

WOOD ENERGY PLANNING - BUILDING CAPACITIES IN ASIA¹

Conrado S. Heruela
Wood Energy Planning Specialist, FAO-RWEDP

ABSTRACT

In the past three years, the Bangkok-based FAO Regional Wood Energy Development Programme (RWEDP) in Asia focused on regional training activities to develop capacities of its 16 member countries in wood energy data and planning. During this period, RWEDP has compiled, assessed and analyzed secondary data to come up with a base case scenario of the consumption and supply of wood energy for the region and the 16 member countries in the future. The programme is now in its last two years of implementation.

The paper discusses the experiences and problems RWEDP faced in implementing the regional training courses. It also describes the approach and techniques RWEDP uses in the compilation, assessment and analysis of secondary wood energy data to come up with a scenario for wood energy supply and use. The paper identifies both the potentials and the limitations of such efforts towards improving capacity in wood energy data and planning in the region. The paper then describes the activities on which RWEDP focuses to maximize impacts of its efforts to develop national capacities. These activities include the conduct of follow-up national training courses and on-the-job case studies in wood energy data collection and planning. It also discusses what RWEDP aims to achieve in the remaining two years of the project. Finally, the paper identifies which follow-up activities are needed to encourage countries to continue their capacity building efforts until they have institutionalized the conditions for wood energy data collection and planning.

¹ Prepared for the International Energy Agency (IEA) Workshop on 'Biomass Energy: Data, Analysis and Trends', 23 to 24 March 1998, Paris, France.

Table of Contents

1. INTRODUCTION.....	3
2. WOOD ENERGY DATA COLLECTION AND ORGANIZATION.....	3
2.1 Building Capacity in Wood Energy Data Collection.....	4
2.2 National-Level Data Collection and Organization.....	5
2.3 Regional-Level Data Collection and Organization.....	8
3. INTEGRATING WOOD INTO ENERGY PLANNING.....	10
3.1 Wood Energy Planning.....	10
3.2 Problems in Wood Energy Planning.....	11
3.3 RWEDP Experiences in Developing Capacities in Wood Energy Planning.....	12
3.4 Strategy for Strengthening National Capabilities.....	14
4. BUILDING NATIONAL CAPACITY FOR WOOD ENERGY PLANNING: BEYOND RWEDP.....	17
4.1 Need for Regional Training Activities.....	17
4.2 Need for Regional Capacity Building.....	18

List of Abbreviations Used:

ADB	-	Asian Development Bank
AEEMTRC	-	ASEAN-EC Energy Management Training and Research Center
AIT	-	Asian Institute of Technology
APERC	-	Asia Pacific Energy Research Center
APDC	-	Asia and Pacific Development Centre
ASEAN	-	Association of South East Nations
EC	-	European Community
ESCAP	-	Economic Commission for Asia and the Pacific
ESMAP	-	Energy Sector Management Assistance Program
FAO	-	Food and Agriculture organization
IEA	-	International Energy Agency
RAP	-	Regional Office for Asia and the Pacific
RWEDP	-	Regional Wood Energy Development Programme
UN	-	United Nations
WB	-	World Bank
WRI	-	World Resources Institute

1. INTRODUCTION

One of the key objectives of the FAO Regional Wood Energy Development Programme (RWEDP) in Asia is to help build capacity in wood and biomass energy planning in its 16 member countries.² In achieving this objective, RWEDP works within a framework for energy planning as a part of a four-phase cyclical process of energy planning and management. Energy planning includes the first two phases of the cycle; energy data collection and organization, and energy analysis and forecasting. Energy management consists of the latter two phases; energy policy and strategy analysis, and energy program formulation and implementation. This four-phase cycle is not a one-time process but a continuous-cycle where activities (and phases) are being done simultaneously. It is a repetitive process in which the outputs of current activities are improvements of the previous ones.

Energy data collection and organization are important prerequisites to energy planning and involve the building up of the country's energy information base. These include various primary data collection activities such as socio-economic and energy consumption surveys, energy resource assessment studies, energy technology evaluations, and preparation of reports by energy agencies and companies. It also includes the compilation, assessment and analysis of secondary data from various sources. The targeted output is the organization of the data for convenient input and retrieval.

Energy analysis and forecasting are the essential activities in energy planning. They involve the analysis and evaluation of data to assess the present and future energy situations. They also involve developing energy plans that will provide bases and inputs for formulating energy policies, strategies and programs. Conducting energy analysis and planning studies usually involves energy modeling using specially designed energy planning software (such as ENERPLAN, LEAP, MEDEES, Energy Tool Box, etc.).

RWEDP has embarked upon activities that aim to develop capacities of member countries to integrate wood energy into these two phases of energy planning: energy data collection and organization and energy analysis and forecasting. RWEDP aims to develop capacities in wood energy data collection and organization and the integration of wood into energy planning.

2. WOOD ENERGY DATA COLLECTION AND ORGANIZATION

Inadequate information and data means lack of data or erroneous data, or both. Such inadequacy of wood energy data and information has led to erroneous formulation of wood energy problems, creating many misconceptions about wood energy. The following are some examples: that wood energy use is the main cause of forest denudation; that fuelwood is obtained by cutting trees from forests; and that fuelwood is only used for cooking by poor rural families. Inadequacy of data also leads to generalized and usually erroneous conclusions such as: fuelwood use will continue to increase linearly with population increases; use of fuelwood will disappear as the economy of a country develops; charcoal production always leads to deforestation; and wood energy problems are the same everywhere.

² The FAO-RWEDP or the "FAO Regional Wood Energy Development Programme" in Asia is a five-year FAO programme funded by the Dutch Government. Its long-term objective is "to contribute to a sustainable production of wood fuels, their efficient processing and marketing, and their rationale use for the benefit of households, industries and enterprises." The project started in mid-1994. RWEDP has 16 member countries, namely; Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Laos, Malaysia, Maldives, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand and Vietnam.

2.1 Building Capacity in Wood Energy Data Collection

RWEDP aims to intensify efforts to improve data and information on wood energy and to provide a better understanding of wood energy systems. Since the project has started, it has implemented the following activities.

- a) **Developed a framework for a wood energy database** - This framework identifies the types of data required and the specific parameters to be used for policy analysis, planning, and program formulation. It also included a “wood energy balance table” format to help facilitate the inclusion of wood energy in overall national energy balances. The framework includes the following types of data: socio-economic data, wood energy consumption data, wood energy flow data, wood energy technology data and wood energy resource data.
- b) **Reviewed and organized available secondary data** - Although the data collected were mostly macro-level socio-economic, energy and forestry data, and not complete for all countries, this was a significant output of RWEDP (see RWEDP Field Document no. 47). The document contains country-by-country data that show variations in wood energy situations across countries. It includes information on production, flow and consumption of wood energy; and the factors that influence them. More importantly, it provides insights on the complexity of wood energy systems.
- c) **Identified “best estimate” wood energy consumption data** – RWEDP obtained time series of energy consumption data for each country from various official national and international energy publications. Data on factors that affect consumption such as urbanization, national income and population were collected. More importantly, information was also obtained on how these data were collected. RWEDP assessed these data and determined the “best estimates” and used them for analyzing and projecting wood energy consumption in the region, country-by-country.
- d) **Organized more detailed wood energy supply data** – RWEDP compiled and assembled more detailed data on wood energy supply that recognize non-forest sources of wood fuels. Efforts were made to collect data that show differences in wood resource potential resulting from variations of agro-ecological situations, land use and tree management practices. Available data pertaining to wood fuel; the processing, transportation, marketing and pricing of wood fuels flows (most of them generated by RWEDP-supported studies) were also organized.
- e) **Conducted a wood energy assessment and projection study** – Using the above-mentioned secondary data compiled by RWEDP, a wood energy assessment and projection study was conducted for all the 16 member countries and for the region. RWEDP formulated its own assumptions for extrapolating detailed data on wood resources and production, and consumption of wood energy for each country. The results were applied to a country-by-country analysis of wood energy situation. The report (RWEDP Field Document no. 50) summarizes characteristics of wood energy supply and use, and provides an outlook on wood energy to the year 2010 for the 16 countries. The document presents a critical review of available wood energy data, leading to best estimates of future consumption. It also estimates the present and future potential supplies of fuels from wood and crop residues.
- f) **Initiated regional-level institutional linkages** - RWEDP linked up with other institutions doing similar regional-level data collection exercises. In addition to FAO Forestry Statistics Section and FAO-RAP, RWEDP reviews data collection of other institutions such as UN Statistics Office (particularly ESCAP publications), WB-ESMAP, IEA, WRI, AIT, APDC, AEEMTRC, APERC and ADB. At first, it appears that all

institutions are doing parallel activities. However a closer analysis of each institution's activities shows specific differences in the types of data they are collecting. A more important result of the review is the identification of the gaps in the wood data collection activities being conducted by RWEDP and the various regional and international agencies.

- g) Conducted training activities** - Two of the reasons why data on wood energy is inadequate are the improper techniques and methods used for data collection, and the lack of resources (particularly funding) to conduct data collection. RWEDP is currently trying to address these issues through a combination of regional training, follow-up national training and case studies. RWEDP hopes to lay down country-specific frameworks that identify the basic procedures needed to improve data on wood energy.

Notwithstanding the constraints, limitations and problems encountered, these RWEDP activities have generated more and better data in the last two years that led to further understanding of wood energy. The process has also physically brought to the RWEDP office many wood energy data publications that are currently available in the region. RWEDP retrieves from them the relevant data, indicators and parameters and has organized these into a system using the RWEDP wood energy database framework. RWEDP is now in the process of developing a computerized wood energy database which can organize and present the data.

2.2 National-Level Data Collection and Organization

The above-mentioned activities have allowed RWEDP to conduct detailed review and analysis of available data in the region. In the process, RWEDP gained knowledge of the specific tasks the different national and regional institutions are doing in relation to wood (including biomass and rural energy) data collection and organization. RWEDP had the chance to assess the quality of their data, and identify gaps and weaknesses in their activities relating to collecting and managing wood energy data. These led to the identification of the following issues in wood energy data collection and organization:

a) Wood Energy Consumption Data

- i. Wood energy consumption data are limited to household data.** Most wood energy utilization data reflect only data on consumption of wood energy in the household sector. Only a few countries have been collecting data on wood energy consumption in the non-household sectors. In these countries, data show that wood and biomass energy are also important fuels used in the non-household sectors; such as in industries, post-harvest processing activities, institutions, and service establishments.

Significant use of wood fuels in the non-household sectors is likely in many other developing countries of the region. Therefore, the existing wood energy consumption data for many developing countries in the region may have been underestimated by the non-inclusion of the consumption from non-household sectors.

- ii. Few countries are conducting regular primary data collection.** Very few countries (e.g. China, Philippines and Thailand) conduct periodic primary collection of energy consumption data that specifically include factors affecting wood energy consumption. Thus, very few countries have actual historical data on wood energy consumption. Many countries extrapolate historical data from a base figure using the assumption that there is a linear relationship between total wood energy

consumption and total population. The usual base figures used for extrapolating historical data were results of previous national surveys, many of which are a decade old. Others used data from past project-level studies that present some problems as discussed later (see item iii below). Data from international statistical publications such as FAO Forestry Statistics were also used which present problems as discussed below (see section 2.3b).

In a linear relationship, techniques used to extrapolate historical data assume that the per capita wood energy consumption remains constant throughout the years. There are problems with this approach. Many national surveys are more than a decade old. Within such a period, countries have mostly undergone significant structural transformation of their economies (e.g. more industrialized, more urbanized, higher incomes, etc.), and patterns of energy consumption have also undergone significant changes (e.g. more users of electricity and fossil fuels). Therefore, values for both per capita total energy consumption and per capita wood energy consumption have significantly changed over the years.

- iii. Data are extrapolated from project-level data collection.** As mentioned above, some countries generate historical data on wood energy consumption by extrapolating data obtained from project-level data collection. First, the data from project-level studies are used to extrapolate aggregate national-level data. Then, these national-level data are used as bases to extrapolate historical data. This appears to be a widely used approach, not only by energy planners, but also by many others (including individuals and institutions) conducting research, policy studies and planning activities in energy, forestry and rural development programs.

This can be an erroneous approach as wood energy situations vary from place to place. Wood energy consumption and supply can vary across areas because of differences in population densities, levels of economic and social development, biomass resource endowment and availability of alternative fuels in the different areas. Thus the amount and pattern of wood energy consumption in one project area is not always the same as in other project areas, and more so, for the whole country.

- iv. Data collection techniques have potential sources of inaccuracies.** Collecting wood energy data can be subject to errors if no physical measurements are taken. Unfortunately, because of budgetary and time constraints, data are usually obtained only by interviews. Such an approach leaves room for errors in data collection, as uniform measurement systems for wood fuels do not exist, neither within countries nor even within provinces or states of countries. Many have developed indigenous measurement systems recognized only in their immediate localities. Physical measurements are needed to establish a common standard for wood fuel measurements and the appropriate factors to convert local forms of measurements to the established standard.

In only a few countries (e.g. China, Pakistan, Philippines, India and Vietnam) information is available to RWEDP discussing the techniques and methods used for conducting physical measurements in their wood energy data collection activities. Given that sources did not provide such information and that in such countries, wood energy data collection capacities are weak, it is more likely that proper wood energy collection techniques were not properly observed in them.

b) Wood Energy Supply Data

- v. **Data on wood energy resources are not properly accounted for.** In almost all countries, data on wood energy resources and supply are always taken to be synonymous to data on forest cover areas or volume of forest trees (usually measured as stem volume). Wood fuel resource potential may be underestimated because other sources of wood fuel resources are not accounted for. These include; trees outside forests; the crowns of trees in the forests; and the wood waste generated from the harvesting of trees to the processing of various wood products. On the other hand, factors that restrict supply such as access rights, difficulty of terrain and social practices are also not accounted for. None-accountability of these factors may lead to overestimation of wood energy supply.

It is this lack or inadequacy of data on wood energy supply that leads to many confusing debates on the relationship between forest denudation and wood fuel use. Many people tend to generalize different situations and then draw generalized conclusions from them. Even if data are available from some areas, patterns of wood resource potentials and supply cannot be generalized for a whole country. Like data for wood energy consumption, supply data are also site-specific.

- vi. **No commonly accepted wood energy supply data collection techniques.** Most wood energy consumption surveys now follow methods accepted by statistical bodies. Many wood energy consumption studies are in fact integrated in general energy consumption surveys, which are implemented by national statistical agencies. Methods for wood energy consumption surveys are relatively more standardized and have wider acceptance.

This is not yet the case for wood energy supply studies. Only in Pakistan there has been a study that comprehensively and systematically collected wood resource data and assess supply of wood energy. This provided an example for precise but relatively costly techniques for generating wood energy supply data. A similar exercise on wood energy supply analysis was done in the Philippines but it used assumptions and approximations techniques based on secondary data from area-based studies of localities of similar agro-ecological conditions. This approach costs less but raises questions regarding accuracy of results. As for other countries, many still equate total forest resources to indicate their wood energy supply. Ironically, this approach seems to have a wide acceptance but as was mentioned earlier (see 2.2b, point i), this is not a proper method.

- vii. **The concept of wood energy flow is still not widely understood.** The study of wood energy flows provides crucial information on the socio-economic aspects of wood energy supply and use particularly in situations where wood fuels have become traded fuels. Such studies look into the processing, marketing, transport and pricing of commercialized wood fuels. This aspect of wood energy supply and its impacts on employment and rural economy, is still not widely recognized as can be seen from the very few investigations done on this subject. Furthermore, there is a need to appreciate the difference of wood fuel flow studies from wood energy consumption surveys, wood energy resource assessments and studies of tree production and management systems.

Except for Pakistan and the Philippines, national aggregate data on wood energy flow is none existent. Nevertheless, there are data available from many area-based studies, many of which were studies supported under the previous phase of

RWEDP. However, care must be taken in using them to extrapolate national aggregate figures.

- viii. Wood energy technology data is not yet systematized.** Wood energy technology data, particularly information on what types of energy conversion and end-use technologies are available and their corresponding efficiencies have been generated from many area-based surveys, demonstration projects and laboratory studies in the past decade. Manufacturers of commercialized wood energy devices also provide this information. Thus, data are scattered in various government agencies, laboratories, other research institutions, and private companies.

A system to organize these data has not been commonly defined yet, leading to different perceptions and interpretation of data. Some data are country-specific because some technologies and devices are country-specific. Even characteristics of traditional technologies and devices, such as stoves, are site-specific. Thus, care must again be taken in extrapolating aggregate figures from the available data.

2.3 Regional-Level Data Collection and Organization

At the regional-level, the main interest is to give a broad picture of the global or regional wood energy situation that may include: trends in consumption, sustainability of supply, trends in technology developments, some general economic and social impacts, and possibly, environmental ones as well. The end objective is to give policy advice to countries. This is the general purpose of data collection at the regional level and in doing so RWEDP has identified the following issues.

- a) Need to improve extrapolation techniques for wood energy data.** – FAO used to be the only international organization that publishes historical country-by-country wood energy consumption data. Countries are asked to provide their data to the FAO Forestry Statistics Office. For countries that do not have data to submit, FAO used to extrapolate historical data for them. Historical data are extrapolated linearly from 1961 figures. This means that the per capita wood energy consumption has been assumed to remain constant throughout the years. As discussed previously (see again 2.2a, point ii), this can lead to errors in estimation of wood energy consumption since countries have undergone changes of the economic structure, which have led to changes in per capita consumption of wood fuels.

Extrapolation can still be used to generate historical data when primary data is lacking. However, a more appropriate technique should be adopted that accounts for the more realistic behavior of variables affecting wood energy consumption. This is one area, where international organizations such FAO and IEA (or even RWEDP for Asia) can provide a leading role. The adoption of correct extrapolation method becomes more important because it has been the usual practice by researchers (and even country energy planners themselves) from countries that have not conducted primary wood energy data collection, to use data published (and extrapolated) by international agencies.

- b) Regional-level data collection and organization activities are insufficient.** – Data collection is very much focused on energy consumption. Although some international organizations have wood resource data, like in some countries, wood energy resource data is erroneously equated to forest resource data. No regional or international organizations currently collect, organize and publish data on wood energy resources, flow and technology. Wood energy technology data, particularly data on process and

equipment design, efficiencies and costs, are still scattered in many regional and national research and technology development institutions.

- c) **A universal Wood Energy Data Base Format is necessary.** - Organizing an international or even regional wood energy data base will have to overcome the lack of uniformity in definitions of terms, collection techniques, parameters and indicators, and conversion factors, among others. This a major factor hampering initiatives for regional-level, or even national-level, collection and organization of data for assessment and analysis.
- d) **Limited wood energy data hinder proper and in-depth policy advisory work.** - Most regional and international institutions doing policy research and advisory work, obtain their wood energy data from the data published or reports submitted by countries. Other times, they get data directly from WB-ESMAP and FAO studies. They also do their own extrapolation studies if the data submitted by the countries contain data gaps. Except FAO, and some studies conducted by WB-ESMAP, most data published by these institutions contain only wood energy consumption data and nothing on wood energy supply. This reflects that only consumption data are available from countries as mentioned above.
- e) **External support to improve data collection capacities has been diminishing.** – External support from regional (or international) development agencies is crucial for a period of years in improving and updating wood (and biomass) energy data in the developing countries of Asia. Most of the countries require both technical and financial support to improve or develop their wood energy data collection. However, aside from RWEDP, WB-ESMAP is the only organization, which has provided such type of assistance to countries in the region. It's assistance, though substantial as compared to RWEDP, has been limited only to a few countries in the region (e.g. China, Indonesia, Pakistan, Philippines, and Vietnam).

Intensive collection of wood energy data was a part of past WB-ESMAP energy sectoral studies of the traditional, rural or household energy sub-sectors in the region. Baseline data were gathered to formulate policies for restructuring a country's energy sector. These one-time surveys have been useful in introducing local experts in the countries in which the studies were done, to proper wood (biomass and rural) energy data collection techniques. This was done with participation of local experts from the cooperating institutions in the surveys, which was dutifully encouraged by the WB-ESMAP country study teams (as opposed to studies done solely by consultants who provide their cooperating institutions only with their reports). Thus, the former studies produced better data and local expertise. Unfortunately, in recent years, WB-ESMAP has not conducted anymore similar exercises in the region.

Thus, RWEDP remains today as the only regional organization providing direct assistance to countries in this region to improve capabilities in wood (and biomass) energy data. But RWEDP has limited resources (for the 16 countries to be assisted) and is due to end in two years time. Without RWEDP, there will no regional support left to assist developing countries to improve their capacity in wood energy planning. There is a chance that RWEDP initiatives in many of its member countries may come to a halt after the project has ended.

Unlike data collection and planning for fossil fuels, electricity (and increasingly for solar and wind), there are few private sector interests pushing countries to do these things for wood energy on their own initiatives. Wood energy remains essentially the interest of the marginalized sector of the population. Historically, the interest of this sector needs

support and assistance from international or regional development agencies so that governments in developing countries will continue to pay attention to them. This has become more crucial at this time when many of the countries in this region are opting for a more open and liberal economy and lesser role for their governments.

3. INTEGRATING WOOD INTO ENERGY PLANNING

Broad-based wood energy development programs which aim at the efficient, economical and sustainable supply and utilization of wood energy, can be a viable energy policy and strategy option for many countries in Asia. Formulating broad-based wood energy development programs involve an integrated analysis of supply and demand for wood energy. Defining policies and strategies would require the incorporation of wood energy assessment and analysis in energy planning and in other relevant sectoral planning such as in forestry and agriculture.

3.1 Wood Energy Planning

a) Project-Level Planning

Past wood energy interventions have been mainly at the project level. In some countries, several wood energy projects have been combined into a program. Wood energy planning in the past dealt mainly with project or program planning. Wood energy project and program planning concepts have been continuously developed, disseminated, implemented, dissected, discussed and reformulated. In the process, project and program planning approaches, techniques and methods have been continuously fine-tuned.

This is particularly true for wood energy projects and programs in areas such as wood fuel production in community forestry programs, wood fuels production in agroforestry systems, tree farming, dissemination of improved cook stoves and lately, modern wood energy applications. Several regional and national institutions have been continuously involved in such projects and are continuously generating experiences on how to plan and manage such projects.

It is imperative to disseminate this knowledge and experiences to project analysts working at the local levels so as to be part of their usual planning tasks.

b) Macro-Level Planning

Wood energy analyses have not been part of macro-level sectoral planning in many countries. Macro-level planning is important because it is the bases for formulating national policies and strategies, the most important of which are allocation of government investment and resources, and prioritization of development objectives and targets. Wood energy analysis should be a part of overall energy or forestry planning.

Most RWEDP focal point agencies in the member countries have recognized the importance of including wood energy analysis in energy and forestry planning. Some of these agencies that have been assisted by RWEDP (i.e. Cambodia, China, Philippines, Sri Lanka and Vietnam) have taken initiatives to integrate wood energy into energy planning under the guidance of RWEDP. The focus of these initiatives is to improve planning approaches, techniques and methods to properly integrate wood energy into macro-level energy planning through case studies. However, the agencies involved in these activities are middle-level divisions or departments that are tasked with overall rural or renewable energy development.

The activities of the RWEDP focal points need to be properly recognized, supported and promoted by higher-level bodies (e.g. policy makers) in energy, forestry and agriculture ministries. The current initiatives to develop capacity in integrating wood energy in macro-level planning in relevant sectors can be sustained and hopefully, be institutionalized.

c) Decentralized Area-Based Planning

Wood energy situations and problems are site-specific. They vary from country to country, from province to province, or from state to state within countries. Even within states or provinces, wood energy situations and problems may be different. Thus it is improper to generalize analysis of wood energy situations and generalize solutions to wood energy problems. Decentralized area-based approach to planning is essential to properly understand wood energy situations and to formulate proper site-specific plans, policies and strategies.

There is a need to develop country-specific approaches, techniques and methods for decentralized wood energy planning and disseminate their applications to countries seriously committed to implementing wood energy development.

RWEDP is supporting case studies in countries (China, Philippines and Sri Lanka) to develop country-specific approaches to decentralized area-based wood energy planning in cooperation with focal point agencies in the energy sector. Focal points in other member countries have expressed willingness to conduct similar case studies. These cooperating agencies are the same middle-level agencies tasked with rural or renewable energy development, which are also involved in developing capacities for integrating wood energy into the macro-level mentioned above.

As in macro-level planning, decentralized area-based wood energy planning needs to be recognized, supported and promoted by policy decision makers so as to expand efforts in building capacity in decentralized area-based wood energy planning and institutionalize its application in local areas.

3.2 Problems in Wood Energy Planning

Wood energy planning exercises, whether it is project planning or integrating wood into macro-level planning or decentralized area-based planning, face the following problems:

a) Inadequacy of wood energy data

This is a major factor that leads to inappropriate integration of wood in energy or forestry analysis, and limits decentralized area-based wood energy planning exercises. The problems, issues and RWEDP initiatives to strengthen national capacities in wood energy data collection have been previously discussed.

b) Improper or lack of understanding of wood energy systems.

This leads to erroneous concepts, approaches and techniques in formulating wood energy plans. Examples of improper or lack of understanding of wood energy systems are given below³:

- the application of the “gap theory” that leads to inaccurate prognosis of wood energy situations and problems;

³ RWEDP defines wood energy systems of consisting of two basic elements; the supply (which includes wood production and flow) and use (the consumption patterns and demand characteristics by various end using sectors) of wood fuels (e.g., fuelwood, charcoal and other derivatives of wood fuels).

- inadequate analysis of wood energy systems that leaves out elements such as factors affecting fuel shifting and consumption, consumption of non-households, non-forest wood fuel resource, and wood fuel flow aspects;
- generalization of wood energy situations that leads to centralized planning approaches and techniques and result in generalized policies, strategies and programs which may not be appropriate for all areas or localities of a country.

c) Weak or lack of linkages among relevant agencies.

Energy and forestry agencies are the key agencies that must link together to obtain a comprehensive understanding of wood energy systems and formulation of wood energy plans, policies, strategies and programs. To develop or strengthen linkage between the two sectors, they need to conduct the following activities:

- identify overlaps and gaps in their wood energy planning activities;
- recognize their current institutional and organizational weaknesses that prevent proper wood energy assessment, analysis and planning;
- define and agree on the responsibilities, including the respective resources to be committed by each, in strengthening their capacities in wood energy planning.

These activities require significant input of expertise from each sector. However, in most countries where RWEDP had encouraged institutional linkages, the problem was not lack of expertise to do such activities but rather having time available for conducting such activities. In both sectors, wood energy are not priority concerns unless RWEDP has initiated and funded such activities. In implementing those activities, some forms of temporary linkages occur, particularly if RWEDP had required them as a condition for support. Nevertheless, in countries where many RWEDP-initiated and funded activities have been implemented, it can be observed that energy and forestry institutions are much closer. There, more information is being exchanged and officials of each agency know each other personally and are more aware of the linkages of their activities, projects and programs with those of the other agency. Still, there is a need to further strengthen such linkages for proper wood energy planning.

3.3 RWEDP Experiences in Developing Capacities in Wood Energy Planning

a) Outputs of Training Activities

- i. **Regional and national level training courses** - During the first three years of the project, RWEDP has implemented three regional training courses in wood energy planning. Almost a hundred participants from 16 countries were trained in these courses. RWEDP also conducted four national training (in Philippines, Sri Lanka, China and Vietnam), and started two case studies on “decentralized area-based planning for wood energy” (in Philippines and Sri Lanka). RWEDP is currently arranging national training in three more countries (Cambodia, Laos and Thailand) and case studies in all the countries mentioned. The experiences from these activities led to the identification of key issues to be addressed in strengthening wood energy planning capabilities. It helped focus RWEDP strategies for national capacity building.
- ii. **Trained energy and forestry officials** - The training in wood energy planning plus other RWEDP activities (in wood energy resources, conversion, and policies) have now produced a number of senior-level officials who recognize the importance and fully support the project objective of building national capacities for wood energy. Many of them made known their interest during their participation in regional meetings organized by RWEDP or during individual meetings with RWEDP experts or even through written communications to RWEDP. At least officials from five more

countries (Bhutan, Indonesia, Maldives, Myanmar, Nepal and Pakistan) have talked with RWEDP on their countries' interest in implementing national capacity building activities for wood energy planning.

b) Assessment of Regional Training Activities

iii. Objectives of regional training - As mentioned earlier, RWEDP implemented regional training on wood energy data and planning, every year for the last three years. The original objectives of the regional training on wood energy planning were as follows:

- To become familiar with the data and information required for integrating wood in energy analysis, planning and policy-decision making; the techniques used for collecting them; and to adopt a common methodological framework for generating and assembling such data and information.
- To learn approaches and methods in the identification, preparation and analysis of wood energy projects and to formulate wood energy programs.
- To learn methods and techniques for incorporating wood in energy planning and identify the requirements for building national capabilities for such.
- To learn the rationale and techniques for decentralized area-based energy planning and its application as a planning mechanism for identifying wood energy projects and interventions.

As previously mentioned, the regional courses have trained mostly officials and staff who are directly involved in planning and/or policy analysis. Most are working in planning units of energy and forestry agencies. Many were holding positions that provide them authority to initiate national-level activities in their countries. This was demonstrated in those countries where capacity-building activities have been initiated.

iv. Results of regional training - Most participants claimed that the regional training courses provided them only a basic understanding of the concepts, approaches and techniques involved in wood energy data collection and planning. However, the training also provided an opportunity to discuss the policy, organizational and institutional requirements in building up national capacities in wood energy planning. These helped them recognize their countries' needs for capacity building. The participants provided such feedback to RWEDP and to their respective senior officials. The feedback became the bases for defining national capacity building activities. The participants are expected to provide the technical support needed in organizing national follow-up activities. This can be seen from the experiences in capacity building going on now in several countries.

v. Effects of regional training - During these training activities the participants had the chance to initiate links between the institutions they represented. The participants from the energy and forestry agencies were given the opportunity to jointly:

- learn concepts, approaches and techniques for wood energy planning;
- undergo training exercises on wood energy data collection and planning;
- discuss with each other their wood energy-related tasks and activities and relate them with the concepts and techniques they learned from the training course;
- analyze what needs to be done to develop or strengthen wood energy planning capabilities in their respective countries, particularly in building institutional linkages.

Bringing together forestry and energy agencies to discuss wood energy and in particular, wood energy planning is a key RWEDP achievement. RWEDP has

actually been encouraging the organization of National Wood Energy Committees in the member countries to facilitate institutional linkages. This has met with various degrees of success among the countries. However, it is the participation of representatives of energy and forestry agencies in the regional training activities that provided one effective venue to develop the necessary linkages for wood energy development. Thus, at the end of the regional courses, participants proposed activities to initiate institutional linkages in their countries. They also identified activities needed to develop national capacities in wood energy planning and identified which of these activities need RWEDP support

c) Recognizing the Need to Focus on National Level Activities

RWEDP has started implementing national-level capacity building activities in the respective countries. RWEDP hopes that through these national level activities, local experts who participated in the regional training will further develop their capabilities in wood energy and that more people will be trained in wood energy data collection and planning in the countries. The national level capacity building activities should then aim to achieve the following results:

- more people who have basic understanding of wood energy development,
- several local experts in wood energy data collection and planning,
- a field document on a country's experiences in wood energy planning,
- country-specific training materials on wood energy data collection and planning.

RWEDP will be focusing on national-level activities and will not implement a regional training course in 1998. Before the project ends, RWEDP is planning to conduct a regional seminar-workshop to gather the representatives from the different countries that have conducted national capacity building activities to share and discuss their experiences.

3.4 Strategy for Strengthening National Capabilities

As mentioned before, RWEDP has conducted three regional training courses, supported four national training activities, and initiated two case studies in the previous three years. In the past, these three types of activity were not explicitly linked with each other. Linking the three activities should result in a more defined and sustainable national capacity building strategy.

a) National Training In Wood Energy Planning

- i. National Training Courses** - The national training courses shall be a combination of seminar and workshop sessions. The courses shall aim at multi-sectoral participation of relevant national- and local-level GOs, NGOs and institutions. The first day of the national training course shall be a "brief seminar on wood energy policies and strategies" targeted for policy decision-makers. The subsequent days shall be a "basic training course on wood energy data collection and planning" for middle-level or junior staff involved in data collection and planning activities. The national training courses shall maximize the use of local resource persons and shall preferably be conducted in the national language.

It is expected that the national training course will result in increased awareness and better understanding of wood energy data collection and planning in the country, particularly to those people who were not able to attend the regional courses. The training should also result in broader support for strengthening wood energy data and planning capabilities, and wood energy development in general in the countries.

- ii. Internship at RWEDP** - Preparation for the training course shall include a two-week internship in RWEDP of at least two local experts, one each from the energy and forestry agencies. During the internship, the local experts shall develop the program

for the national training course in wood energy planning. The energy agency (or the agency primarily involved in energy planning) shall be the lead partner of RWEDP in implementing the national training activity.

- iii. **Tutorials in LEAP Application** - There will be training on LEAP as part of the preparation for conducting the case study. This shall be a one-week hands-on training on the use of LEAP for those who will be involved in the case study. It will not be a formal training course, but rather tutorial sessions involving hands on computer exercises using as much available country data as possible.

b) Multi-Level Case Study on Wood Energy Planning

RWEDP shall assist the country's energy agency to initiate case studies in wood energy planning. The case studies shall provide a venue for an on-the-job training in wood energy planning. The case studies shall provide the participants the intensive training required to develop them into wood energy planning experts in their respective countries, who can provide technical advice and act as resource persons in further training in the countries. The case study shall be done at three levels; national-level, provincial- or state-level, and district-or county-level.

- i. **National level study** - The national level study shall be an exercise in integrating wood energy into national level energy planning. It shall involve the application of the LEAP model in conducting macro-level analyses of policies and strategies in sectors (such as energy, forestry, and agriculture) affecting wood energy. It shall involve secondary data collection activities to gather data needed in the application of LEAP. The study shall result into the identification of requirements for strengthening national-level capacities for wood energy data collection and planning.
- ii. **Provincial level study** - The provincial-level study shall be an exercise in area-based (i.e. provincial-based) decentralized planning for wood energy. This study shall involve site-specific (i.e. provincial-specific) policy analysis using the LEAP model. It shall also involve secondary data collection activities to gather data needed in the application of LEAP. The study shall result into the identification of the requirements for developing capacities for provincial-level wood energy data collection and planning.
- iii. **District level study** - The district-level study shall be an exercise in district-based decentralized energy planning. The district level study shall involve wood energy project identification and/or program formulation. The study shall use LEAP in the identification and initial assessment of wood energy projects and programs. It shall include both primary and secondary data collection in gathering the data needed in the application of LEAP. The study shall result into the identification of the needs for developing capacities for county-level wood energy planning.

c) Guidebook on Wood Energy Planning

The experiences from the implementation of the case studies and the results shall be the basis for writing a national guidebook for wood energy planning for each country. The guidebook shall be written both in English and the country's national language. It shall be made available to other organizations to be involved in wood energy data collection and planning. It shall be the main reference materials for conducting further training in wood energy data and planning in the countries.

d) Formulation of a National Strategy for Capacity Building

The results of the case studies shall also be used in identifying further needs for strengthening wood energy data collection and planning in a country. These shall be inputs in formulating a continuous sustainable strategy for national capacity building in wood energy data and planning in the country. It shall also be the basis for identifying regional support needed to carry-on national capacity building after the completion of RWEDP.

The energy agency shall organize a small national-level expert consultation meeting that will discuss and validate the strategy for national capacity building in wood energy data and planning that have been defined. The meeting should also formulate an action plan.

e) RWEDP's Support

RWEDP's basic task is to encourage, to provide technical guidance and to contribute modest financial support to countries interested in building-up their national capacities in wood energy planning. RWEDP already provides, and shall continue to provide the following.

- iv. Technical and financial support for the national training course** - RWEDP allocates up to US\$10,000 for the conduct of a national training course. It also shoulders the expenses, i.e. travel and daily allowance costs, incurred by national experts who come to the RWEDP office to work as interns in developing the program for the national training course. RWEDP provides guidance and supervision in the development and implementation of the national training course. RWEDP also provides resource persons during the training course.
- v. Technical and financial support for the case studies** - RWEDP has provided up to US\$15,000.00 each for the conduct of the case studies and the required preparatory activities including the LEAP tutorials. Such studies are to be implemented for at least one year. Again, RWEDP provides technical supervision in the conduct of the case studies.

f) Problems in National-Level Capacity Building

- vi. Obtaining firm commitments from countries** - Not all countries have definite plans to conduct national level capacity building activities, although officials from focal points in the majority of the member countries have indicated their interests. It would be desirable that there are more concrete and firm indications from countries to seek assistance from RWEDP in conducting national follow-up training activities. However, usually it is only officials higher than the heads of focal point agencies who can make commitments for their countries. RWEDP needs to conduct several (time-consuming) follow-up communications to be able to obtain official commitment by countries to conduct national level capacity building activities. This presents a problem since RWEDP has less than two years left to provide assistance to them.
- vii. Practicing decentralization as a development strategy** - Though the conventional thinking is that countries in this region are moving towards less government intervention, the reality is that policy-making and planning are still very much top-down processes in most of them. Decentralization is advocated in many sectoral development programs but the need is to translate this into actual practice. Adoption of appropriate approaches and techniques is required but more importantly, adoption of appropriate institutional set-ups and social norms too. Country-specific mechanisms have to be evolved to overcome the difficulties encountered here. The actual situation in each country with regard to the role of

government in planning and the extent of decentralization will be the major factors that will shape country-specific wood energy planning concepts and approaches. How can these factors be taken into account in developing national capabilities in wood energy planning?

4. BUILDING NATIONAL CAPACITY FOR WOOD ENERGY PLANNING: BEYOND RWEDP

The next two years will see RWEDP expand its initiatives in national capacity building to more countries. What RWEDP can only do is initiate activities that lay down a framework and guidelines that define the basic tasks for national capacity building. RWEDP will not have the resources and time to provide support and guidance for the full implementation of these tasks, particularly when consolidation is what is already being aimed for in the countries. Many of these tasks and activities will go beyond the remaining period of RWEDP's existence.

The case studies that will be implemented in several countries may open up new questions in wood energy planning. This may lead to reformulation of approaches and revisions of techniques and methods that have just been developed for wood energy planning. These will generate debates, discussions and probably further research and case studies. The resolutions to these will have to be addressed at a time when RWEDP has already ended. Which of the national capacity building activities will the countries be able to handle themselves? Which will need external assistance?

4.1 Need for Regional Training Activities

Despite the number of training courses that RWEDP will be implementing during the project period, there will still be a need for more of such short training courses in the region. The reasons for these are as follows.

- the number of participants in these training is still small compared to the number of people to be trained, especially when the need for decentralized strategies is considered;
- there is a need to organize follow-up in-depth training courses since most of the present training includes only basic and introductory concepts; there is a need to validate concepts with actual experiences and develop from them more practical approaches;
- there is a need to develop training packages using national languages as many potential trainees are local people have little knowledge of English;
- there is a high turnover rate of staff in agencies working for wood energy development.

Organizing such courses will require significant resource inputs from the institutions. RWEDP now provides these resources which include expert advice, training materials and funding for the implementation of the training courses. Funding includes travel costs and living allowance for the participants and honoraria of resource persons and experts. The total cost of these resource inputs could be substantial for the institutions to bear.

The training institutions RWEDP cooperated with in implementing regional courses, notably AIT, are offering degree programs. As such, they can incorporate in their energy graduate program subjects on wood energy planning. With the incorporation of wood energy in relevant curricula, the institutions will hopefully turn out graduates already knowledgeable of wood energy. Although effects will not be felt immediately, training students on wood energy as part of their degree program can be a cost-effective long-term strategy for building and sustaining the expertise required. This can be the long-term strategy for human resource development in the region. RWEDP is now planning to develop training materials that may be used in relevant degree programs.

Training institutions face the following constraints if they take over the tasks of implementing wood energy training - whether they plan to conduct short training courses or to incorporate wood energy concerns in their existing degree training programs. These constraints are: available expertise is inadequate to effectively implement wood energy training, and financial support required to build-up capabilities and implement training courses when RWEDP finally ends is uncertain.

4.2 Need for Regional Capacity Building

A regional body that will continue the present role of RWEDP in strengthening national capacities will be highly desirable. The regional body will be responsible for the following activities currently handled by RWEDP.

- formulating the training concepts and consultation meetings at regional and national levels;
- providing expert advice in formulating and monitoring of national activities;
- documenting and analyzing the various country experiences;
- disseminating information and assessing the countries' experiences;
- providing seed funding for institution building activities.

Several regional institutions appear to have the potential to perform the current tasks of RWEDP. Many of these tasks will be additional responsibilities for them. Some are developmental tasks that will be implemented only for shorter periods of time. Others will become normative tasks, which should become part of their routine tasks as a regional developmental institution.

a) Regional Level Developmental Tasks – The regional body can take responsibility for the developmental tasks as the components of a new regional project. The developmental tasks which are currently handled by RWEDP include:

- overseeing capacity building of regional institutions to implement wood energy training courses;
- providing directions and expert advice to national agencies in conducting national training activities, pilot projects and case studies;
- assessing, analyzing and evaluating the national activities;
- documenting the results and disseminating them through seminars, workshops and publications;
- fine-tuning approaches, techniques and methods for wood energy development based on actual experiences of countries.

b) Regional Level Normative Tasks - Sustaining national institutional-strengthening activities will be a major objective of the regional body. This will require that some of RWEDP activities be developed into normative tasks. The regional body can start institutionalizing these normative tasks while still implementing the developmental tasks. The institutionalization of the normative tasks can be part of the new regional project. These tasks includes the following:

- collection and publication of relevant indicators for wood energy;
- preparation and publication of annual regional wood energy situation;
- prognosis of future regional wood energy scenarios;
- information dissemination on developments in wood energy.

The regional body that will take over these tasks needs to build-up its expertise in wood energy systems. It needs to mobilize additional funding and resources to be able to perform the above tasks. It will need developmental financial support if it will be responsible for wood energy development in the region. However, it faces constraint in funding and expertise in wood energy development. These are further reasons for having a new regional project. It

may be viable to link such a project with similar initiatives in other related sub-sectors like biomass energy, renewable energy, rural energy and other programs such as environment, gender, poverty alleviation and income generation. It may prove to be more attractive to donor agencies, to provide financial support for a broader-based new project.