



REGIONAL WOOD ENERGY DEVELOPMENT PROGRAMME IN ASIA GCP/RAS/154/NET



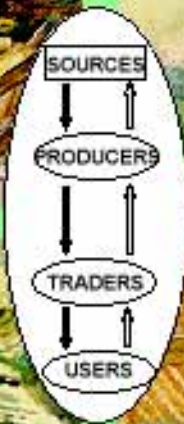
WOOD FUEL FLOWS

Rapid Rural Appraisal in Four Asian Countries

PHILIPPINES



THAILAND



NEPAL

INDONESIA



*Khon Kaen University
Thailand*

*Forests, Trees and People
Programme*



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CONTENTS

Foreword	i
I. INTRODUCTION	1
1. Background	1
2. Conceptualization and Methodology of Research	2
3. Overview of the Reports on Wood Energy Dependence in Urban and Rural Areas	7
4. Policy Implications	9
II. WOOD ENERGY FLOWS, RRA STUDY IN POKHARA, NEPAL	11
1. Introduction	13
1.1 Country Background	13
1.2 Overview of Energy Use	16
1.3 Previous Studies of Wood Fuels in Nepal	18
1.4 Description of Study Area	19
2. Wood Energy Entrepreneurs	22
2.1 Fuelwood	22
2.2 Charcoal	27
3. Acquisition of Wood and Charcoal	29
3.1 Government Forests	29
3.2 Forest on Local Commons	32
3.3 Private Trees and Woodlots (Forests)	34
3.4 Agricultural Fields	34
3.5 Charcoal as a By-Product from Fuelwood Use	34
3.6 Commercial/Industrial Residue	35
3.7 Livestock Yard	36
3.8 Business Waste	36
3.9 Preferred Tree Species	36
4. Transformation	38
4.1 Pit Type of Kiln	38
4.2 Social Aspects of Charcoal Production	40
4.3 Tree Species and Charcoal Quality	40
5. Distribution	41
5.1 Inter – and Intra-Village Distribution	41
5.2 Distribution to the Pokhara Urban Area	43
5.3 Intra Town Distribution	44
5.4 Fuelwood Bundles	45
5.5 Sawdust Containers	46
5.6 Charcoal Containers	46
5.7 Price of Wood Fuels	47
6. The Use of Wood Fuel	50
6.1 Household Cooking	50
6.2 Commercial uses (Hotels, Restaurants)	51
6.3 Industry (Manufacturing)	52
6.4 Social-Ceremonial Uses	54
6.5 Other Uses	54
6.6 Adjustments Made by Users	55
6.7 Type of Stoves	56
7. Conclusion and Recommendations	57
References	59

III. RURAL URBAN DEPENDENCE ON WOOD ENERGY IN A SELECTED AREA IN LAGUNA PROVINCE, PHILIPPINES; A RAPID RURAL APPRAISAL	63
1. Introduction	65
1.1 Household Fuelwood Consumption	65
1.2 Fuelwood Consumption by Industry	66
1.3 Review of Existing Information	68
1.4 Site Section	68
2. Overview of the Study Area	72
2.1 The Province	72
2.2 The Municipality of Siniloan	75
2.3 The Major Producer Area	78
3. Major Findings	83
3.1 Production System	83
3.2 Distribution of Wood Energy	101
3.3 Consumption System	115
4. Summary, Implications and Recommendations	125
4.1 Producer System	125
4.2 Distribution System	126
4.3 Consumption System	127
References	130
IV. RURAL-URBAN INTERDEPENDENCIES IN THE COMMERCIAL WOOD ENERGY SYSTEM IN MAJALAYA SUB-DISTRICT, WEST-JAVA	131
1. Introduction	133
1.1 Rural-Urban Wood Energy Systems	133
1.2 Types of Energy Used	133
1.3 Changes in Types of Energy Use (Energy Substitution)	133
1.4 Wood Energy Supply and Demand	134
1.5 The Future of Wood Energy	134
1.6 General Description of the Study Area	134
2. The Use of Wood Energy in Majalaya	136
2.1 Wood Energy Consumption in the Urban Area	136
2.2 Wood Energy Usage in Rural Areas	140
3. The production and Distribution of Wood Energy	141
3.1 Wood Energy Producers	141
3.2 The Marketing of Wood Energy	144
4. Acquisition of Wood	149
4.1 Wood Energy Sources	149
4.2 Preferences for Wood Types	153
4.3 Availability of Wood	154
4.4 Wood Energy Decision-Making	155
4.5 The Legal Context of Wood Energy Sources	157
5. The Role of Wood Energy in Meeting Energy Needs	159
5.1 Types of Energy Use	159
5.2 Changes in Types of Energy Use (Energy Substitution)	160
5.3 Wood Energy Supply and Demand in Majalaya	160
6. Summary, Conclusions, and Recommendations	162
6.1 Summary	162
6.2 Conclusion	163
6.3 Recommendations	164
References	165

V. URBAN-RURAL WOOD ENERGY INTERDEPENDENCY IN A DISTRICT OF NORTHEAST THAILAND	167
1. Introduction	169
1.1 Country Background	169
1.2 The Use of Woodfuel in Thailand	170
1.3 The Study Area	173
2. The Production System	176
2.1 A Transition Period	176
2.2 Charcoal Production	177
2.3 Fuelwood Production	183
3. The Distribution System	186
3.1 Distribution of Charcoal	186
3.2 Distribution of Fuelwood	190
4. The Consumption System	192
4.1 Use of Wood Fuel in Rural Areas	192
4.2 Use of Wood Fuel in the Urban Area	192
4.3 Adjustments	195
5. Conclusions	198
5.1 Rural Dependency on Wood Energy	198
5.2 Urban Dependency on Wood Energy	199
5.3 General Conclusions	200
5.4 Suggested Follow-up Research Topics	200
Bibliography	201
Appendix 1. Rural Systems Analysis. Report of an International Training Workshop	203
Appendix 2. The RRA Flow Studies and Wood Energy Development; Emerging Issues & Strategies	217

PART ONE: INTRODUCTION

by

Neil Jamieson
(Editor)

1. BACKGROUND

The four studies reported in this volume are the products of an International Training Workshop in Rural Systems Analysis held at Khon Kaen University, Thailand, in April and May 1990 (see SW. Grandstaff *et al.* 1990, summarized in Appendix 1, page 203-215, for details). Research upon which the substantive chapters that follow are based was conducted as a final training exercise during the summer of 1990. The training and the exercises in research were designed to be responsive to critical needs within the region.

Development activities have long been hampered by a lack of accurate and timely information about actual conditions in rural areas. The Farming Systems Research Group at Khon Kaen University has since 1983 devoted considerable attention to this problem. They have developed, adapted, and tested various processes and methods for acquiring reliable and useful information about rural conditions in an expeditious and cost-effective manner. This work has now received international attention and several publications reflecting this work are now available in English and are being translated into other languages as well. Methods like these have been referred to under the broad rubric of "rural systems analysis" or, more commonly, "rapid rural appraisal" (RRA) (see Khon Kaen University 1987 for a comprehensive overview of RRA).

It is highly desirable that the processes, methods, tools, and techniques developed at Khon Kaen University be made available throughout the Third World and adapted and applied to various purposes and local conditions. Local universities and research institutions in the developing world can play a vital role in spreading, promoting the use of, and further improving such critical capabilities. The training workshop at Khon Kaen University and the research reported in the following pages have been intended to contribute to this process, while at the same time contributing to better understanding of a particularly widespread and important phenomenon in the developing world, the use of wood as a source of energy.

Although many people--including government officials, conservationists, foresters, and various apostles of modernization in rural areas--have long acted as if they hoped and believed that the use of wood as a source of energy would soon disappear, the facts appear to be otherwise. According to the World Resources Institute, the use of wood for fuel increased by 35 percent from 1976 to 1986. In 1987, about one half of the world's population, some 2.5 billion people, were cooking and heating with wood energy. About 125 million of these users of wood fuel are having problems obtaining enough to meet their needs, either because there is a shortage of wood fuels or because the price has risen beyond their means. This number of energy deficient people might well considerably increase by the end of the century (Barber 1990).

The problem quite simply is that each year there are more people and fewer trees. Both the causes and ramifications of this situation are complex. The social, economic, and environmental consequences interact in subtle ways that confound plans, predictions, and naive good intentions.

Much remains to be understood. But that which is already quite clear is sufficient to cause alarm. As the following studies (and the experience of recent decades) amply demonstrate, however, hasty measures to halt these trends can do more harm than good. We must understand in a much more sophisticated manner than has heretofore been achieved the complex evolving systems in which we aspire to intervene.

2. CONCEPTUALIZATION AND METHODOLOGY OF RESEARCH

As part of the training course in Rapid Rural Appraisal (RRA) at Khon Kaen University, four teams of three persons each prepared a model of fuel systems for their respective countries: Indonesia, Nepal, the Philippines, and Thailand. Each team, working independently, prepared a model of the wood fuel system in their country, based upon the prior experience of team members and information readily available from secondary sources. Hypotheses regarding the structure and workings of each model were then generated. The four teams then shared and discussed their respective models and hypotheses. Out of these discussions the teams jointly constructed a common general model for wood fuel systems and a shared set of hypotheses.

From this exercise a set of initial sub-topics was jointly formulated to serve as common guidelines for the teams in initiating research activities in their respective countries. "Sub-topics" are focal points of research, including issues, hypotheses, and general questions. Five sub-topics formed the initial basis for beginning in-country research.

1. There may be specific common natterns in changes in wood energy situations between countries.
2. Energy and forest policies may have an impact on wood energy - and increased uses of non-renewable energy sources in urban areas.
3. Some specific activities of wood energy consumers in urban areas may continue to depend on wood energy resources.
4. Specific types of rural people may depend significantly on income generated in wood fuel supply.
5. There may be sustainability problems in some rural dependency patterns, but there may also be lessons from other patterns for more sustainable manapement. Both of these may have policv implications.

Using these shared sub-topics as initial guidelines, the four teams worked in their own countries to identify and exploit existing sources of data more fully. At this point, each interdisciplinary team was refining its conceptualization of wood fuel use as a resource system with bio-physical, socio-cultural, and economic dimensions. Another important element of complexity involved the interdependence of urban and rural areas. Fieldwork using Rapid Rural Appraisal techniques was then undertaken to test and further refine the emerging model.

2.1 Methodology

2.1.1 Research Methods

The teams relied upon a number of standard RRA techniques and principles (for a full discussion of RRA see Khon Kaen University 1987). Techniques employed included analysis of secondary data; direct observations and use of indicators; physical measurements; and semi-structured interviews. Interviews were held with key informants and also with selected informants and households drawn from representative samples of participants in the wood energy system. Semi-structured interviewing was in all cases the most important source of information.

The principle of triangulation was central to the design and conduct of field research. Basically, this involves examining key questions from several different perspectives and comparing information derived by several different methods or from several different sources. As a part of this approach, the field teams were all interdisciplinary.

In Indonesia two ecologists, a geographer, and a plant pathologist formed the core team. In Nepal a core team consisting of a forest hydrologist, a general forester, and a statistician enlisted the assistance of cooperating researchers with specialties in forest management, resource economics, botany, and rural sociology, with two anthropologists serving as advisors. The Philippine team consisted of a community development specialist, a forester, and a specialist in social forestry. The Thai core team consisted of an animal breeder, an agronomist, and an agricultural economist.

Data collection also relied upon the principle of triangulation. While semi-structured interviewing provided the bulk of the field data, visual observation and direct measurement were used to check and refine informant reports. Review of existing information before initiating fieldwork also provided a partial basis for assessing the accuracy of findings.

Before proceeding to the field, all the teams reviewed the secondary literature available on their country and region regarding the production and consumption of energy in general and wood energy in particular. They visited government offices at all local levels to review existing information on the study area and its immediate environment. And they studied technical reports from various agencies, both those directly concerned with wood energy systems and those whose programs or policies had some significant impact upon these systems.

Direct observation was used extensively by all the teams throughout their research. They traveled about the research area, keeping their eyes peeled for piles of charcoal or fuelwood, storage facilities, any kind of wood on trucks or carts or being carried by people. They walked through forested areas to observe conditions described by informants or in technical reports, visited kitchens in people's homes and in restaurants, visited factories and charcoal kilns and truckyards and bus depots. The Nepal team began their research by observing the flow of goods into town, monitoring points of entry to the urban center. The Philippine team hired an assistant to monitor and determine the volume, point of origin, and destination of wood energy products moving on vehicles in the main rural production area of their study.

Direct observation is rarely practiced in isolation from other techniques. Interviews are best conducted at or near the site of activity under investigation. Thus, the interviewing of a housewife about her use of wood energy in cooking is best conducted in the kitchen of her home, where the physical arrangements and presence or absence of materials, appliances, and utensils of various kinds both suggest new questions and provide a means of verifying and interpreting the answers she gives to prepared questions. Farmers, on the other hand, are best questioned about production techniques in their fields, and so on.

Indicators based upon direct observation and preliminary readings and interviews were developed to facilitate the learning process. For example, in urban areas house types were used as an indicator of socioeconomic status. Type and location of kiln were used as an indicator of the type of charcoal producer.

Physical measurements were used to determine the size of kilns, the length and volume of bundles of fuelwood, the weight and volume of different kinds of sacks of charcoal, backloads of fuelwood, distances between home and production sites, between production sites and markets, and so on and so forth.

But as is usually the case, the teams relied most heavily upon semi-structured interviewing (SSI) in the conduct of their research. In listening carefully as the respondents talked about local conditions and practices, the teams constantly revised their interview guidelines and devised new, more relevant questions as the research proceeded. Interviews were of several different kinds. Key informant interviews were used to get an overview of places, processes, and conditions. Household interviews were conducted to get the perspective of a range of urban and rural people and of different socioeconomic classes. Other interviews were with members of various categories of actors in the wood energy systems; i.e., charcoal makers, middlemen, categories of consumers, etc.

Team meetings were also an integral and important part of the research. The frequency and duration of these meetings varied according to the conditions under which the teams worked. The Philippine team, for example, reported that they intended to meet at the end of every working day, to compare experiences, discuss the information gathered, and prepare detailed fieldnotes by topic. Once in the field, however, they found that lack of time and sheer exhaustion forced them to hold such meetings only every three or four days. Although the frequency, duration, and content of team meetings varied among the teams and from time to time during the course of the research, all teams found that frequent discussions enabled them to revise their list of sub-topics, form new hypotheses, and follow up on new leads.

21.2 Site Selection

The selection of research sites also took account of variability in several major factors. The first step was to select an appropriate urban area. After visiting three potential urban sites and conducting some preliminary interviews in each, the Indonesian team selected the sub-district town of Majalaya because it had the most complex assortment of wood energy consumers. The Thai team picked a district town within driving distance from their base in Khan Kaen because it seemed reasonably representative of the majority of district towns in Northeastern Thailand and contained a variety of consumers of wood energy. The Philippine team methodically narrowed down a lengthy list of candidates, ultimately selecting a town that was reasonably accessible but seemed to be heavily dependent upon wood energy. Because of the formidable difficulty of travel in Nepal, the team there virtually had to study the town in which they are based.

All in all, the four urban sites around which these studies were based seem reasonably representative of most towns in Asia, if one excludes the very big cities and the most remote ones. If there is a bias that the reader should be alerted to, it is probably the tendency to make the final selection among candidates based upon the degree of dependence upon wood energy and the diversity of uses to which wood energy was put. The study sites provide excellent illustrations of the ways in which wood energy is produced, transported and used; but they may, especially in the case of the Philippines and to a somewhat lesser degree in Indonesia, represent the high-dependence half of the continuum of wood energy consumers. In many other towns, in other words, wood energy may not be quite so important as in the study sites. Wood energy is nevertheless, as amply documented in a variety of studies, important all over Asia and the developing world.

2.13 Reporting of Findings

The teams began writing the reports as soon as fieldwork was completed. It is important to note that the teams did not complete their training in Khon Kaen and return to their respective home institutes to begin their research until the end of May, 1990. Their final reports were due in Khon Kaen by October 1, 1990. This meant that only four months were available for planning the research, selecting study sites, gathering and analyzing data, and writing the final reports. Not all members of all the teams, furthermore, were completely free of other responsibilities for all this time. The reports were in most cases written in two to four weeks in the month of September, 1990.

It is important to emphasize that the final research reports, which were edited and condensed for this volume, were available to interested parties in each country only five months after the beginning of training. In fact, useful briefings, in-country reports, seminar presentations, and conference papers based upon this research were appearing within three to four months of the participants' return to their countries. The editing and publication of this volume has been slowed by the exigencies of international communication and difficulties in coordinating the schedules of several different individuals and groups of people scattered around the world.

2.2 Reflections on Methodology

It is also important to note that ideally, the RRA field exercise for a training course like this would deal with an easier topic. Wood energy systems are very complex, poorly understood, and controversial. Moreover, many participants in these systems are engaged in activities that are illegal, especially in the production and distribution sub-systems, but also to some extent among consumers. This means, inevitably, that some topics are very sensitive.

Obtaining information in such cases requires an exceptional degree of skill and patience, well beyond what one might reasonably demand of a recent graduate of a training course in RRA techniques, even though most participants were already expert in doing other kinds of research. Problems arising from the reluctance of prospective informants to speak freely did in fact affect some parts of some studies. The Indonesian team, for example, experienced great difficulty in getting information from rural producers, who were afraid of getting into trouble.

This raises the question of assessing the reliability of the reports that follow. Upon how much and what kinds of work are these reports based? As mentioned above, the bulk of the data was obtained from semi-structured interviews. Altogether, these four teams conducted 207 interviews, averaging about 52 interviews per report. The range was from 63 interviews in Nepal to

37 interviews in Indonesia. In Thailand 50 interviews were conducted, and 57 were done in the Philippines. There are, however, many different kinds of interviews. And it is important to stress that these were, at least for the most part, team interviews. RRA methodology includes a technique of group interviewing, developed at Khan Kaen University, that can vastly increase the power and validity of such interview sessions (see Grandstaff and Grandstaff 1987).

Some interviews, especially important in the early stages of research, were “key informant interviews.” These are usually long interviews with especially knowledgeable individuals who provide an overview of an area or a topic. Examples of key informants on a study like this might include a current or retired village chief or sub-district head, a particularly experienced and knowledgeable dealer or producer, or an expert in some occupation that uses a lot of wood energy. Many interviews were household interviews, conducted in people’s homes, probing *in situ* the complex ways and reasons that a household might depend upon wood energy either as a source of energy or as a source of income. Yet other interviews were more tightly focused ones, geared to specific topics with individuals who possessed specialized, first-hand knowledge of some or one of the many ways in which wood energy is produced, transformed, packaged, distributed, sold, and used by different categories of people for a wide variety of purposes.

The range of these interviews is extraordinary, and much of what people told the team is fascinating. In these reports we vicariously encounter veteran charcoal makers, skilled woodsmen, canny merchants, and bold entrepreneurs, bus drivers who buy small amounts of charcoal in one town and sell them for a profit in another, peasants who carry fuelwood to town in the pre-dawn darkness because they are ashamed to be seen selling wood. And the unsuspected array of people who use wood energy in some way in order to earn their living is astonishing: blacksmiths and goldsmiths, tinkers, moonshiners, candle makers, silk extractors, tobacco processors, roadside vendors of a prodigious variety of snacks, tire retreaders, crematoria workers, chicken breeders, butchers, bakers, dyers of cloth, restaurateurs, laundrymen, dairy operators--the list could go on and on. The teams varied in the mix of interviews they conducted, though each encountered a richly textured cross-section of humanity.

The 63 interviews conducted in Nepal consisted of 10 key informant interviews, 19 household interviews, and 34 individual interviews on specific topics. The Philippine team interviewed three key informants and 12 households from the production system, three key informants and six households from the distribution system, and four key informants, two key informant households, and ten other households from the consumption system. Informants were balanced according to income level, location, and occupation. The Indonesian team based its report mainly upon eight key informant interviews, four interviews with producers, five interviews with participants in the distribution system, and eleven consumers. Another ten interviews were conducted to check specific points and to obtain detailed information from people with specialized knowledge. The Thai team conducted 14 key informant interviews, 16 household interviews, and 20 individual interviews on special&d topics.

3. AN OVERVIEW OF THE REPORTS ON WOOD ENERGY DEPENDENCE IN URBAN AND RURAL AREAS

All four study areas shared certain general characteristics. There was everywhere a relatively high degree of rural poverty (including landless and smallholder farmers). A relatively high rate of population growth in the recent past is continuing to some degree. There has been a notable reduction of the total forested area within all four regions and a reduction of species diversity within the remaining forestland. There has been a growing scarcity of hardwoods, especially of species preferred for wood energy, which reduces the quality of wood energy products, notably charcoal and fuelwood. In all study areas the amount of time and energy required to obtain wood and to market products has been increasing. Also, recurring periodic scarcity of charcoal and fuelwood available to urban consumers, combined with price instability, has characterized all four study areas.

A major difference between the four study areas is the relative importance of the various kinds of places that wood energy is obtained. At one end of the continuum, forests were an extremely important source of wood energy in the particular area selected for study in the Philippines. Forests were also very important in Indonesia and rather important in Nepal. At the other end of the continuum, in the area selected for **study in Northeast Thailand, wood energy was** obtained almost entirely from privately owned agricultural land.

There appears to be a shift in all study areas toward a greater diversity of sources for wood energy. Species selectivity and even taboos against the use of certain species for certain purposes is declining and in some places (i.e., the Thai study area) have virtually disappeared in recent years. In the Indonesia study area a relatively small but growing amount of wood energy, exclusively for non-commercial purposes, is coming from a wider range of sources: upland plots of private land, home gardens, construction residue, driftwood, and agricultural residues. In Nepal, community production and management of wood energy sources promises to play a more important role.

In all four study areas there is a heavy and persistent dependence upon wood energy to meet household energy needs in rural areas and significant segments of the rural poor are dependent upon the production and/or sale of wood energy as a source of income. Some cottage industries in rural areas also are dependent upon wood energy: to process food, to cure tobacco, to extract silk, even to boil cattle feed at one place within the Indonesian study area.

In urban areas, too, all four studies found considerable dependence upon wood energy, although the degree of dependence varied from study to study, with the lowest level of dependence in the Thai study area. Low and lower middle economic level urban households depend heavily on wood energy for cooking and ironing. Again, there seems to have been more of a shift toward the use of LPG for household cooking in the Thai study area than elsewhere. Small and medium scale urban enterprises in all areas studied also depend upon wood energy. While it seems that this dependency is being reduced in some places to some degree, mainly because of periodic shortages and fluctuating prices for wood energy, and again especially in Thailand, some dependence upon wood energy for both household and commercial purposes seems destined to continue at a significant level into the foreseeable future.

Many small business enterprises--food processors and food vendors, blacksmiths, etc.--have a strong preference for wood energy and both economic and technical reasons to resist the substitution of alternative energy sources. Moreover, if as seems likely fossil fuels become more and

more expensive and more scarce in the coming years and decades, wood energy and biomass energy may become even more essential in meeting both national energy needs and the needs of poor people both in rural areas and in cities as well as many small business enterprises. With improved production techniques and appropriate management systems, wood energy systems can be of great economic and social value, now and into the future. Despite these findings and inferences, the studies indicate that in general wood energy systems have a very low priority in government policy, a priority which is at odds with the desires and needs of a very large segment of the population.

Perhaps related to this point, the studies also found that in general there seems to be a rather high and still rising level of illegality associated with the acquisition (and sometimes the production and distribution) of wood energy. This not only makes the system less efficient, it also sometimes results in unnecessary waste of resources. For example, in the Indonesian study area, it was found that the wedge is now being used by some operators to make their illegal work in the forest speedier and less easy to detect. But at the same time this practice wastes usable wood. So, too, in all study areas, do wood shortages and stringent regulations result in much charcoal production taking place in relatively inefficient shallow pit kilns. The studies seem to suggest that the tendency of many government officials and forestry personnel to emphasize the "policeman role" in conservation efforts may well be counter-productive in a number of ways.

The interface between the production subsystems and the distribution subsystems was in general found to be rather fuzzy, extremely complicated, and difficult to understand. In some cases, most strongly in the Philippine report, it was suggested that middlemen profits are very high, raising questions of equity and speculation as to how the impact of wood energy systems might best contribute to the reduction of rural poverty. At the same time, other examples indicate that in many cases wood energy entrepreneurs may actually generate income-producing work for the rural poor that would not otherwise exist. This is apparently a very complex and possibly important issue that merits further investigation.

All of the studies suggest, at least implicitly, that inadequate attention is being given to developing alternative sources and means of producing and utilizing wood energy and biomass energy of all kinds. In response to scarcity, in some places innovative patterns of wood energy production are beginning to emerge, as are some new (and a revival of some old?) patterns of wood energy resource management. But on the whole these seem often to be too little too late. They are not yet widespread (although tree conservation practices seem to have changed drastically in recent years in parts of Northeast Thailand). They are also poorly studied, as are traditional practices that relate to such activities. Relatively little effort is being made to discover, describe, assess, improve, develop, disseminate, and provide support to such practices.

At the same time, the studies provide numerous examples of the ways in which both government policies and regulations and public attitudes make the production and transportation of wood energy products more difficult and less efficient than they might be. One of the great values of these reports, in my view, is the vivid way in which they illustrate the extent to which the use of wood energy and social status of those engaged in the wood energy business are negatively perceived by many government officials, technical specialists, and large segments of the general public. These undercurrents of disapproval and disdain influence the way people engaged in the wood energy business are treated and they also influence the behavior of producers and transporters of charcoal and fuelwood and the nature of their interaction with their social and bio-physical environments, nearly always in negative ways.

4. POLICY IMPLICATIONS

4.1 The Tentative Basis of Both Policies and the Challenges to Policy

Literature searches conducted to help formulate research in these four countries indicate that at both the national and the regional level, there is a relative paucity of useful, reliable, and timely information about the size, structure, function, and dynamic processes of wood energy systems. Data tends to be highly aggregated; but the reality it purports to represent is characterized by great complexity, variability, and diversity. This growing body of “numbers out of context” does not seem to provide a very secure toehold on the path to wisdom.

The implications of wood energy systems for energy policy, for social policy, for economic policy, and for the environment seem often (if not usually) to be poorly thought out and based upon a very questionable set of assumptions. The human dimensions of these systems seem to be the most neglected. Wood energy is a source of both income and energy for the poorest of the poor. Narrowly conceived solutions to deforestation--be they technocratic, administrative, or moralistic--tend to deprive the poorest and most vulnerable members of society of a source of desperately needed income and to deprive even larger numbers of very poor people of a source of energy they can afford to use. The issue of equity cannot be separated from the issue of sustainability in local systems. But these detailed studies of four local areas in Asia do not provide any tidy answers to this type of question. What they provide, however, and what has often been missing in the past, is a vivid portrayal of the human costs at stake in resolving such issues and the complexity of the network of interactions into which we intrude in our efforts to develop rural areas, modernize the cities, and protect the environment. These are mere abstractions, these studies remind us; they are necessary conceptual tools, but they are also labels that conceal and homogenize real human beings in concrete circumstances that defy universal generalizations, no matter how “valid” they may be at a highly aggregated level.

All participants in this project of training and research have been highly stimulated by this activity. All are highly motivated to attempt to employ the data and insights acquired in these four studies to better define some critical policy implications that arise from this work, and to either confirm or challenge some of the assumptions upon which current policy is based. No one feels altogether comfortable saying too much about many of these issues, however, given the difficulties of generalizing from the small and not necessarily very representative areas studied to regional and national policy levels. These studies, after all, deal with only four districts out of the thousands that make up Asia, and the studies of these districts are far from definitive.

Nevertheless, based on these reports and discussions with team members, it seems that some points should be raised, even though there is still a tentative quality to the linkage between the specific findings of these studies and the broader policy implications one might wish to address. When reading the following reports, the concerned reader may want to bear in mind some of the following questions.

4.2 Energy Policy Issues

1. How should we respond to the strong sense that comes through some of these reports that wood energy systems are an important, enduring, and valuable component of the energy systems, the economies, and the sociocultural fabric of many parts of the developing world? Should not wood energy systems be developed to become more efficient, more sustainable, and more equitable, rather than opposed and suppressed? And, furthermore, are not attempts to suppress these activities doomed to failure in any event?

2. How can we help to increase efficiency in the acquisition, processing, distribution, and consumption of wood energy, getting maximum use per unit of wood and per unit of cost? Is it not a tragedy, and a powerful condemnation of our efforts to date, that the entire wood energy system is apparently now being made less efficient, rather than more efficient, by existing policies and regulations?

3. How can we better discover, develop, and disseminate ways in which underutilized potential sources of wood energy can increasingly serve as substitutes for more scarce and more expensive sources? E.g., cannot multi-purpose trees become integrated into land use systems in sustainable and equitable ways that make them an integral part of the subsistence economy?

4.3 Forestry Policy Issues

How can we increase wood production for energy purposes so as to maintain a steady supply of raw materials for making wood energy on a sustainable and equitable basis?

4.4 Social Policy Issues

How can we integrate the acquisition, production, processing, distribution and sale of wood energy resources into the subsistence economy so that wood energy increasingly contributes in a significant and reliable way to the reduction of poverty and to the amelioration of its dreadful human consequences? In particular, how can this be made an integral part of development planning for upland and midland areas, and for other marginal zones where poverty is high and agricultural productivity is low?

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SOUTHEAST ASIAN UNIVERSITIES AGROECOSYSTEM NETWORK

RURAL SYSTEMS ANALYSIS

REPORT of an INTERNATIONAL TRAINING WORKSHOP¹

Held in Northeast Thailand, April - May 1990

BACKGROUND AND PURPOSE

A principal problem in development activities affecting rural areas has been the lack of methods to acquire accurate and timely information about rural conditions. With accelerating change in rural areas, brought about by factors such as rapid population growth, this problem has become even more acute.

During the period 1983 to the present, the Farming Systems Research Group at Khon Kaen University in northeast Thailand devoted considerable effort to addressing this particular problem. As a result, processes and methods were developed, adapted and tested which have proven effective. This work has now received international attention and several published collections reflecting the work are now available in English language and are currently being translated into other languages as well. Methods like these have been referred to under the broad rubric of "rural systems analysis," or more commonly, "rapid rural appraisal" ("RRA").

In order to have widespread effect, it is essential that the processes, methods, tools and techniques, such as those developed at Khon Kaen University, be made available throughout the Third World and adapted and applied to various purposes and local conditions. In order to do this, local universities and research institutions in Third World countries are seen as critical, in their capacity as conveyers, developers and repositories of knowledge. Such institutions should acquire RRA capabilities as quickly as possible, in order to teach others and promote widespread usage.

However, there are currently several serious obstacles in transferring this type of knowledge. One problem is that there are not enough, and not effective enough, training materials yet available that would allow institutions and individuals to acquire this type of knowledge without considerable assistance from experienced practitioners. Funding and venues are currently being sought to help solve this problem, which would entail the development of multimedia materials through interinstitutional cooperation in a number of different rural settings.

But the need to develop training materials is probably not the principal obstacle. The processes and methods to be taught are very much of a hands-on nature, and experience has shown that the fastest and most effective way to transfer such knowledge is through the direct and intensive assistance of experienced practitioners, not through the dissemination of training materials alone. Unfortunately, however, there are also a number of obstacles to conducting international training. For example, the training necessarily involves a lot of fieldwork, and fieldwork is far more effective when both trainers and trainees are experienced in the particular rural area and, most important, when both are able to converse directly (without interpreters) with the local rural inhabitants.

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In recognition of both the needs and the obstacles involved, an experimental process was proposed by which it is hoped that knowledge can be most effectively transferred. First, it was felt that initial training should be done within the Region, where communications, cultural differences, and differences in rural conditions would be less problematical.

Second, it was felt that a two-step process would be needed: in the first step, training would be conducted in northeast Thailand, with the assistance of interpreters during field exercises; in the second step, trainees would conduct field exercises in their own countries, with the assistance of training staff from Thailand acting in the capacity of resource persons. Third, new training venues would be designed, different from the processes used within Khon Kaen University, that would better suit non-Thai trainees and would hopefully allow highly intensive training to take place in a much more limited period of time (at Khon Kaen, many people worked years to develop the skill levels they attained).

Lastly, great care would be taken to target both institutions and individuals for the training. The training group would be kept small, in order to maximize intensity and interaction with trainers. On the other hand, the number of institutions per training session would also have to be limited, so that several people from each institution could attend. This would maximize the knowledge transferred to each home institution, would create a trained RRA team (necessary for the in-country follow-on exercise, and for the most challenging types of RRA work), and, by producing several trained practitioners, would allow the best chance for successful institutionalization in the home institution.

This international training in rural systems analysis involved twelve trainees, three each from four institutions in Indonesia, Philippines, Nepal and Thailand.

The training was supported by the Food and Agriculture Organization of the United Nations (especially the Forestry Department, the Regional Wood Energy Development Programme in Asia, and the Agricultural Services Division). The first phase took place for approximately six weeks during the period April 16 through May 23, 1990.

The second phase - the in-countries applications, with training staff from Thailand acting as resource persons - took place from June to October 1990. This is a report of the first phase: the Training Workshop in Rural Systems Analysis. The reports of the second phase are presented in the preceding chapters of this volume.

TRAINING ACTIVITIES

A description of the qualifications needed for comprehensive RRA work is contained in Grandstaff 1990. These include:

- interdisciplinary concepts (especially systems analysis and systems thinking); agricultural science concepts;
- social science concepts;
- disciplinary specializations (that are appropriate to the subject matter of the particular enquiry and also contain a mix of biophysical science and social science expertise);
- RRA knowledge and experience (semi-structured interviewing, use of numerous diagrammatic tools, etc.);
- local language ability;
- applied knowledge and experience in the local rural area;
- attitudinal factors (such as interest in the lives of the rural inhabitants and willingness to learn from others); and miscellaneous factors (health, acclimatization, etc.).

It is impossible to train individuals in all these categories in a short training course. Instead, trainees were chosen, as much as possible, for already having qualifications in some of these categories.

The subject matter presented and discussed during the training can be divided into twelve categories, (other categories were not taught during the training, but ways were suggested by which trainees could enhance their skills later, in the home institution setting):

(1) Philosophy, theory and development of RRA.

How and why this type of rural enquiry and analysis was developed, underlying principles and guidelines (e.g., use of iteration and open-ended learning, contrast with other forms of rural enquiry, etc.).

(2) Interdisciplinary concepts and systems thinking.

Emphasis was placed on basic systems theory and systems analysis and some of the basic concepts of ecology and human ecology. Applied conceptual frameworks were also stressed (e.g., resource systems analysis).

(3) Management and use of pre-existing information and secondary sources

This included reviews of the types of data likely to be available, how to access it and organize it and incorporate its usage into RRA processes, computer assisted management of areal unit data (e.g., from administrative records), topographical maps and aerial photograph usage, etc.

(4) Conceptual tools.

This is a catch all term for a rather large collection of techniques and tools that can be used to assist in conceptualizing questions and eliciting, organizing and analyzing information. Examples include: the six helpers (who-what-where-when-why-how), and a variety of time, space and logic schematics (crop calendars, sketch maps, transects, decision trees, etc.).

(5) Observation and indicators. Observation and use of indicators (biophysical and sociocultural) are important parts of RRA, taught primarily by examples, sensitization, and field practice.

(6) Folk taxonomy, local terms, local measures, etc.

Local taxonomic classifications can be elicited and analyzed and can reveal much about such things as natural resources, and local strategies and usage patterns. Accurate understanding of local terms, and local measures of distance, area, weight, volume and time, etc. (e.g., lunar calendar), is essential in getting accurate information during RRA work.

(7) Semi-structured interviewing.

Probably the most important general method used during fieldwork. To learn to do it well requires extensive practice, but trainees benefit from numerous hints and guidelines which can be discussed and used in practice. Important subcategories are key informant interviewing, individual/household respondent interviewing, and various forms of group interviewing.

(8) Organization of RRA.

Things covered in this category span a range of operational concerns, from management issues such as estimating time and funding needs, travel planning and logistics, to more conceptually oriented techniques, such as using triangulation in the selection of sites and interviewees.

(9) Village agroecosystem RRA.

This type of RRA work focuses on a single village (but also within the hierarchical context of the neighboring villages in the area) and uses a broad range of techniques to analyze the village agroecosystem, its features, properties, problems and constraints, etc. Key questions and issues can be identified that can then be addressed by further work, including more topically focused RRA enquiry.

(10) Topical RRA.

This type of RRA typically spans a number of villages or sites, selected through triangulation so that analysis of the topic in the various sites contributes to an understanding of the larger area or region. The subject matter is topically focused (e.g., trees in paddies, water scarcity in the dry season, etc.).

(11) Institutionalization.

It was stressed throughout the training that the primary purpose was to develop "centers of excellence" in RRA and rural systems analysis. Emphasis was placed on doing frequent, high-quality RRA work, the creation of an RRA support center and what it should contain, training of other staff, teaching, developing applications, etc.

(12) County work plans.

Near the end of the training workshop, several days were devoted to conceptualizing the wood energy RRA studies which would serve as the in-countries exercises, and doing initial planning for these exercises.

While many classroom sessions were involved, much of the training actually took place informally, especially during fieldwork, and in numerous discussion sessions that are not reflected in the formal agenda.

TRAINING MODES

In order to convey and instill the processes, methods and techniques as deeply and effectively as possible in a limited period of time, a number of different "training modes" were planned. These included:

(1) Plenary lectures and classroom teaching.

These sessions utilized multi-media tools as much as possible, for example, use of several whiteboards and flip-charts, hand-outs, transparencies on (two) overhead projectors, and some use of slides, videotapes, and computer imaging projector. Lecturers were frequently rotated and assisted by other training staff also sitting in and commenting. Discussion and questioning were encouraged and the format, room, use of coffee breaks, small group discussions, etc. were arranged to keep these sessions as informal as possible.

(2) Small group classroom work.

Teaching and exercises of a more difficult or hands-on nature were done in sub-groups, sometimes simultaneously, sometimes rotational (e.g., computer work, so that trainees had maximum interaction with the tools and the teaching staff).

(3) Field teaching.

Some of the lecturing was done in the villages, using the village and its environment as part of the training materials. Some of this teaching was done rotationally in order to have smaller groups and more intensive interaction.

(4) On-campus practicums.

Two of these were conducted using semi-structured interviewing of Khon Kaen University staff and students, in English language. It was reasoned that, to a certain extent, the University community might "act enough like a village," at least for carefully selected topics, to make it worthwhile to allow trainees to practice interviewing without having to use interpreters.

(5) Field practicums

These formed the bulk of the fieldwork. Trainees conducted RRA-type work, or various portions of RRA work, in villages, with assistance of training staff.

(6) Case study presentations.

Two formal presentations of RRA case studies were conducted by principal practitioners who were involved in these studies. Various other case study materials were used during the course of training to illustrate various points.

(7) Readings.

The (English language) readings assigned were fairly extensive, and copies of all the readings were given to each participant (see section on 'Reading Materials').

(8) Reading discussion sessions.

Due to insufficient time, this mode was not able to be used. However, many of the readings were reviewed, taught, or referred to during the lecture sessions.

(9) Review discussion sessions.

Two formal review discussion sessions were held during the course of the training (more were initially scheduled but had to be canceled due to insufficient time). During the review discussions, all participants were able to raise questions for the group (trainers and trainees) to discuss.

(10) Video presentations.

It was intended that separate sessions of videotape presentations would be used to increase diversity of training modes and give participants additional perspectives (major presentations of the 1985 International Conference and perhaps some videotapes of field exercises). It was also hoped that videotapes of the participants themselves made during field practicums could be used for review and critique purposes.

However, due to insufficient time, neither of these videotape modes was able to be used during the training. In one of the lecture sessions a video presentation was used.

These training modes were, as much as possible, used interactively, for example, mixing fieldwork with classroom work in an alternating and progressive manner. One morning was also devoted to informal presentations by trainees describing their home institutions and the roles which they perceived RRA work would take in their particular institutional settings. Informal entertainment and socializing was also included in the training period (including several evening parties and daytime fieldtrips to points of interest in northeast Thailand).

REFLECTIONS ON THE WORKSHOP

During and after the workshop, training staff held intensive discussions on the progression of training. Trainees were also frequently consulted, both during formal sessions and also informally, both by training staff and through the assistance of observers. The following observations and discussion are a result of this type of introspection and review and are intended to be used to further improve subsequent international training activities.

Length of the workshop

Both trainees and trainers strongly felt that six weeks was not a long enough period of time for everything that needed to be accomplished. Some of the planned activities had to be omitted from the schedule, and it is likely also that more reading would also have been done had things not been so rushed. An axiom of RRA work is that, while it may be rapid, it must never be hasty. Certainly, good RRA training takes time, and it works best when it is not rushed, so that trainees are relaxed enough to be able to assimilate a great deal of new and "different" types of information, ways of interacting and attitudes.

While it was agreed that the training should continue to be very intense, it should not be so intense that trainees become overly tired to the point where learning may be reduced. Because of the intensity, trainees should have most weekends off (at least a day and a half per week), in order to “recharge”, reflect, and review notes and readings, etc. Luckily, no one (neither trainers nor trainees) got sick.

It is felt that the next round of international training should last at least eight weeks, perhaps even ten weeks. (The trainers also recognize, of course, that it is an important goal to increase cost efficiency in international training to the maximum extent possible; it might be possible later to reduce the time needed, as a result of increasing experience and the further development of training materials and training venues, etc.)

Flexibility of the agenda

The agenda was changed frequently, usually in minor ways, throughout the course of the training. The ability to do this is seen as essential. The agenda must be able to respond to the varying backgrounds and speed of learning of participants. Also, RRA fieldwork takes place under non-laboratory conditions. When local inhabitants must be involved in non-controlled ways, one must allow flexibility in scheduling, to account for the unexpected. In this regard, fieldwork in RRA training is no different from fieldwork in actual RRA conduct

Training modes and iteration

It seemed clear that using a number of different training modes and mixing them in an alternating and developmental manner is far more effective than, for example, weeks of classroom work followed by weeks of fieldwork. In future training sessions, it is hoped that this principle can be applied even further. In particular, it is hoped that actual fieldwork may be able to be started as soon as possible, possibly on the very first day. Initial fieldwork would deal only with limited semi-structured interviewing of a highly focused nature, using a very limited number of tools and techniques, then gradually expand to a greater range of tools, techniques and types of enquiry. More complex concepts (e.g., systems thinking) might then be introduced later in the program as the need for using these in RRA becomes clearer to participants, as a result of accumulating field experience.

Use of translators/interpreters

It is an axiom that, if it is impossible to converse directly with local rural inhabitants, the next best thing is to use professional translators rather than “helpful” colleagues, etc. However, during international training of this type, the conclusion was reached that the trainers themselves should act as both interpreters and trainer/ observers in the field (best: two per interviewing team, one doing the interpreting, another observing and taking procedural notes, with each taking turns to minimize fatigue). It is very unlikely that enough professional translators could be found, or that they would have the prerequisite knowledge of local rural terms and conditions. Also, in a training context, they would additionally have to be familiar with the modes and processes of RRA, in order to work effectively with trainees. Taking all this into account, it became clear that the trainers themselves are the best persons to perform translation functions.

Regional advantages

The fact that all of the trainees were from the same Region was apparently an important factor in helping to make the training successful. There were cultural differences and some communication difficulties, but these were less problematical than might otherwise have been the case. Trainees were also able to infer some things about the local rural conditions, or at least, to learn about local conditions more quickly and easily than might otherwise have been the case (e.g., all had seen water buffalo before, were generally familiar with what it takes to care for them, etc.). As international training experience accumulates this may become a less important factor, but it seemed clear that the decision to begin

international training within the Region was a good one. With increased training experience and an expanded network of practitioners experienced in different settings within the Region, it should then be easier to offer effective training to persons from other Regions of the world.

Selection of trainees

It seemed clear to the trainers that the high quality of trainees made a significant contribution to the success of the training. All were carefully selected by their institutions, all were highly motivated, and were interested in learning about rural conditions and in learning to use RRA, all were able to learn quickly and put in a lot of effort, etc. When training of this type is conducted in a small group of trainees, with frequent informal interaction, even one or two inappropriate trainees could have a major negative impact on the learning ability of the entire group. In future training sessions, it will be important to put sufficient effort into the identification of participating institutions and (the mix of) individuals, if results are to be most satisfactory.

Teaming trainees during training

Much of the training work was done in small trainee teams (not just the fieldwork, many of the classroom exercises, too). How these teams are formed may be critical. Team members were assigned at various times for various purposes, to get the best mix for overall learning of all concerned. Initially, no one from the same country was on the same team, so that informal ("out-of-class") discussion later among people from the same country would be an additional mode of knowledge sharing. However, in latter portions of the training, it is clearly important that people from the same country/institution operate as a team, in order to build team expertise and rapport, critical for later in-country work and institutionalization.

Feedback and critiquing

More work is probably needed on how to do this best, so that maximum learning can take place without discouragement or loss of face. In this session, trainers stressed avoiding any unpleasantness by making comments and critiques very general or by very informal discussion with individuals. Self-criticism was very useful, and it may be possible to enhance this in the future by using videotapes, made of participants during fieldwork.

Informality

Much of what needs to be learned about RRA has to be learned through informal modes. The several evening parties were very useful in this regard. Coffee breaks were taken at least twice a day, of flexible length (depending on the discussions going on during the breaks) so that trainees could talk to training staff informally. An additional technique would be to hold some of the training elsewhere in the Northeast, away from Khon Kaen, allowing the opportunity to isolate both trainers and trainees in a single place, which would further increase opportunity for informal interaction during "off hours." Allowing more time for the training workshop should also allow more time for informal interaction.

Use of examples of actual RRA work .

The increased amount of written (English language) RRA material now available was certainly of great help in conducting international training of this type (see 'Reading Materials'). However, it will be even more useful if informal "evaluations" can be held prior to future training sessions that could provide a more detailed description of factors related to various RRA applications, of a type that are not available in written form (e.g., how the results of RRA work were used by individuals and institutions, how it affected their jobs, etc.). This type of "evaluation" work could be conducted by Khon Kaen staff, primarily using semi-structured interviewing within Thailand.

Subject matter in need of greater emphasis

It was felt that greater emphasis might be placed, if possible, on (1) the analysis of information during RRA, (2) the management (including logistical management) of RRA work, and perhaps (3) more comparison with other forms of rural enquiry and the advantages, disadvantages and limitations of RRA compared to these.

Need for feedback from trainee testing

Some of the tools and techniques taught may be easier to apply in some settings than in others. For example, it may be more difficult to do transacts in mountainous Nepal, more difficult to do farm plot mapping in parts of China where households have numerous different plots in different locations. Feedback from trainee home applications can be used to improve and strengthen the curricula and training materials for subsequent rounds of training.

Need for follow up

The primary purpose of the international training is to foster institutionalization of processes and methods in the home institutions of the trainees. However, this larger goal cannot be accomplished through the training alone. Monitoring the course of development in the participating institutions may provide valuable information for subsequent rounds of training activities, and may also show more specifically what other kinds of activities are needed. In particular, it is expected that the institutions may have different difficulties in establishing "RRA support centers" within their institutions, and may need outside assistance in this regard.

Demands on trainers

Mounting training of this type takes considerable effort on the part of trainers and support staff. Khon Kaen University is a degree teaching and research institution oriented toward Thai language activities of a more routine nature. Khon Kaen university staff have other duties which they must perform or otherwise "cover" during training periods. This is also true of much of the work that must take place before and after the actual training period itself. To do this kind of training well requires a great deal of preparatory work and methodological and training materials development prior to the actual training period. The need for training staff to act as resource persons during follow-up in-countries fieldwork creates further demands, as will the need to monitor and encourage the progress of applications in trainee institutions. Consequently, it would seem that an expanded and timely program of international training activities will need to seek ways to allow a core of the training staff to be released from other duties.

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WORKSHOP AGENDA

Week 1, 16-22 April

- Monday *Registration; Opening*, Dr. Nodapol Tongsovit
Introduction, Dr. Terd Charoenwatana.
Philosophy of Workshop and Nature of RRA: On common features of RRA work, when to use RRA, qualification categories, building in-depth local RRA capability, and why universities are needed as in-country centers of excellence, etc.
- Tuesday *Systems Thinking I*. Review of basic concepts of systems thinking and why these are important as thinking and working tools in RRA.
Principles and Organization of RRA: Overview of RRA principles in the context of rural settings and needs, steps in organizing RRA work, with more details on pre-fieldwork activities, and the structural organization & activities during fieldwork.
- Wednesday *Systems Thinking If*- The agro-ecosystem concept and analysis, steps (as per Conway and since then).
Sources and Management of Secondary Information : Review of examples of secondary information for village level study. Definition and types of maps, the map features relevant to rural analysis, using aerial photographs, satellite images.
- Thursday *Conceptual Tools*: Introduction to various tools: using secondary data, mapping, transect, time line, crop and animal calendars, logic trees, decision trees, and activity sequences.
Reading and Review.
- Friday *Field Teaching, Village Map, Transects*: Participants divided into 2 groups, one with base map made, one without; use of observation and key informants, local names put onto maps.
Presentation and Discussion: Groups presented results, compared and discussed findings.
- Saturday *Computer Assisted Areal Data Base Management*: Area Graphics.

Week 2, 23-29 April

- Monday *Semi-structured interviewing*- Introduction, subtopics, how to conduct interviews, protocols, techniques, hints, errors.
Sub-topic building- Three international teams worked on a list of subtopics for key informant interviewing.
On-campus practicum; Key Informant Interviewing- Teams interviewed staff of Soil Departments, in English language, using subtopics each team developed.
- Tuesday *Presentations, Discussion and Critique*: Teams presented results of the key informant interviewing, and critiques, discussions, etc.
Group Interviewing- Natural group, encounter group, focus group, etc. Examples, techniques and hints.
RRA Case Study Presentation: "Fuelwood Situation & Farmers' Adjustments in Northeastern Thai Villages".
- Wednesday *Observation, Indicators and Folk Taxonomy*: Description, various examples, video presentation, etc.
Conceptual Tools II Review and greater details on conceptual tools: flows, social mapping, household structure.
- Thursday *Field Teaching, Mapping and Transects, Observation, Indicators and Folk Taxonomy*: Trainees divided into 2 groups for each topic set, and then rotated, so each could learn both in smaller groups.
Field Trip to Udon: Needed for visa extension because of unexpected immigration status.
- Friday *Field Practicum; Semi-Structured Interviewing*- Participants divided into 3 teams with Thai member acting as translator; assigned topic: charcoal for cooking.
Presentations, Discussion and Critique: Teams presented results of field interviewing; discussions and critique.
- Saturday *Field Trip* to Ubonrat Reservoir.

Week 3, April 30 - May 6

- Monday *Country Reports*: Participants reported on past and current working experiences in rural areas and the role of RRA applications.
On-campus Practicum; Individual Respondent Interviewing: Of students of Faculty of Agriculture, same topic as first on-campus practicum (in English language).
Review Discussion: Questions related to everything covered up to this point.
RR,4 Case Study Presentation: "Role of Natural Foods in N.E. Thailand". Description of methodology and hints. *Review Discussion*: continued from period before case study presentation.
- Tuesday *Presentation of Agro-Ecosystem Analysis of Ban Kor* Use of overlays for pattern analysis of secondary data to identify issues.
Subtopic Development for Village RR,4 to study Livelihood of Non Lam Village: Teams worked on subtopics of biological/physical/socio-cultural aspects of villagers' livelihood.
Presentations and Discussion : To finalize plans and assignments for Village RRA work to begin on next day.
- Wednesday *Village RRA at Non Lam Village*: Work in 3 international teams, with 1 interpreter & 1 resource person. Note reconciliation and additional interviewing.
- Thursday *Preparation of Findings, Presentations and Discussion*: Staff help teams to interpret, organize, and summarize information. Emphasis an key issues. Plan for household interviews.
- Friday *Household Interviewing at Non Lam Village*: Teams interviewed identified types of households.
Note Reconciliation and Discussion: Team reconciled notes, discussed and analyzed information from household interviewing.
- Saturday *Field Dip* to Ban Chiang and Northeast countryside.
- Sunday *Presentations and Discussion*: Results of Non Lam household Interviewing.

Week 4, 7-13 May

- Tuesday *Comceptual Framework for Topical RRA: Lecture and country-team work on developing conceptual framework* on topic of water scarcity in the dry season in the Northeast.
Initial Site Selection for Topical RRA: Computer assisted analysis of areal unit data and other techniques. Site triangulation.
Subtopic Building: Country team work on conceptual framework and subtopics for the water scarcity topical RRA_ Teamwork reconciled to produce common framework and subtopics.
Review of Principles of Note Taking- Discussion and re-emphasis based primarily on trainers' observations during fieldwork so far.
- Tuesday *Topical RRA Fieldwork*: Four country interviewing teams operated in 2 RRA study groups. Each group had different work schedules.
- Wednesday *Plena?y Meeting*- Groups exchanged information.
Continued Fieldwork on Topical RRA: as per Tuesday.
- Thursday through Saturday *Continued Fieldwork on Topical RRA*: Daytime fieldwork with evening used for team meetings on note review and subtopic revision.

Week 5, 14-20 May

- Monday *Whter's Workshop L RRA* Report organization and outlining; hints and principles for RRA report writing. Lectures and discussions using case study materials. Country teams worked on outline for water scarcity topical RRA report.
- Tuesday *Institutionalization*: Review of procedure and philosophy for creating centers of excellence in RRA.
Writer's Workshop 11- Section writing; Case study approach as in first session. Then each team selected a section from its outline and wrote it up for practice.
- Wednesday *Village RRA Synthesis and Presentation*: Organization of information and synthesis of village RRA work.
- Thursday *Country Research Planning*- Participants worked on common objectives and conceptual framework, scheduling, coordination, etc. for the follow-on country exercises on wood energy.
- Friday, *Country Research Planning*- (continued)
- Saturday

Week 6. 21-24 May

- Monday *Household Record Keeping*- As example of a different form of rural study; compared with RRA; complementarities.
Discussion: Generation of questions, etc. for final review session.
Meet YXU Staff. Participants met individually with various university staff in their areas of interest.
- Tuesday *Final Review Session*: Discussion to review and clear up whatever covered in entire course of the workshop.
Closing Ceremony: Closing addresses and award of certificates.
- Wednesday *Relaxation*, day trip to Chonabot district.
- Thursday *International participants depart for Bangkok*.

International group training of the type described in this publication may be held in northeast Thailand in the future, depending on needs and availability of funding. Training is normally held sometime between early March through late May.

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THE RRA FLOW STUDIES and WOOD ENERGY DEVELOPMENT[#]

Emerging Issues & Strategies

As stated in the foreword, the RWEDP project team has used the review and discussion of the reports that are presented in this volume, as an opportunity to try to identify emerging issues and possible implications for wood energy development activities.

As each team has presented its own conclusions and recommendations, and highlights of the reports are presented in the Introduction (p.1-10), emphasis is here laid on possible implications for policies and programs.

In view of the focus of the studies on commercial wood energy flows, issues and inferences presented in the following do not necessarily apply to non-commercial situations. It is also acknowledged that great caution should be exercised in generalizing the findings from the four study areas.

The following ideas are presented solely for the purpose of stimulating the continuing discussion amongst those involved in wood energy development activities, and thereby contribute to more effective action at national and at regional level.

1. Wood Energy Development. Coping with Complexity; Dealing with Diversity

The general impression of wood fuel systems that emerges from the study reports, is dominated by the complexity of individual wood fuel systems, and the diversity of processes in which wood fuels are produced, traded and used.

The value of the reports is however not limited to the accuracy with which the complexity has been analyzed; the way the results are presented enables us to better understand and appreciate the reasons for the complexity and diversity. As all teams have pointed out: wood fuels are usually by-products, or inputs in a cooking or manufacturing process, riding "piggy back" on all sorts of transport from the producer to the user. And the reports also show that one has to understand these wider processes to understand the role, problems, and potentials of wood fuels.

Thomas' and Grandstaff's characterization of the resource management strategies of the Northeastern Thai (quoted by the Thai team in their report), may well be appropriate for the bulk of the wood fuel producers, traders and users that we encounter in the four reports: Poor people managing a portfolio of resources, over which they have limited control, compounded by even less control over their socioeconomic environment

This contributes to adaptive, reactive and hence more variable behavior than encountered in more formal resource systems. Our concepts and methods, policies and programmes, techniques and support systems have been developed for this latter type of system, in which we ourselves also operate and with which we are more familiar.

The consequences of this situation are most clearly illustrated by the illegality, quasi-legality or at best socially suspect nature of wood fuel production, trade and use, that is reported by all four research teams.

[#] By Raj S. Gujral, Aroon Chomcharn and Cor Veer, FAO Regional Wood Energy Development Programme in Asia, Bangkok, Thailand.

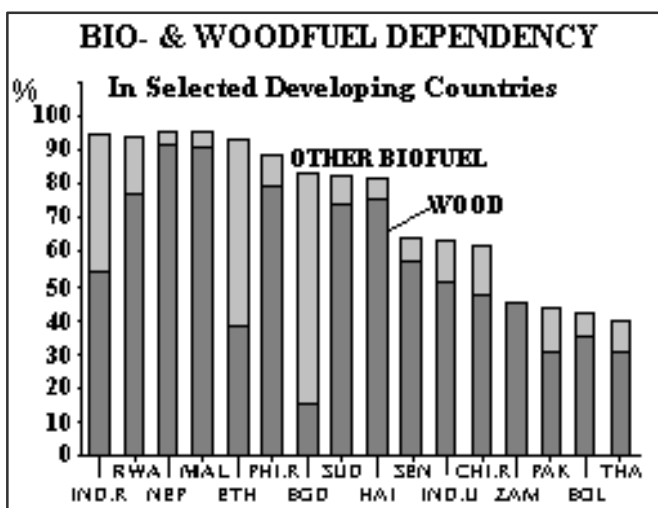
The analyses of the teams also make us aware that ignoring the complexity and diversity of wood fuel systems in the design and adaptation of policies and programmes, leads at best to their failure and more probably to unintended negative side-effects.

The teams have convincingly demonstrated how to master complexity in their studies. We all, participating in various capacities in wood energy development action, face the challenge to follow their example in addressing the policy issues that Neil Jamieson raises so eloquently in his introduction.

2. Wood (in) Energy Policy

Issues

Energy policies in Asia (and elsewhere) started to emerge in the early seventies as an attempt to mitigate the effects of oil price rises and fluctuations. Major objectives of national energy policies include accordingly the reduction of dependence on imported oil, as well as the provision of adequate energy supplies to all users in an environmentally sound, equitable and economical manner.



Policy instruments include investment in energy infrastructure (power generation and distribution), price interventions and demand management¹. Wood energy development has seldom been seriously considered in this context, for a variety of reasons: The oft assumed contribution of wood fuel use to deforestation; the perception of fuelwood as a rural subsistence commodity without significant linkages to e.g. oil consumption; the general urban/industrial bias in economic development theory and practice; the perception of wood as an energy source that is on its way out (yesteryear's fuel), etc.

It is only now that better information becomes available, that many of these myths start to give way to more rational and empirically sound perceptions on the nature of the energy sector. In most countries it is now realized that the bulk of the energy is used in domestic cooking, and that many of the industrial activities are small scale informal activities. In most developing countries (woody) biomass is predominantly used in these processes and this is reflected in the predominance of wood in the national energy balances in most developing countries as the graph above shows. It is increasingly realized that the accelerated transition to fossil fuels that is the intended or unintended effect of many of the prevailing energy and forest policies, is hard to justify. Subsidies such as those on e.g. kerosene for cooking have been characterized as "money to burn"². The reports show that this may be just one aspect, the disappearance of well functioning systems and the difficulties of reviving these when and as the need arises, are to be considered as well.

The gradual replacement of myths by facts, and the accumulation of experiences with wood energy development activities³ opens a window of opportunities to more rationally assess the possibilities to turn wood energy development into a policy instrument that contributes to the achievement of national energy (and forestry) policy objectives. The evidence is rapidly growing (the reports in this volume are part of this) that there is much scope for policy support to the maintenance, continuation and development of woodfuel production, trade and use systems in a cost-effective manner⁴.

This is the new challenge for energy and forestry policy makers and program planners. The findings of the four studies show that this challenge can only be met if it is realized that the accuracy of the information about wood energy needs to be as good as the more easily accessible information about other energy sources. Also solutions need to be developed for the problem that the complexity and diversity of wood energy systems conflicts with the need for aggregated information for national energy policy decisions. Such aggregation is required to enable comparison with support to other energy sources, and allow for the setting of priorities and allocation of resources to wood energy development.

Strategies

An interactive mix of information *generation, interpretation and organization* activities may be needed to balance accuracy and abstraction.

If Rapid Rural Appraisal (supplemented with other research as, when and where needed) were to be the core element for the *generation* of information in such an information-for-policy process, then at least two other elements are required: Tools to properly *organize* existing information about wood fuel sources and users, problems and opportunities, and a (wood) energy policy *decision support model*, that enables the comparison of wood with other energy sources, through appropriate aggregation of wood energy data in a framework that includes relevant data on all energy sources⁵.

The interaction between these elements and the need for each has also become apparent during the RRA processes reported here. In the selection of sites for study, the teams would have benefited much from appropriately organized secondary information enabling them to quickly compare various prospective sites. Also a clearer policy framework would have allowed the teams to derive criteria for such selection, e.g. according to nature and status of the sources (private, communal or state lands, etc.), types of wood energy use, etc. Particularly the Philippines' and Indonesian teams, have had to spend considerable time in formulating such criteria and investigating prospective sites (see e.g. p. 68 - 71).

Another illustration of the advantage of better organized existing information concerns the "mark-ups" in the wood fuel flow from sources through traders to users, as reported in all reports. There is often an impression (cautiously avoided by the teams in their reports) that the traders take if not "all" then certainly "too much", thereby overcharging the consumers and underpaying the producers. Particularly in cases where the real costs involved are difficult to establish, comparison with margins found elsewhere under comparable conditions could help in dispelling unjustified impressions of avarice and properly identify cases where redistribution of economic rent would be an option.

3. Fuel in Forest Policy: Wood Fuel Resource Management

The most important issue emerging from the RRAs as a priority for forest policy is the further development and dissemination of non-coercive, participatory forest policy instruments. The reports clearly illustrate that exclusive reliance on coercive instruments is at best ineffective and more often counterproductive.

Fortunately this is realized in all countries participating in RWEDP, as expressed in the field experiments, pilot projects, and in some countries, policies and programmes in social or community forestry⁶. In both Nepal and the Philippines, the type of change that emerges as crucial for sustainable wood energy production, i.e. more flexible forest land tenure arrangements, form the core of their community/social forestry policy and programs. In other countries pilot projects in "joint forest resource management" are starting to yield the experiences for wider application .

In addition to support to the further development of these innovations, the main issue from a wood energy point of view is how to facilitate the application of these new approaches in those lands and with those people that are involved in supplying wood for energy.

It may be expected that the information strategies earlier referred to could contribute much to the identification of such areas, and that there would be considerable overlap in priorities as identified from a community forestry (extension) perspective and those identified from a wood energy development perspective. The 'size' of this overlap would also depend much on the priority wood receives as compared to other energy sources and on the extent the energy sector would be able to mobilize and allocate budget resources to community forestry.

This interaction between energy and forestry further underscores the importance of having agencies from both sectors actively involved in both policy and program planning and implementation.

4. Additional Issues in Wood Energy Program Planning

Just as in policy formulation, the effects of planning and implementation of development support may not be expected to be better than the quality of the information and understanding with which these are planned, monitored and evaluated.

As the teams have experienced, RRA is not magic, and its rapidity refers more to the speed and intensity of learning than to time saving in the overall process of trying to understand the interactions between poor people and their resources, particularly if compared to the time and resources now often allocated to this process in many field programs. If field staff were however organizationally enabled and encouraged to understand the situation they try to improve, it may be difficult to find a better way than RRA to improve the efficiency of the limited resources allocated to assist rural people to improve their livelihood.

There is a great need to adapt, apply and focus RRA methods and techniques to the needs of those who are at village level charged with the task to achieve the ambitious targets that are so easily formulated on paper and so hard to achieve in the field. Particularly if one is not properly equipped with the necessary tools and techniques.

Development of these tools and training of field staff in RRA may therefore be one of the highest priorities..... in those cases that the expertise, developed and maintained in exercises as reported here, is available.

In addition to this general inference from the research results, a number of more specific issues for wood energy development program planning can be distilled and presented here for discussion.

As stated earlier the full range of community forestry strategies (-change in- local institutional arrangements, participatory planning and design of technical arrangements, etc.) must be considered in the development support to wood fuel producers. The reports indicate, however, that there may be some specific issues that may more frequently have to be addressed in wood fuel production situations.

One of these is the need to improve the management of the existing (natural, secondary, brush) vegetation. Much emphasis has been given in many programmes on the creation of new plantations. Methods, tools and techniques for management of the existing vegetation are therefore somewhat underdeveloped. Development of ways and means for the organization of such management and appropriate management practices (e.g., enrichment planting of preferred species) should probably receive a higher priority for effective improvement of wood fuel resource management.

Particularly in Nepal innovative methods and techniques have been developed to organize and implement community forest management regimes⁷. There is great scope for adaptation and application of these innovations in all three other sites: the management of the secondary vegetation in the Philippines' site by the carabao loggers and charcoal makers could thus be explored. Initiatives for such community management trials have already been taken in other areas of the Philippines and lessons

learnt from these experiments could be applied to sites such as the study area in Laguna Province. The same applies to the Indonesian site⁸.

It is on the basis of such management of the wood fuel resource base (including trees on private lands) that additional issues can be addressed. One of these issues is the effects of the removal of legal transit barriers cum informal tax points. This could in some of the sites studied contribute to producers receiving a better price for wood fuels for their own benefit and for the benefit of the resources they (now) manage.

Improvements in (charcoal) processing should be considered as another strategy to add value on-site, and provide more means for improved resource management. Here there seems to be much scope for exchange of experiences between the Philippines, Thailand and Indonesia. Particularly the detrimental health aspects and charcoal quality control problems in the Philippines may be alleviated with some of the low cost kilns used in Thailand.

In addition to these production and trade issues, the results of the RRAs point at the need to reconsider the support given to the users of wood fuels: Rural people have often been targeted as a priority category in improved stove programs. Though it should be kept in mind that the research reported here has not been carried out in the type of wood fuel subsistence situations that are thought to be the setting for the emergence of urgent rural cookstove needs, the reports do show that for a substantial number of rural people (particularly for the poor, including the women amongst them) their role as wood fuel **producers** may be at least as much or more in need of support than addressing their wood fuel consumption activities. And as the research results also show, there may be a great need for development support to wood fuel consumption in urban households, and rural and urban enterprises⁹, or more generally all those users who depend on commercial wood fuels.

An additional advantage of focusing on this category of users, is that e.g. improved devices could be designed in cooperation with and produced by local producers (potters and blacksmiths) and disseminated through existing marketing channels. The competition with existing stoves on the market may also allow for quicker feedback on acceptance, as compared to other forms of dissemination.

These observations point at a more general need to address the productive aspects (including its environmental, income and employment aspects) of wood energy development, in addition to its role as energy input.

The discussion that was invited in the foreword and the additional suggestions from RWEDP network institutions is hoped to further shape the on-going and planned future regional support for the development, dissemination and application of the strategies indicated above.

NOTES

¹ See Lukas, N.J.D., J. Ambali, E. Chang, M.S. Forbes-Ricarte and R.M. Shrestha. 1987. *Energy Policies in Asia. A Comparative Study*. New York etc.

² See WRI. 1987. *Money to burn? The high costs of energy subsidies*. Washington.

³ See e.g. Leach, G. and R. Mearns. 1988. *Beyond the fuelwood crisis. People, land and trees in Africa*. London.; Leach, G. 1989 *Wood Energy Development: Issues and Strategies in Asia*. In: FAO-RWEDP. 1989. *Status of Wood Energy Development in Asia. Country Status Reports*. Bangkok; and Shepherd, G. 1990. *Forestry, social forestry, fuelwood and the environment: A tour of the horizon*. ODI Social Forestry Network Paper 11a.

⁴ See also World Bank. 1989. *Woodfuel Supply and Environmental Management*. Industry and Energy

Department Working Paper Energy Series Paper No.19, Washington, and *Ibid*, 1989. Fuelwood Stumpage: Considerations for Developing Country Energy Planning. Energy Series Paper No.16.

⁵ One set of tools for the organization of wood energy information to be considered are the PC based Geographic Information Systems. As such systems are increasingly used for a variety of purposes in most RV*rEDP countries, GIS use for wood energy development would have the additional advantage of access to existing digitized information. Relevant (wood) energy (policy and planning) decision support models have been discussed in an OEA/RWEDP workshop held in Manila in November 1990. Follow up training in the operation of these is foreseen.

⁶ For overviews of these innovations, see FAO-RWEDP 1988. Planning forestry extension programmes; Report of a regional consultation; and particularly the more recent publications by the Ford Foundation: Poffenberger, M. (ed.) 1990. Keepers of the Forest. Land Management Alternatives in Southeast Asia. West Hartford.; Poffenberger, M. 1990. Joint Management of Forest Lands. Experiences from South Asia. New Delhi.; Forest Management Partnerships: Regenerating India's Forests. Executive Summary of the Workshop on Sustainable Forestry, held in New Delhi, 10-12 September 1990.

⁷ See e.g. Hill Forest Development Project. 1990. Manual for Shrubland and Timber Management. and Dalmacio, M.V. et al. 1987. Assisted natural regeneration; A strategy for cheap, fast and effective regeneration of denuded forest lands. Manila.

⁸ See in addition to Poffenberger, 1990, *op.cit.*, FAO-RWEDP, UGM, FONC. 1990. Social Forestry in Indonesia. Workshop Report. Bangkok.

⁹ See FAO-RWEDP. 1990. Status of Wood Energy in Rural Industries in Asia. Papers presented at Regional Expert Consultation on Wood Based Energy Systems in Rural Industries and Village Applications, held 12-16 March 1990.