum of 85% of the total loan amount.

EC and IOU—for CBO or NGO proponents, the concerned EC or IOU is a good source of co-financing and could participate in the project as the service provider or the owner of the RE facility. It is prudent to involve EC/IOU in the business planning process if EC/IOU funding is considered.

Technology suppliers—Some local or foreign technology suppliers provide equipment on a variety of financing terms, including loans or lease.

Grants/Government Equity

DOE—The Department of Energy has limited government grant funds for priority barangays to be energized. The DOE may also refer the proponent to multilateral or bilateral funding sources that provide limited grant assistance.

LGU—Assistance in the form of direct contribution from the LGU's Internal Revenue Allocations and/or counterpart resources may be obtained by involving the LGU's Planning and Development Office early on as a stakeholder or partner. This will facilitate obtaining an LGU council resolution that approves financing or other types of support.

Congress/Senate—Legislators interested in allocating part of their development funds to worthy energy projects may also be approached.

4.1.3. Business Plan Preparation

A business plan should set future goals and objectives and list the strategies, tactics, action, human resources, and financial resources to reach those goals, which are put in a time frame.

The business plan has three main components: the marketing plan, the technical and organizational plan, and the financial plan.

The following guidelines from the Department of Trade and Industry (www.business.gov.ph) may help in preparing the business plan:

INTRODUCTION

1. State your objectives. This section tells your reader who you are, what your business goals are, and when you expect these goals to be accomplished.
2. Describe the business. This section gives background information on your business and how it is currently doing. Explain what the business will be, how the idea for your business was conceived, and how the business is expected to develop.

MARKETING PLAN

3. Describe your products or services. Give a detailed description of your products or services to give the reader a clear idea of what you are selling. Also describe applications or uses of your products that may not be apparent. Present the competitive advantage of your product or service over similar products and state your product's advantages and disadvantages.
4. Identify your potential market. Determine who are your present or projected customers and how many they are. Be as specific as possible.
5. Identify your competitors. Competition need not be a threat but instead spur you to do your best. Learn as much as you can about your competitors and include the following information in your plan:
 - a. Description of your competitors. Identify businesses likely to become your competitors.
 - b. Size of your competitors. Determine your competitors' assets and sales volume.
 - c. Profitability of competitors. Which of your competitors are making money? Which are losing? By how much?
 - d. Operating methods. Determine the operating methods of each of your major competitors in terms of pricing strategy, quality of products and services, after-sales services, warranties, credit terms, etc. Discuss only those items relevant to your business.
6. Consider your pricing policy. Consider all relevant factors in pricing your products or services. Factors include cost of production and distribution, degree of market acceptance, and pricing structure of competitors.

7. Determine your marketing methods. Selling a good product or service is not enough. Your business plan must answer the following questions:
- How will you promote or advertise your business?
 - How will you sell your product? Will you employ sales people? Will you engage marketing agents?
 - What channels of distribution will you use to reach your customers?
 - What do your customers think of your product or service? How can you improve your image as an enterprise?

TECHNICAL AND ORGANIZATIONAL PLAN

8. Identify your material requirements and sources of supply. List down what materials you will need and where you will get them. Include only direct materials; office supplies and other indirect materials should not be included in the list. Tabulate your material requirements and state the number of suppliers for each item. Indicate your main supplier and why.
9. Determine the process and equipment you will use for your product. Give a detailed explanation of the production process. For each step, explain the work done, as well as the equipment and materials used.
10. Determine your key personnel. Identify the key people in your business, including you as owner and manager. If your business is a corporation, list the names and addresses of all directors.
11. Identify your work force and support personnel. List down the skills and positions you need, the number of people for each position, and their corresponding salaries and wages.

FINANCIAL PLAN

12. Determine your financial requirements. Prepare a forecast that outlines all your capital requirements. There are three: fixed capital, working capital, and pre-operating capital.
- Fixed capital—includes cost of land and building, or lease deposits on them; cost of improving the land or renovating the building; machinery and equipment; furniture, furnishings and fixtures. These are usually one-time expenses and will generally last the lifetime of the business.
- Working capital—reserve money you need to run the business until it becomes self-supporting. This may take from one to six months or longer. You need working capital to purchase your raw materials, compensate your workers, and pay for transportation and utilities.

Pre-operating capital—includes fees in registering your business, permits and licenses, consultant or lawyer. Pre-operating capital is money that you spend before your business begins to operate. Be sure that no significant item is overlooked. Be realistic and do not underestimate your requirements. Provide for contingencies and a margin of safety to avoid cost overruns later.

13. Prepare a budget. The budget should include marketing, production, general and administrative expenses. Marketing requires expenses in selling and distribution, storage, advertising and promotion. Production cost includes cost of materials and components, labor, and manufacturing overhead. General and administrative expenses include salaries of administrative staff as well as legal and accounting costs. Projections should be prepared every month during the first year of operation and every quarter for the second and third years.

Permits and Licenses Required for Mini-Hydro and Wind Power Projects

MINI-HYDRO

- Mini-Hydroelectric Power Non-exclusive Reconnaissance Permit (OEA Office Circular No. 92-11-23) from DOE
- Mini-Hydroelectric Power Development and Operating Contract from DOE
- Water Rights Permit from the National Water Resources Board
- Environmental Compliance Certificate (ECC) from DENR
- Initial Environmental Examination (IEE) Report from DENR
- Environmental Impact Statement (EIS) Report from DENR
- National Commission on Indigenous Peoples (NCIP) Certification
- Free Prior and Informed Consent (FPIC) from indigenous people
- Certificate of Compliance from the Energy Regulatory Commission
- Power Purchase Agreement with electric cooperatives/distribution utilities
- Permit on Navigable or floatable waterways from the Department of Public Works and Highways
- Endorsement of Local Government Units

WIND

- Environmental Compliance Certificate (ECC) from DENR
- Special Land Use Permit (SLUP) from DENR
- National Commission on Indigenous Peoples (NCIP) Certification
- Power Purchase Agreement with electric cooperatives/distribution utilities
- Pre-Negotiated Commercial Contract (PNCC) from DOE
- Pre-Commercial Contract (PCC) from DOE
- Transmission Service Agreement (TSA) from the National Transmission Corporation (TRANSCO)
- Certificate of Compliance from the Energy Regulatory Commission