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Editorial

The use of woodfuels in RWEDP member-countries is still growing in absolute terms. This fact is not always recognized, as it is partly overshadowed by a relatively faster increase in fossil fuel use. The largest single user of energy is still the domestic sector, which is the main woodfuel using sector, followed by industries and enterprises. However, in many areas in Asia today, wood energy supply conditions continue to deteriorate. Increasing shortages of woodfuels have forced many users to shift to substantial use of agricultural residues. Woodfuel users are faced with limited options of accessible and affordable fuels. It is the landless and poor urban households, which compose the majority in the region, that find themselves in the most difficult situation.

A major constraint to effective management and planning in the wood energy sector is the insufficiency of data and environmental information. The data are required for the formulation of proper policies and strategies for wood energy production and use. However, most countries have inadequate capabilities to collect and analyse data, and often lack knowledge or skills for formulating policies, plans, or strategies, and implementing them both at the national and sub-national levels. For example, up to the present there is still a lack of information about the specific sites in the countries of the region where woodfuel extraction is an important issue, or where there is a need to create additional woodfuel supply. This definitely limits the potential recognition of wood energy both as a problem in and as an opportunity for development.

When the present phase of the Regional Wood Energy Development Programme in Asia was being conceptualised by member-countries and the FAO jointly, it was felt that there was a general weakness in the region in terms of being able to apply techniques and methodologies for incorporating woodfuel issues into energy and forestry planning. It was also observed that data bases and institutional capabilities for collecting and analyzing wood energy data were limited. Therefore, strengthening member countries in wood energy planning methods and tools was identified as one of the main tasks of RWEDP.

Wood energy planning sounds ambitious, like landuse planning, or environmental planning for that matter, and there are few successful examples of multi-sectoral planning in any problem area that we can learn from, whether in developing or industrialised countries. RWEDP is small and the region is large with a population of more than 3 billion people. Therefore, let's be modest in our expectations. Still, the present issue of Wood Energy News may provide some inspiration to those who are determined to take wood energy development seriously.

Front page: What can wood energy planning do for her?

Wood Energy Planning

W.S. Hulscher

It is generally agreed that governments have a role to play in wood energy development but usually this role does not yet include the planning aspects. Most people accept that projects for wood energy require some form of project planning. At the same time, the involvement of governments in wood energy development by means of development planning (or perspective planning) is not taken for granted. Indeed, neither planning per se, nor government involvement in every sub-sector of the economy will be a panacee for all sorts of problems. However, there are strong reasons for governments in Asia to be involved in wood energy planning (use of the term 'planning' here, and in the remainder of this article, refers to development planning), in order to support government policies. Some well-known reasons are the following:

- For many decades to come woodfuels will remain a basic commodity for more than half of the population, and particularly for the rural poor;
- Woodfuels are becoming increasingly scarce;
- The use of wood energy links to public sector interests like environment, public health, equity, balanced rural development, employment and even foreign exchange;
- Interventions in the wood energy subsector largely depend on government actions, like public resource management, pricing, taxes and subsidies, and economic incentives for fuel substitution and licensing, for example.

Additional reasons would be that energy demand in transitional economies can be quite dynamic, whereas developing energy supply options requires long lead times, e.g. up to 20 years, supported by the establishment of effective public-private partnerships for implementing new supplies. This calls for long-term scenarios.

Government planning institutions, both centralised and decentralised, often display a lack of interest in 'traditional' fuels, including wood and biomass energy. Obviously there is an imbalance as compared to the major efforts which are common, for instance, in the planning of electricity and fossil fuel supplies or incentives for their use. The most direct adverse effects of neglecting wood energy planning can be severe scarcities and drudgery for weaker groups, over-exploitation of local resources and, as we often observe, ineffective government interventions. Wood energy planning has both long-term and short-term components, i.e. from 1 year to 10 years or more.

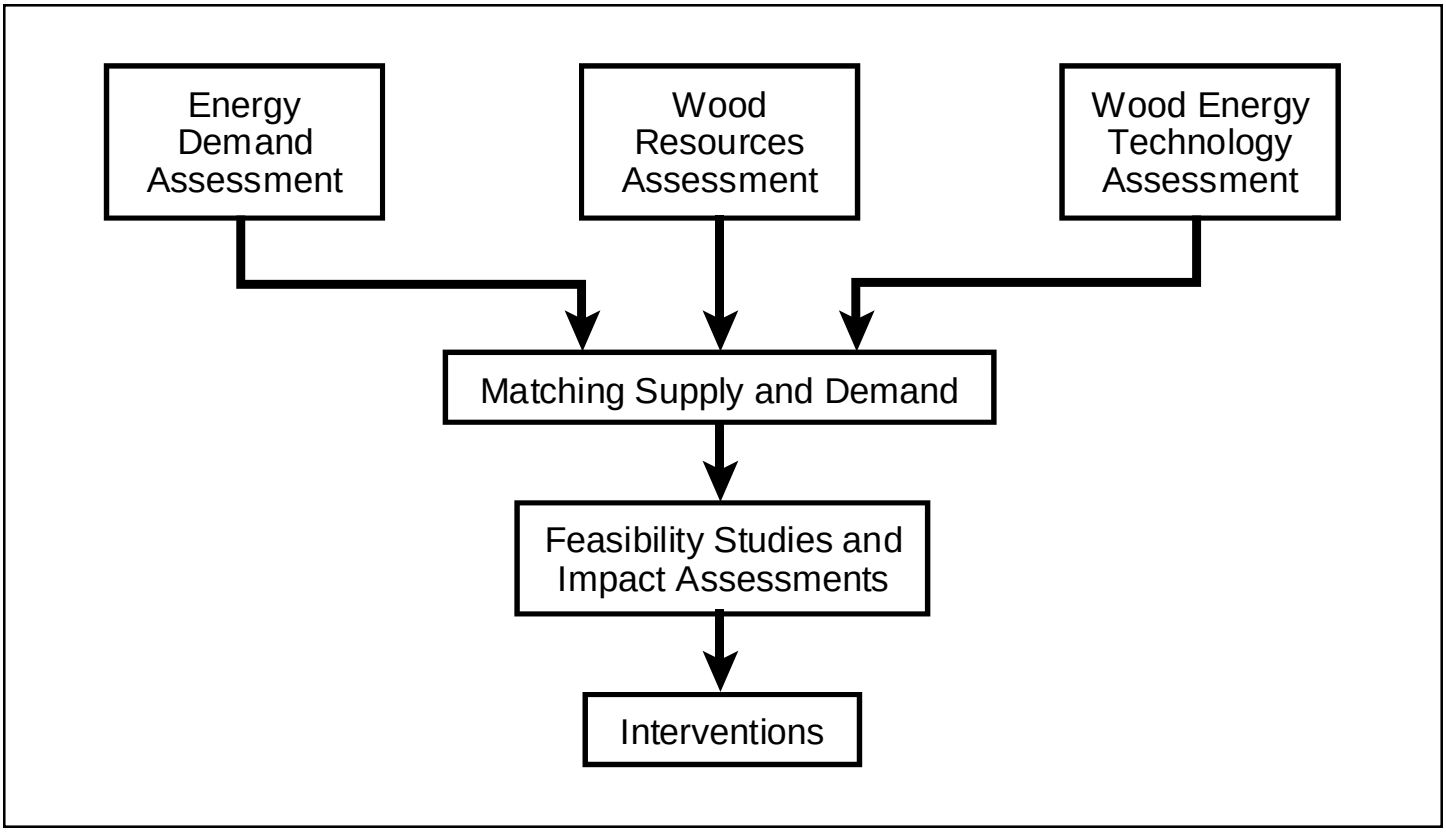
Wood energy planning builds on adequate data on the one hand, and supports effective policy making on the other hand. Wood energy planning 'works' if it directs resource allocation and leads to further sound government interventions amongst other energy options. Therefore, wood energy planning should be part of energy planning. At the same time, for wood energy planning to be feasible at all, it should be based on decentralised structures, e.g. linked to area-based planning and/or rural development planning. Decentralisation allows close interaction between planning and implementation, whether in projects, programmes or policies at large. Experience has shown that such interaction is vital for successful interventions which address local and site-specific issues like wood energy.

For wood energy planning, systematic time series data are required, which implies more than a casual survey. Data availability is a serious problem in most countries. The relevant data are scattered over various institutions and they are not as accurate as the data readily at hand for fossil fuels, but they need not be. Usually, data are sufficiently accurate if at least they allow a correct understanding of the problems at stake and provide a grasp of trends over time. These two requirements can be met by a combination of macro-studies at certain intervals (e.g. base-line surveys linked to nationwide censuses) and well-selected micro-studies. Relevant micro-studies would be on wood energy consumption patterns and trends (in households, industries, institutions, commerce, etc.), and on wood energy supply patterns and trends, including studies of woodfuel sources, flows and markets.

Wood Energy Planning as a Process

Planning of (wood)energy means basically matching supply and demand. The planning exercise can be facilitated by various computer models which are available as tools, i.e. based on simulation models or optimisation models, or a (limited) combination of both. However, the planning would remain futile if not supported by feasibility studies and impact assessments. Such studies should address the feasibility of envisaged interventions for managing woodfuel demand or woodfuel supply, or both. Impacts of envisaged interventions should be assessed for environment, poverty alleviation, employment, gender issues, etc. This may seem to demand a considerable effort, but considering the importance of the basic commodity at stake for half the population or more (indeed, when capitalised wood energy represents a multi-billion dollar sub-sector in most countries in Asia!), it is not unreasonable that governments should direct part of their planning capacities towards the issues of wood energy.

The process of wood energy planning is illustrated in the figure below. Note that interventions can be supply-oriented (aiming at increasing, redistributing or substituting supply) or demand oriented (aiming at managing demand by conservation or other measures which enhance rational consumption), or both. Technology assessment refers to the whole range of techniques for growing,



The process of wood energy planning

harvesting, preparing, transporting and converting wood and biomass fuels.

Consumption Data for Wood Energy Planning

On the demand side wood energy planning requires quantitative data on consumption patterns and trends of wood and other biomass fuels in a systematic way. Such data can only be obtained by surveys. The data need to be linked to information on the local rural and national economy, and key information from relevant sectors like energy, forestry, agriculture, and environment. Relevant social conditions, gender related information, and distributional aspects must be studied to help interpret consumption data. The surveys should lead to quantitative overviews to be installed in data bases which are accessible for purposes of planning and policy making.

Supply Data for Wood Energy Planning

On the supply side wood energy planning calls for quantitative data on supply patterns and trends of wood and other biomass fuels. Such data include the sources of supply, their productivity and sustainability, and the patterns of woodfuel flows from sources to markets and finally to consumers. Related socio-economic data are on employment (or income generation) and gender aspects. Linkages with geo-information on land use from forestry, agriculture and environment sectors backs the interpretation of data obtained from supply surveys. Part of the data can be obtained from aerial surveys, but many aspects also need ground surveys. Again, the data are to be compiled in data bases providing overviews for planning and policy making.

Institutional Development for Wood Energy Planning

The development or selection of methodologies which are most suitable for wood energy planning in a particular country, is subject to evaluation by government experts. These days countries in Asia can benefit a great deal from each others' experiences. Next comes the development of skills in planning units. Furthermore, national or local government authorities may choose to develop prognostic tools and indicators for wood energy. Governments can call upon specialised consultants and established NGOs to assist them in these tasks. Furthermore, the FAO Regional Wood Energy Development Programme in Asia is mandated to assist in strengthening member countries in wood energy planning.

Despite the increasing appreciation of wood energy development in the region, the importance of supporting planning activities still remains generally unrecognized by national policy and other decision makers from both the energy and forestry sectors. Common misconceptions like 'woodfuels are phasing out', 'biomass is always available', or 'woodfuel use destroys our forests' need to be overcome if wood energy planning is to take its proper place in the region's sustainable development.

Energy Planning at the Micro Level - An Indian Experience -

I. Natarajan

Even after 40 years of independence, households in rural India depend primarily on bio-fuels to meet their energy needs. Data available from several energy studies conducted by the National Council of Applied Economic Research (NCAER) show that the share of these fuels in total rural household energy, between 1978-79 and 1992-93, remained unchanged at 95%. During this period, there has been an impressive expansion in the availability of two commercial fuels namely LPG and kerosene which are basically domestic fuels. But, practically all of this was absorbed in the urban centers. The impact on the rural energy scene was negligible where the tendency of the households was to collect fuels free of cost rather than pay for them.

Traditionally, rural households use three bio-fuels, namely firewood, dung cake and crop wastes. With little growth in the cattle population in the country during the last 2 decades, the availability of dung has not increased significantly. The growth in the availability of crop wastes also has not be able to keep pace with the ever growing demand for energy in the villages. Consequently, the demand for firewood has increased faster and in 1992-93, this fuel formed 62% of the total rural household energy use compared to 54% in 1978-79.

Most of the firewood used is collected rather than purchased. Land owners obtain wood from their own farms while others collect them from nearby forests, public lands, road side trees, bushes etc. The increased collection of wood has an obvious effect on the country's environment, namely a steady decline in the area under tree cover.

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Concerned at the rapid denudation of tree cover, the Government of India had initiated a number of programmes to stem the growth of rapidly expanding firewood demand in the rural areas. Some of these programmes are Improved Chulha, Solar Cooker Programme, Biomass Programme. Other Rural Development Programmes such as National Rural Employment Programmes, Rural Landless Employment Guarantee Programme and the like, have tree plantation as an important component. These programmes are aimed at (a) augmenting the supply of wood, (b) conservation through efficient use and (c) providing alternatives to firewood.

All these programmes are National Programmes planned at the national level. They are also target oriented. But the targets are not decided on a scientific basis. In many cases the states themselves make suggestions based on their capabilities and past experience. Further, these are stand alone types of programmes not very well integrated among themselves or with the other on-going rural development programmes.

India is a vast country, with diverse agro-economic conditions. The states vary widely with regard to their natural resources endowment. There are variations in the eating/cooking habits of the people and their energy needs are different. The availability of different energy options also varies from one region to another. In formulating energy programmes one has to take into account all of these factors. The strategies should vary according to the characteristics of particular areas. What is applicable to Punjab may not suit Andhra Pradesh. Therefore planning at the macro level may not satisfy the needs of all the areas.

This factor was recognised in India's Sixth Plan when a National Rural Energy Planning Exercise was started in the Planning Commission in 1981 for developing an appropriate approach for planning and implementing integrated rural energy programmes.

As a part of this exercise, an integrated rural energy pilot programme was initiated in 1981, initially in five selected states. The aim was to develop the design and approach for planning and implementing area based micro-level integrated rural energy projects through which the least cost mix of different sources of energy is provided. The area considered for this micro level planning is a Community Development Block, an administrative unit covering on an average around 100 villages. During 1981-87, this pilot exercise grew into a National Integrated Rural Energy Programme (IREP) which was extended to all the states in the Seventh Plan. By 1995-96, about 650 blocks were covered under this programme.

For planning and implementing the programmes IREP cells are formed at the state, district and block levels. The progress of the IREP programme at the block level is monitored by the state/district level cell. The Central Government provides the grants for meeting salary, training and extension expenditure of the programme.

For planning and implementation of the programme at the block level, an energy survey of the block is conducted. This is done either departmentally or through a professional research organisation. Based on this survey, the present supply position of various energy sources such as firewood, crop wastes etc. are assessed. Projections of demand and supply of energy are also made and the likely gap between demand and supply is identified. Thereafter an action plan is prepared to bridge this gap to the extent possible. Emphasis is on conserving the existing conventional energy sources and promoting renewable energy sources available in the area. The land use pattern is

analysed to identify potential areas for fuelwood plantations. Various energy saving devices are also identified taking into account the suitability and potential of the area. Then, targets are fixed for various energy devices and these are recommended to the state department.

The targets are finalised by the state department after taking into account the availability of funds, and the programmes of other departments. The plan thus formulated is dovetailed with the state energy plan. Inter-department coordination for implementing the plan is maintained.

One of the features of IREP is that it ensures large scale peoples' participation in the planning and implementation of the programme by direct involvement of panchayats, nonofficial bodies and institutions and the establishment of self managed organisations and other appropriate people-oriented arrangements wherever feasible at the micro-level for the implementation of IREP projects. Involvement of people is vital for any intervention programme. It makes people believe in the programme and hence ensures sustainability. This large scale participation of the beneficiaries has created a demand for energy devices in the area in contrast to non-IREP blocks where the devices are invariably thrust on unwilling villagers.

IREP officials at block, district and state levels make periodic visits to the villages to get feed back from the villagers. This helps them in making corrections wherever needed. Since the area of operation of the programme is small and compact, the system ensures the maintenance of a close link between planners and beneficiaries. This perhaps is one of the major virtues of micro-level planning.

Considerable stress is laid on human resource development through training. This training is multi-tiered with setting up of training institutes at the national, regional and subregional levels. The villagers are trained in various energy saving devices and technologies. Awareness camps and demonstration camps are regularly organised. Some states organise cooking competitions and prizes are awarded to women who make optimum use of fuels. Through these methods, the villagers are made to realise the importance of conservation of energy and/or use of energy sources which are eco-friendly.

The programme also provides support services for the maintenance and repair of devices. This again gives confidence to the villagers that the devices they have acquired can be repaired without difficulty. A monitoring mechanism has also evolved whereby the work done at various levels is constantly supervised.

Encouraged by the success of IREP, the Government has extended the programme to cover 1000 blocks in 1996-97 and has plans to cover the entire country by the end of the Ninth Plan.

Peoples' participation in planning of wood energy programmes

Wood Energy Planning in Pakistan

S.W. Haider

Traditional fuels are the primary source of energy for a majority of the rural population in Pakistan. Reliable statistics on consumption of traditional fuels, especially wood, have not been available in the past, since these are not widely traded in the market but are generally collected from the farm.

Under the ESMAP Pakistan Household Energy Strategy Study (HESS, 1991), comprehensive surveys were undertaken to gain an understanding of the consumption patterns, develop consistent and rigorous data bases, and to formulate a long-term strategy for sustainable development. Satellite imagery, GIS, field surveys and destructive sampling was also used for the assessment of the standing wood stock and its sustainable productivity.

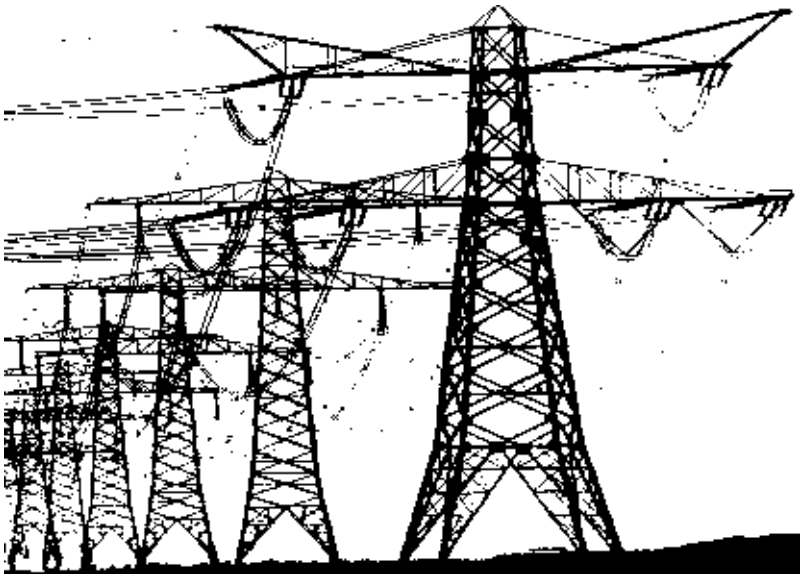
Based upon these surveys, it has been estimated that wood consumption is over 30% (11.35 million TOE) in the national energy mix, while in the household sector, dependence on wood energy is 54% of total consumption. It is anticipated that due to rapid population growth, and increase in per capita consumption, dependence on woodfuels will continue to be profound up to the year 2008. It is also concluded that woodfuel and timber markets are working effectively and with good economic efficiency, and there is no need for government intervention.

HESS has enabled the development of a consistent set of data bases on (a) wood energy consumption patterns; (b) biomass supply assessments; (c) wood fuel market structures; and (d) socio-economic data on consumers. Analytical work and modelling has been carried out to understand the fuel transition as income increases, wood flows from farms to the markets, price elasticities, interfuel substitution, and the contribution of forests and farm trees to the overall energy mix. With the improved availability of data, policy options have been thoroughly analyzed, and an energy strategy, with particular emphasis upon the sustainable development of wood resources, has been formulated. This strategy is being implemented by the government in a phased manner as part of its overall Energy Policy in Pakistan.

The strategy consists broadly of the mechanisms for managing and orienting wood supplies, the processes for managing and orienting demand, and the institutional and community elements and/or agents participating in the promotion and implementation of the strategy. These mechanisms and institutional and community elements act in an integrated and complementary manner to achieve the overall objectives of the strategy. Within this broad framework, there are four specific programmes encompassing these components, as follows: (a) setting institutional responsibility and development; (b) overall demand management; (c) sustainable supplies and woodfuel production; and (d) commercial fuels infrastructure and interfuel substitution.

Because of the very nature of wood fuel development, temptation for direct government intervention is being strictly avoided. Instead, government policy has been directed at maintaining the private market system, and facilitating the development of the wood markets through greater information dissemination, removal of fiscal barriers and physical constraints, rationalization of energy prices and promotion of end-use efficiencies.

A major constraint in wood energy development is, however, the fact that there are no major wood-based industries in the country, and the consumption in the household sector is largely from collected rather than traded wood. The government has recognized the paramount need to encourage wood-based industries, promote commercialization of wood consumption, and provide alternate economic opportunities to women and children engaged in collecting wood. At the same time, it is spelling out in clearer terms the institutional responsibility for wood energy development, and is fostering cooperative endeavor on a sustained basis. Pakistan's experience in evolving a wood energy development strategy could be of relevance to a number of countries in the Asia-Pacific region on account of similar socio-economic conditions.



Electricity is being planned - what about wood energy?

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Wood Energy Planning in Nepal

Kamal Rijal

Background

Planned development in Nepal started in 1956 when the First Five Year Plan was initiated. The Eighth Five Year Plan (1992-97) is the first plan devised by a democratically elected government under the multi-party system. All economic policies and strategies have a direct and/or indirect impact on the demand for, and supply of energy commodities including fuelwood.

Wood energy development policies were formally introduced in Nepal during the Sixth Five Plan period (1975-1980). The realization of the importance of wood energy as a main source of meeting the energy needs of the rural people prompted a massive campaign for afforestation and reforestation activities, which was, however, unsuccessful. Prior to this plan, forests were considered as a source of foreign exchange earnings and the focus was always on the extraction of timber with wood being considered a by-product. From the Seventh Five Year Plan (1985-1990) forest plantation and preservation activities were considered extremely important for maintaining the country's ecological balance apart from their timber and energy value.

A review of the Eighth Five Year Plan (1992-1997) shows one of the main objectives of the forestry sector development having significant implications for the wood energy sector as being 'stability in the supply of timber, fuelwood, fodder and other forestry products necessary for common people in their daily life'. The subsequent policy statements were:

- Agro-forestry and farm forestry will be encouraged for the supply of timber and fuelwood required in the urban sector;
- Entire responsibility concerning community forests will be handed over to the user groups for meeting their daily needs for fuelwood, fodder and timber;
- In order to gradually decrease dependence on public forests, arrangements will be made for the forestry-based industries to produce their required raw materials in private or lease hold forests.

Wood Energy Use Pattern

The examination of present energy consumption and supply pattern shows that almost 91% of the total final energy requirement is met by biomass fuels, while fuelwood accounts for more than 80%. The total sustainable supply of fuelwood is only about two-thirds of the demand and the deficit is met mostly by 'mining' forests. Less than 15% of the national fuelwood requirement enters the market economy to meet the fuelwood demand in urban areas.

Due to heavy reliance on biomass fuels as well as inefficient technologies, the overall energy system efficiency remains very low i.e. 20%. This has resulted in high indoor air pollution with severe health effects specially on women and children. Besides, increasing rate of interfuel substitution among biomass fuels will further aggravate ecological degradation.

Wood Energy Planning: a Case Example of Nepal

It may be unfair to state that wood energy planning did not exist in the country prior to the 80's but much of it was carried out on an ad hoc basis. The Forestry Sector Master Plan prepared in 1988 realized the importance of wood energy planning in the context of Nepal. This document clearly identified the imbalance in the fuelwood supply and demand and suggested methods of augmenting woodfuel supplies, though emphasis was given to community forestry development.

In 1994, the formulation of a Perspective Energy Plan (PEP) was initiated at the National Planning Commission. This paid special attention to wood energy planning realizing that the reduction in wood energy consumption is not feasible in the foreseeable future.

Methodological Framework of PEP

The methodological approach of the Perspective Energy Plan (PEP) was comprehensive and included developing an understanding of global and regional economic prospects and energy scenarios, assessing the sustainable energy resource framework, formulating and assessing sustainable economic development strategies, understanding energy and economy interactions for developing various alternative strategic planning scenarios for the optimal development of energy resources leading towards the formulation of the energy resource development strategies. Finally, a regulatory institutional framework, investments, energy pricing and efficiency improvement strategies were designed.

A computer-based model was developed to examine the energy - economy interaction. The environmental concerns of the energy - economy were also examined with the formulation of a Reference Energy System-Integrated Macro-economic Input Output (RESIMIO) Model. Reference Energy System (RES) approach of energy modelling was considered in this exercise. The RES provided a physical representation of energy flows from extraction to final consumption by end-use technologies.

Major Findings of PEP in relation to Wood Energy Development

Energy Mix: Almost 14-15 million tons of fuelwood (40% more than the present

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consumption level) will be required in FY 2017/18 in all scenarios. However, there is a possibility of reducing the demand for fuelwood if the economic price of fuelwood prevails in urban areas. Almost 42% of this demand will be met from the non-accessible forest areas if the present trend of forest management continues.

Energy Technology Choices: In the rural residential sector, the use of biomass fuels in improved cookstoves is desirable for cooking and water heating, and in open fires for space conditioning. Non-availability and unacceptability of these technologies force users to fall back on the use of traditional stoves. The reason for multiple use of resources and technologies which prevails in rural areas must be given due consideration while designing wood energy programs. In the industrial sector, agriculture residues are preferred to fuelwood boilers to meet the process heat requirement.

Wood Energy Use and Environmental Implications

At present, Nepal's per capita emission of carbon is only about 900 kg of carbon equivalent compared to 4200 kg in the United States. Although energy related emission of greenhouse gases in Nepal is small it is rising at an alarming rate in urban places like Kathmandu Valley where almost 60% of total petroleum fuels and almost 40% of coal is being consumed. The share of biomass accounted for 76% in terms of total carbon emission, petroleum fuels and coal for 24% and a similar trend is expected to continue in the near future.

Deforestation and the use of biomass fuels are observed to be the main culprits in rural environmental problems. Shifting cultivation, conversion of forest lands to permanent pasture and agriculture, commercial logging and overgrazing are the direct causes of environmental degradation. In addition, inadequate ventilation facilities combined with inefficient cooking stoves burning biomass fuels without smoke outlets is causing serious health effects on the rural people, especially women.

Land use changes (especially deforestation) account for more than 70 percent of the GHG emissions in Southeast Asia, while it accounts for 43% in Nepal where the contribution of biomass burning in GHG emissions is less than 1 percent.

Wood Energy Development Strategies

Biomass fuels (predominantly fuelwood) will continue to remain the main supplier of energy in rural areas of the Hills. The following strategic options are identified as appropriate for sustainable woodfuel management and development taking into consideration environmental issues: i) diversification of fuelwood production mode and its management to augment the present woodfuel supply; ii) conservation in energy consumption; iii) development of alternative fuels from woodresidues; iv) environmental corrective taxes and cost recovery; v) stumpage fees as a means of ensuring sustainability of forests; and vi) institutional and legislative reforms.

Augmentation of Present Fuel Supply: Afforestation and Fuel Plantation Program

Increase in fuelwood supply is possible through effective implementation of the following fuelwood production modes.

Community Forest: The primary aim of the Community Forestry Programme (CFP) is to develop and manage forest resources through active participation

Is wood fuel use responsible for erosion?

of communities to meet their basic needs. They organize themselves to protect, manage and utilize that area of forest.

Private Forests: Private tree plantations which include small wood lots as well as scattered trees or trees grown in the agricultural fields increased in areas where the demonstration plantation and nursery services are available and in places where the prices of fuelwood and wood products are high. These factors indicate that the government package (loan, nursery services etc.) must be directed to the areas where the scarcity of fuelwood is severe and market access is easier for wood products.

Leasehold/Industrial Plantations: There is a demand for leasehold and industrial plantations due to their high productivity and the growing number of wood based industries, and a transportation system that also raises the comparative advantage of the production and stumpage price.

National Forestry: The management of public forests other than those handed over to communities or the private sector is the responsibility of the Government.

These programmes have to be supported by technical, institutional and financial inputs without which they cannot be made effective.

Conservation in Energy Consumption: Promotion of Efficient Technologies

Fuelwood is inefficiently used in terms of fuel and time, and also makes women and children susceptible to various diseases. Efficient end-use devices in cooking, space heating, and process heating could lead to considerable saving in fuel. By improving the conservation awareness and changing the behavioral characteristics of users improved technology in end-use devices can be introduced. In spite of some progress in improved design, use of locally available materials and skills, adaptability to local conditions, etc., these programmes have not been as successful as one would have expected.

Development of Alternative Fuels from Wood Residues: Briquetting Technology

To reduce transportation and handling costs and to improve the heating value, wood wastes and/or agriculture residue are used to make briquettes. Private manufacturers produce briquettes and their production needs to be supported as their use is more hygienic and less hazardous to human health than the direct use of wood wastes.

Concluding Remarks

Energy supply must meet the needs of rural areas mainly for cooking and space heating. In the urban and modern sectors of the economy high-grade energy is required to fuel the country's emerging industrialisation. Strategies must therefore be designed to ensure an increase in the volume of fuelwood in a sustainable manner, promotion of efficient wood energy technologies and development of technologies for efficient utilization of wood wastes. Besides, the development of cost-effective, new and renewable energy technologies and efforts to decrease the level of consumption must receive high priority.

Data Analysis Tools for Decentralised Wood Energy Planning

Joost Siteur

The production, distribution and consumption of biomass fuels occurs usually at local level and outside the monetary economy and is very site-specific. The demand and supply situation can vary per region, district, town or village depending on cultural, social, agro-ecological and climatic conditions. Likewise, geographic factors such as the location of consumption and resources, infrastructure, slope, land use and land ownership can constrain the accessibility of biomass resources for certain types or groups of consumers. The spatial variation among areas and the spatial distribution within an area should be taken into account for (decentralised) wood energy planning.

In recent years several energy models have been developed to assist energy planners. Most of them lack the ability to incorporate spatial factors. The Long-range Energy Alternatives Planning model (LEAP) contains a biomass module to evaluate the biomass availability for different subareas and zones per land use type. It incorporates accessibility as the fraction of a land use type that is accessible for biomass fuel production. However, it does not provide tools to analyse available data and to produce the required data input. Geographical Information Systems (GIS) can be useful for these purposes.

A geographical information system comprises a set of powerful tools for collecting, storing, retrieving, transforming and displaying spatial data. By interactively accessing, transforming and manipulating these data, environmental processes, past trends and the possible impacts of planning decisions can be studied. Input data can be information from existing maps, field observations, aerial photographs, satellite imagery, tables and reports (Burrough, 1986).

Possible applications of GIS for energy planning are:

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- assessment of area and biomass resource per land use type from land use maps, satellite images, forestry and agriculture statistics and other data sources;

- evaluation of the accessibility of existing resources for different user groups considering the land use, infrastructure, slope of the terrain, landownership, mode of transport and related social and cultural factors;

- the assessment of the spatial distribution of demand and supply of energy;

- the overlay of administrative units (usually the basis for data collection) with agro-ecological zones, which often determine energy demand and supply patterns and woodfuel flows;

- the presentation of information in the form of maps and tables.

Case Study: Phrao District, Thailand

For a case study on decentralised energy planning for Phrao district in Northern Thailand, LEAP and GIS were used to evaluate the biomass resources and to assess the accessibility of the forest resources for fuelwood collection. The total forest resources appear to be quite sufficient to meet the demand in a sustainable manner, but, due to accessibility constraints, overharvesting of some parts might occur. Most people collect fuelwood from the forest once a year during the dry season by car. For the case study a number of assumptions were made. It was assumed that fuelwood collection occurs near roads through the forest that are accessible by car, not within 500 meters from main roads due to possible control, and that people do not walk more than 10 minutes away from the roads to collect wood. The time spent to reach a certain point was considered a function of distance, slope and average speed. The forest area that is accessible for fuelwood collection under these assumptions can meet the estimated demand in a sustainable manner. The figure below shows the results of the accessibility assessment for a part of the study area.

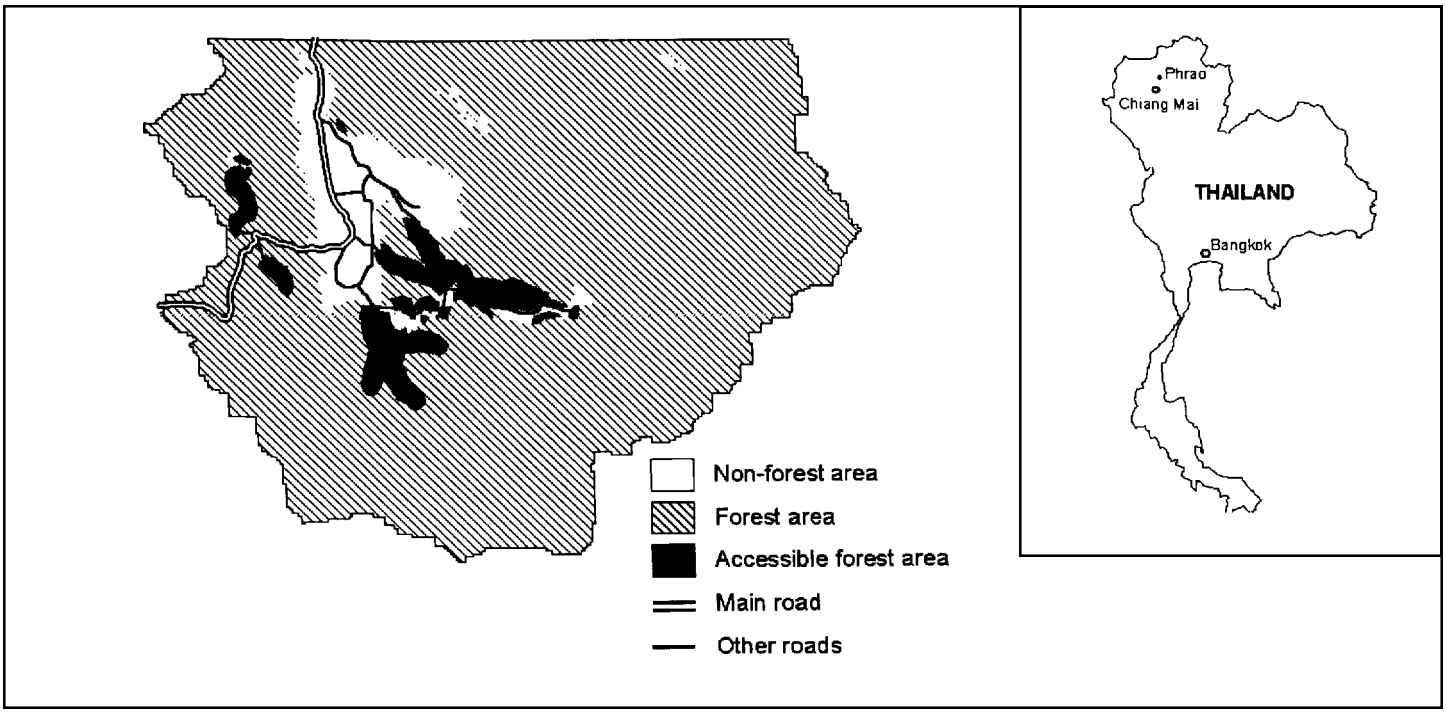
The use of GIS for energy planning is not limited to LEAP. The biomass supply can be fully evaluated using GIS and its results can be used as an input for any energy model that incorporates the supply of woodfuels. Likewise, the choice for LEAP as an energy model does not exclude the use of other models. LEAP's flexible data structure provides a comprehensive framework for the integrated evaluation of demand and supply of energy. It can easily incorporate the results of other models that focus on a specific issue or that follow a different approach.

Naturally, these tools cannot solve problems. They can only assist energy planners to assess the current situation, to make forecasts and to assess possible impacts of policy interventions. Models give a simplified version of the reality so their results should be interpreted with care, considering the reliability of the input data and the assumptions made for data analysis and modelling.

Since the development of the use of spatial information and spatial tools for energy planning is still in an initial stage RWEDP would like to receive reactions from readers who have interest and/or experiences in this field. A full report on the case study is available from RWEDP upon request.

Reference:

Burrough, P.A. (1986), Principles of Geographical Information Systems for Land Resources Assessment, Clarendon Press, Oxford.



Accessibility of forest for fuelwood collection in Phrao District, Thailand

Decentralised Energy Planning in Education An Example from the Philippines

Angelito V. Angeles

Central Luzon State University (CLSU) in The Philippines contributes to decentralised energy planning of the six provincial governments of Central Luzon Region. Senior students are involved in the activities. This paper presents in a nutshell some experiences of the university with student projects applying the Long Range Energy Alternatives Planning Model (LEAP).

Background

In 1991, key staff of 16 Affiliated Non-Conventional Energy Centers (ANECs) of the Non-Conventional Resources Division (NCRD, now Non-Conventional Energy Division, NCED) of the Philippine Office of Energy Affairs (OEA, now Department of Energy, DOE) were trained in Methodologies for Local Non-Conventional Energy Planning which focused on LEAP (2nd draft version). The training was conducted through the collaborative efforts of RWEDP, DOE and the Stockholm Environment Institute-Boston (SEI-B) which developed the model. Echo training courses were conducted in 1992 subsequently by OEA and SEI-B for selected staff of all ANECs. These were conducted in two batches: one for Luzon ANECs and one for Visayas-Mindanao ANECs. The author who was one of the ANEC staff trained in 1991, was also one of the two key assistant trainers on both echo training activities. From among the Philippine ANECs trained, only CLSU-ANEC has tried to use the knowledge it has gained, albeit in a limited way.

The CLSU-ANEC Experience

CLSU-ANEC is mandated officially by the Philippine DOE-NCED, and morally by the people it is bound to serve. It has a strong and unequivocal commitment to serve and develop the nation by contributing to the national efforts towards the Filippino vision for Philippines 2000. Following the strong manpower development training the staff received from DOE-NCED in local or decentralized energy planning, CLSU-ANEC embarked upon a strategy to implement what it had learned from various related planning workshops.

Because of the usual delay of financial assistance which ranged from 4 to 8 months due to reasons beyond DOE-NCED's control, CLSU-ANEC thought of a strategy of employing senior agricultural engineering students to conduct studies on the energy demands of selected sectors in the service provinces of CLSU-ANEC.

Studies Conducted by Students

The following studies were conducted as a contribution to decentralized energy planning:

- Mateo, D.V. & Angeles, A.V., 1993. A study on the energy demand for the province of Nueva Ecija from 1990-2000 using the LEAP system. Undergraduate Thesis. CLSU. Munoz, Nueva Ecija, Philippines;
- Agliam, N.L., Juliano, A.S. & Angeles, A.V., 1994. Determination of household energy intensities for the province of Nueva Ecija. Undergraduate Thesis. CLSU. Mu#oz, Nueva Ecija, Philippines;
- Grospe, J.P., Agoyaoy, A.A., Tambalque, A.P., Malamug, V.U., & Angeles, A.V., 1995. A study on the energy demand for the provinces of Tarlac, Bataan, and Bulacan from 1994-2004 using the LEAP system.

In addition, there is a similar on-going study for the provinces of Aurora, Pampanga, and Zambales to complete all the service provinces of CLSU-ANEC. This study will now include the energy supply aspects which are missing or weak in the previous studies. The study is expected to be finished by March 1996 using the LEAP version 95.

Benefits from Involving Students

The benefits for the students include the following:

- The studies were conducted and officially credited as undergraduate theses, thus fulfilling one of the requirements for the degree of Bachelor of Science in Agricultural Engineering;
- The students were trained in the use of word processing, spreadsheet and graphics software so that they could produce the LEAP reports. This is in addition to their training in the use of the LEAP software itself;
- Some expenses on the part of the students which could be charged to CLSU-ANEC funds were reimbursed;
- The students were free to use ANEC computer facilities including peripherals and supplies to support their activities.

CLSU-ANEC received the following gains:

- Savings were made on ANEC funds and staff manhours, which would otherwise have been devoted to data gathering and travel;
- The financial and time savings could be used productively on other high priority ANEC activities;
- CLSU-ANEC could deliver output on LEAP-related activities even when constrained by lack of funds.

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Constraints Encountered

A number of constraints were encountered while conducting the LEAP studies and these along with some partial solutions found are described below:

- Constraint: Lack and shortage of data. Solution: Conduct of basic studies through supervised student research works;

- Constraint: Shortage of time to conduct data gathering and analysis on the supply aspects of the LEAP model. Solution: Studies were limited to the demand aspects of the LEAP model. Inclusion of supply aspects were postponed to other forthcoming studies;

- Constraint: Shortage of computer time because of limited computer units of the classes at the CLSU-ANEC. Solution: Students had to work 24 hour a day at the CLSU-ANEC office;

- Constraint: Limited preliminary hands-on familiarization training on the LEAP model. Solution: Familiarization with the model was done simultaneously while entering data for the studies.

Future Plans

CLSU-ANEC identified the following plans for implementation:

- Continue and improve activities on decentralized energy planning using the LEAP model, and include the supply side of the model;

- Continue and refine throughout CLSU-ANEC the training of senior students in contributing to energy planning for selected provinces of Central Luzon through the use of the latest version of the LEAP model;

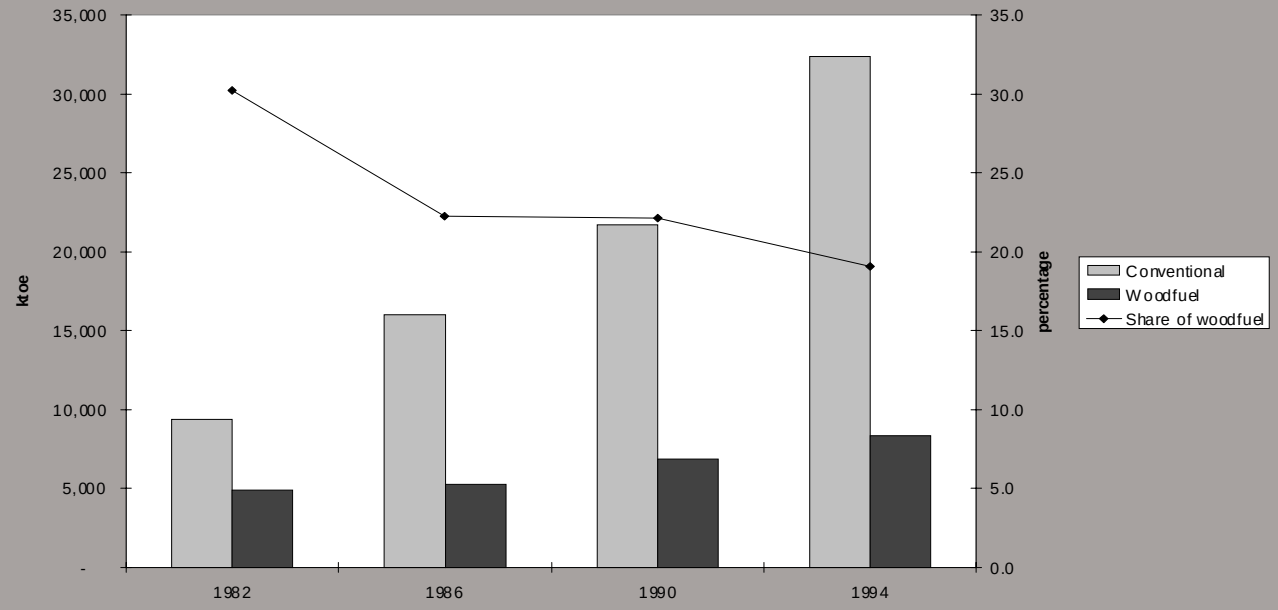
- Edit and reproduce in book form the condensed versions of the manuscripts on Energy Demands for the Provinces of Nueva Ecija, Bulacan, Bataan, and Tarlac for provision to each concerned Provincial Development Office as a planning tool and as an input into their provincial energy planning activities;

- Conduct applied wood energy research as undergraduate theses of senior students as an input to decentralized energy planning which would then be an input to decentralized environmental planning of concerned provincial agencies;

- Provide free technical assistance and coordinate with other institutions on decentralized energy planning using the LEAP model.

Is Wood Energy Phasing Out?

The graph clearly shows that the consumption of wood energy is not phasing out in a country like Thailand. Though the share of wood energy in national energy is decreasing, in absolute terms wood energy is still increasing. The same trend applies in other RWEDP-member countries. Are such trends sustainable? Consumption data are extremely relevant for wood energy planning.



Conventional vs. wood energy consumption in Thailand (source: Thailand Energy Situation 1994 DEDP)

Wood/Biomass Energy Database

W.S. Hulscher

A summary of basic data for wood and biomass energy development planning can be presented in an energy balance table. The accompanying table suggests a layout. In fact, such a table is a component of an overall energy balance including all sorts of fuels. In principle, an energy balance table can cover areas of any size, starting at the village or district level, up to the national and regional level. An energy balance of a larger area can be composed by aggregating the energy balances of the smaller areas.

RWEDP has developed brief Guidelines for Developing a Wood/biomass Energy Data Base. The purpose of these Guidelines is twofold:

- To assist countries which are in the process of defining and setting up a wood and biomass energy data base, by presenting a sample format;
- To help standardize the format of wood energy data in the region, in order to allow comparison of data between countries and aggregate data to the regional level.

The table below allocates different columns to various wood and other biomass fuels, as indicated. Of course, the columns can be modified as appropriate for different areas or countries. For instance in some areas bagasse may be allocated a separate column. Similarly, the rows in the table carry labels which may not correspond to current data availability in RWEDP member countries. For instance, the breakdown of production sources for primary fuels may be different in different countries. Also the rows accommodating different subsectors in final consumption patterns may have to be modified according to data availability. A word of warning may be necessary with regard to the concept of losses. Losses are definitely relevant to transport and distribution. However, introducing losses as a row in primary production could cause considerable confusion. The reason is that what a forester concerned with timber harvesting would consider a loss (branches, twigs), is the very production quantity from the energy point of view.

The choices made by RWEDP regarding the columns and rows presented, were guided by trade-offs between the likelihood of data availability on the one hand, and policy relevance on the other hand (for instance, electricity from biomass by cogeneration). The results were checked by the participants in the recent RWEDP regional activities in Dhaka and Kuala Lumpur.

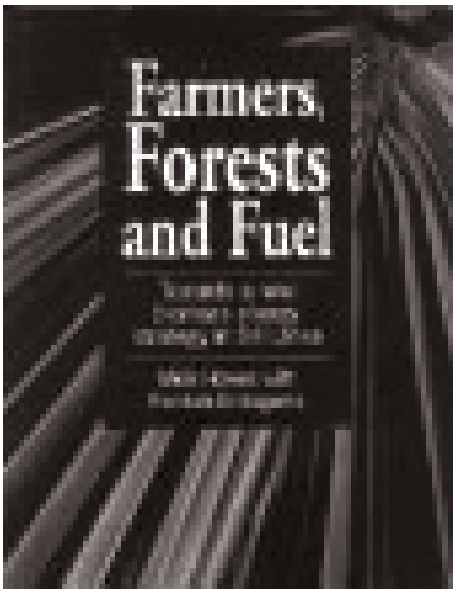
A copy of the Guidelines is available from RWEDP.

Wood/Biomass Energy Balance Layout

All values in energy units

	Energy Source	Fuelwood	Charcoal	Other Biomass	Prod.Gas, Meth./Eth.	Electricity	Heat	Total	Remarks:
10	Production								11+12+13+14
11	From Forest land								
12	From Agriculture land								
13	From Construction								
14	From Other sources								
20	Imports (Primary)								
30	Exports (Primary)								Negative values
100	**Primary Supply**								10+20+30
110	Conversion								111+112+113
111	Thermo/biochemical Conversion	-	+	-	+				Source: Negative value
112	Electricity Generation	-				+			Product: Positive value
113	Cogeneration	-	-			+	+		Total (loss): Negative value
120	Energy Sectors Own Consumption								Negative values
130	Imports (Secondary)								
140	Exports (Secondary)								Negative values
150	Losses in Transport and Distribution								Negative values
160	Non-Energy Use								Negative values
200	**Final Supply**								100+110+120+130+140+150+160
210	Households								211+212
211	Rural								
212	Urban								
220	Cremation								
230	Institutional								
240	Commercial								
250	Agriculture								
260	Transport								
270	Industry								271+272
271	Large Scale								
272	Small Scale								
280	Statistical differences/Unaccounted								
300	**Final Consumption**								210+220+230+240+250+260+270+290

Suggestion for wood/biomass energy balance table



Farmers, Forests and Fuel - Towards a New Biomass Energy Strategy in Sri Lanka

The crisis of declining fuel availability and the perceived link between this and environmental degradation has led to extensive investment in domestic stoves programmes and the promotion of new forms of forestry, initiatives which have drawn strength and impetus from a growing awareness of gender issues, accompanied by the recognition that women tend to be affected first and most strongly by fuel shortages. *Farmers, Forests and Fuel* surveys the current and likely future extent of biomass energy shortages, and seeks to identify the most appropriate responses to fuel supply problems on the basis of experience in Sri Lanka. The author, Mick Howes, discusses the outcomes of earlier interventions and how far criticisms of these schemes are justified, before presenting some broad principles to be followed and lessons to be learned about approaches to fuel shortages in a complicated and highly differentiated rural economy.

The first two chapters trace the evolution of energy policy-making in Sri Lanka from its origins in 1974, and set a context within which to explore the more specific biomass-related interventions which are considered later in the book. Chapters 3 and 4 review the proposition that it is unhelpful to think in terms of a national biomass energy deficit, and describe a methodology which enables the extent of shortages to be disaggregated both by geographical location and socio-economic group. Chapter 3 draws exclusively upon secondary sources while Chapter 4 reports findings derived from a series of field studies conducted in various parts of Sri Lanka in 1987. Chapters 5 and 6 describe the major biomass-related interventions with which the Government of Sri Lanka has been associated; assess their overall effectiveness; and spell out their implications for different sets of people. The Community Forestry Project (CFP) and the promotion of stoves under the National Fuelwood Conservation Programme (NFCP) are discussed in chapters 5 and 6 respectively. Both chapters utilize a combination of materials from the field studies and secondary sources. The final chapter returns to the most general themes raised in the introduction, seeking to explain the outcomes of the interventions, to explore alternative solutions to Sri Lanka's biomass energy problems, and to sketch in some broader principles regarding the role which the state might most usefully perform when confronted by a rather complicated and highly differentiated rural economy.

This book is published by Intermediate Technology Publications, 103/105 Southampton Row London WCIB 4 HH, UK, ISBN 1 85339 089 5, 1995.

Report of the Regional Expert Consultation on Gender and Wood Energy in Asia

A Regional Expert Consultation on Gender and Wood Energy in Asia was conducted at Chiang Mai in June 1995. At the Expert Consultation, 24 policy makers from 12 member countries discussed the subject of gender in wood energy, and some contributed by presenting policy statements. It was probably the first time high-level policy makers from both the forestry and the energy sectors have jointly discussed gender issues. The delegates reviewed relevant gender analysis tools and discussed how to institutionalise a gender-sensitive approach in their respective organisations. In doing so, they went much further than reiterating the usual statements on gender gaps. The meeting provided a conceptual framework for how to proceed. One of the results was the adoption of an operational policy statement of RWEDP on Gender and Wood Energy. The Expert Consultation further endorsed the recommendations of the Regional Advisory Committee to make an effort to prepare short training modules on gender and wood energy, which are to be made available to training institutes in the region. The report contains the transcriptions of the inaugural session, the discussions held, the RWEDP Policy Statement on Gender and Wood Energy, the list of participants, and the papers presented. The papers focus on several gender topics, namely: Placing Gender, Planning Approaches to Gender in Energy, Gender Analysis Tools, Preparing Gender Policy Statements, Institutionalising the Gender approach, and two country examples, namely Nepal and the Philippines.

This report can be obtained from the RWEDP secretariat.

Proceedings of International Workshop on Biomass Briquetting

The International Workshop on Briquetting Technology held in New Delhi in April 1995, was organised by the Indian Institute of Technology (IIT) Delhi in cooperation with Twente University of the Netherlands. The workshop was part of a R&D cum briquetting demonstration project entitled "Biomass Densification Research Project (Phase II)" and was organised in order to make the results of the project more widely known. Close to 100 people participated in the workshop with participants coming not only from the government, academic and the banking sector but also from

private industry and international organisations. While the majority of participants came from India, other countries like Egypt, Indonesia, Malaysia, Myanmar, Nepal, the Netherlands, Philippines, Sri Lanka, Vietnam and Zambia were also represented.

Historically, biomass briquetting technology has been developed in two distinct directions. Europe and the US perfected the reciprocating ram-press technology while in Japan the screw press technology was developed. Both technologies have their merits and demerits but it is universally acknowledged that briquettes made with screw press technology are superior with regard to storability as well as their ability to be converted into charcoal sticks without breaking into small pieces. Briquetting of loose material improves the handling as well as the combustion characteristics. At the same time it can help in making better use of loose residues which now are often discarded or burnt with inappropriate combustion systems resulting in severe pollution. There is therefore scope for briquetting of such loose residues whereby the density can be increased from about 0.1-0.2 ton/m^3 to about 1.2 ton/m^3.

Experience has shown that non-carbonised briquettes can be and are used as a substitute for coal and other fuels in many industrial applications like brick burning, steam boilers and other furnaces. Carbonised briquettes also find a ready market locally as well as for export to Japan, Korea and Taiwan. At the same time many constraints are still faced, ranging from excessive wear of the screw with most of the residues (screw press technology) or the punch and die (ram technology), institutional support, mismatch between equipment and residue supply, etc. These constraints were also confirmed by many of the participants. During the workshop constraints as well as opportunities were discussed extensively.

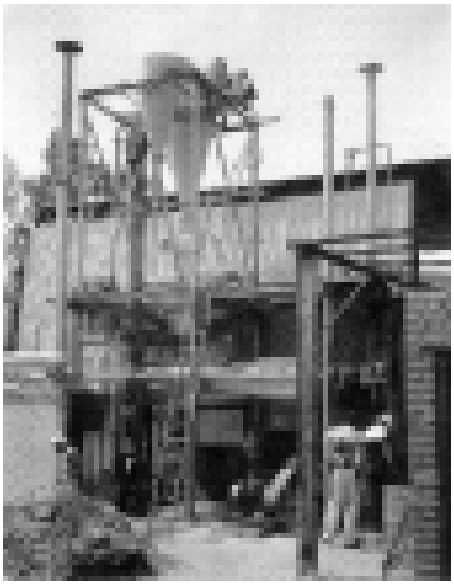
The report, which contains the proceedings, observations and recommendations given during the workshop, can be obtained from the RWEDP secretariat.

Biomass Briquetting: Technology and Practices

Many of the developing countries produce huge quantities of agro residues.Apart from the problems of transportation, storage and their handling, the direct burning of loose biomass in conventional grates is associated with very low thermal efficiency and wide scale air pollution. Briquetting is one of the routes which can mitigate these pollution problems while using industrial/domestic energy resources. Worldwide, two main high pressure technologies, namely ram/piston press and screw extrusion machines, are being used for briquetting of sawdust and locally available agro-residues. Although the importance of biomass briquettes as substitute fuel for wood, coal and lignite is well recognised, numerous failures of briquetting machines in almost all developing countries have considerably retarded their extensive exploitation. The recent successes in briquetting of biomass will emerge as a promising option for the new entrepreneurs and other users of biomass.

This report, which is written by P.D. Grover and S.K. Mishra, discusses fundamental aspects of briquetting, several briquetting technologies, latest developments including feed preheating, procedures for setting up a briquetting plant, steps in economic analysis and appliances for biomass briquettes.

The report is available from RWEDP secretariat.



News and Notes

Study Tour on Wood Energy Planning

RWEDP, in cooperation with the Ministry of Environment and Forests (MOE), Government of India and with the support of the Ministry of Non-Conventional Energy Sources (MNES) organized a study tour on wood energy planning in India. The study tour, which was conducted for participants from energy and forestry agencies of RWEDP member countries, was designed so that participants could learn from India's practical experiences in data assessment and analysis for wood energy planning, and to see first hand the initiatives undertaken by the country in integrating wood energy in national and decentralized energy planning. Nineteen delegates from ten member countries participated in the study tour. The tour, which covered Delhi, Dehradun, Mussorie, Hyderabad, Bangalore and Agra, was conducted from 24 October to 02 November 1995.

In the first two days of the tour, the participants interacted with representatives of agencies/institutions involved in national-level planning activities relevant to wood energy. The ensuing discussions during these two days highlighted key aspects which need to be strengthened in countries committing themselves to wood energy planning, im-

provement of data base, creation of linkages among institutions involved in related planning exercises for exchange and verifications of wood energy data; standardization of methodologies for collecting and analyzing data; and development of a common framework and information baseline from which projections for wood energy supply and use can be carried out. In the next three days, the study tour group were in Dehra Dun to visit the Forest Survey of India (FSI) and the Forest Research Institute (FRI). In FSI, the participants saw the facilities that allow the institution to conduct a biannual forest resource assessment study.

The study tour went next to Hyderabad and then to Bangalore. In Hyderabad, the group visited the National Remote Sensing Agency, where they were exposed to remote sensing technology and its application in planning exercises. The participants also had the opportunity to interact with state authorities in Hyderabad and in Bangalore which whom they had discussions on how state agencies and national-level bodies link to develop programmes and projects which are then implemented at the state level. Briefings were also given on technology development and dissemination. The participants returned to Delhi for the last two days of the study tour, were they further interacted with other resource persons and made some more visits to nearby areas.

The participants expressed their gratitude both to RWEDP and the Government of India for making the tour possible. Many of them expressed an interest in linking with some of the institutions visited.

India is one of the few countries which has addressed wood energy planning and the development and implementation of wood energy policies and strategies as part of its national energy programme. Nevertheless, its wood energy programme, is incorporated into the rural energy programme with activities linked with the forestry sector.

The information base and institutional structures for rural energy development in India have evolved over the years, and a greater emphasis is being placed now on the creation of new markets where wood energy systems and other decentralised renewable energy technologies could play a role as alternatives to centralised sources of modern energy supplies. The need for a decentralised planning process has been recognized and an area-based approach, specific to local needs and resources in rural areas, is being pursued.

However, based on what was shown in the study tour, the accompanying presentations and ensuing discussions, the integration of wood energy concerns in both energy and forestry planning in India, and in the national development planning process, still needs further strengthening and consolidation.

India also benefited from the study tour. MOEF and MNES, the two RWEDP focal points, had to work together in preparation for the study tour which made them realize the practical need to link with each other and involve other sectors in wood energy development. Many of their officials have a better appreciation now of the objectives of RWEDP. As a result, India, presented on the closing day of the tour, a plan of activities to be undertaken by the country's NATCOM, a key strategic step towards institutionalizing wood energy development in the country. They will include strengthening and consolidation of wood energy planning.

1995 1st Regional Training Programme on Wood Energy Planning

RWEDP, in cooperation with the Asian and Pacific Development Centre (APDC) - Asian and Pacific Energy Planning Network (APEN-PLAN) implemented the "1995 1st Regional Wood Energy Planning Training Programme". The course was conducted from 7 to 23 November 1995 at APDC in Kuala Lumpur, Malaysia. The course consisted of two training activities: "Regional Training Seminar on Integrating Wood Energy in Decentralized Energy Planning"; and "Training Course on Data Collection, Assessment and Analysis for Wood Energy Planning". 25 participants from 13 countries and two trainees to be trained as trainers attended the course.

This regional training programme is the first of five such training programmes which RWEDP will organize during the next five years. RWEDP realizes that there is a need to increase awareness and deepen concern of planners and policy makers in wood energy development. A major constraint to this is the insufficiency of data and information needed for the formulation of proper policies and strategies for wood energy production, supply and use. Very few countries have adequate capabilities to collect, organize and analyze wood energy data. Furthermore, far more have had the experience of using such data to formulate policies, plan strategies, and implement wood energy projects well-integrated into relevant sectoral programmes such as in energy, forestry, agriculture or rural development. Far fewer recognize the need to do such exercises at both the national and subnational levels. It is essential then to develop the capability of countries to generate, organize and assess wood energy-related data and also their capacity to use this information for the analysis and formulation of policies and strategies, and the assessment and planning of programmes and projects, for the efficient, economical and sustainable use of wood energy.

In the first training activity "Regional Training Seminar on Integrating Wood Energy in Decentralized Energy Planning", lectures and case studies were presented on the various steps involved in decentralized area-based planning for wood energy. The seminar culminated with a workshop on wood energy project formulation. Lectures and case studies were used as training tools in the second training activity, "Regional Training course on Data Collection, Assessment and Analysis for Wood Energy Planning". The highlights of the second training activity were a one-week hands-on computer module on the use of the LEAP model for energy planning and analysis, a field exercise that involved an actual household energy survey, and a workshop on developing a format for a wood energy data base. The participants were asked to

analyze the data they had collected and organize it using the wood energy data base format that was developed in the workshop.

The Government of Malaysia through the Forest Research Institute of Malaysia (FRIM) and the Economic Planning Unit (EPU) of the Prime Minister's Office took time to host the participants and briefed them on relevant planning activities and other projects being undertaken by Malaysia related to wood energy development.

The regional training programmes that RWEDP will organize during the next five years will be complemented by national-level workshops in member countries to disseminate further wood energy planning skills within the countries. RWEDP will provide technical and financial support to one national workshop for ten of its member countries in the next five years. At the end of five years, with five regional training programmes and ten national workshops, RWEDP hopes to have helped develop a critical mass of planners and policy analysts in the region who are aware of the potentials of wood energy and are capable of incorporating wood energy concerns in relevant planning and policy formulation exercises.

Women and Wood Energy Development

A Subregional Training Course on Women and Wood Energy Development was organised by RWEDP for member countries in South Asia, 27 November - 1 December 1995, in Bangkok. The Course was a follow-up of the Regional Expert Consultation on Gender and Wood Energy in Asia, at Chang Mai, Thailand, last June. The main subjects in the course programme (all with respect to wood energy development) were:

- Personal awareness of gender, like perceptions about questions of gender and development;

- Placing gender, i.e. understanding different possible approaches to issues of women and development, which have different implications for kinds of interventions that are selected;

- Gender analysis tools, i.e. step by step methods and procedures with respect to planning, assessing project proposals, etc. to check probable impacts on men and women;

- Adapting existing checklists, like how to adapt checklists to local circumstances;

- Gender analysis field tools, i.e. tools and procedures which are useful in the fundamental redesign of projects from gender principles.

Course participants (20) were higher and middle-level staff from institutions and departments concerned with wood energy planning, policies and strategies, from the forestry sector, the energy sector and NGOs, involved in the implementation of projects and programmes. Two thirds of the participants were female and one third male. In the opening session, the audience was addressed by representatives from the Government of Thailand, the FAO Assistant Director General, and the Netherlands Embassy in Bangkok.

The course neither aimed for country presentations nor for field visits in the host country. Instead, ample time was allocated to case studies, exercises, discussions, audio-video materials, role playing, etc. It was appreciated that this approach, facilitated by competent resource persons, benefited the overall learning process. Participants also reviewed outlines of training modules on wood energy and gender which are being prepared by RWEDP for implementation by educational institutes. This activity is a follow-up of a recommendation made by the RWEDP Regional Advisory Committee in its meeting of February 1995. Participants expressed their intention to promote gender-related training on issues of wood energy in their own organisations. Furthermore, participants were invited to link with RWEDP in undertaking gender-related pilot studies on issues of woodfuel flows, and gender-disaggregated studies on relationships between woodfuel use and income.

It was further observed that common notions about gender and development, amongst professionals and laymen alike, still identify attention to women's issues with a charity-type of approach, based on widespread misconceptions that farmers are invariably males.

A report on the training course, including a summary of the training materials, will be available from RWEDP secretariat. Another Subregional Training Course on Women and Wood Energy Development will be organised by RWEDP for member countries in South-East Asia, in 1996. This course will focus on issues of Women, Wood Energy and Health.

Subregional training course on women in wood energy development

Events

Event, Description (Info)	Date, Venue
Training Course in Marketing of Non-Timber Tree and Forest Products This course covers: marketing analysis with an emphasis on product and marketing development, impact of forest policy, impact of market demand of local resources, management practices and forest privatisation, feasibility study of non-timber forest products, development of markets, green marketing, and case studies from around the region (RECOFTC).	18 Mar-5 Apr 1996 Bangkok, Thailand
Energy & Environment for Sustainable Development, International Workshop Energy Projects This workshop consists of the following modules: energy technologies, energy technology assessment, project planning and management, and energy project formulation (UT).	20 May-22 June 1996 Enschede, The Netherlands
International Course on Rural Extension This course is divided into three blocks: personal skills for effective group communication, strategic diagnosis of rural development situations, and applying Agricultural Knowledge and Information Systems concepts in the home situation (IAC).	9 June-6 July 1996 Wageningen, The Netherlands
Socio-Political Analysis of Forest Resource Management Programs and Policies The course deals with the concepts, theories and identification of traditional and alternative methods in social and political analysis of the programs and policies of forest resources management; integrates wood energy issues, class, gender and cultural analysis in program and policy formulation (Los Banos).	11 June-22 July 1996 Los Banos, The Philippines
Forestry Extension Officers Development Course This course deals with an analysis of social and economic issues in the forestry and wood energy sectors, the application of extension approaches and strategies to forestry projects, comparative extension programmes, and the monitoring and evaluation of extension efforts (Los Banos).	11 June-22 July 1996 Los Banos, The Philippines
Reforestation Planning and Plantation Establishment and Management The course deals with the principles and techniques of conducting bio-physical and socio-economic surveys, preparation of reforestation plans, species selection, production of planting stocks, and establishment, development and protection of plantations (Los Banos).	11 June-5 Aug 1996 Los Banos, The Philippines
Training Course in Community Forestry Extension Course topics cover: the role of the extension agent as a community mobilizer, the principles of extension, various extension methods and education, communication, gender, participatory planning, evaluation and monitoring, and micro-teaching. There is also a field study component in which participants analyze on-going projects (RECOFTC).	1-26 July 1996 Bangkok, Thailand

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Production (Bhutan) and collection (India) of wood fuel