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The Social Sciences in Asian Forestry Curricula

*Readings from the Literature of
Social Sciences in Forestry*

Forestry/Fuelwood Research and Development
(F/FRED) Project



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Social Sciences in Forestry*

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CONTENTS

INTRODUCTION	i
READINGS IN ANTHROPOLOGY	1-72
China	
Gonzalez, N.L. Not by Rice Alone.	1
Jarvis, D.I. Women's Involvement in Forestry in China Fluctuates with Public Policy and Law.	3
Rambo, T. Community Forestry - The Social View.	5
Indonesia	
Jessup, T.C., and N.L. Peluso. Minor Forest Products as Common Property Resources in East Kalimantan, Indonesia.	7
Michon, G. Village-forest-gardens in West Java.	13
Nepal	
Messerschmidt, D. Guan Sallah: The "Village Dialogue" Method for Local Planning in Nepal.	15
_____. People and Resources in Nepal: Customary Resource Management Systems of the Upper Kali Gandaki.	18
Pacific Islands	
Thaman, R.R. Urban Agroforestry: The Pacific Islands and Beyond.	20
Philippines	
Wollenberg, E.K. Land Use Decision Making in the Uplands: A Case Study of Lake Balinsasayao.	27
Thailand	
Fraser, T.M. Fisherman of Southern Thailand The Malay Villagers.	30
Asia	
Gibbs, C.J.N. Agricultural Systems Research in Asia: A Comparative Discussion of Human Ecology, Agroecosystems Research, Farming Systems Research, and Cropping Systems Research.	39
Planning Self-Help Forestry Projects in Asia.	42
Rambo, T.A. Recent Progress in Human Ecology Research by Social Scientists on Tropical Agroecosystems in Southeast Asia.	56

b

Asia (General Applicability)	
Marten, G.G., and D.M. Saltman. The Human Ecology Perspective.	58
No Specific Geographic Region	
Tribal Peoples and Economic Development, Human Ecologic Considerations.	63
 READINGS IN ECONOMICS	 73-122
Bangladesh	
Faber, D.C., and H.J.J. Stolwijk. Role of Biomass Energy in Rural Development: A Case Study of Bangladesh.	73
India	
Chambers, R. Trees Can Liberate Rural Poor in Developing Countries.	75
Levine, G., et al. Problems and Solutions: Lessons from Experience with Natural Resource Development Projects.	77
Romm, J. Agroforestry Research for Watershed-Based Strategies of Dryland Agricultural Development.	81
Sen, D. and P.K. Das. The Management of People's Participation in Community Forestry: Some Issues.	85
Sharma, K. (ed.) Economics of Wastelands Development, Seminar Proceedings.	88
Philippines	
Gregerson, H.M. Incentives for Forestation: A Comparative Assessment.	97
Segura de los Angeles, M. Upland Economics and Economic Impact Analysis.	99
Asia (General Applicability)	
Magrath, W. Microeconomics of Agroforestry.	102
Raintree, J.B. Bioeconomic Considerations in the Design of Agroforestry Cropping Systems.	105
Sarvate, S. Social, Economic, and Technical Criteria for Assessing Fuelwood Energy Schemes.	108
Tropical Forests: A Call for Action, Part II Case Studies.	117

READINGS IN POLITICAL SCIENCE	123-191
China	
Yiqiu, C. Man-Development-Environment.	123
India	
Bandyopahyay, J., and V. Shiva. Chipko: Rekindling India's Forest Culture.	125
Blaikie, P.M., et al. The Management and Use of Common Property Resources in Tamil Nadu, India.	128
Shingi, P.M., et al. People's Participation - Some Propositions.	133
Shiva, V., and J. Bandyopadhyay. The Evolution, Structure, and Impact of the Chipko Movement.	135
Nepal	
Bajracharya, D. Deforestation in the Food/Fuel Context: Historical and Political Perspectives From Nepal.	138
Thailand	
Pinyosorasak, P. Strategies Adopted in the Development of Diversified Forest Rehabilitation Project, Northeast Thailand.	140
Asia	
Sheperd, G. Social Forestry: The Current State of Play.	142
Asia (General Applicability)	
Arnold, J.E.M. Replenishing the World's Forests: Community Forestry and Meeting Fuelwood Needs.	146
Blair, H.W., and P.D. Olpadwala. Forestry in Development Planning: Lessons From the Rural Experience.	149
Chambers, R. Rural Development: Putting The Last First.	160
Firewood Crops Shrub and Tree Species for Energy Production.	166
Oakerson, R.J. A Model for the Analysis of Common Property Problems.	176
Raintree, J.B. Strategies for Enhancing the Adoptability of Agroforestry Innovations.	180
Runge, C.F. Common Property and Collective Action in Economic Development.	186
Shapiro, K.H. Agroforestry in Developing Countries: Selected Policy Issues.	191

- d

READINGS IN SOCIOLOGY

192-283

Bangladesh

- Leuschner, W.A., and K. Khaleque. Homestead Agroforestry in Bangladesh. 192

India

- Fortmann, L.P. Women in Subsistence Forestry: Cultural Myths From a Stumbling Block. 195

- Molnar, A. Social Forestry Experience in India and Nepal: A Review of Community Woodlots, the Involvement of Women, and the Introduction of Wood-Saving Devices in the Various Projects. 199

Indonesia

- Christanty, L., and J. Iskandar. Development of Decision-Making and Management Skills in Traditional Agroforestry: Examples in West Java. 203

- Van der Poel, P., and H. Van Dijk. Household Economy and Tree Growing in Upland Central Java. 206

Nepal

- Pelinck, E., et al. Training and Extension for Community Forestry. 209

Pakistan

- Dove, M.R. Village Interest in Farm Forestry: Punjab, NWFP, Baluchistan. 212

Philippines

- Fujisaka, S., P. Sajise. Change and "Development" in the Uplands: A Synthesis of Lessons, Unresolved Issues, and Implications. 214

- Polisco-Botengan, M.A., et al. Conditions for Participation in an Integrated Social Forestry Program (Barangay Ambassador, Tublay, Benquet). 216

Thailand

- Forestland for the People: A Forest Village Project in Northeast Thailand. 218

- Grandstaff, S.W., and T.B. Grandstaff. Semi-Structured Interviewing. 235

- Redhead, J.F. Social Forestry at Kasetsart University: Curriculum Development, Thailand. 237

- Thompson, B. Introducing Nutrition Considerations into Forestry Projects: Experience From Northwest Thailand. 243

Asia		
	Conway, G.R. Agroforestry Analysis For Research and Development.	249
Asia (General Applicability)		
	Daosukho, S. Communication Media and Utilization in Regional Training Course in Community Forestry Development Techniques.	255
	Noronha, R. Seeing People for the Trees: Social Issues in Forestry.	258
	Vergara, N.T. Forestry Extension in Regional Training Course in Community Forestry Development Techniques.	266
	West, P. Sociological Aspects of Agroforestry.	271
No Specific Geographic Region		
	Summary Report of Rural Development Participation Project, 1977-1982.	275

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INTRODUCTION

This volume of excerpted readings has been compiled as part of the Forestry/Fuelwood Research and Development Project (F/FRED) effort to disseminate applicable knowledge from anthropology, economics, political science, and sociology literature to experts and academic institutions of forestry and social sciences in the Asia region.

The word "excerpt" means to gather or pluck from a published work those extracts or elements that convey the essential tone and findings of the author. The excerpts contained in this volume were selected from a much larger bibliographic listing (*The Social Sciences in Asian Forestry Curricula: Bibliography of Social Sciences in Forestry Literature*, C. LaPorte & S. Kelleher, eds.) and other relevant publications. They are representative of the quality of work that has been produced within each discipline about resource management issues in Asia. Special attention was given to tracking down studies in the so-called "grey" literature; that is, in-house reports and studies not found in the usual compilations. This literature is often found by field practitioners to be the most useful and applicable, as it does not follow the narrow confines of international journal formalities. Literature was selectively, rather than comprehensively, screened for excerpting so that the resulting volume indicates where the underlying "iceberg" of studies supporting the selected "tip" represented by the excerpts can be found.

These excerpts demonstrate the existence of sound, usable studies in anthropology, economics, political science, and sociology which can provide valuable information to farm and community forestry planners, practitioners, and evaluators, as well as other social and natural scientists. Each excerpt has been categorized as to its chief application; i.e., whether it illustrates theory and concepts, methods and measures, or technology transfer. The volume is arranged alphabetically by discipline (anthropology, economics, political science, and sociology); within each discipline, the entries are organized alphabetically by country and then by author. Entries specifically relevant to Asia follow the individual country selections. Entries generally applicable to Asia are next, and the anthropology and sociology subject areas end with entries not defined by a specific geographical region.

The aim of producing these excerpts is to make social scientists in various disciplines and different countries aware of the research activities and potentials that are at work beyond the boundaries of their own countries and disciplines. Exposure to this sampling of the work being done throughout the region and across disciplines should encourage more coordinated, cumulative efforts on the part of social researchers. A correlative aim of these excerpts is to inform biophysical scientists that there is a body of systematic, quantitative social science knowledge that can be fruitfully applied in their forestry research efforts. These selections suggest accomplishments, potentials, and future directions for the social sciences in forestry research -- not the final solution.

Readings in Anthropology

DISCIPLINE: Anthropology
APPLICATION: Theories and concepts; Technology transfer
COUNTRY: China
EMPHASIS: Fruit trees; tree tenure; ancestor reverence; marketing of tree products; agricultural policy reform; soil conservation

Gonzalez, Nancie L. 1984. Not by Rice Alone. Culture and Agriculture (22): 1-5.

"...The litchi (Litchi chinensis...) tree...has presumably had a long history in southern China. Large numbers of trees were commonly planted near the ancestral halls, and proceeds from sales of fruit were used to refurbish the halls as well as to repair local roads, bridges and clan schools... The litchi matures quickly and must be gathered within the short space of 7-10 days. Harvest was traditionally an occasion of celebration and merriment, and each male clan member took home a small share of the harvest to consume or to dry and sell as he wished."

"In the early fifties, the ancestral halls were converted to other uses, and the litchi trees were distributed, usually in clusters, to the various production teams which had been formed amongst the various 'natural villages,' as the Chinese call them today..."

"For various reasons, which included the apathy of workers assigned to jobs from which they could realize neither profits nor personal satisfaction, as well as to the official Communist Party policy of diverting labor to other endeavors during the Great Leap Forward (1958-1960); the litchi harvests declined... between 1949 and 1974, when there was great emphasis on grain production. Therefore, in 1978, a 'new' system was introduced, which returned at least partial responsibility to the individual or household, and indirectly, to the family or paternally related group formerly called the clan. This has taken different forms in different places..."

"Of even greater interest to Western observers is a variant of this system in which teams have experimented with individual management of trees... in Guangdong Province... to improve overall production and individual incomes, their team had assigned specific trees to individuals for a period of 10 years. In order to assure parity, each tree had been recorded and numbered with red paint, and assignments had paired the highly productive with the older, sickly, or smaller trees. Although no written records have been kept over the years for individual trees, the output value of each was estimated and recorded by a committee of 'experienced judges'. For villagers, the trees have special identifying characteristics -- almost like personalities -- and, though the state discourages it, there is a distinct sense of ownership or at least personal identification with one's assigned trees. They do not find it confusing or difficult to remember where their trees are located, even though they may be quite scattered..."

"...I had heard it rumored that large numbers of fruit trees... had been cut during the Cultural Revolution in order to make way for increased paddy rice production and to discourage 'private enterprise.' The village elders

and leaders..., however, were insistent that this had not been the case -- at least not for litchis. 'These trees belonged to our ancestors,' they said, and 'we could not cut them down.'... Such comments confirm the view ...tha* some local level decision making, including a certain amount of resistance to official policy, may have persisted during that time..."

"In order to understand this, one must consider the symbolism of the litchi. As remarked above, it has long been associated with the revered ancestors, and apparently even today there are clandestine offerings made to deceased parents and grandparents before the harvest begins. Because the harvest is so difficult and the fruit is so delicate, it is also rare and expensive, as well as being thought extraordinarily delicious. It was an appropriate gift to the emperor in former times and is served even today to honored guests."

"But none of this explains why official agricultural policy should now favor and encourage a greater output of litchis. In fact, the association with the ancestors might be seen as a dangerous element, possibly leading to backsliding when it comes to declaring loyalties. The Communist state has consistently defined good citizenship in terms of allegiance to the nation...over that to kinfolk. The 'new' litchi harvest system, if anything, tends to remind the people of the past..."

"We must look, for a more complete explanation, to other factors. The present Party leadership has felt that in order to motivate the farmers to greater production, as well as to keep them happy down on the farm, they must increase incomes on the one hand, as well as provide more consumers' goods. At the same time, they have sought to increase exports of all kinds in order to obtain foreign exchange for development purposes and to buy certain foods which they do not yet produce in sufficient quantity. The large Chinese population of Singapore, Hong Kong, Taiwan, and elsewhere has retained much of its traditional Chinese culture and is affluent enough to pay well for various products from their former homeland. As anthropologists, dietitians, and marketing experts know, a good deal of nostalgia surrounds native foodstuffs in any society, and people will go to great lengths to obtain items which remind them of home."

"Another reason for encouraging the fruit industry is that it is seen as a way to bring back into productive use many of the barren hillsides which have become seriously eroded through continuous cultivation over too long a period of time. It is not clear just when these hills were abandoned, but the goal now is to plant successively first beans, then cassava, followed by pineapples, and finally fruit trees. It is thought that erosion will be halted only when a tree root system is in place..."

"Who buys this fruit? 'Anyone who wants it!' was the maddening answer. But further reflection suggests that the response was indicative of a major change in Chinese policy, one which touches the agricultural, industrial, kinship, and even international domains. Mercantile agrarianism in China can be traced back at least to the Han dynasty, when regional exchanges knit the individual farmer into a massive economic network. Now, he is being integrated into a much larger and more complex system, and the evidence is that the metamorphosis has been underway for about a decade..."

DISCIPLINE: Anthropology
APPLICATION: Theories and concepts; Technology transfer
COUNTRY: China
EMPHASIS: Women in forestry; reforestation; tree tenure

Jarvis, Devra I. 1986. Women's Involvement in Forestry in China Fluctuates with Public Policy and Law. *Women in Forestry* 8 (3): 20-22.

"...China has had a long history of sex segregation accompanied by an intense preoccupation with preserving the honor and chastity of its females (Coplan and Bujra, 1978). Even with the communist regime, the emphasis was only on liberating the women for production. Instead of lifting barriers between sexes, a policy of strict puritanism was instigated (Mitche, 1984). Furthermore, women's participation...in agricultural and industrial development, instead of increasing at a constant rate, has tended to fluctuate in accordance with economic growth (Curtin, 1975)..."

"The result of these political, cultural, and economic pressures is the current emergence of female role models that encourage women to be less outgoing, less active, more reserved and quieter than their male counterparts. Those women who are outgoing and active are usually assumed, by traditional Chinese eyes, to be less than virtuous. Both males and females are therefore sceptical of women who wish to be involved in such an outgoing, arduous field as forestry. Families, too, offer little encouragement for their daughters to study forestry..."

"Nevertheless, there has been an increase in the number of female students in forestry colleges and research institutes in China..."

"One major, major, problem for women who receive a forestry education is that many units in China do not want to employ women. Furthermore, most women and most men would prefer not to be assigned to work in remote areas where conditions are considerably harsher than in urban areas..."

"When significant women's participation does occur, it is usually in areas where forestry is the major source of income for the region.... The majority of work done by women in forestry is in afforestation and reforestation."

"Since the establishment of the People's Republic of China, China has emphasized and spent a lot of money on reforesting her depleted resource with campaigns like "The Great Green Wall" and "Four Around Planting." Tree planting has become the concern of the masses and an increased forestry awareness is being developed. Opportunities for jobs exist both with the state and privately for afforestation and reforestation work. Moreover, this work is predominantly done outside forest areas, closer to home, making it a more culturally acceptable occupation for women. Several women's afforestation teams have been noted for their excellence in afforestation and reforestation projects..."

"In some remote areas... women have organized themselves to plant trees. In Inner Mongolia, the wives of military officers have joined together to plant trees in order to stabilize sands and protect crops (Bie and Zhao, 1982)."

"One particular policy that has increased the participation of women in afforestation is the recent decree by the central government that trees are the property of the planter and can be inherited by his or her children. For the first time, tree planting is seen as a way to ensure the security of one's descendants. It is now possible for both communes and individuals to make contracts with the state either to buy seeds, to grow seedlings, or to buy seedlings for afforestation. The trees become the property of the planter and the land is supplied by either the commune or the state."

"The custom of the elderly to look after young children, as well as the availability of kindergarten and nurseries, have given more opportunities for women with children to participate in forestry production (Kang, 1978). In many afforestation brigades, women with children are allowed to return home half an hour earlier from work (Chen, 1983)..."

"In summary, the participation of women in forestry in the People's Republic of China reflects cultural, political, and economic influences. Women's participation and advancement as professional foresters have been limited by traditional values concerning the activities and demeanor of women. Some women... were able to benefit from earlier periods of emphasis on liberation and production and their achievements are recognized by the government. Fluctuations of labor demand and economic growth have strongly influenced the role of women in forestry. Where there is a need for immediate afforestation coupled with economic changes that allow for individual profit and security for one's children, there has been an increase in women's participation in forestry. It is possible that this increased involvement of local women in forestry is the needed key that will open the door for the future increase and advancement of women in forestry as professionals.

Bie, Y. and Zhao, G. 1982. Lu Hua Ying Chu (Greenification Management Area). Nei Meng Gu Fu Nu. 28.

Chen, R. 1983. A day in a mountain village, the new look in China's rural areas. Beijing: China Reconstructs, pp. 81-86.

Coplan, P. and Bujra, J.M. 1978. Women United, Women Divided - Cross Cultural Perspectives on Female Solidarity. London: Tavistock, p.48.

Curtin, K. 1975. Women in China. New York: Pathfinder Press, p. 53.

Kang, J. 1978. The Women of New China are an Important Force in Forestry Development. In: Proceedings of the Eighth World Forestry Conference. Vol. 4. Jakarta. pp. 1245-1248.

Mitche, J. 1984. Essays in Feminist Literature and Psychoanalysis. London: Virago Press, p. 44.

DISCIPLINE: Anthropology
APPLICATION: Theories and concepts; Technology transfer
COUNTRY: China; Indonesia
EMPHASIS: Human ecology; community forestry; species preference; gender roles

Rambo, Terry. 1984. Community Forestry - The Social View. In: Community Forestry: Some Aspects. Bangkok: FAO, UNDP and the East-West Center. pp. 39-46.

"Unlike conventional production forestry, which is primarily concerned with technical problems relating to natural ecosystem management, community forestry involves the forester in two complex systems, the forest ecosystem and the human social system. Because the interactions between these two systems largely determine the success or failure of community forestry projects, there is an increasing need for foresters to supplement their knowledge of trees and how to manage them with an understanding about people and how they behave in relation to trees. Thus, successfully carrying out a community forestry programme requires not only the skills of the forester but also those of the social scientist..."

"The interaction between people and trees and trees and people can be broadly conceptualized in terms of the systems model of human ecology (Rambo 1983). In this model... two semi-autonomous subsystems - the ecosystem and the human social system - are visualized as inter-related through exchanges of energy, materials and information. Consequently, any change inside either of the two subsystems, e.g., the cutting of trees in the ecosystem or the increased use of firewood in the social system, may lead to change in the other subsystem by altering the flow of energy, materials, or information from one subsystem to the other system. Such changes in the second system can in turn affect the first system through a process of feedback. The human social system and the ecosystem can thus be seen as engaged in an endless dialectical relationship, a coevolutionary process in which changes in either system can only be understood by taking its interactions with the other system into account."

"In applying the systems model of human ecology to community forestry we are concerned with how implementation of forestry programmes is affected by social factors and how forest management affects social organization and human welfare..."

"Although foresters both know about trees and tend to place a high value on them, they should not assume that the same is necessarily true of everyone else. Many people, including many rural people, have little or no knowledge about how to grow trees. Some peoples do not even like trees or place a high value on having them in their environment. They may even, for culturally valid reasons, actively seek to remove trees. For example, Chinese believers in feng shui (geomancy) may cut down trees that grow in front of their house and grave sites in order to maintain good fortune and prosperity (Lovelace, 1981). In contrast, there are many tribal groups in Asia, such as the Dai people of southern Yunnan, who for religious reasons, preserve large nature reserves in the form of 'holy hills', which serve as inviolate sanctuaries for natural vegetation and wildlife (Pei 1983)."

"Positive cultural valuation of forests is not enough, however, to ensure a successful community forestry programme. There must also be adequate technical knowledge of how to manage the forest ecosystem. It is often assumed that rural people, because they know how to plant and raise particular crops...successfully, must automatically know how to cultivate all kinds of plants. This is not necessarily the case, particularly where exotic species are involved. Balancing the rate of production with the rate of harvesting is very different in annual cropping systems than it is in perennial forests, and there is abundant evidence that not all farmers do a good job in this regard in forest systems."

"Cultural knowledge and values may also influence the acceptability of particular species used in community forestry programmes. Cashew nuts, for example, although a hardy and high value crop, require specialized knowledge if they are to be harvested safely. Breadfruit, although a reliable source of carbohydrates in agroforestry programmes, may not be an acceptable staple for people who consider rice to be synonymous with food..."

"In contrast to many traditional Southeast Asian agricultural systems where work is equally divided between males and females and where consequently women enjoy a relatively high social status, forestry is often exclusively a male activity. To the extent that this sexual division of labour is followed in community forestry projects, the status of women can be adversely affected, (Colfer 1981), for example has shown how the introduction of chain saws into forest-living Dayak communities in Kalimantan threatens the status of women in these swidden farming communities, since only men are able to use the new technology..."

"As the above examples have illustrated, social factors are extremely important in community forestry. These factors are significant both with regard to how community forestry projects are designed and implemented and as to whether or not they achieve their stated objectives of improving the quality of life of the rural population. It may not, therefore, be an overstatement to assert that many of the major problems facing community forestry are sociological rather than biophysical in nature. Consequently, foresters attempting to carry out community forestry projects need to learn to deal with social factors as a central part of their work..."

Colfer, C.J.P. 1981. Women, men, and time in the forests of East Kalimantan. Borneo Research Bulletin 13 (2): 75-85.

Lovelace, G. 1981. Settlement, landscape modification and ideology in early historic Hong Kong. East-West Environment and Policy Institute Working Paper. Honolulu: East-West Center.

Pei, S.J. 1984. Some affects of the Dai people's cultural beliefs and practices upon the plant environment of Xishuangbanna, Yunnan Province, Southwest China. Paper presented at the Conference on Cultural Values and Tropical Ecology, East-West Environment and Policy Institute, Honolulu.

Rambo, A.T. 1981. Conceptual Approaches to Human Ecology. Research Report No. 14. Honolulu: East-West Environment and Policy Institute.

Discipline: Anthropology/Sociology
Application: Theory and Concepts
Country: Indonesia
Emphasis: Analysis of three minor forest products links to external trade markets as a cause of resource degradation.

Jessup, Timothy C., and Nancy Lee Peluso, "Minor Forest Products as Common Property Resources in East Kalimantan, Indonesia", in Proceedings of the Conference on Common Property Resource Management, April 21-26, 1985, Prepared by Panel on Common Property Resource Management Board on Science and Technology for International Development Office of International Affairs National Research Council, Washington, D.C.: National Academy Press, 1986, pp. 505-532

INTRODUCTION

"One way to study the use of biological resources in a diverse ecological setting (such as a forest or fishery) is to consider simultaneously all the exploited species. This is typified by "ecosystem" or "resource system" analyses. Another approach, also holistic but in a different way, is to focus on one or a few resources and factors. We take this second approach in our case study of tropical forest resources in the province of East Kalimantan in Indonesia Borneo. We focus on a few so-called "minor" (non-timber) forest products to show how problems of their exploitation are related to: (1) biological and technical characteristics of the exploited species; (2) rules and other formalities of resource use; and (3) interactions among resource users and other relevant actors."

"Our concern is with environmental problems of resource depletion and forest degradation. By "depletion" we mean the reduction of a resource to such a low level abundance that its renewability is seriously threatened. By "degradation" we mean a decline in the quality of the resource. We are also interested in how people attempt to sustain their use of resources despite fluctuations in the circumstances of their availability and exploitation."

"We differ with Bromley (this volume) and some others in that we do not assume the existence of quasi-autonomous social and ecological systems. By adopting a more integral and nonsystemic approach to the study of resource use, one avoids significant difficulties, both theoretical and practical, in defining and identifying the boundaries and goals of such systems."

"Our case study is from the province of East Kalimantan..."

"...Despite a small population (1,214,604 in 1980, less than 1 percent of Indonesia's total, and a mean density of 5.7 people per sq. km [Zimmermann 1982:33]), East Kalimantan had become Indonesia's wealthiest province by the 1970s. Its natural resources-- mainly timber and oil, but also rattan and other minor forest products--accounted for almost 25 percent of Indonesia's export earnings in 1976."

"Most useful species in tropical forests provide products other than timber. Though overshadowed in recent times by large-scale commercial logging, products now called "minor"-- such as rattan, dammar (resins used in making

varnishes and lacquers), and edible birds' nests-- have been traded since antiquity and, until World War II, were comparable in importance to timber. They still contribute more than timber does to the incomes of people living in or near forests."

"Indigenous forest product collectors in East Kalimantan, whose forest-related activities are the primary focus of this paper, do not use all available resources or engage in all possible economic activities at any given time. Rather, they switch from one to another or vary the degree of their involvement in response to changing opportunities and problems, including fluctuations in commodity prices and employment as well as environmental variations. Nevertheless, many commercial forest products are over-exploited, often to the point of depletion.

Three circumstances surrounding the overexploitation of forest products may be ascribed to the "modern" economic context of collecting: (1) the concentration of international trade in minor forest products in a relatively small number of species, commonly for luxury uses, with prices (and therefore incentives to collect) rising as the stocks decline; (2) the closing of opportunities to practice some "traditional" activities, such as shifting cultivation, by the designation of large tracts of forest land as logging concessions; and (3) a decline in local employment opportunities in logging with the change from manual to mechanized methods in the 1970s."

"The most important of East Kalimantan's minor forest products are rattan, aloes wood, edible birds' nests, dammar, illipe nuts, beeswax, and reptile skins (Table 1). We will focus on the first three of these products."

TABLE 1 Export of Forest Products from East Kalimantan, by Value, as Officially Reported (in Thousands of US dollars). (Note Rise in Timber Exports in Early 1970s and in Rattan Exports in Late 1970s.)

Year	Timber	Rattan	Birds' nests	Resin	Illipe nuts	Aloes wood	Bees-wax	Reptile skins
1967	600	-	-	-	-	-	-	-
1968	4,000	-	-	-	-	-	-	-
1969	15,000	-	-	-	-	-	-	-
1970	53,000	100	26	1	258	2	-	-
1971	96,000	89	10	8	-	2	-	-
1972	111,000	93	8	12	-	-	1	-
1973	276,000	142	6	6	1	2	2	-
1974	365,000	262	3	19	66	-	-	-
1975	258,000	128	2	6	-	-	-	24
1976	402,000	160	12	2	-	-	-	-
1977	493,000	539	11	-	-	-	0.5	-
1978	525,000	1,313	18	9	-	-	3	-
1979	-	2,912	14	14	3.5	-	-	-
1980	-	2,882	-	6	-	-	-	22

*Hyphens indicate no data in source tables.

SOURCES: Derpsman (1979: 46) for timber (given to nearest \$1 million); Zimmermann (1982: 80-81, 284-289) for minor forest products

"Rattan and aloes wood are typically held as common property within village territories, which is the general pattern of local control over forest resources in Borneo. Birds' nests, in contrast, are often controlled as private property by individuals or families."

"Indonesia produces about 90 percent of the world's rattan, and East Kalimantan is one of the main sources."

"Demand for Borneo aloes wood rose sharply around 1977, possibly because the supply from Cambodia and Vietnam had been curtailed (Paul Chai, personal communication). This led to a flurry of collecting in parts of East Kalimantan."

"Birds' nests are the most valuable, per unit of weight, of all of Borneo's forest products. One kilogram (about 100 nests) of high quality nests were valued at between \$200 and \$400 in 1979 on the Upper Mahakam River in East Kalimantan; the lowest grade sold for about \$10. In Singapore, the price was about \$1,000 (Peluso 1981)."

"A general characteristic of tropical forests is their great diversity of species. Since the number of species in a given area is high, the number of individuals of any one species in the area tends to be low. Most are dispersed throughout the habitats in which they occur rather than being concentrated in a few locations. Collectors of these dispersed resources, which include rattan and aloes wood, must forage widely in search of suitable products."

"In contrast to the pattern just described, edible birds' nests are a highly concentrated and rapidly renewable resource. They are produced by cave-dwelling swifts, which nest year after year in the same locations if the caves have not been seriously disturbed by human predators. These differences in the ecological patterns of forest resources have consequences for the way people manage them (i.e., as common or private property)."

"Collectors (and traders seeking to induce people to collect) tell tales of single trees yielding many kilograms of high-grade wood worth hundreds of dollars. Some people in the Apo Kayan have indeed found a kilogram or more in a single day, but typically a collector gets less than that from dozens of trees examined during an expedition of a week or so. Thus, aloes wood is also a very unpredictable resource."

"The spatial distribution and predictability of a resource affect the ease with which users can effectively exclude other potential users. Exclusion is more easily accomplished for a concentrated resource than for a dispersed one as long as the effort required to monitor and guard the resource is proportional to the area, perimeter, or number of entry points that must be covered."

"Throughout the interior of Borneo, shifting cultivators (such as the Kenyah of the Apo Kayan and Upper Mahakam) inhabit village territories, within which residents of each community are entitled to use most forest products as the common property of the village. In addition, households may have more exclusive rights to certain forest products or certain uses of forest land within their village's territory."

"Kinship is an important factor underlying the property rights outlined above."

"Conversely, property rights are forfeited by a person who permanently leaves a village."

"Inheritance is also according to kinship. In the so-called "cognatic" societies that predominate in Borneo, male and female descendants share equally in the inheritance of rights to land, trees, and other property."

"It is important to recognize that traditional property arrangements are not stagnant and unchanging, and that adaptations to local circumstances can shift them in unexpected ways."

"...the actual coordination of resource use among a group of users can change considerably even though the formal rules remain the same."

"The basic agrarian Law of Indonesia, passed in 1960, made no provision for traditional, village-based control of forest products. Ownership of all forest land was claimed by the national government. Although the constitution does recognize the local authority of "customary law" (adat) in some matters, traditional village rights to forest land and products were excluded by the 1960 law. In fact, traditional property laws are still important to local people in many areas, particularly in regard to land tenure, inheritance, and the collection of forest products. Conflicts often occur, however, where established residents must compete with more recent settlers, itinerant collectors, and timber companies for the use of forest resources."

"In the early 1970s, the Indonesian government granted timber concessions in East Kalimantan to a large number of foreign and national companies. This had a number of detrimental effects on local communities in or near the concessions, but the practice of shifting cultivation there is strictly prohibited, a rule that is enforced (in this case) by timber company personnel. Because the infertile soils of the region are not suited to permanent field-agriculture, the restriction on shifting cultivation has severely curtailed villagers' ability to produce sufficient rice for their own needs, let alone expand their production of cash crops."

"Despite their legal right to collect minor forest products within timber concessions, villagers have at times been denied entry to those areas, and timber company personnel have otherwise infringed on the rights of local residents. Collectors and traders in various parts of the province complained to Peluso of timber company guards who confiscated rattan from collectors, of loggers who raided caves and sold the stolen birds' nests to unauthorized buyers, and of timber companies that illegally cut Borneo ironwood (Eusideroxylon zwagerii), a species reserved for local use."

"Outsiders can seek permission to collect forest products within a village territory."

"Commercially valuable forest products in East Kalimantan--and Southeast Asia generally--are rapidly dwindling in abundance and quality as a direct result of exploitation, even as the area of forest in which these species can grow is diminished by logging, shifting cultivation, and other types of conversion (Table 2). Wild populations of rattan seem to have been exhausted in many areas, and others are now disappearing."

TABLE 2 Export Prices of Rattan and Birds' Nests from East Kalimantan, 1970-1978.*

YEAR	RATTAN			BIRDS' NESTS		
	Export Volume (Tonnes)	Export Earnings ('000 US\$)	Price (US\$/Kg)	Export Volume (Tonnes)	Export Earnings ('000 US\$)	Price (US\$/Kg)
1970	2,979	100	33.57	11.5	26	2.35
1971	3,602	89	24.71	12.9	10	.77
1972	3,703	93	25.11	6.6	8	1.21
1973	5,136	142	27.65	7.0	6	.86
1974	4,634	262	56.54	6.9	9	1.30
1975	2,021	128	63.33	1.0	2	2.00
1976	2,780	160	57.55	5.8	12	2.07
1977	4,787	539	112.59	1.6	11	6.88
1978	3,105	1,313	422.87	1.5	18	12.00

SOURCE: Muttaqin (1980).

"Peluso found that traders attempting to enter the highly competitive rattan business offered relatively good prices for inferior grades of rattan and accepted bundles containing a mixture of mature and immature rattan, thereby exacerbating the tendency to overcollect."

"Thus, despite differences in the biology and property status of minor forest products, the outcome of commercial exploitation in each of the three cases we have considered have been overharvesting and a decline in quality of the resource."

"Local common property users' organizations cannot by themselves manage forest resources in East Kalimantan, where so many external influences affect forest exploitation. However, traditional village groups and cooperatives can be incorporated into programs of forest conservation and forestry development. For example, in the case of rattan, there are opportunities for rattan processing in upriver collection areas, which might be linked both to locally managed rattan cultivation and cane from noncultivated species (Dransfield 1981; Peluso 1983a)."

"...One of the greatest difficulties in designing and implementing a policy of "conserving the commons" for minor forest products is to relate the actions and decisions of collectors in a particular locale to the wider context of forest exploitation, trade, and the eventual use of forest products around the world."

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DISCIPLINE: Anthropology
APPLICATION: Theory and concepts
COUNTRY: Indonesia
EMPHASIS: home gardens

Michon, G. Village-forest-gardens in West Java. 1981. In: Plant Research in Agroforestry. Huxley, P.A. (ed.). Nairobi: ICRAF. pp. 13-24.

"ABSTRACT. Indonesian village-forest-gardens are distinctive types of agroforestry land use. They are species rich and possess sophisticated spatial structures and dynamics. Although mainly centered on subsistence production surplus products can provide a valuable cash income. Sustained yields are achieved under the present system of home-gardens and village-forest-gardens without any significant input of fertilizers or pesticides. They represent, for the mass of the rural population, the only asset for survival and material autonomy. Until recently, they have been studied only cursorily but these systems, which are far from 'primitive', have many lessons to teach, and they are still susceptible to improvement if we learn enough about them. The two types of gardens are described in some detail and their importance to the farmer is discussed." (p. 12)

"These Indonesian village-forest-gardens have reached a highly elaborate stage in the imitation of natural forest ecosystems. The Javanese peasant farmer has reproduced in his small parcel a sophisticated producing ecosystem, conditions of which simulate the forest environment, and which is well integrated into the original landscape. In this island, where the tropical rainforest has been almost completely depleted, those artificial 'harvestable forests', which do not deplete natural resources, are a model of land use strategy able to preserve the endangered biological and genetic potential of the environment."

"Besides their interest as agroecosystems, their socio-cultural and economic importance is meaningful too. They are both a production unit and a dwelling place and can be considered the result of human cultural activities and traditions." (p. 14)

"...In spite of the high specific richness of the gardens' vegetation (more than 500 cultivated species can be found in a single village), the place of each species can be found in a single village), the place of each plant is carefully chosen, and often corresponds to its ecological niche in the natural forest. Enquiries have shown that people have a certain ecological knowledge in planting their gardens. This knowledge goes together with an individual care towards each plant that is in contradistinction to the mass treatment of cultivated crops in monoculture."

"This knowledge and respect of ecological constraints, resulting in a 'natural' configuration of garden vegetation, ensures that environmental processes work optimally and render an ecological stability..." (p. 19-20)

"The 'forest-garden' is protected and perpetuated by a wealth of knowledge that the local farmers have acquired empirically as well as by custom, superstition and religious laws. Others have tried to imitate it by selecting and siting plant species according to architectural and biological complementarities, but these efforts have usually led to errors, or to badly managed gardens..."

"A village garden is not only an agroforestry system, but also a reflection of the character of a rural society because it has been modelled by social traditions and customs. The ecological features of such a system can and should not be dissociated from its social and historical background. The present evolution of these garden types expresses a response to the societies' main socio-economical problems, and its aspirations for development along sound agroforestry lines." (p. 21-23).

DISCIPLINE: Anthropology
APPLICATION: Method and Measures; Technology Transfer
COUNTRY: Nepal
EMPHASIS: project planning

Messerschmidt, D. 1983. Gaun Sallah: The "Village Dialogue" Method for Local Planning in Nepal. pp. 17-27.
(KMB's files)

"Introduction. Gaun Sallah is a field methodology...It is conducted in direct consultation with the people. It is here that the relevant planning officials, the line officers, and extension workers meet the residents and their elected representatives...These meetings and discussions are at the heart of the Gaun Sallah. Whether they are long or short in duration, whether they are held in a centralized location or in several locations across the panchayat, depends on...such factors as panchayat settlement patterns, the relative homogeneity or heterogeneity of the populus and local resources, availability of the local public to meet, line agency or development project constraints on time, budget and manpower, et cetera...

Throughout the discussion, three principle objectives of Gaun Sallah remain unchanged:

- o that it elicit and encourage people's participation,
- o that it assures the maximum integration of internal and external resources..., and
- o that it promote institutional development at the local...level...

... the initial Gaun Sallah planning exercises in a project area...are the most costly in terms of time and manpower. After the system becomes routinized, however, and as planning officers are more thoroughly trained and become familiar with it, the process becomes easier, hence more efficient...once a panchayat plan...has been prepared using this method, followup planning or the completion or enlargement of a plan become easier and less costly.

Gaun Sallah Planning in the Field. The field activities of Gaun Sallah are at the heart of this methodology. Prepared with the necessary data about panchayat resources, the Gaun Sallah team enters the field to begin the planning dialogue, or more precisely to continue the dialogque already begun during the data collection phase.

There are four considerations in conducting Gaun Sallah at this stage...They are:

First, who is involved? Who are the planning participants? The Gaun Sallah planning team is comprised of two categories of people: core members and other participant-observers. They in turn can be divided into two groups or levels of participation: village leaders with their constituents (the local level), and planners and specialists from outside (the district and project central level)...

Second, When does the dialogue occur? What is the optimum timing for Gaun Sallah planning events in the panchayat? Planning in the field flows around several types of meetings:

- o an initial orientation meeting in the district headquarters,
- o one or two panchayat-level meetings...,
- o ward tours, conducted between the first and last panchayat-wide meetings, and
- o special tours, to address problems or unique situations which may arise during the course of Gaun Sallah and, to estimate or determine the feasibility of specific project priorities and options on site.

The Third consideration, What is the content of the Gaun Sallah dialogue?, and Fourth, Where are the dialogue events located?, are best discussed together.

...the orientation meeting...is to introduce the Gaun Sallah planning method and to review relevant data about the panchayat.

The panchayat-wide meeting... is held within the panchayat, usually at the designated panchayat meeting hall. The first panchayat-wide...meeting has these minimal parts:

- o Describe development potential to the villagers...
- o Local leaders speak out at this meeting...
- o Line agencies respond in this meeting...
- o The summing up comes next as the highlights of the meeting are reiterated...

The ward tours are held in one or more of the nine wards of the panchayat. The purpose of dialogue at this level is to

- o elicit ward level needs, priorities and implementation and management commitments, and
- o determine feasibility of potential development inputs in terms of physical resources as well as local social and economic resources...

The Special Tours, as the name implies, are designed to address special or unique problems and issues that arise during the Gaun Sallah dialogue. The special tours can be described in terms of two basic purposes:

- o to assure the fullest, most representative form of local villager participation, and
- o to check the feasibility of local priorities and suggested or requested project inputs...

Finally an optional final meeting at the panchayat level may be held to report on and discuss the results so far. At some point the village leadership has to ratify its requests in inputs to the plan document, and this is as good a time as any to pursue that objective. Herein the panchayat leaders have the chance to discuss every option, and to place their priorities in order along with the details of villager participation in implementation and management activities.

DISCIPLINE: Anthropology
APPLICATION: Methods and Measures; Technology Transfer
COUNTRY: Nepal
EMPHASIS: Common Property Resources

Messerschmidt, D.A. 1986. People and Resources in Nepal: Customary Resource Management Systems of the Upper Kali Gandaki. In: Proceedings of the Conference on Common Property Resource Management. Prepared by Panel on Common Property Resource Management, Board on Science and Technology for International Development, National Research Council. Washington: National Academy Press. pp. 455-474.
(WRB's files)

"The anthropologist, in determining what a resource means, and to what use(s) it may be put, whether conflicting or complementary, tends to pose certain fundamental questions: Who uses the resource? Under what conditions? How are they managed? By whom? To what end? These questions are designed to consider the fundamental definition(s) of the resource among the various individuals and collectivities involved. In short, we ask, 'What is --?' (a single tree, a forest...). We expect to hear different answers from each category of user or public whom we ask...

The local village public...will answer our question 'What is a forest?' in ways qualitatively distinct... From Nepalese villagers...we can expect to hear answers with at least three parts. One part concerns the forest's natural products (e.g., fuelwood, building material, water source, pasture land, etc.), and the physical and technical attributes thereof. Another concerns certain supernatural attributes (e.g., the forest as an abode of certain deities and/or spirits), and beliefs and practices associated with them. And, while not an attribute of the forest per se, villagers will also describe certain social or political behaviors associated with those who use and/or control the forest. Few, however, distinguish clearly among these seemingly discrete categories of information. They are all part of the perceptions and knowledge about, or the definition of 'forest' in the local cultural context. And that, in turn, generates or determines resource use and management strategies and associated behaviors (according to our definition of culture).

Furthermore, we tend to find that within each Nepalese community or social group, the natural attributes vary considerably by resource type--each is used in distinct and discrete ways, according to its unique technical and physical characteristics, in a given cultural context...

Traditionally Nepalese villagers' definitions of 'fuelwood,'... provide a case in point. By convention, most Nepalese distinguish two types of fuelwood according to certain physical and technical characteristics, correlated with cultural and social activities by season. One type, called jikra, includes old fencing and agricultural residue (stalks, cobs, etc.) found around households... The other, daura, consists of fresh (wet or green) wood and dead wood (dry twigs and branches) collected directly from the forest. Usually dead wood is free for the taking from private lands or from the forest commons, but the cutting of fresh wood on public land is

more often carefully controlled. Jikra is generally collected any time of the year, but most often in summer and autumn. Daura collection commences in early winter, when fieldwork is at a minimum and farmers and householders have more time (Bajracharya 1983; Fox 1983)... (p. 465-467)

The physical and technical attributes of the socio-political behaviors associated with particular resources may vary with the imposition of exogenous changes, but there is a nearly universal belief in Nepal that certain resources have supernatural characteristics (uses). These beliefs tend to appear quite similar despite differences in ethnic or caste identity, environmental variations, or religious predilections.⁶

For example, various gods and godlings (local and regional and of fertility, tutelary, gustatory, or other definition) are commonly believed to dwell in or be otherwise closely associated with water sources, forests, pasture sites, and other resources or natural objects...

...Such universal reaction toward the supernatural aspects of forest or water sources are just as much a form of controlled 'use' of such resource as are logging timber, collecting fuelwood, cutting fodder, grazing meadows, or diverting water into fields.

Belief systems in which nature is sanctified often function to hold resource abuse in check through some combination of respect and fear that disturbance or neglect of the supernatural may cause more harm than good to the resource and to the people associated with it. At various levels, these beliefs serve to remind people of the miraculous (hence fragile) nature of the resource and of the people's own responsibility to manage it for the sustained public good.

Sociopolitical solutions to resource management needs by the local villagers of the upper Kali Gandaki, and elsewhere across Nepal, also tend to be quite similar. In all cases described, where local traditions have not been totally disrupted by exogenous changes, management actions have been designed by local user groups along egalitarian and participatory lines (although certain historic conditions and styles of communal association vary from place to place). Likewise, rules concerning resource use or abuse tend to be quite similar--fines are charged for misuse, monetary fees or in-kind contributions are collected to pay watchmen, and social ostracism befalls those who neglect communal duties vis-a-vis the resource or who habitually neglect or debase the resource. (p. 468-469)

...it can be reasonably speculated that the more that local management systems or customary controls are accommodated in the development of resource management policy, the more efficient and equitable will be the result...

But, even where reciprocity and equity do not appear strong (as in some instances of hierarchy based Hindu caste communities), it remains clear that local tradition 'survives' in some form, regardless. It is the strength of those local systems, their familiarity, their source in 'tradition,' and not necessarily their equity, efficiency, or economy in Western terms, that give them survivability--even in the face of forces to formalize, nationalize, or 'panchayat-ize' them..." (p. 473)

Discipline: Anthropology
Application: Theory and Concepts
Country: Pacific Islands
Emphasis: The need to consider urban environments in agroforestry systems

Thaman, R.R. 1987. Urban Agroforestry: The Pacific Islands and Beyond, Unasylva. 39(1): 2-13.

"In the Pacific islands, trees and agroforestry have always been, and will continue to be, central to social, economic, nutritional, spiritual and ecological well-being. Even with increasing urbanization, trees still dominate the landscape, and "urban agroforestry" is a well established practice in all Pacific island towns. Trees are perhaps as important to urban people as they are to rural people, and the preservation, promotion, and improvement of urban agroforestry could be one of the most direct and economically, socially, ecologically and nutritionally appropriate means of bringing about sustainable development in the Pacific islands."

"It could be argued in fact that, if greater priority is not given to the encouragement of tree planting and preservation and to agroforestry in both rural and urban areas, current trends of increasing dualism and economic disparity, increasing food dependency, deterioration of traditional food systems, increasing incidence of malnutrition and nutrition-related degenerative disease and environmental degradation will no doubt intensify."

"Two main types of Pacific island urban agriculture are agroforestry in urban areas and agroforestry in urbanized home gardens adjacent to residences in rural areas where large- and small-scale "non-home" commercial agricultural production may or may not be also practiced, often at some distance from the home. Agroforestry in urban areas can be further subdivided into "dooryard" agroforestry on idle or undeveloped land within urban areas, but usually at a distance from the residence."

"Dooryard urban agroforestry

"Dooryard" urban agroforestry is today a ubiquitous feature of Pacific island landscapes. Even in areas not known for agricultural diversity, such as Kiribati and Nauru, urban gardens contain a wide range of food trees, non-tree staple and supplementary food plants...

Random surveys of home gardens in Port Moresby, Papua New Guinea; Suva, Fiji; Nuku'alofa, Tonga; South Tarawa, Kiribati; Nauru and the "Location" contract worker settlement on Nauru indicated that at least 85, 114, 79, 61, 33 and 65 different species or distinct types of food plants, respectively, were cultivated in home gardens in these areas..."

"As stressed by Soemarwoto et al. (1985) in their study of Javanese home gardens, true plant diversity is far greater than indicated by species differences, since many species are represented by numerous cultivars, all of which add economic, ecological and nutritional stability to urban agroforestry systems. In "tree gardens" in Yap, in the Federated States of Micronesia, for example, there are reportedly 21 named coconut cultivars, 28 bread-fruit cultivars and 37 banana cultivars (Falanruw, 1985).

There are also countless "weed" species, which are important components of urban agroforestry. Soemarwoto et al. (1985) caution that the term "weed" should be used with extreme care because of the many uses home gardeners have for weeds as medicines, fodder, mulch, roofing, fish poisons..."

"...40 percent (73) of 183 plant species reportedly used medicinally by the indigenous Fijians (Weiner, 1984) are found in home gardens in a cultivated, protected or weedy state."

"The importance of sacred or perfumed plants to urban agroforestry is also considerable. Of some 49 plant species considered by Tongans to be sacred ('akau kakala), 36 were found present in a survey of home gardens in the capital, Nuku'alofa. Of the 36, 23 (64 percent) are trees and five others woody shrubs. In addition to their sacredness, such plants constitute a very significant economic resource. Their flowers, leaves, fruits and bark are used in leis and ornamentation for the expanding tourist industry, as well as being the main scents used in body oil (coconut oil), perfumes and deodorants, the imported substitutes for which are extremely expensive and often not so culturally acceptable."

"Nature of cropping The most common plants of Pacific urban agroforestry systems tend to be the traditionally important native plants or pre-European contact introductions, except where the gardeners are from immigrant populations."

"Urban agroforestry on undeveloped land Cultivation and/or protection of trees and non-tree plants on idle or undeveloped urban and peri-urban land is widespread and constitutes an important source of food and tree products such as timber, fence posts, fuelwood, medicines, leaves, flowers, fruits and nuts (Thaman, 1977a and b, 1984b, 1985b). Such areas include road frontages, empty adjacent allotments, river banks and valleys, rights-of-way for proposed or existing paths and roads, and open land in general, including hillsides, swampland, etc. In Port Moresby, over one-third of all households had gardens on idle land in addition to their home gardens."

"In Suva, some 20 percent of all households cultivated "unused" open land, and it was estimated that on the 30 Km² Suva peninsula, of the area not under swamp or mangrove, approximately 5 Km² (over 70 percent) of the "undeveloped" area was under this type of cultivation. Some 20 percent of all households also planted along road frontages, despite Suva City Council regulations forbidding such practices"

"It must be stressed, however, that despite the current importance of agroforestry on undeveloped urban and peri-urban land, it is these areas, because of insecure tenure and undefined ownership, that are most severely affected by wanton deforestation for fuelwood gathering and agricultural clearing..."

"Animal husbandry and urban agrosilvipastoralism...pigs and chickens are also kept on home allotments. In terms of agrosilvipastoralism within the wider context of urban areas, it must be stressed that the livestock depend on trees to a great extent for shade, sustenance and tethering. Apart from kitchen waste, the main feed for pigs and chickens in most areas is coconut. In Tonga, goats and pigs are commonly fed the leaves of Leucaena leucocephala,

Pisonia grandis and Erythrina variegata, while "living edible pens" for poultry and pigs are made of these same species, plus others such as Hibiscus tiliaceus, and Polyscias spp., all of which are easily pruned or pollarded to provide fodder. On the negative side, grazing animals and pigs seem to accelerate deforestation in urban areas through the consumption or destruction of tree seedlings and saplings. Once established, however, trees and animals seem to coexist well, except where goats eat the foliage and bark of trees."

"PROBLEMS

"Despite the considerable importance of urban agroforestry in the Pacific islands, there are a number of problems. Unfavorable climate, poor soils, the cost and availability of land and water, insufficient time and labor, pest damage, theft and lack of government assistance are the problems most commonly mentioned."

"Both water shortage and poor soils, however, often make trees a more attractive proposition than short-term ground crops, which usually require more water and higher soil fertility.

Insufficient land area and insecurity of tenure were problems in most areas, and constitute major disincentives to urban agroforestry and the planting and protection of trees and other long-term crops. Other problems included diseases, insects, birds, rats, dogs, mongooses and noxious weeds; theft and premature harvest of produce, especially of banana bunches and tree fruit, such as mangos; insufficient time for planting and maintenance; high costs of poultry feed and deforestation of undeveloped urban and peri-urban lands where most low-income families still depend on firewood to cook their meals (Thaman and Ba, 1979); boundary problems with respect to ownership of crops; unfavorable response to gardening or livestock rearing by neighbors and government apathy."

"Importance of urban agroforestry"

"The importance of urban agroforestry and its implications for planning are not clearly understood by most planners and policy-makers. The lack of quantitative data on its nature, extent, and cultural and ecological importance is a major problem."

"There have been campaigns encouraging the cultivation of food crops in Port Moresby. In Fiji, the National Food and Nutrition Committee (NFNC) and The Fiji Times, through the "Feed Fiji First" campaign, have placed major emphasis on home food production and have sponsored competitions in housing estates, schools and agricultural resettlement schemes."

"... a major assessable component of a course on "Agriculture, Food and Nutrition in the Developing World" at the University of the South Pacific in Suva, a regional university serving 11 member countries, is the development and maintenance of mixed home gardens. Tonga and Fiji have both promoted tree planting in towns as integral parts of their World Environment Week and Arbor Day programmes, respectively."

"Nutritional importance Nutritional deterioration, as a result of a shift from the consumption of nutritious traditional foodstuffs to imported foods of

inferior nutritional quality, is a serious problem in Pacific island urban areas (Coyne et al., 1984, Thaman, 1982a, 1983, 1984a, 1985a). However, studies in Hawaii (Yang, 1976) indicate that with the correct selection of vegetable crops on a 42-m² plot (4.6 x 9.1 m), a family of five can produce over 100 percent of its vitamin A and C requirements, over 50 percent of its iron requirements and 18 percent of its protein, and save US\$1-20 per day in food costs."

"[Fleckenstein (1978) argues] ..."surely dooryard gardens could grow the foods which provide vitamins and minerals which protect the body against various diseases", and which "are needed in much smaller amounts". Fitzroy (1981) supports this view with his findings in the capital of the Solomon islands, Honiara, that people without gardens had lower intakes of iron and vitamins A and C.

In areas of Kiribati and the Federated States of Micronesia, where little land exists for home gardening, there are serious micronutrient deficiencies. Most recently, widespread night blindness was detected among children in urban Tarawa, and seemed to be related to the low intakes of papaya, pandanus, bread-fruit and fish (traditional sources of vitamin A) rather than to any injury (Pargeter et al., 1984)."

It is important to stress that fruits such as mango, guava, papaya, soursop, avocado, pandanus, coconut and bread-fruit are very good sources of fibre, vitamins C, A and B-complex, and other micronutrients, many of which are lacking in highly refined urban diets (Miller et al., 1965). Similarly, the leaves of trees such as the horseradish tree (Moringa oleifera), curry leaf (Murraya koenigii) and the tree-like hibiscus spinach (Abelmoschus manihot) are excellent vegetable sources of iron, vitamins C and A, plant protein, dietary fibre and other micronutrients (Omen and Grubben, 1978)."

"Economic importance ...In Papua New Guinea in 1971, for example, 80 percent of all families could not afford rentals of the cheapest housing (Papua New Guinea Housing commission, 1975); in Suva, many families in government housing would not have been able to pay their rents if it were not for the estimated US\$8-12 per family per week they saved by growing their own taro, cassava, tree crops and other foods, and collecting firewood on idle urban lands (Ali, 1976). In short, the "real incomes" of urban gardeners are increased considerably by agroforestry activities.

Considerable economic benefit is also realized through the cultivation of non-food trees such as Pandanus spp. or paper mulberry (Broussonetia papyrifera) and of sacred or fragrant flowers, which are important for the production of tourist handicrafts as well as for subsistence production of plaited ware and fine mats, tapa cloth, body oils..."

"Social benefits The social benefits of urban agroforestry are manifold. Important benefits include: the maintenance of social ties through the distribution of garden produce and provision of food for feasts; the recreational and physical exercise value; and the educational importance to urban dwellers and their children, who often have limited knowledge or appreciation of agriculture and its culturally important plants. The spiritual importance of urban agroforestry is exemplified by the great religious significance the Hindu community of Fiji attaches to trees such as the

coconut, tamarind, mango and neem (*Azadirachta indica*), which are common in home gardens in both urban and rural areas. Moreover, religious shrines, known as sthan, are often found in gardens, with the garden itself having considerable sacred value."

"...if community urban agroforestry were encouraged, [other social benefits might be] realized, such as providing a social center of activity, food for the landless, experimental environmental education opportunities or a meeting ground for improving community spirit and lessening alienation among different social, ethnic or racial groups."

"Conclusion

To promote urban agroforestry, governments, non-government agencies and local village or community organizations should actively encourage diversified cropping and tree planting as a priority. Agricultural extension [services could be expanded or refocused] to provide technical advice on small-scale arboriculture in urban areas, rather than the predominant concentration on large scale and/or commercial cropping, forestry and livestock enterprises, primarily in rural areas."

"A concerted attempt must be made to encourage home gardeners to plant or replant trees, especially fruit and fuelwood trees. The younger generation seems to have neglected the wisdom of the past, and continues to depend on senile trees of low productivity, often planted by their parents or grandparents. Such plantings could, where land area permits, take the form of useful plants, fruit-trees, fodder plants and nurse plants for climbing food plants, especially along roadsides, paths, and property lines, all in a manner to maximize productivity."

"Agroforestry has always been central to Pacific island life, and is now an integral part of Pacific island urban life. It must be seen as the "roots" of sustained-yield Pacific island development. It must be systematically fostered and intensified if Pacific island nations are to deal effectively with their rapidly increasing populations, and with serious problems of increasing malnutrition and nutrition-related non-communicable diseases, with increasing financial, technological, and food and fuel dependency on overseas countries, and with increasing disparity between the haves and the have-nots. The choice may in fact be between poverty in the seemingly paradisiacal Pacific islands, or a firm commitment to "urban" agroforestry and tree planting, both separately and as part of all development projects."

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DISCIPLINE: Anthropology
APPLICATION: Methods and Measures; Technology Transfer
COUNTRY: Philippines
EMPHASIS: agroforestry; land use

Wollenberg, Eva K. 1985. Land Use Decision Making in the Uplands: A Case Study of Lake Balinsasayao, Philippines. In: Agroecosystem Research in Rural Resource Management and Development. University of the Philippines at Los Banos Program on Environmental Science and Management (PESAM) and Southeast Asian Universities Agroecosystem Network (SUAN). Sajise, P.E.; and Rambo, A.T. (eds.). pp. 147-169.
(WI Library)

"This study is based on data collected from April 1984 - February 1985. Two months were spent in reconnaissance and building rapport with the community. Seven households were chosen for case studies... These households were interviewed approximately once every 2 weeks for 10 months. Questions concerned diet, fuelwood consumption, division of labor, time allocation, marketing schedules, agricultural expectations and land classification... Based on the case study information, hypotheses were formed concerning patterns in land use decision making. These hypotheses were then extensively tested in the Balinsasayao area as well as in Mahilum and Hanay-Hanay..." (p. 154)

"The concept of acceptability, i.e., matching technology to farmer circumstances, is simple and elegant. Application of the concept quickly becomes complicated. There are many subtle factors that may not be immediately apparent from the baseline data. This may be more true if baseline data is gathered rapidly and with locally insensitive methods. One factor to be considered is the variability of benefits received through adoption of the technology. This variability is known as risk... as expressed by the width of a frequency distribution curve...The wider the frequency distribution, the greater the risk. A frequency distribution can describe the past occurrence of an event, or can be constructed from the expectations that a decision maker has 'calculated.'

A methodological difficulty lies in eliciting and quantifying the expectations of respondents. There are three possible approaches...one approach entails estimation of expectations from trends. Information should be gathered directly from farmers, since it is their perception of past events that shapes their expectations. A second approach is observing real farm decisions and questioning farmers about the expectations associated with those decisions. Observation can be time-consuming and real farm decisions can be difficult to control for experimental purposes...The third approach elicits expectations using hypothetical situations. "Hypothetical" decision making lends itself well to extensive surveys...(It) may not accurately reflect actual farm expectations, since simulation does not commit the respondent to carry out decisions on his farm. Furthermore, the farmer is often not able to articulate his expectations...When a decision maker is unable to assign a probability to a given event the event is described as uncertain. Uncertain events represent an extreme case of risk...

...Land use choices at Lake Balinsasayao are examined by asking the questions, 'what are the risks associated with different land types?' and 'what are the household strategies to compensate for that risk?' Decision making, rather than risk per se is the emphasis of the analysis.

Decision making is a system of information processing. Given a similar decision environment, with similar constraints and alternatives available to members of the community, one can expect patterns of land use decision making to emerge. The researcher can predict these patterns by knowing what information is used by farmers, and how that information is processed. The process is determined by observing actual farm decision making and asking farmers why they do and what they do. The farmers' land use criteria can then become the criteria for the development planner. If farmer criteria for land use can be identified, and agroforestry designs improved accordingly, acceptability and likelihood of innovation should be higher.

"...Ethnoscience is an attempt to understand the system of terms used to describe the environment. These terms give the outsider the opportunity to understand the reality perceived by a culture group. Land use terms employed at Lake Balinsasayao indicate the information base upon which decisions are made. Terms reflect the limits of the Kaingineros' environmental knowledge, as well as the categories and criteria used to evaluate land types.

At Lake Balinsasayao, it was first necessary to establish whether cognitive norms of land use existed in the community. Two steps were necessary: (1) identifying land types, and (2) identifying uses appropriate to each land type...Local terms of land classification...were elicited from 24 farmers using the questions,...'what are the kinds of land that one can have?' and 'what kind of land is that?'....The questions were first asked inside the respondents' homes. One to two months later a second set of interviews was conducted at respondents' fields. The second questioning resulted in much richer, detailed and careful; answers...the physical environment of response elicitation can be as important as the question itself. (p. 154-157)

Farmers were asked to match land types with hypothetically appropriate uses...The analysis shows that there are culturally prescribed land uses that correspond with each land type. Normative patterns of land use exist at a cognitive level, and are shared among the members of the community.

Construction of a set of land rules provides a framework for the analysis of decisions. Identification and understanding of locally employed terms is a fundamental step in defining the decision information base. Just as importantly, a working vocabulary of terms is necessary for effective communication with farmers. Decision criteria become apparent when these terms are linked with their appropriate uses..." (p. 159-160)

"The Silliman team has tried to improve agroforestry at Lake Balinsasayao. However, from observations of current land use practices and farmers' of land types, any single agroforestry scheme will not necessarily be appropriate to all land types and households. Some high diversity crop

combinations typical of agroforestry require high time and labor inputs from the farmer. Even a low diversity combination such as coffee and a nurse tree...might not be adopted by the kainginero on low intensity lands, where production is constrained by travel time and theft. What the developer views as appropriate for one land type, might easily be considered inappropriate by the farmer.

High levels of crop diversity have been generally taken to imply stability...Economists generally agree that economic diversification decreases variability in returns. The latter concept is that of spreading or hedging risk. Experience from Balinsasayao suggests that simply increasing the number of crop species on a field does not necessarily decrease the variability of yield. Yields may be variable because of constraints to farmer management...Stability of returns seems to be more a function of the type of crop than the number of different crops...The assumption that high diversity leads to high stability can not be blindly applied.

The long-term requirements for agroforestry may be a disincentive for adoption. The need for quick, visible returns is widely recognized in technology transfer projects. Investment of effort becomes more risk-laden when returns are intangible or delayed for the adopter. Long-term ecological benefits may not be felt directly by farmers. The developers' goals to serve public interests may overshadow the farmers' private short-term requirements...The consequence of planting many long-term crops is a decrease in farmer flexibility. Poorer households with low intensity cropping strategies would be less likely to allocate land to such long-term commitments...

Innovations tend to require more attention from the farmer. Kaingineros study what is unfamiliar to them. The growth of a new seedling variety was monitored daily by the head of the family to ensure its survival. A recently constructed fence for erosion control was checked after every heavy rainstorm...Farmers allocate more time to study the progress of innovations, not only to become more knowledgeable, but also to be able to modify the 'experiment' according to changing conditions. Both purposes improve the information input to the decision making process. Experimentation is almost always conducted near the house, particularly in the home garden...The accessibility and small scale of the homegarden permit high time and labor input...Several farmers mentioned the high visibility of the homegarden as a criterion for innovation near the house. The family is then able to show new accomplishments to visitors. The implication is that agroforestry may need to be introduced at scales appropriate for testing in the homegarden..." (p. 165-167)

Discipline: Anthropology
Application: Theory and Concepts
Country: Thailand
Emphasis: Village life and social structure of a Southern Thai fishing village

Fraser, Thomas M., Jr. Fisherman of Southern Thailand The Malay Villagers, Case Studies in Cultural Anthropology, General Editors, George and Louise Spindler, Stanford University, Holt, Rinehart and Winston, Inc., New York, 1966, 110 pp.

"These case studies in cultural anthropology are designed to bring to students, in beginning and intermediate courses in the social sciences, insights into the richness and complexity of human life as it is lived in different ways in different places. They are written by men and women who have lived in the societies they write about, and who are professionally trained as observers and interpreters of human behavior."

"This is a case study of the people of Rusembilan. They are Muslims and in this and other features are set off from the rest of Thailand in a cultural area oriented toward Malaysia."

"The internal integration of the village is declining in significant degree due to the substitution of outboard motors for oars and sails on the koleks [35 - 50 foot long fishing boat], and the use of nylon, rather than cotton nets for fishing. These seemingly minor technical substitutions have directly affected the allocation of roles and statuses in the community, and the flow of communication. The analysis demonstrates how delicately poised cultural systems may be, and how relatively minor changes may cause basic shifts in the whole system."

"The Village and Its Context" (pp. 1-7)

"The name of the village is taken from the two Malay words, *sembilan*, meaning "nine", and *ru*, meaning "casuarina", the local species of pine tree."

"It is almost exclusively an agricultural and fishing region...By far the most important crops economically are rubber and coconuts, in that order. ...Coconuts grown for copra, although important for manufacturing within Thailand, do not reach an international market in quantity. While coconuts are of some importance in coastal areas, they are universally overshadowed by fishing or rice growing or both."

"Rusembilan and the many similar village communities in South Thailand are, indeed, peasant communities: they constitute part-societies with part-cultures (Kroeber 1948:284). They depend for many essential functions on their relationship with complex, national societies, without which they would absolutely lose their characteristic form."

"The field work on which this study is based was carried on in the village of Rusembilan and neighboring villages over a period of eight years."

"Making a Living" (pp. 8-25)

"Fishing in the waters of the South China Sea and the Gulf of Thailand is considered to be the only important occupation and directly involves only able-bodied males. Fishing, boats, prices, nets, and other topics related to fishing are uppermost in the minds of members of the community, men, women, and children, at all times. ...Because of this preoccupation with fishing, the economies of Rusembilan and other coastal villages are unusually sensitive to fluctuations in the supply of and demand for fish. Objectively, this sensitivity is not necessary, for the east coast area offers opportunity for a wide variety of cash crop production."

"After the fishing season is over on the east coast, there are usually a number of men, not owning rice land, who travel to the west coast to take advantage of the differently timed fishing season there. ...This practice has been declining in recent years as the opportunity for hire-tapping in the east coast provinces has been increasing. ([Footnote] The practice of tapping rubber on the estates of others. Payment is usually 50 percent of the tapper's yield.)"

"Roughly three quarters of Rusembilan families own flooded padi (unprocessed, uncooked rice) fields..."

"Unlike most activities in Rusembilan, recruitment of groups to work in the rice fields is not on the basis of association among members of the same boat crew, but on the basis of kinship proximity. A man will first call on his own and his wife's closest relatives living in the village, then the next closest degree of relatives, and so on until he feels he has recruited sufficient labor for the task at hand. He recruits just enough labor, for not only must he feed those working on his fields, but he knows that by asking them to help him, he has assumed an obligation to reciprocate. ...With the completion of transplantation, a cultivator is free to pay back his reciprocal obligations, or to work for wages on the fields of large landholders, as no attention is needed in his own fields until harvest any time from December through February. This relatively slack period is also the usual time of making repairs to houses and boats or seeking temporary employment elsewhere."

"With conscientious effort it takes a week to harvest a field and this is often stretched to two or three weeks. Each stalk of rice is individually cut against the harvester's palm with a special knife held in the same hand. It is this slow process coupled with the necessary bent posture which is responsible for the negative attitudes held by most villagers about rice harvesting. The harvested heads of rice are tied in convenient-sized bundles and stacked at the edge of the field to be taken back to the village in the evening. The harvested stalks are left standing in the fields and serve as convenient fodder for village cattle, thereby ensuring fertilization of the fields for the following year's crop."

"Villagers estimate that it takes somewhat more than 2 acres of padi field to meet the rice consumption needs of a small-to-average family. Most families in Rusembilan own no more than an acre, so that rice deficit is widespread throughout the village and other villages like it. In an effort to improve this situation, and to provide grain for the northeastern provinces of Thailand, district authorities planted a large demonstration field of rice

during the spring of 1964 (out of season) which depended on irrigation for flooding the fields. Each village in the district was assigned a particular 4-acre plot in the field and was responsible for transplanting, weeding (which was necessary at this season), and harvesting it. An unexpected problem arose: this was the only field of rice within many miles at this season and it consistently attracted a tremendous concentration of birds."

"In general, the people of Rusembilan have little interest in raising vegetables and other garden crops for their own consumption. Some, however, do maintain small gardens which are carefully fenced to exclude freely wandering cattle. These gardeners are usually among the less wealthy residents of the village who cannot be sure of sufficient income from fishing to supply them with vegetables from the Pattani market. Perhaps two dozen Rusembilan families raise ubi keladi, a form of taro which is used as a supplemental source of starch in the diet. Sweet manioc (ubi kayu) is a popular root crop; however, the inconvenience of transplantation keeps many families from growing this crop. A few families plant patches of okra, melons, and pineapple on whatever plot of waste land they can find and fence. In addition to the garden crops, a number of individuals own fruit- or nut-producing trees. Mangos grown in the village are of no economic and little dietary importance, but they are a delight to small children who manage to consume most of the crop as it ripens. Bananas, papayas, and a carmelly, brown-skinned fruit called sawahnillo are grown by some families for domestic consumption, while cashew nuts are grown for sale by a few others."

"The pattern of land utilization in Rusembilan is typical of these coastal villages. Approximately half of the village lands are controlled by nonresident owners for growing coconuts. These owners are mostly the Chinese merchants in the town of Pattani, and while they certainly make a profit in absentia, their plantations in the village do provide gainful employment for a number of village families who work as plantation guards and harvesters. Another 10 percent of village lands is used by residents of Rusembilan for commercial coconut production. The average size of locally owned plantations is about an acre and a half, compared with a little over 10 acres' average holding for nonresidents."

"While the proportion of Rusembilan men with proprietary interest in rubber plantations remained much the same between 1956 and 1964 (about 10 percent), the individuals involved have changed; in fact only two men who had acquired rubber-growing land in 1956 maintained their interest in it at all. The reason for this turnover is that rubber growing does not provide quick and easy profit. Most of the land acquired is uncleared jungle which must be prepared before planting the rubber trees. Working full time at clearing the jungle, a man can prepare at most 2 acres in a month. Full-time work is the exception rather than the rule, however, because commitments to rice and fishing at home usually limit time at the plantation to intermittent three-or four-day periods. Also, if clearing is not kept up conscientiously, the jungle quickly reclaims the land which had been cleared. Coupled with this is the problem of malaria coastal villages are practically free of this disease and fishermen staying for any length of time in the malarial interior are likely to be stricken with the disease. Most of the men from Rusembilan are ready to give up rubber growing at this point; a few continue and plant trees. Until recently, the only available rubber saplings were of a variety which took seven years to mature to the point at which they would produce any rubber

at all."

"One of the problems still facing the aspiring rubber producer is that of acquiring clear legal title to his plantation."

"One of ten families from Rusembilan in 1961 decided to try their hand as a group at plantation life. ...With little to hold them, they were positively inclined to move when it was heard that there was unused land suitable for mixed rubber and fruit production in an area about 25 miles from Rusembilan. Within the district where they were to settle, the government had already established a resettlement project where Thai farmers, mostly from the distant central and northeastern parts of the country, were allotted 25 rai (about 10 acres) of land. If they maintained it properly for a period of five years it was to be granted with clear title to the settlers. The district officer who was approached by the families from Rusembilan apparently based his response to their inquiries on the pattern established for the resettlement project. Each of the ten families was allowed to use a parcel of 25 rai and was told by the district officer, "You do your planting and never mind about the future." They interpreted this as a promise that they would eventually be given title to the land. In addition to this, the district officer told them that further plots of 10 rai each would be made available to the families for rice planting, and that the district would supply the first year's seed. In addition to planting rubber, some of it of the early-maturing, high-yield variety, these families have also established a fair number of coconut and fruit trees, including durian, rambutan, and some citrus fruits. In order to produce sufficient income during the period required for the trees to mature, most of the men engage in fishing occupations either at Rusembilan or Pattani."

"There are a number of specialized occupations involved in house construction. Although all men of Rusembilan are capable carpenters, a small number are highly skilled in woodworking. These men, who generally learned their skills from their fathers, are able with amazing accuracy and speed to rough out mortise and tenon joints, to shape the wooden pegs for securing the joints, and to produce a number of fine articles of furniture. They are in great demand whenever a house is to be built, being called in wherever precise workmanship is crucial. Traditionally, these services were paid for by the return of other services on the part of the house owner, but increasingly today reciprocation is being replaced by cash payment. One skilled carpenter in Rusembilan constructed his own kolek, a tedious and painstaking task to say the least. While several other men in the village are able to, and occasionally do, construct the smaller and cruder types of boats for themselves, all, except this one man, purchase their kolek from the village of Taluban, 30 miles down the coast, where boat building of the highest order is a village specialization. (Boats from Taluban are sold up and down the east coast as far north as Nakorn Sritamarat and as far south as Trengganu in Malaysia.) Other minor occupations related to house building such as casting of the concrete blocks used as footings for house posts, manufacture of the decorative wooden scrollwork placed at the top of the window opening in more substantial village houses, and the preparation of roofing thatch from coconut or nipa palm fronds for less substantial village houses are carried on as the need arises or if not, can be provided by craftsmen in Pattani."

"Fish sales are usually confined to the morning hours, their place being

taken in the afternoon by women bearing baskets of plantation products: durian, rambutan, and petai, long beanlike pods harvested from jungle trees."

"The Web of Life" (pp. 26-39)

"The nuclear family, as indeed all kin relationships, is structured bilaterally no more weight being given to one side than to the other. It emphasizes within it the relationships of husband-wife, parent-child, and sibling-sibling...."

"It is also the husband who represents the family in the religious and political activities of the community. While women may take secondary roles in religious matters often only as observers, they play no part at all in the area of political decision making. The wife's role is that of manager of the household. She, with the aid of her elder daughters, takes care of domestic chores such as keeping the house clean, maintaining a supply of wood for cooking and water for drinking and washing..."

"Naturally, when conflict has disrupted close kin ties, these cannot be exploited for reciprocal agricultural labor. It is not uncommon, therefore, to find neighbors and fellow crew members, as well as kinsmen, involved in these activities."

"Boat crew relationships may also provide the basis for cooperative economic ventures such as purchasing plantation land."

"Both in the past and at present it is customary for the older or more respected men of the community to spend a certain amount of time each morning sitting in one or another of the coffee shops and discussing various matters of interest with anyone wishing to drop in. The amount of time thus spent by these men is determined in part by the press of other activities on the beach or in the fields; in part is also determined by the continuity and size of their "audiences". Younger men drop in for a half and [sic] hour or more, and in this way much of the business of the village, and its important decisions are accomplished."

"By 1964, attendance by common crew members at the coffee shops on anything like a regular basis had ceased almost completely. Many of the elders, in fact, no longer made a practice of regular attendance. Instead, many of the respected steerers and boat owners would sit on the beach, or a raised bamboo platform, in the shade of a coconut tree and serve as much the same kind of focal point as they had previously in the coffee shops."

"Maintaining Control" (pp. 40-55)

"Two essentially different systems of authority appear to be operating in the Malay-speaking area of South Thailand. While there is only very rarely any overlap in the systems themselves or the personnel exercising the authority, there is a significant area of overlap in the units over which this authority is exercised. One system of authority is based directly on the Royal Thai Government and affects the Malay villages and villagers as territorial units within and citizens of the Thai nation. This system of authority will be discussed in the last two sections of this chapter. The other system of authority which is far more significant in the daily lives of

the villagers, is indigenous, and stems directly from the social organization of the Malay communities, based on the traditional and religious values of the villagers. The latter type of authority generally operates unchallenged at the village level; it is at the intercommunity or regional level that it comes into marked conflict with that stemming from Bangkok."

"There is often a measure of outside coercion [sic] involved in organizing community projects. The coercion may be as mild as an order from the district officer, for the villagers of Rusembilan and other Malay villages have traditionally been subject to corvee labor, and expect it."

"One of the most unpopular tasks which the kamnan [local Thai government official] must perform is gathering together members of the community (usually men) to undertake village projects requested by the district office."

"As has been stated or implied throughout this section, relations between the Malay villagers and the district officials are not generally cordial. Occasionally, a highly motivated man who knows or learns the Malay language is appointed district officer, and relations in his district improve for the period he remains in office."

"Although the Thai government through such efforts as community development is making a sincere effort to help the people of the South (as well as other areas of the country), and although the people of the South realize this, there are still large areas of misunderstanding and hard feeling between Thais and Malays of the area. Some of these and the historical bases for their existence have already been sketched. The linguistic problem is one of the chief sources of difficulty between the two groups of people in the South, but it is only one of them."

"Even without such open prejudice, there is a common tendency among many Thai officials stationed in the South to assume a superior attitude in dealings with village peoples (this is not entirely confined to the South). The Thais encountered by Malay villagers are almost always better educated than the villagers themselves, and as it is not uncommon to equate intelligence with educational level, it is hardly surprising that a sense of inferiority and superiority with attendant graft and exploitation finds itself into such cross-cultural relationships. There is a saying among Thais in the South, which has achieved almost the status of a proverb, that "a government officer who has no money is stupid"."

"Dealing With the Supernatural" (pp. 56-74)

"In addition to this joint class of spirits, there is a special category of supernatural force which Rusembilan and the Malays of South Thailand share in greater or lesser degree with most of the Malayo-Polynesian language groups of Southeast Asia. This is *semangat*, a soul-substance or vital force found in all things. Its quantity, and perhaps quality, vary from object to object and from one part of an object to another. However, whether resident in inanimate objects, plants, animals, or men it is the same."

"Rejuvenation of *semangat* to avoid trouble is also required at the first planting of rice, and at other stages in the agricultural cycle."

"Basic to the cure of any disease caused by (or potentially caused by) supernatural agency is exorcism or appeasement of the troublesome spirit. This important art is in the hands of a specialist to be found in practically every Malay village the bomo."

"Spirits, aside from causing illness and trouble, also have positive uses in Rusembilan and other Malay villages. It is important to take care of the appropriate spirits if one wishes a particular venture to be successful. In growing rice, particularly at the time of transplantation, suitable offerings have to be made to the spirits of the rice plant. In Rusembilan, many cultivators observe this simply by placing a bowl of colored rice out for the spirits at the time of transplantation, in the belief that the guardian spirit of the village will see that nothing amiss happens during other stages of the agricultural cycle. Other people, especially in inland rice-growing areas, present more elaborate and frequent offerings at each stage of the growing cycle."

"No hard and fast line can be drawn between the traditional, shamanistic elements of Malay culture and those elements which are Islamic. As has already been seen, even the shamanistic curing seances often draw heavily on Islam for their most central ingredients, the exorcistic incantations. Likewise, all but the most strictly Islamic occasions (those limited to community religious personnel and teachers in Koranic schools) involve at least a certain amount of traditional belief."

"While the religious leaders may feel some conflict or at least some discomfort in the juxtaposition of Islam and traditional spiritual beliefs, the ordinary Malay villager has no difficulty in reconciling these two historically different traditions."

"In spite of his sincere devotion to Islam, the Malay villager feels free to reinterpret its demands to fit conditions of his Southeast Asian culture. A major area of reinterpretation is in the treatment of women. As has already been seen, it is the wives of the fishermen of Rusembilan who tend to be dominant in economic matters. The only time a Malay woman sees a veil is during a formal wedding ceremony, and it is now becoming common for a bride to substitute sun glasses for the veil. Only in matters dealing with formal religion and the mosque is there segregation of adult women from men."

"The Thai government, in part as a gesture of good intention to the Malay population of the South, and in part to emphasize its policy of recognizing no difference in its citizens except religion, decided to build a large mosque on the outskirts of Pattani town. The structure, which cost the government 4 million babt [sic] (\$200,000), is indeed impressive, and is visible to all who travel the main highway between Pattani and Yala. However, in deciding on its construction in the first place, and its site in the second, the government, and by implication the Majalis Ugama of Pattani, neglected to account for the fact that within half a mile of the new structure is the traditional main mosque of Pattani, revered by the people and once used by the rajas of Pattani. They further neglected to consider that many of the Malays of the town and province would see this gesture as completely a political move, devoid of the type of spirit which was purported to motivate it."

"Learning to Live in Rusembilan" (pp. 75-89)

"Many people in Rusembilan today recognize that the cleverness (or wisdom) of the old men is too narrow to meet the needs of life in modern South Thailand, and stress the importance of acquiring the type of knowledge offered by the government schools."

"However, secondary education remains one of the two major roads to upward mobility among Malays of South Thailand. It is the road by which Malays are able to participate in the apparatus of government, and to enter Thai official society on a surprisingly equal footing."

"The other road to upward mobility remains entirely within the context of Islamic Malay society. This is higher religious education. In 1960 there were 133 pondok, or secondary religious schools, in Pattani province, and these offered direct competition in terms of Malay students to the government secondary schools. In 1956, it was estimated that as many as 80 percent of the youths of Rusembilan attended one of these pondok for at least a short period of time after their Masuk Jawi [ceremony celebrating a boy's puberty]. They received further instruction in proper performance of ritual and prayer, as well as additional details of Islamic Law."

"Economic activities, especially fishing, occupy a large part of an adult's time. These activities are guided by a set of values stressing personal industry, avoidance of trouble to others, adherence to the rules of tradition, and the positive attraction of wealth. Within the limits set by one's relations with others, competition is an important element in economic pursuits. ...Land and plantation ownership has traditionally been an individual matter, each owner attempting, with as little reliance on others as possible, to exploit his holding efficiently and profitably."

"The Changing Scene" (pp. 90-105)

"The series of innovations in the fishing operations of Rusembilan between 1956 and 1960 is illustrative of this readiness to change without due regard for possible disruptive consequences."

"By the last third of the 1956 fishing season, eleven of the twelve Rusembilan kolek has made arrangements of one sort or another to be included in the tow group of one of the motor launches. It was then that the disruptive consequences began to be apparent. Basically, the problem was that membership in a tow group meant that the individual kolek and their steerers were deprived of a considerable amount of their previous independence in locating fish and in timing their return to market them. Disputes arose almost immediately over the position of particular kolek in the tow as the last boat in the string was dropped off at the first-sighted school of mackerel, often giving it a large advantage over the other kolek. This problem was solved relatively easily, although never to the satisfaction of all, by rotating positions each night. A more difficult problem arose in regard to the return trip. Frequently one kolek in a tow group would have caught a full load of fish while the other kolek desired to fish further. Neither the alternative of waiting idly while the other kolek finished fishing and while the market prices might be dropping, nor that of rowing back to shore ahead of the tow was particularly appealing. The second alternative was

most often chosen with the result, in a number of cases, that the last boats to finish fishing would be towed in and overtake those which had left the fishing area earlier."

"In spite of the efforts to increase coffee production as part of the community development program, there is still considerable surreptitious use of the reserved forests by villagers for growing fruit and small amounts of rubber."

"Men of Rusembilan pointed with amusement at an agricultural development program initiated in their village by district agricultural officials (not connected with the national community development program). The goal of the program was to utilize the waste land between village padi fields for planting coconut trees. Ordinarily, the fields are separated by a narrow strip about 2 feet wide which serves to prevent water from running off the flooded fields, allows a certain amount of grazing area for villagers' animals, and also provides a dry path for getting from one place to another. The coconut program started running into serious difficulties almost as soon as it was started. Who owned the trees? Traditionally a man owns his padi field, but not the dike between his field and the next. Disputes as to the ownership of coconuts arose long before there were any nuts to be harvested, and it is perhaps fortunate that the whole program was scrapped before the trees, and the disputes, came to fruition. Coconut trees have very shallow root systems, and with the trees planted a foot to 18 inches above the level of the rice fields, it became impossible to plow the fields near the dikes without either breaking the plows or the coconut roots. Furthermore, as the trees sought nutriment from the soil, this was depriving the rice plants with the result that within a 25- or 30-foot radius of a tree rice did very poorly."

"While the villager responds to programs of community development and economic assistance in his area in terms of traditional economic and cultural values, the motives of the government in instituting such activities may be somewhat more complex. From the point of view of the government of Thailand, the South is characterized by two problems: one is the old sore of Malay irredentism, the other a relatively recent threat of Communism. And while no one would deny that government programs in the South are in part motivated by sincere interest in economic development, it would be equally foolish to rule out political considerations as an important part of any such motivation."

"It is expected that the community development and resettlement programs will have a growing impact on the area."

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DISCIPLINE: Anthropology
APPLICATION: Theory and concepts; Methods and measures
COUNTRY: Asia
EMPHASIS: Human ecology; agroecosystems research; farming systems
research; cropping systems research

Gibbs, C.J.N. 1985. Agricultural Systems Research in Asia: A Comparative Discussion of Human Ecology, Agroecosystems Research, Farming Systems Research, and Cropping Systems Research. In: Agroecosystem Research in Rural Resource Management and Development. University of the Philippines at Los Banos Program on Environmental Science and Management (PESAM) and Southeast Asian Universities Agroecosystem Network (SUAN). Sajise, P.E.; and Rambo, A.T. (eds.). pp. 77-93.

"... there are currently at least four very active sets of researchers attacking problems in a very similar ways, whose work is distinct but highly complementary. These sets are distinct largely because of their disciplinary backgrounds, the institutions within which they work, and because they have chosen to define their problems in different ways. Two sets, working mainly in Southeast Asian universities in human ecology and agroecosystems research, have begun with an intellectual difficulty and are searching for a new body of theory, or combination of theories, to order and explain very complex phenomena. Two other sets, working mainly in national and international agricultural research centers in farming systems research and cropping systems research, have begun with an existing body of theory but the perception of an important gap between goals and achievements. However, despite their different origins all four sets are working in teams, employing systems approaches to research on topics which form part of an important hierarchy of agricultural systems...." (p. 77-78)

"The term human ecology (HE) is used here to define a research perspective that helps describe and explain in very broad terms the behavior and interactions of social systems with ecosystems...The components of the ecosystem and the social system are linked by flows of energy, materials and information. The resulting conceptual framework assists man to understand the structure, function and dynamics of human interactions with ecosystems."

"The common characteristics of studies employing a human ecological perspective is the concern with interactions between the natural world and the social world, which Western thought patterns normally keep separate [Rambo 1985]. Natural scientists and social scientists normally work apart but if we want to understand the processes that lead to the disappearance of tropical rain forests, the destruction of coastal fisheries, or the marginalization of small-scale upland farmers, we must bridge the gaps between groups of disciplines...HE permits and encourages communication across disciplinary boundaries and has been applied successfully in Asia in studies of human interactions with tropical ecosystems..." (p. 78)

"Agroecosystems research [AER] describes and analyzes agroecosystems in terms of their structure, function and dynamics [Rambo and Sajise 1985]. Structurally agroecosystems are complex exhibiting emergent properties,

i.e., the whole is more than the sum of the parts. Functional emergent properties of special significance for applied research include productivity, stability and sustainability. Productivity refers to the level of output of a system, stability to the capacity for minimizing short-term variations in output, and sustainability refers to the ability to withstand repeated stress or major perturbation over the long-term (Conway 1985)..." (p. 80)

"Farming system research (FSR) analyzes the farm and the behavior of the farm household as a unit of production and consumption...to identify ways in which the welfare of the household can be improved by increasing the productivity of the farming system [Gilbert, Norman and Winch 1980]. FSR priorities reflect a holistic view of the farm as a socioeconomic and biophysical entity but research on components of whole farm systems are also considered to be legitimate parts of FSR..."

"...FSR analyzes the farm in terms of both production and consumption but focuses in practice on efficient utilization of the factors of production under the control of the farm household to achieve the farm household's goals..." (p. 81)

"Cropping systems research (CSR) can be described as a subset of farming systems research designed to increase food production through the introduction of additional crops or improved management practices into existing crop production systems [Zandstra 1982]. Like FSR, CSR requires a systems approach but CSR is typically disciplinary and commodity-oriented with emphasis on increasing the annual output of food per hectare... CSR has recognized the importance of multiple cropping in developing country farming systems and has focused on the problem of fitting crops together in space or time often in response to farm labor or soil moisture constraints..."

"The design of CSR is based on recognition of both the socioeconomic environment of the farmer and the physical biological characteristics of farmers' fields. CSR incorporates important elements of on-farm testing by researchers and by farmers, and tends to emphasize crop management and the environment at a particular site..." (p. 82)

"... As we move from HE to FSR to CSR the object of investigation becomes much more sharply defined both spatially and temporally, the results sought become more specific and more measurable, the research approach becomes more narrowly disciplinary and reductionist, and research becomes more empirical and less analytical..." (p. 82-83)

"There appears to be a considerable gap between HE and AER, on the one hand, and FSR and CSR, on the other. I have attempted to depict HE, FSR and CSR as related points on a hierarchy of research approaches all aimed at understanding social interactions with ecosystems, and AER as an approach that can be applied at any level of this hierarchy. The question is that of whether or not the gap between these approaches can be bridged in practice? Can HE and AER propositions be scientifically tested to produce generalizations of direct value to policy-makers? Alternatively, can FSR and CSR methods be broadened to take explicit account of ecosystem stability and sustainability and the social consequences of ecosystem

change? Certainly the need for movement in these two mutually reinforcing directions is apparent and should be supported for several reasons."

"...Asian agriculture is continuing to expand and intensify on marginal lands in secondary agricultural regions. In the rain-fed uplands, hilly lands, on tidal swamplands and elsewhere new agricultural enterprises are being promoted with an inadequate prior understanding of the prevailing socioeconomic and ecological factors and their interactions. Lowland technologies are being transferred uncritically to fragile environments. In these regions the development of new and productive farming and cropping systems is vital but unless they are dependable and environmentally stable, their success will be short-lived and costs will be felt beyond the boundary of the farm or the field and into the future..." (p. 89-90).

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Discipline: Anthropology, and Sociology
Application: Technical Transfer
Country: Asia
Emphasis: Review of and additional thoughts provoked by workshop

Planning Self-Help Forestry Projects in Asia, Based on the "Workshop on Planning Self-Help Fuelwood Projects in Asia", Chiang Mai and Khon Kaen, Thailand, 2-13 February 1987, Swedish International Development Authority, Food and Agriculture Organization of the United Nations, 84 pp.

"INTRODUCTION" (pp. 1-6)

"Rural people are reliant upon forests to provide essential needs, ranging from the use of forest land for agricultural and animal production to the collection of food, medicine, fibre, dyes, tannins, resins, oils, fuel and construction materials."

"...Fundamentally, forestry for rural development assumes a concept of human growth and responsibility in a balanced social, as well as material advance."

"The core of the approach is faith in people's collective capacity to define their own forestry needs, goals and priorities and to take a step-by-step process of development through action and reflection."

"The term "self-help" implies that the active role is primarily played by villagers. It is they who identify the needs, define the project, carry it out, and receive the main benefits."

"In this document, we shall define "self-help forestry" to include virtually any efforts made by villagers to plant, care for, or manage trees, whether on privately -or publicly-owned land."

"This document is based largely on training materials, field experiences, and insights gained during the FAO Regional Workshop on Planning Self-Help Fuelwood Projects in Asia."

"Building upon the topics covered during the Workshop, this report is designed both to review theoretical concepts and to provide practical guidelines to facilitate self-help forestry planning."

"...the report is organized into two main sections. Part I consists of two chapters which parallel the Workshop lessons and experiences."

"Part II, also in two chapters, addresses methods of integrating the roles and activities of communities and foresters in self-help forestry development."

"PART I: CONCEPTS AND WORKSHOP LESSONS" (pp. 7-36)

"...In densely populated agricultural areas, trees are integrated within farm lands and home settlements, and serve to strengthen the rural economy. Often trees are also associated with local beliefs and taboos that promote conservation attitudes."

"The recent depletion of trees in farming systems throughout Asia, partly due to intensification and mechanization of crop production and overgrazing, was identified by participants as a critical problem."

"...examining local practices often leads to discoveries of promising species, helping to reduce the growing danger of overdependence on a few tree species that have caught the attention of researchers."

"The methods used in the field visits were a modified version of Rapid Rural Appraisal, ...RRA. Before leaving for the site visits, the participants formed small groups to discuss the questions that should be raised during the field visits, as well as the general plan for the visit: which key informants to consult for what types of information, whom to see first, "discussion protocol" on how to allocate time and topics when asking questions, and so on. Upon entering the village, the participants conducted an initial round of interviews in the morning, followed at mid-day by a discussion of the group's progress and a re-evaluation by the participants of the questions to be raised and persons to be sought out for interviews in the afternoon. The groups met again following the field visits to prepare a short report of their findings and experiences before sharing their impressions for discussion in a plenary session."

"Don Chang"

"...Participants saw the potential role of self-help forestry projects primarily in terms of increasing the availability around homes of multiple-use tree species, and providing trial and demonstration plots for highlighting agroforestry alternatives, such as kenaf or paddy with trees in alternate rows or on the field bunds...Discussion of alternatives with village leaders and residents, however, raised a number of constraints, such as lack of water, limited information regarding suitable technical options, and poor cooperation among villagers."

"Integrated Development Project: Phu Wiang Watershed"

"Study Village" Ban Hin Rong."

"There are a number of issues that affect potential forestry development activities in Ban Hin Rong."

"...there is as yet no formal arrangement to allow villagers to continue this agroforestry practice by moving from plot to plot as trees mature. One landless farmer we interviewed therefore felt particularly insecure about his future. The lack of formal usufruct or other secure tenure arrangements may eventually dampen farmer's participation in such schemes."

"...The lack of provision for villagers to legally obtain timber from the forest gives a strong incentive for tree poaching."

"Training activities have been conducted by the Forest Department and other agencies in budding and grafting, mushroom raising, and small livestock improvement in the village. Last year, 35 persons were reportedly trained in Ban Hin Rong. However, only one of the trainees has subsequently taken up any of these activities. The reasons cited by some were that other work was more

pressing or lucrative, while others felt that initial cash investments were too high or markets (for mushrooms, in particular) were too distant. This would indicate the need for better two-way communication and information-sharing (concerning market data, for instance), when future activities are being selected."

"Women interviewed in the village expressed an interest in income-generating activities and employment. However, there are few alternatives presently available that deal with the constraint of child-care commitments.

"Study Village: Ban Nong Khong."

"Needs discussed by the local people included water for drinking and crop production, an all-weather road, electricity, and secure land tenures....The prevailing attitude of the people towards the establishment of forest plantations within the forest reserve was that land was taken away from them which was previously used for cassava production."

"The planting of trees around the school yard and homesteads indicates a positive response to resource depletion. Foresters could reinforce these self-help efforts by providing improved varieties of fruit trees, tree seeds and seedlings, and training in nursery production.

Charcoal is used extensively throughout the region, although its production is viewed as illegal because it uses wood harvested in the forest reserve. Cooperation with timber concessionaires to collect left-over wood for charcoal production could result in a viable cottage-industry, if it were legalized.

The largest constraint is the availability of land. Agroforestry and silvipasture systems with crops and animals within the forest reserve could perhaps alleviate the problem."

"...One striking point raised was that although Ban Hin Rong and Ban Nong Khong are located a short distance from one another, in the same watershed, the villages displayed many differences in local needs, priorities, and project opportunities."

"All of the sites visited during the Workshop illustrated the high dependency of rural people on the surrounding forests, which provide villagers with basic necessities of life such as food and medicine, as well as fuelwood and construction materials."

"...tendency for communities near the forests to consider forested areas as a land bank."

"...Villagers' preference for multi-purpose trees rather than trees designed solely for fuel production was clearly demonstrated in the field trips..."

"...In Ban Nong Khong, however, a major issue and limiting factor is the dependence of villagers on nearby forests, including a fair degree of reliance on practices (such as cassava cultivation and charcoal production) that are restricted by the Forest Department. This means that efforts to improve

conditions in Ban Nong Khong will require that the Department develop innovative approaches to difficult questions of land use, tree tenure, and concession structures that limit the uses to which forests can legally be put."

"...Workshop participants:"

"...voiced frustration that their own administrative, staffing, or organizational constraints prevent them and/or their field officers from spending much time in detailed discussions at village level."

"Trees have religious and symbolic as well as economic roles in village systems. ...Certain tree species are not planted in home compounds because they are believed to be temple trees."

"Men and women often perceive the role of forests and trees differently. ...An example of this diversity comes from India when villagers were asked "What trees should we plant?" The men replied "Fruit trees". The women complained "The men want fruit trees because they want to sell the fruits in the marketplace and buy liquor and tobacco from their proceeds...What will we get?" they asked, and then replied themselves, "Nothing...We want fuel and fodder trees because it is we who have to walk miles every day to collect them" (Chowdhry, 1984)."

"...Differing perspectives between rural communities exist in Mae Soi, since one community is seeking to reforest and protect the upper hills of the watershed, while another is using the land for subsistence agriculture."

"...No uniform, "blanket" approach to community forestry can adequately take into account the diverse needs, resources, and priorities that exist between one village and the next, or even between communities in a single location."

"Chapter 2

Villagers' Participation In Forestry Initiatives"

"...For clarity, it is perhaps useful to view participation in terms of a continuum from self-initiated action by people to action imposed on villagers from the outside (derived from Dani and Campbell, 1986):

self-initiated	indirectly encouraged"	induced	imposed
<----->			

"...For development projects, it is useful to disaggregate the concept, referring to specific questions like: Who is participating? At what stage is participation occurring? and How is participation occurring?"

"Site Visits In Chiang Mai Province"

"Phrao District"

"Three villages were visited which participate in the Utility Wood Project implemented jointly by the Royal Forestry Department (RFD) and the Department of Land Development (DLD). This project is funded by the government for the "poverty areas" in Thailand. Eucalyptus seedlings are provided by the RFD with training and distribution activities carried out by the DLD. Seedlings are distributed to farmers or village leaders who request them."

"In Sahakon Damri village, a woodlot was established by a youth group under the leadership of the village head. The original request by the group had been for fruit trees, with the idea that the village land could provide a food product to be sold to support group activities. However, the DLD insisted that Eucalyptus was preferable."

"...one farmer planted Eucalyptus seedlings...The poor growth of the trees (less than one meter in one year) and high mortality from excessive fertilization suggested, however, that this farmer lacked technical assistance in management and species selection."

"Mae Soi"

"This area was frequently visited by Ajahn Pongsak, a forest monk, who became interested in the subject and began to draw the attention of villagers to the relationships between forests, water and life in accordance with Buddhist principles. He requested people to use fallen wood for fuel to reduce needless fellings in the area, and has been able to convince many people, including the headmen of the five villages, to protect the area and to plant a tree whenever one or two are felled."

"Mae Chaem"

"...Food, firewood, medicinal plants and house construction materials (such as bamboo and leaves) are gathered from the nearby forest. The Karen people, originally from Burma, worship trees and forests with ancient beliefs encouraging protection of certain tree species as well as any trees along streams and in burial grounds."

"The CARE project has integrated this social organization into their nursery activities. A village nursery was collectively constructed, but is managed with individual rows distributed for household use."

"...The farmers in Mae Chaem were motivated by the potential benefit of agroforestry systems to control erosion and sustain crop yields. In contrast, the benefits of tree planting to the youth group were undefined."

"Discussions relating to the last three case studies (Mae Soi, Thai-Norway and Mae Chaem) touched upon how conflicts can arise between villages in need of the same limited resource. The 10-strand barbed wire fence put up by the Mae Soi villagers to protect the watershed from further environmental degradation at the same time prohibits Hmong farmers from entering their

fields. This in turn is causing a migration of Hmong families into Karen villages on the other side of the watershed. The introduction of stable land use practices such as agroforestry systems to the Hmong farmers was discussed as an alternative land use to protection and a starting point for negotiations. These examples indicate the problems a forester has to face in promoting self-help forestry activities at the village level."

"Who is Participating?

It is useful to ask the questions -- Are the most economically disadvantaged families participating in village meetings and other aspects of the project? Who is most active and vocal? Are women participating? Are particular groups of individuals left out? Assessing this dimension of participation can lead to a better understanding of the social dynamics of the local population and correct strategies to encourage the participation of those left out."

"How is Participation Occurring?

This refers to the qualitative dimensions of participation. Questions that may be asked are -- What is the motivation behind participation?"

"At What Stage is Participation Occurring?

Most programs tend to emphasize participation in implementation without recognizing that the true spirit of participation can be achieved only when the people are involved right from the start."

"Four stages of participation are particularly significant for development programs:

"* Participation in identifying the needs which forestry - related projects might fill."

"* Participation during the initial stages of project formulation;"

"* Participation in implementation,;

"* Participation in evaluation of the project,"

"How is Participation Facilitated?"

"As illustrated in the site visits, a facilitator might be an individual, a group, or an institution, including forestry officers, who can assist in initiating and facilitating dialogue at all stages of project development, right from locating mutually shared concerns, to entering into negotiations, to working together and evaluating the performance."

"It is often possible to identify individuals within the village who are already local facilitators, or who can assume this role."

"Part II: A Partnership Approach" (pp.37-42)

"A forester's role in self-help forestry projects is really determined by

the degree to which s/he is prepared to work as a project facilitator as well as a specialist."

"This chapter introduces the forester's role in promoting self-help projects, and discusses the lead and support roles that may be played by village organizations, local facilitators, NGO's, governmental support agencies and the Forest Department as a whole."

"Historically, foresters have played the role of policing the forests against damage and encroachment. This continues to be an important function of the forestry staff. Promotion of self-help forestry, however, requires a different outlook and approach. One cannot use authority for enlisting people's participation."

"Some Workshop participants gave excellent examples of how they achieved this in their job situations. One of them described the immense positive effects of abandoning forestry uniforms and wearing clothes similar to those of villagers. The same forester also engaged extension staff in the use of religious symbols to emphasize the importance of trees. For example, in a modified version of a traditional ritual, seedlings were carried ceremonially through the village and around the temple grounds, to emphasize the importance of trees in the preservation of life."

"The Role Of Village Organizations and Facilitators"

"...it is often useful to take advantage of existing trusting relationships to form new coalitions. In many cases, however, the initiative to identify effective local groups or organize new groups must come from outside. In either case, it is essential to ensure that the organization represents the true interests of the local residents, including those of the poor."

"The Role of NGOs And Other Support Agencies"

"Foresters are often constrained in facilitating self-help projects due to departmental objectives, diverse responsibilities and training that is technically oriented. However, they may often find opportunities to obtain the assistance of others in helping villagers to organize, identify needs, assess projects, negotiate for implementation and evaluate results."

"...Many NGOs work at the village level with the purpose of facilitating organization, negotiation and planning of projects. They should, therefore, be considered an appropriate and rich resource to foresters in helping to generate and propagate self-help activities."

"...we have seen from some of the case studies that there exists a strong competition in the use of land, and agriculture tends to be favored by small farmers. In such cases, perhaps, it is desirable to look for agroforestry alternatives in conjunction with workers from the department of agriculture."

"A middle rank forestry officer is faced with several constraints when responding to self-help initiatives. The first and most important is the planning and budgetary allocation process itself"

"...Newly created policies for self-help forestry may therefore require governmental support in finance and planning ministries, not solely in forest departments."

"...Working with farmers to combine local and external technical knowledge will require innovative methods and supplemental training...training in concepts and skills such as the "human approach" vs. the "technology approach" to development (see Mercado, 1986), and practical communication skills (see United Nations Department of Economic and Social Affairs, 1978)."

"In rural areas, people have little cash income to meet everyday needs. This means that they cannot afford to invest in activities for which the benefits are uncertain."

"...In India, for example, the forestry department often underwrites the purchase of all or a major part of the production of a community, school or farmer nursery. The individual or group concerned is also provided free training in various aspects of nursery raising. This had led to widespread establishment of small private or community nurseries through the country and has contributed significantly to the tree plantation drive also."

"The Self-Help Workshop focused on village initiatives in self-help forestry development, and on ways in which national policies can strengthen these efforts. One without the other would not succeed in bringing about change. ...For example, national media self-help initiatives by increasing general awareness when the Forest Department is prepared to support self-help projects. Technical information can also be broadcast, as can reports of successful self-help projects that have already begun. By including personal interviews of the participants in such projects, villagers' own perspectives and ideas can be given more recognition and credibility."

"Regional market development is another area which may require Forest Department support."

"In particular, monitoring and on-going evaluation should take place periodically throughout the project. This allows direct action to be taken to modify or discontinue activities that have not shown positive results, and to strengthen those which have proved successful."

"Preparation: Understanding The Local Situation

Sharing knowledge implies a two-day flow of information."

"A Bare Beginning: Existing Information Sources"

"A facilitator first entering a particular locale can gain initial awareness of the local situation through existing sources. ...official statistics, published articles, and aerial photographs can provide a starting point. ...Added sources include research from regional universities (anthropological or ethnographic studies, research on cropping patterns, economic conditions, and the like) and reports from previous and ongoing development projects. Useful insights can also be obtained through informal discussions with local fieldworkers, government officers, or other outside researchers, such as university staff and graduate students."

"The need to test the accuracy of existing data through direct observation on the ground and sustained dialogues with village residents is exemplified in an evaluation of Van Panchayats (village forest associations) in a north India district (Morse et al., 1987)."

"A number of techniques have been developed to help researchers from outside the village gain a rough understanding of the local situation fairly quickly. Variations on these techniques have appeared under such names as "Rapid Rural Appraisal" ("RRA"), "Sondeo," "Informal Agricultural Survey," and others."

"Intensive Dialogues with Villagers: The Heart of the Matter"

"Initial probes should therefore devote adequate time and attention to determining the range of issues villagers feel are important. Two helpful approaches for this include open-ended discussions with little or no pre-set agenda, or discussions focusing on a pre-determined set of topics, but in no particular order or priority."

"An Entry Point — Dealing with the Past. An important first step before attempting to encourage new activities in a village is to know what has gone wrong in the past."

"Given the many types of "interest groups" and individual concerns at play in the village, the forester/facilitator will have to be careful to foster "representative" involvement in dialogues and in projects."

"Persons in diverse situations should be sought out to discuss village problems and opportunities for self-help projects, including:

- * Elders, recognized leaders, religious heads, and other such "key informants."
- * Contrasting persons, households or communities
- * "Natural" social groups
- * Existing project-centered groups."

"In initial dialogues, villagers will identify certain problems they wish to address. The next question is: How to understand the problem and its causative factors, both social and biophysical? The forester will have certain technical information to share with villagers at this stage, including evaluations of site limitations, species options, and so on. But the understanding of problems and search for solutions will be more successful when local people themselves are encouraged to probe the causes of the problem in depth. Such diagnosis by villagers will also uncover constraints they perceive in working toward solutions. Villagers' diagnosis of problems is therefore a key step to increasing their involvement in project planning and implementation."

"The guiding lesson in this systems approach to diagnosis is "to listen unencumbered to the farmer". Farmers got more involved in experimenting with solutions that lay within their own capacity than experimenting with high input solutions."

"'Active,' participatory methods of discussion, including manipulation of movable figures and sketches, can be a great aid in the discussion process. Villagers themselves, for example, can use a board with detachable symbols that depict different sites and tree species, to associate and compare successes or problems they have experienced. (Examples of active discussion techniques were presented in the workshop by Alexandra Stevens of FAO, who is presently developing a handbook of such techniques.)"

"Once the range of basic limiting factors has been identified, a larger number of residents might then be asked to rank the importance they attach to identified factors. The pooled ranks can be charted on a blackboard, perhaps in a pie diagram or bar graph that represents the rated importance of each issue..."

"The stages of identifying problems, causes, and constraints, involving as many of the population as feasible, will begin to clarify the common interests of various subsections of the population..."

"In the process of group formation, a forestry officer or facilitator may be helpful in pointing out new ways of organizing to deal with mutual problems. There are a few points to consider that may improve chances for the successful formation of groups with a long-term dedication to the problems at hand. For instance:"

"Start with 'natural' social groups..."

"Groups will be more likely to form when some tangible immediate benefit is available and recognizable."

"Being part of a recognizable social group does not necessarily imply a sense of 'community.' "

"Though types of approaches with which villagers are comfortable will differ, the forester or facilitator can help use such active methods in many of the tasks involved in project identification and assessment, such as the following:

- "* Brainstorming on potential projects with individuals or small groups."
- "* Eliminating the 'impossible or improbable.'"
- "* Comparing general benefits and impacts."
- "* Considering how a project may affect different people and groups."
- "* Identifying the tasks and inputs involved in different projects."
- "* Clarifying the time constraints and other barriers."
- "* Ranking projects."
- "* Evaluating practical realities: inputs, outputs, distribution of benefits."

"* Working toward consensus."

"IMPLEMENTATION: ASSISTING WITH SETTING UP PLANS"

"By this point, the inputs will already have been identified, the contributions of different participants clarified, and some agreement negotiated on how to distribute outputs fairly. If this was done thoroughly in the negotiation phase, it need only be summarized and formalized prior to initiating action."

"Before initiating work, a formal record of promised inputs can be drawn-up that is clear to everyone. This could use the symbolic representations from the discussion phases, with numerals or symbols to indicated expected quantities of inputs (e.g., person-days of labor per household)."

"Some means to decide on incentives for follow-through, or penalties for withdrawal, are best set up before such issues arise."

"PARTICIPATORY MONITORING AND ONGOING PROJECT EVALUATION"

"Monitoring the progress of a project and evaluating the results are often the domain of officials who examine a situation 'objectively' from the outside. But this kind of approach often fails to determine what is going 'wrong' and what is going 'right' in a project, from the perspective of those actually involved..."

"The art and techniques of participatory monitoring and ongoing evaluation (sometimes referred to as PMOE) are not new. ...Participatory evaluations frequently rely on active, visual discussion techniques, as discussed earlier. Systematic assessments of participation (as suggested in FAO/ACCRA, 1986), combined with group members' self-evaluation -- through techniques such as 'analytical polling,' role playing, 'conversation charting,' and 'empathy practice' (United Nations Department of Economic and Social Affairs, 1978) -- are all practical tools that can be used. A summary of the concepts and certain basic techniques of PMOE appears in Appendix F."

"Planning self-help projects is never a one-shot deal. Development efforts are mutually reinforcing and self-regenerating: each successful activity provides a foundation for beginning another."

"APPENDIX A
WORKSHOP AGENDA"

"APPENDIX B
WORKSHOP PARTICIPANTS"

"APPENDIX C
REFERENCES CITED"

"APPENDIX D
ANNOTATED BIBLIOGRAPHY OF WORKSHOP READER"

"APPENDIX E"

ADDITIONAL REFERENCES

"I. SPECIES SELECTION AND SEED SOURCES"

"II. NURSERY MANAGEMENT AND FIELD ESTABLISHMENT"

"III. AGROFORESTRY"

"APPENDIX F

PARTICIPATORY MONITORING AND ON-GOING EVALUATION (PMOE)

by A. Stephens

FAO, Bangkok"

"Participatory Monitoring and On-going Evaluation (PMOE) is a process of involving the people concerned in systematically and objectively assessing how well things are going in the implementation of a project or program..."

"PMOE is first and foremost a learning process..."

"Responsibility for initiating PMOE is usually with a trained field worker or group organizer, but eventually the system must be managed by the group carrying out the project itself...."

"Quantitative data collection is relatively simple; using record cards, wall charts, etc. as demonstrated. Qualitative data is collected from descriptive reports, minutes of meetings or by the group members giving a value or index to qualitative data for record purposes..."

"Whatever methods are used they must be applied systematically and consistently, so that progress and problems can be evaluated over time."

"The quantitative or qualitative nature of information must be recognized. As far as possible, data should be quantified so that it is valid for measurement over time. ...Where social variables are being monitored or evaluated they should be given a quantified value whenever possible, even if this is only be a simple two or three color system."

"The Participatory Monitoring and On-going Evaluation must be locally based to ensure maximum participation. Normally this is within the project itself, and it should be small, compact and accessible to its members..."

"For example group members should be encouraged to monitor the technical support provided by their group organizer in terms of both regularity of visits, and technical support provided."

"The question of who receives PMOE reports is a matter for discussion with group members. Questions of confidence must not be threatened by any misuse or abuse of information from a PMOE system."

"Presenting PMOE data in forms meaningful to and useful for the user requires tabulation and presentation in suitable formats. These may be on proformas provided, in tables, written reports, etc., or in more creative complex or simple schematic representations. In any case, the information should be readily understood by the users so that it can have immediate application for project activities..."

"APPENDIX G
USE OF RAPID RURAL APPRAISAL"

"...rapid appraisal techniques may help increase the understanding of outside agencies, but they will do very little toward building a rapport with villagers and providing the necessary early encouragement of self-help efforts."

"This effort has led to the development of a methodology and set of tools and techniques that can be collectively referred to as 'rapid rural appraisal' or 'RRA'. The search and results of rapid rural appraisal should not be confused with 'quick and dirty' studies. The intent of RRA is to provide systematic research that is relatively quick and relatively clean (i.e., accurate, informative, and reliable)."

"Although it is not possible to discuss rapid rural appraisal in detail here, its key elements and principles and some of its tools and techniques can be briefly described.

One of the most important elements of RRA is, of course, rapidity. Most RRAs have involved 3-14 days in the field (depending upon the research topic, scope, and focus), preceded by 1-2 days of pre-field preparation. ...Analysis, interpretation and report preparation can usually be completed by the research team in 2-4 weeks."

"Considerable facility in the local language is almost always necessary as are mental and methodological flexibility..."

"RRA studies are ideally conducted by small, interdisciplinary teams of 2 to 7 experienced researchers whose varying specialties provide different perspectives and enable the collection and integrated understanding of a wide range of data..."

"RRA relies upon a variety of tools and techniques drawn from many different fields including journalism, anthropology, communications, and agriculture..."

"For further information and sources on RRA see Robert Chambers Putting the Last First and Proceedings of the 1985 International Conference on Rapid Rural Appraisal (1987) Khon Kaen University, Khon Kaen, Thailand."

APPENDIX C
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United Nations Department of Economic and Social Affairs, 1978. A Manual and Resource Book for Popular Participation Training. Volume Four: Techniques. New York.

DISCIPLINE: Anthropology
APPLICATION: Theory and concepts; Methods and measures
COUNTRY: Asia
EMPHASIS: Human ecology; agroecosystems research

Rambo, T.A. 1985. Recent Progress in Human Ecology Research by Social Scientists on Tropical Agroecosystems in Southeast Asia. In: Agroecosystem Research in Rural Resource Management and Development. University of the Philippines at Los Banos Program on Environmental Science and Management (PESAM) and Southeast Asian Universities Agroecosystem Network (SUAN). Sajise, P.E.; and Rambo, A.T. (eds.). pp. 118-125.

"... there is no question but that there has been a significant increase in both the quantity and quality of research by social scientists on the human ecology of Southeast Asian agricultural systems...Perhaps more significantly, in terms of development of an interdisciplinary human ecology perspective, many of the papers by natural scientists show the influence of social science theory and methods on their agroecosystem analyses..." (p. 118)

"...The conceptual frameworks employed in most agroecosystem research are primarily the products of scientists trained in agronomy or ecology [e.g., Conway, 1984]. That people play an important role in agroecosystem functioning is recognized by attaching an ill-defined 'socioeconomic component' onto the basic ecosystem model. The boundaries of the system continue to be drawn in terms of biophysical criteria (the dike around the paddy field, the topographical features controlling the flow of runoff within the mini-watershed) rather than in terms of social criteria (e.g., the geographical limits within which the decision-making authority of a particular system is felt)."

"The manner in which we define agroecosystem frameworks is much more than a scholastic argument between different academic specialities. The theoretical framework we employ influences, even determines the kinds of questions we are able to ask. For example, questions relating to the differential distribution of political power among different individuals, classes, and polities, and how these differences influence resource management (which many social scientists see as a central concern of their discipline) may be obscured by the use of biophysical criteria to delineate boundaries in agroecosystem models... (p. 119-120).

"Existing models of human ecology are basically descriptive rather than analytic. The reader looks at all the lines and arrows connecting the different social and ecological components and draws the conclusion that 'everything is related to everything else.' A researcher could spend several lifetimes trying to describe these interrelationships in even a very small and simple agroecosystem and never produce a comprehensive description...As Romm [1984] suggests, what is needed is to identify those relationships between components that are especially powerful in determining the structural configuration of the agroecosystem..."

"Human ecology research has focused on questions of system stability rather than questions of system change...Emphasis has been on describing the existing relations between system components rather than on analysis of change processes."

"Human ecology research has focused on micro levels of the agroecosystem hierarchy...In part this may simply reflect the not surprising fact that most agroecosystem research is conducted in peasant villages and therefore the local community is a 'natural' unit for study. I suspect, however, that it also reflects a major theoretical deficiency in social science - our failure to effectively delineate intermediate levels between the village and the nation in the social systems hierarchy. Attempts to do so to date have used political or administrative units, e.g., district or province, which are probably not social systems in any functionally meaningful sense..." (p. 120-121)

"...Agroecosystem research teams need to have as much breadth and depth in the social sciences as they have in the natural sciences...If achieved, it will also be likely to reveal that there are nearly as many problems of communication between social scientists representing different disciplines as there are between natural and social scientists. Effectively integrating the research of anthropologists with economists may prove as difficult as integrating either with ecologists or agronomists." (p. 123).

Conway, G.R. 1984. What is an agroecosystem and why is it worthy of study? In A.T. Rambo and P.E. Sajise (eds). An Introduction to Human Ecology Research on Agricultural Systems in Southeast Asia. Los Banos: University of the Philippines at Los Banos.

Romm, J. 1984. Emerging issues in rural resource development in Southeast Asia. Working paper. Honolulu: East-West Environment and Policy Institute.

Discipline: Anthropology
Application: Theory and Concepts
Country: Asia (General Applicability)
Emphasis: Introduction to components of traditional agricultural systems in South East Asia with a theoretical background in human/social ecology, case study of tree use in paddy fields.

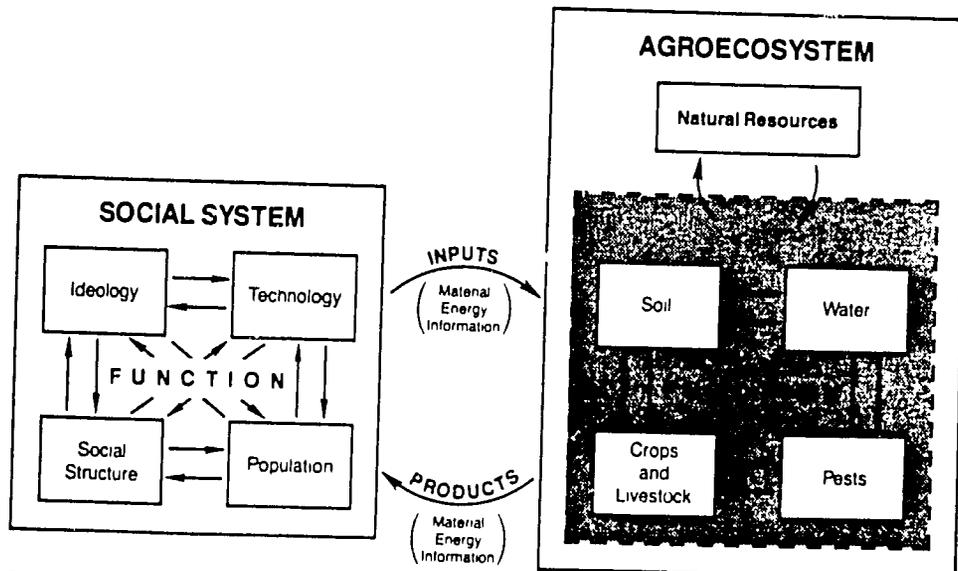
Marten, Gerald G., and Daniel M. Saltman. 1986. "The Human Ecology Perspective" Pages 20-53 in Gerald G. Marten (ed.), Traditional Agriculture in Southeast Asia A Human Ecology Perspective, Boulder: West View Press.

"In this book the human ecology of agroecosystems is concerned with understanding how farms function. It is a way of looking at agriculture as a whole system - agricultural fields and the people who farm them."

"Human ecology provides the holism needed to comprehend interactions between agroecosystems and human social systems."

"Interactions between agroecosystems and human social systems involve exchanges of energy, materials, and information within and between the two systems (Figure 2.1).

Figure 2.1. Interactions Between Agroecosystems and the Human Social System^a



Source: Modified from Rambo 1982.

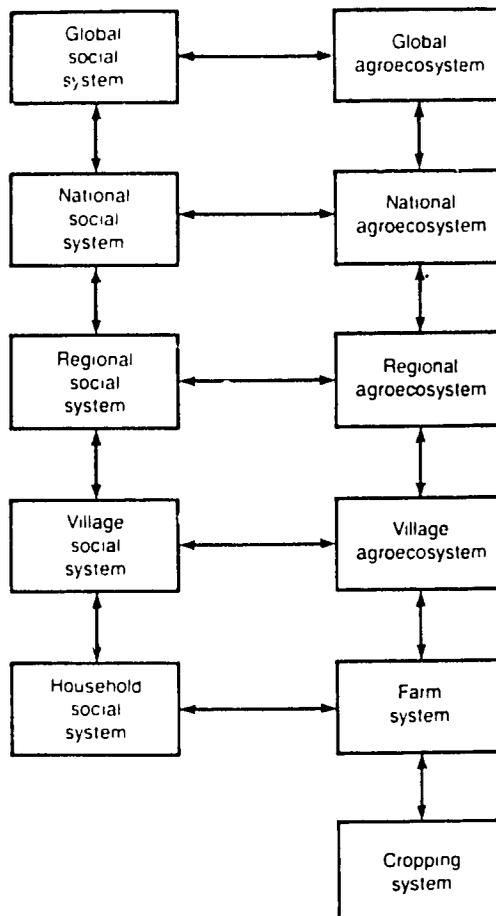
^a"Natural Resources" in the diagram are soil, water, and biological resources from which agroecosystems are constructed.

"Understanding these exchanges of matter, energy, and information between the two systems makes it possible to appreciate how the behavior of each is shaped by the other through repercussions of events or actions in the coupled system."

"Agroecosystems and social systems can interact in a range of scales (Figure 2.2). A few square meters of farm land are an ecosystem, and so is an entire continent. Human social systems can be households, villages, ethnic groups, nations, and the international community of nations. This book will focus on human social systems primarily at the household level. It will focus on agroecosystems at two levels:

1. The cropping system, a particular configuration of crops in space and time that is employed more or less homogeneously on a single agricultural field; and
2. The farm system, the array of one or more cropping systems employed by a single farm household."

Figure 2.2. An Organizational Hierarchy for Agroecosystems and Human Social Systems



"This chapter describes the major elements of structure and function in agroecosystems of small scale subsistence farmers in Southeast Asia and provides examples of interactions between farmers and the agroecosystems on which they depend for a living."

"Land, water, sunlight, and living organisms are the natural resources on which agroecosystems are based."

"Agroecosystems contain one or more biological components (crops and livestock) intended to provide products for human consumption, but they also contain numerous other species of living organisms that can affect how the agroecosystem functions from a human perspective. Some organisms act as pests that compete with crops for light, water, or mineral nutrients or feed upon the crops as herbivores, parasites, or pathogens. Other organisms are essential to sustaining crop production on a long-term basis because of their roles in vital ecosystem processes. For example, soil animals, fungi, and bacteria are essential to the maintenance of soil fertility because of their role in biological decomposition that releases mineral nutrients into the soil. Other animals and microorganisms are natural enemies of crop pests, preventing the pests from becoming abundant enough to cause serious crop damage."

"Traditional agroecosystems in Southeast Asia are notable for the complexity of their structure. ...Interplanting trees with field crops (i.e., agroforestry) is not unusual in traditional agroecosystems."

"The spatial ordering of the crops in a field gives an agroecosystem not only a horizontal structure but also vertical structure because the leaves of different crops occur at different heights."(pp. 20-25)

"Sunlight is the only major source of energy input in most natural ecosystems, but human energy inputs are significant in agricultural ecosystems. They include human and animal labor, mechanized energy inputs (e.g. plowing with a tractor), and the energy content of introduced chemicals (e.g. manures, fertilizers, and pesticides). Human energy inputs in an agroecosystem do not feed directly into the biological energy flow as sunlight does. Human energy inputs are used to shape agroecosystem structure, thereby shaping energy flow through effects on primary production and the percent of that production that is channelled to products for human use (Norman 1978, Bialy 1982, Schahczenski 1984)."

"The productivity of an agricultural system usually is evaluated by tonnage yield of agricultural products or the monetary value of those products. Productivity can also be interpreted more broadly, however, to include products such as human nutrients (e.g., calories, vitamins, minerals, and amino acids), medicines, building materials, soil conservation, watershed functions, esthetic functions, and provision of a favorable environment for social interaction."

"Stability is important because people depend upon a certain level of production year after year. Nonetheless, agricultural production often fluctuates from year to year, particularly on marginal land where periodic fluctuations in rainfall, pests, and a variety of other natural phenomena may increase or decrease yields. ...Local crop varieties can be important to

these farmers, because the local varieties are often resistant to pests, drought, soil nutrient deficiencies, and other environmental stresses of the area. By having a collection of different seed types on hand, farmers can choose varieties appropriate for a planting season's unique characteristics. Small-scale farmers also feel secure when they can employ cropping systems based on a technology they understand well, knowing they can provide the necessary inputs and knowing they can use or sell the resulting products."

"A dependence on outside resources is reduced to a minimum in traditional farming, with assets and products from good times stored for sale or consumption during difficult times."

"The sustainability and resilience of an agricultural system are decreased when it is dependent on inputs that may not be available at some time in the future."

"Agroecosystems differ from natural ecosystems because people perform a significant role in shaping agroecosystems, with the explicit purpose of providing products for human use."

"Because traditional agroecosystems are often a product of centuries of cultural and biological evolution, the degree of coadaptation of their components, the adaptation of the system as a whole to the surrounding physical environment, and their productivity, stability, and sustainability are often more similar to natural ecosystems than is modern agriculture."

"The human social system conditions agricultural decisions in many ways. A social system can be viewed most simply in terms of technology, population, ideology, and social structure (Figure 2.1), though a more comprehensive view might include such elements as language, personalities, values, knowledge, economics, nutrition and health. Population density and the amount of land available to a farming household are critical in determining the technology to be applied, particularly the intensity of labor used for the agroecosystem."

"The social structure includes power relations that determine access to and distribution of natural resources to be used for agricultural production, as well as distribution of the products themselves. Social structure also includes spatial patterns of human settlements, land tenure, social stratification, kinship relations, sociopolitical organization, organization of production, and ethnicity, which will act as constraints that shape the farming decisions of individual households."

"...triple cropping makes extremely heavy demands on labor, and people no longer have as much time for traditional religious festivals and are too busy for traditional cooperative labor exchange, social activities that served useful functions in the past (Ramitanondh 1985). Although their total income from triple cropping is higher than from double cropping, the return on their capital and labor investment from the third crop is relatively low because it is cultivated at a time of year when weather is marginal. Finally, triple cropping has led to a relative increase in wealth by the village elite and has created a dependence of all on inputs (e.g., chemical fertilizers) that come from the outside world."

"The organization of water supply can be a major function of village social organization (e.g. irrigation societies)." (pp. 31-48).

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Discipline: Anthropology
Application: Method and Measures
Country: No Specific Geographic Region
Emphasis: Statement of World Bank's requirements for projects involving tribal peoples. Provides model for assessment of projects effecting tribal people.

Tribal Peoples and Economic Development, Human Ecologic Considerations, World Bank, Washington, D.C., 1982, 111 pp.

Good documentation in text. Excellent bibliography arranged by: Author, Subject, Country or Region, 45 pp. long.

"It is estimated that, at present, there are approximately 200 million tribal people, roughly 4 percent of the global population. They are found in all regions of the world and number among the poorest of the poor."

"The first chapter of this paper describes the problems associated with the development process as it affects tribal peoples. Subsequent chapters set forth why the Bank [World Bank] should be involved and outline the main requisites for meeting the human ecological needs of tribal peoples."

"This paper highlights the fact that certain peoples, specifically tribal, who are still living on the periphery of the dominant national society, deserve special consideration under World Bank projects, both to ensure that they will benefit -- though in the longer run -- from projects presently financed and that they will not be affected negatively by development projects."

"It is not the Bank's policy to prevent the development of areas presently occupied by tribal people. However, the Bank will assist projects within areas used or occupied by such people only if it is satisfied that best efforts have been made to obtain the voluntary, full, and conscionable agreement (i.e., under prevailing circumstances and customary laws) of the tribal people or that of their advocates, and that the project design and implementation strategy are appropriate to meet the special needs and wishes of such peoples."

"The purpose of this paper is to provide an overall perspective...of this broad policy statement in order to assist borrowers and their consultants in the delicate task of designing projects, regulations, or institutions that take into account the special kinds of problems that arise when economic development impinges upon a tribal society."

"...detailed annexes are designed to lead readers to course of specific information on individual tribes."

"The focus of this paper is more on the groups needing most attention, namely the relatively isolated tribal groups, and less on the substantially acculturated tribal groups."

"Tribal minorities in all parts of the world have suffered for centuries from the adverse effects of expansion from outside into territories that were

formerly entirely tribal and once support larger tribal populations. This process has often led to the decimation and even to the extinction of these tribal populations. This was generally accepted as an inevitable, though by no means always intentional, by-product of development. Similarly, despoliation of their renewable resources had often severed such people from their economic and social bases and relegated formerly self-sufficient societies to the lowest economic level of the national society."(pp. iii-2)

"These negative consequences of inadequately planned development are sometimes justified as being the painful, but necessary, side effects of a process that is for the greatest good of the greatest number."

"Tribal groups can make valuable contributions to the wider society, especially to the national society's knowledge of socioeconomic adaptations to fragile ecosystems."

"Development projects need to take into account the fact that, generally, the absorptive capacity of tribal populations is lower than that of other national populations. Therefore, the time frame for development must be longer than the usual five-year project duration."

"The Bank's policy is, therefore, to assist with development projects that do not involve unnecessary or avoidable encroachment onto territories used or occupied by tribal groups. Similarly, the Bank will not support projects on tribal lands, or that will affect tribal lands, unless the tribal society is in agreement with the objectives of the project, as they affect the tribe, and unless it is assured that the borrower has the capability of implementing effective measures to safeguard tribal populations and their lands against any harmful side effects resulting from the project."

"This paper does not dwell on those projects in which tribal people were the direct recipients of aid. It seeks to avoid potentially adverse effects in projects where the tribal groups are not yet accorded adequate attention..."

"Systematic evaluation of the effects of project implementation on the tribal way of life is not yet routine...Project area populations must, therefore, be identified as part of the base-line, background, or regional studies of the project cycle."

"The term 'tribal people,' often shortened to tribal or tribe, is employed here to characterize a specific type of population. Such groups typically have stable, low-energy, sustained-yield economic system. More specifically, the people may be hunter-gatherers, shifting agriculturists, herders, simple farmers, or fisherfolk. The populations included in this terminology exhibit many, if not most, of the following characteristics:

- a. geographical isolation or semi-isolation;
- b. unacculturated or only partially acculturated into the national society;
- c. nonliterate: not possessing a written language;
- d. nonmonetized or only partially monetized, largely or entirely independent of the national economic system;
- e. ethnic distinctiveness from the national society;
- f. linguistic difference from the national society;
- g. possessed of a common territory;

- h. economic base more tightly dependent on their specific environment;
- i. possessing leadership, but no national representation, and few, if any, political rights."

"Phases of Integration

Four successive phases of acculturation or integration into the national society may be distinguished.

1. Isolated tribal groups
2. Semi-isolated tribal groups in intermittent contact
3. Permanent contact
4. Integrated.

This paper is concerned primarily with small groups in the first three phases."

"Distinction between Tribal Groups and Peasants

Semi-isolated or uncontacted tribal groups differ fundamentally from the national population and from the peasants in that population, with whom they are often erroneously classified in development planning. Tribal societies may not recognize or appreciate state sovereignty over them. They function apart from, or on the periphery of, the larger world economic system. The national peasant population, on the other hand, is linked intimately with that economic system."

"Tribal Groups as Distinct Individual Units

Tribal groups differ not only from peasants, but also from one another. Distinct customs, rites, social structures, and methods of food production often exist among tribal groups who share similarities of geographic location or language."

"The common problems they face, particularly those relating to land and health, require solutions tailored to the specific circumstances of each tribe."

"Increased attention by the World Bank to the design of the project components appropriate for the recuperation or restoration of a tribal society -- including welfare, survival, and preservation of tribal groups who have been, or are being or may in the future be, affected by Bank-assisted development projects -- is merited for several reasons. ...it is first a matter of equity. Another major justification for the Bank's concern is the great potential value of tribal knowledge of management of marginal lands: Other reasons for such special attention relate to the vulnerability of projects affecting tribal people, Bank policy on the social design of projects, and national and international legislation."

"Failure to understand customary tribal rights to land will usually result in considerable implementation delays."

"Since the Bank's new policy direction of 1973, its project design has placed a higher priority on the consideration of the social impact of projects upon poverty-level populations. Tribal groups who may be affected by projects must now be identified as a matter of routine as part of the process of project identification and preparation."

"The sharing of tribal people in project benefits is critical, since without them any tribal societies in or near a project will inevitably fall into the lowest socioeconomic level of the national society. Project plans should also allow for an adequate pace necessary for the assimilation of recently contacted groups and their adjustment to the new circumstances."

"International covenants, agreements, and other legislation require protection of tribal land tenure, the observance of social and cultural rights, and the option to maintain one's culture. The Bank, as an affiliate of the United Nations, should prudently be assured that those borrowers who are signatory to the UN charter are complying with the spirit of the United Nations charter, international covenants, treaties, and agreements, when it lends for projects affecting tribal people. Clearly, the Bank cannot assist borrowers with projects if tribal groups may be seriously harmed thereby."

"Many nations have enacted legislation recognizing the unique status of tribal populations and providing for special protection of tribal areas, including restrictions on the power of nontribals to obtain tribal lands."

"One basic principle which the Bank has adopted is that members of tribal populations within a Bank-assisted project area should have equality with their fellow citizens as provided for by the national legislation." (pp. 3-12)

"Since there are few short-term and no long-term standards for successful occupation by outsiders (nontribal) of marginal tropical wet forest regions still inhabited by tribal groups, it would be valuable for the world as a whole to learn how tribal people manage such ecosystems. Unlike tribal societies, both agroindustrial groups and peasant farmers have shown themselves almost totally unable to manage sustainably and produce effectively in such environments. "

"Tribal peoples are not only familiar with the thousands of biological species in their ecosystem, but they also understand ecological interrelations of the various components of their resource base better than do most modern foresters, biologists, agronomists, and ecologists. Indigenous knowledge is essential for the use, identification, and cataloging of the biota...."

"Tribal people are the repository of accumulated experience passed on by word of mouth and, thus, permanently record their experiences and knowledge in a form inaccessible to outsiders. Therefore, as tribal groups disappear, their vase knowledge vanishes with them...."

"Clearly, the Bank accepts that entire tribes of human beings must not be sacrificed to the goal of economic development, particularly when certain human groups have shown that well-being is not necessarily equate with material wealth' nor should the technically more powerful abuse the rights or way of life of the technically less powerful. Annihilation of any existing human groups by whatever means, especially when their cultural expression has demonstrated harmony with the supporting environment, will impoverish humanity as a whole."

"Certain basic needs must be acknowledged and accommodated if tribal groups are to benefit from -- rather than be harmed by -- development projects. These fundamental needs are equally important, and each must be met

for continued physical, socioeconomic, and cultural survival in the face of development."

"The four fundamental needs of tribal societies relate to autonomy and participation, to conditions that will maintain their culture and their ethnic identity to the extent they desire: (a) recognition of territorial rights, (b) protection from introduced disease, (c) time to adapt to the national society, and (d) self-determination."

"Particular problems occur and needs are evident in cases of uncontacted tribal groups. While there are only a few such groups remaining in the world today, special action is necessary if they are in the area of influence of any project considered by the Bank."

"The first and fundamental need for tribal survival and cultural viability is continued habitation in and use of the traditional land areas."

"Tribal lands include not only areas which are obviously inhabited at a given time, but others that may be used or occupied only intermittently in supra-annual cycles."

"To the extent that tribal groups inhabit marginal areas, much larger land areas may be required to support the population than would be the case in more fertile regions."

"Modern legal concepts of 'private' property are inapplicable to tribal land-use patterns, since land is owned in common and parcels of land are used intermittently."

"Along with economic significance, the traditional land base holds important symbolic and emotional meaning for tribal people. It is the repository for ancestral remains, group origin sites, and other sacred features closely linked to tribal economic system."

"Land rights, access to traditional lands, and maintenance of trans-human routes are vital to the economic, social, and psychological well-being of individual tribal members, as well as for the maintenance of the group's cultural stability. Communal title, or group tenure, may need legislative innovation on the part of a nation; such innovations are neither unknown nor especially difficult. The Bank can discuss tribal policies with governments, which would act to implement agreed policies."

"In India, the concept of Hindu joint family property, where each male member of a joint family had a fluctuating share in the property (and this included conceived, though yet unborn, males), closely approximates the concept of communal tenure."

"In some cases, the creation of a tribal reserve may be the most feasible means of protecting a tribal group whose culture is endangered by national intrusion, or by a development project, mainly in order to provide time necessary for adaptation. Such a reserve should function as a secure base, providing the tribe time and space to make its own adaptations; not as a prison in which the tribe is confined. Although the reserve becomes less necessary as the tribal society becomes able to tolerate or withstand the

pressures of the national society, title to their land remains fundamental."

"Enforced 'primitivism' is also a disruptive policy occasionally practiced on a reservation. This policy is often followed either to promote tourism, since 'primitive' costumes, houses, and crafts are tourist attractions, or it is defended as a means of preserving the tribe's cultural identity. Minority culture never has been a static entity which must be preserved exactly as it is found or as it is believed to have been. Cultural continuity should be encouraged in all spheres, but the choice of whether to continue to modify old ways should be left to the tribal people themselves and not imposed upon them."

"The major problem with the creation of reserves is that, as currently practised, control of the tribe and its lands is transferred to outsiders -- by the government administrators or a specially appointed group."

"It is only when tribal people are accorded equality under the law and have the capability to choose their own destiny that they can contribute fully to the national society. All this will be difficult, time consuming, and not amenable to acceleration."

"After recognition of title to land, the maintenance and protection of health standards is the second 3/ fundamental prerequisite to the tribe's survival."

"Except in the rare cases of 'first contact,' in which health measures are initially most urgent."

"Indigenous medicine in tribal areas has usually controlled endemic diseases and met the needs of the tribal society in its traditional habitat. Therefore, the object of health measures within the context of development is to foster existing therapies, to introduce appropriate new repertoires, and to avoid the introduction of unfamiliar diseases and conditions that might disrupt existing standards of health. Three major factors impair indigenous health: first, transmission of disease; second, modification of diet and living conditions; and third, social change and stress." (pp. 13-23)

"Contact with dominant groups also results in dietary damage among tribal people who desire to imitate the food habits of the dominant group and, thereby, seek to enhance their own status within the wider society."

Before the dominance of the more Hinduized groups in Nepal, tribal groups like the Tamang, Magar, and Sherpa consumed meat. Today, increasing number of these tribes are giving up meat with the result that their present diets do not provide the nutritional balance they formerly enjoyed. Further, as a result of the growing reluctance to slaughter animals, the number of livestock has far exceeded the carrying capacity of the land, which is fast deteriorating."

"Unfamiliar concepts, values, and roles impose additional demands on the coping process of the tribal society. Unless introduced carefully, recognizing the absorptive capacity of the population, sudden demands decrease the capacity to adapt successfully. Major and rapid social changes are associated with:

- a. loss of self-esteem;
- b. increase in actual and perceived role conflict and ambiguity;
- c. increase in the perceived gap between aspiration and achievement."

"The prerequisite to successful survival of a tribal group as an ethnic minority is the retention of autonomy: cultural, social, economic. This freedom of choice involves continued control by the tribal people over their own institutions: tribal customs, beliefs, language, and means of subsistence or production."

"...the tribe alone should choose which traditions should be altered. Retention of tribal customs enhances maintenance of ethnic identity, stability as a productive unit, and, more importantly, successful adaptation to new circumstances. One reason, for instance, why the Balinese have been relatively impervious to outside influence is that they have maintained their cultural integrity, will not admit non-Balinese as members of their communities, and have adopted changes that reinforce their culture."

"Isolation should be rejected as impossible: a zoo-like arrangement of an enforced primitive state. Complete assimilation into the national society denies, then extinguishes, ethnic diversity."

"An intermediate policy adopted by the Bank under the projects it finances is more humane, prudent, and productive. This allows the retention of a large measure of tribal autonomy and cultural choice. Such a policy of self-determination emphasizes the choice of tribal groups to their own way of life and seeks, therefore, to minimize the imposition of different social or economic systems until such time as the tribal society is sufficiently robust and resilient to tolerate the effects of change. The following conditions are essential if this intermediate policy is to succeed:

- a. National governments and international organizations must support rights to land used or occupied by tribal people, to their ethnic identity, and to cultural autonomy.
- b. The tribe must be provided with interim safeguards that enable it to deal with unwelcome outside influences on its own land until the tribe adapts sufficiently.
- c. Neither the nation nor the nontribal neighbors should compete with the tribal society on its own land for its resources."

"Action to guarantee the physical survival of tribal populations and encourage freedom of cultural choice is directed towards the following outcome:

- a. a tribal population that forms a recognized and accepted ethnic minority -- one component of an ethnically pluralistic national society;
- b. as such, this ethnic minority maintains its traditional way of life, more or less modified in accordance with the preferences of the tribal population itself;
- c. the tribal economic system progressively evolves from 'precontact' subsistence to a sustained-yield agro-ecosystem with the production of a surplus on occasion."(pp. 23-28)

"OPERATIONAL STEPS FOR THE PROJECT CYCLE

1. Country Economic Analysis and Sector Work

The World Bank prepares an introductory and Basic Economic Report (BER) to provide an adequate and comprehensive background knowledge of a country's economic and social structure."

"As soon as the type and general location of the project has been selected, but before its precise location has been decided, the presence or absence of special social groups (e.g., tribal people) is to be routinely determined during identification or during prefeasibility studies. If the presence of tribal people in the general region is identified and a decision is made not to relocate the project to avoid the tribal area, then reconnaissance by an indigenist or appropriate anthropologist would be necessary before project preparation."

"2/Indigenist is used here to connote 'protribal,' since anthropology may not necessarily hold a protribal position. The indigenist should function as an advocate of tribal peoples and as an intermediary between the tribal people and the dominant culture."

"Staff or agencies (including consulting firms) responsible to the government for project preparation need specialist indigenist input in order to evaluate the information provided by the tribal agency if one exists."

"Delimitation and demarcation of tribal lands are best carried out before preparation. Without them, an acceptable tribal component cannot be designed."

"The appraisal mission determines the adequacy of the tribal component prepared by the tribal agency. This involves (a) reviewing the measures proposed to mitigate the impact of the project on the tribal people; (b) assessing whether there are risks that the tribal people might interfere with project implementation; (c) assessing the ability of the tribal agency to implement the proposed tribal component."

"Agreement on the details of the tribal component is essential." (p. 42)

"NATIONAL GOVERNMENT AGENCIES COORDINATING TRIBAL AFFAIRS*"

"Arranged according to the Regional offices of the World Bank."

"SOUTH ASIA

Bangladesh

Ministry of Cultural Affairs. Secretary of the Ministry of Home Affairs. Hilltribes Development Board, Chittagong.

Burma

Frontier Areas Administration -- sponsors the Hill Peoples Regulation Act of 1889 which put tribal peoples under special jurisdiction.

India

Tribal Welfare Institute, The Tribal Development Division,

Ministry of Home Affairs.

EAST ASIA AND PACIFIC

China,
People's
Republic of Central Institute for National Minorities.

Fiji Ministry of Fijian Affairs and Rural Development. Native
Land Trust Board - -supports careful use of tribal lands
to promote development.

Indonesia Department of Social Welfare (DEPSOS), Ministry of Social
Affairs (resettlement of tribal people is done by other
agencies), Jalan Juanda 36, Jakarta.

Korea,
Republic of No official tribal agency.

Lao People's
Democratic
Republic Le Comite des Nationalites.

Malaysia Department of Orang Asli Affairs.

Papua
New Guinea Office of Home Affairs. Also, the Department of
Decentralization which deals with the providences,
containing the Division of Provincial Affairs. All
inhabitants of Papua New Guinea are considered citizens,
no special legislation for tribal populations.

Philippines Presidential Assistant on National Minorities (PANAMIN),
36 Rosario Drive, Quezon City, Manila.

Thailand Department of Public Welfare.
Hill People Development and Welfare Division, Ministry of
the Interior, also carried out a socioeconomic survey in
1961-62 on selected tribes: Meo, Yoa, Lahu, Lisu, Akha,
and Karen. Deliberate government involvement with
northern hill tribes began in 1955 with the program of the
Border Patrol Police and was intensified in 1959 when the
Department of Public Welfare was assigned research and
development activities in remote mountain regions.
Tribal Research Centre, Public Welfare Department in the
University of Chiangmai.

Viet Nam No official tribal agency.

Western Samoa No official tribal agency."

"NON-GOVERNMENTAL ORGANIZATIONS CONCERNED WITH TRIBAL AFFAIRS (Selective listing only)"

"EAST ASIA AND PACIFIC-BASED GROUPS

PHILIPPINES

Philippine Association for Intercultural Development
Room 209, UCCP Building
877 C. de los Santos Ave.
Quezon City
99-62-41

Anthropology Association of the Philippines
Anthropology Department
University of the Philippines
Diliman Quezon City

Episcopal Commission on Tribal Filipinos
Rm 15 Capital Bldg.
372 Cabildo St.
Intramuros, Manila"

Readings in Economics

DISCIPLINE: Economics
APPLICATION: Methods and Measures
COUNTRY: Bangladesh
EMPHASIS: Fuelwood

Faber, D.C.; and Stolwijk, H.J.J. 1984. Role of Biomass energy in rural development: a case study of Bangladesh. In: Strategies and Designs for Afforestation, Reforestation and Tree Planting: proceedings of an international symposium on the occasion of 100 years of forestry education and research in the Netherlands. Wiersum, K.F. (ed.) Wageningen: PUDOC. pp. 63-76.

"Summary

"The deteriorating economic condition in many developing countries is encouraging more intensive use of biomass energy for fuel. This is leading to a competition with biomass for agricultural purposes and resulted in an integration of the energy sector with the whole agricultural system. Forestry and energy policies have to take account of this new development. In preparing problem-solving strategies, they have to take account that natural resources are not uniformly distributed among socio-economic groups. A case-study of Bangladesh is presented which illustrates this situation. The two scenarios for improving fuelwood production by either improved tree cultivation in homesteads or by establishment of woodlots are given and compared for their suitability in increasing both fuel and agricultural production and in their income distribution effects. It is concluded that the first practice will benefit all socio-economic groups, but that high income groups will profit most. The second practice is not profitable with present relative prices of fuelwood and agricultural produce." (p. 63)

"...the fuelwood problem, especially in rural areas, can be understood only within the context of the total rural and agricultural economy. The fuel and agricultural systems are so closely related and interdependent that it is no exaggeration to speak of a food-fertilizer-feed economy. Therefore, a fuel crisis will eventually become more and more an agricultural and food crisis. Because of these linkages, the fuel crisis has many (poorly discerned) aspects. Studying the role of fuelwood in overall planning is an exceedingly complicated and involved task. One needs to know not only the available techniques but also the institutional arrangements that indicate who controls the relevant resources, who reaps the benefits and who bears the costs. A clear insight into these institutional arrangements is a prerequisite to evaluate the consequences of alternative courses of action for different participants (socio-economic groups) in the economy."

"In this study we hope to illustrate this argument by a case-study of the biomass-energy problem in Bangladesh. Plantation establishment may be an unsatisfactory and insufficient answer to the energy problem for some of the most afflicted socio-economic groups within the Bangladesh economy. Because of their very limited access to necessary land resources, they will immediately ask 'where?'" (p. 65)

"Bangladesh provides one of the most interesting case studies of traditional energy, as the country's biomass resources are utilized to an extreme and possibly dangerous extent."

"...About 90% of the population lives in rural areas; 81% of household energy consumption in rural areas is provided by biomass fuels like cowdung, straw, jute stricks, twigs and wood. The combination of heavy dependence on biomass fuels and high population density puts immense strains on biomass production for food, fuels, building materials (dung, straw, sticks, mud, etc.) and to sustain livestock on very little land. The present situation of Bangladesh is of interest to other developing countries with high population growth rates and with comparable population densities in the future. The prospective energy supply of Bangladesh itself, under conditions of further population growth, constitutes a formidable challenge, particularly when it comes to the distribution of available energy supplies for the individual household." (p. 65-66).

"...Because natural resources are not uniformly distributed among the rural population, relative scarcity of biomass differs between socio-economic groups. Forestry and energy policies have to take this into account. Although the introduction of better cultivation practices in homestead fuelwood production benefits all socio-economic groups, the benefits are enjoyed more by the rich than by the poor because of the skewed distribution of ownership and control of resources towards the high incomes..."

"Given the existing technological and economic conditions, it is not profitable to reallocate land to woodland...Note, however, that changing relative prices or a yield increase of fuelwood may alter the results. But even if that were to happen, one may expect uneven distribution. It is therefore not sufficient only to examine ways of increasing forest and wood production as such. Indeed, by advocating such measures silviculturists, agronomists and economists must together analyze the effects of increased afforestation and tree planting. The environmental, agronomical, and socio-economic effects of such policies are by no means straightforward." (p. 75-76).

DISCIPLINE: Economics
APPLICATION: Theories and concepts; Technology Transfer
COUNTRY: India
EMPHASIS: Tree tenure; marketing tree products

Chambers, Robert. 1987. Trees can liberate rural poor in developing countries. *Farm Forestry News*, 2 (1): p. 4. Forestry/Fuelwood Research and Development (F/FRED) Project, Winrock International.

"Professional foresters often ignore the importance of trees as savings and security for the rural poor of developing countries..."

"Foresters have been more concerned with industrial and conservation forestry; agronomists with field crops. Few efforts have focused on trees on private farms. ..."

"Professionals have lagged in recognizing the long-term trend of increased value for trees and tree products. As deforestation and declining common property resources have reduced tree supplies, rising populations, urbanization, and higher incomes increase demands for tree products, especially fuelwood and construction timber."

"Though often regarded as incapable of saving, poor people are much concerned about debts and assets. As patron-client relations and obligations weaken, the poor become more vulnerable to contingencies. They abhor indebtedness. Poor people who are not absolutely desperate will sacrifice greatly to hang onto assets, whether land or trees, and will save for future needs and security..."

"When viewed as savings and security for the poor, trees have several advantages over other assets. They appreciate quicker than jewelry, land or bank deposits; are more manageable than livestock; and coppice when 'cashed.' The fixity of trees makes savings easier and cashing more difficult than with most other assets. Their rapid appreciation after a few years encourages poor families to save now to gain more later."

"Poverty cynics, who regard the poor as feckless, will expect them to dissipate the cash from the sale of trees and tree products on consumer durables, drink and frivolous pursuits. A recent study by Tushaar Shah contradicts this view (Shah, 1987). Fifty-nine families who benefited from the sale of their trees grown under the West Bengal Group Farm Forestry Programme used almost all the profits to improve their longterm economic or social condition. They spent 38 percent to purchase land, 21 percent on other productive expenditure, and 14 percent on housing; 22 percent on marriage expenses, and 4 percent on other contingencies, with only 1 percent unaccounted for. Thus, these poor people used almost all the cash from tree sales to improve their long-term economic or social condition."

"For poor people to value trees, two major conditions must be met. First, the poor must have unequivocal rights to the trees. Once assured of these rights, small farmers will plant more trees and cut and sell fewer than expected. Administrative restrictions that prevent small farmers from cutting trees on private lands are equivalent to a bank manager preventing

the small depositor from withdrawing cash from his account without special permission... Not surprisingly, such regulations induce precisely the behavior they are designed to prevent: unsure whether they can cut their trees, farmers cut them while they can, and do not plant more."

"The second required condition is freedom to market and access to fair prices. Small, powerless, and unimformed growers are easily exploited..."

"If trees are to liberate the poor, professionals must first liberate themselves from prejudices and perceptions. Policymakers have to prepare themselves to push for the removal of restrictions and to ensure that knowledge of these removals is widespread. If they are successful, small farmers will once again surprise the skeptics by the speed with which they plant trees and the restraint with which they harvest them."

Shah, Tushaar. 1987. Gains from Social Forestry: Lessons from West Bengal. In: Commons, Wastelands, Trees and the Poor: Finding the Right Fit (workshop proceedings). London: Overseas Development Institute.

DISCIPLINE: Economics
APPLICATION: Theories and concepts; Technology Transfer
COUNTRY: India
EMPHASIS: Participation; incentives; community forestry; distribution of benefits; common property resources

Levine, G.; Bentley, W.R.; Brockbank, B.; and Ghildyal, B.P. 1986. Problems and Solutions: Lessons from Experience with Natural Resource Development Projects. Ford Foundation, Rural Poverty and Resources Discussion Paper No. 20, 14 pp.

"Several projects with unusual elements have been implemented in India during the past decade. These have attempted to increase the economic surplus from natural resources and to share this increase among villagers in an equitable way. To varying degrees these have involved new mixes of land and water use technologies, modification of implementation procedures, and changes in village level institutions..."

"In this paper we present the conclusions from our review of these experiences in the form of hypotheses relating to the major issues faced by resource planners and managers as they attempt to deal with common property development. Among these issues are:"

"o How can legitimate claimants to the use of the resources be identified?"

"o How can use of the resources be allocated to provide reasonable equity among these claimants?"

"o How can access to the resources be regulated?"

"o To what extent, and how can the personal resources of the villagers be mobilized for contribution to development of the common resources?"

"o How can the improved resource management systems be maintained?"

"o How can appropriate technologies be identified and adopted?"

"Hypotheses"

"All current users of the common property resources of the area must be considered to have legitimate claims on these resources, although these may not be the only legitimate claimants."

"The use of common property resources, such as ground water, grazing lands, and certain types of forests over a period of time confers, at least in the eyes of the users, a form of 'right' which can be abrogated or modified only with difficulty. However, when the resources are in relative abundance or where others invest in expanding the availability of the resources additional claimants can be added to the user group..."

"Equity does not always mean equality."

"In most circumstances, it is recognized that people do not share equally with respect to opportunities and resources. This may be due to favored location, tradition, relative power or need (as perceived by fellow beneficiaries). However, this inequality may be considered both acceptable and 'fair' by the resource users, and attempts to change the relative 'rights' frequently will be resisted. New resources, or expanded supplies of the traditional ones, can be reallocated, but not without reference to local perceptions of equity." (p. 1-3)

"... It is customary for 'outsiders' to equate equality with equity, though many examples exist where substantial differences in treatment are still considered 'fair' by those involved. This is particularly true where these differences have a long tradition and where the impact of the differences is not critical to survival. Traditional forms of sharing water usually consider the same quantity of water per unit land as being fair, even though some people have more land than others. Villages may share grazing on common lands without restriction, even though some may have more animals than others. It is possible to change perceptions of what is fair, but substantial effort is required, and then more easily with expanded or new resources..." (p. 7)

"o Regulation -- The group of hypotheses dealing with timing of improvements, agreement among users and development of a sense of ownership all relate to the problem of controlling the access to and use of the common property resources. It is almost axiomatic that the maintenance and improvement of common property resources will entail changes in the behavior of the users. To achieve these changes, incentives are necessary. Tangible incentives, in the form of external assets can be powerful, but only as long as they can be withheld. The experience of the Sukhomajri and Pani Panchayats project both suggest that it is much easier to obtain agreement on changes in user practice before implementation of a subsidized activity..."

"Consensus, essentially agreement by all participants, is difficult to obtain, but it is essential when the use system is susceptible to disruption by the activities of individuals or small groups. Three years were required to develop effective consensus in Sukhomajri; in Nada, it was never achieved for the village as a whole, and significant friction between castes persists. Where there has been reasonable consensus, social regulation of access and use is feasible. Control of grazing through social 'fencing' has been effective in Sukhomajri and less so in Nada... However, even when there is agreement by consensus, individuals will break the rules, and some organizational structure usually is required to apply sanctions, to provide guards and in other ways to implement the agreement. The existence of a supportive legislative and administrative framework can be very helpful."

"Basic to the development of consensus is the feeling on the part of the villagers that they, as a group, 'own' the project. There is substantial experience in water development, in reforestation and similar efforts that the variety of forms of individual and group participation necessary for successful implementation and maintenance will not occur unless this sense of ownership exists. Among planners and project implementers there is no

universally agreed-upon procedure for developing this attitude. In the case of the Pani Panchayats...there is the view that direct financial contributions from the beneficiaries is necessary. In the Sukhomajri and Nada projects, educational and encouragement efforts were utilized. In the Chipko area it was a sense of growing deprivation which impressed on the villagers their need to 'own' the resources and thus, the effort to protect them."

"o Resource Mobilization -- Security of tenure, the impact of project activities on private property and the basic productivity of the common property all influence the degree to which personal resources can be mobilized for development. When there is uncertainty about one's ability to reap the benefits of investment the incentive to invest obviously is impeded. Uncertainty is increased by a lack of officially recognized rights of tenure and/or of usage; by extended waiting times before benefits accrue; and by unproven technologies. Inclusion of water for irrigation in a development project frequently results in the mobilization of significant amounts of personal resources because reasonably appropriate and productive technologies are available, benefits are clearly apparent and relatively rapidly realized. Improvements in pasture or in market availability for products currently being produced can have a similar effect. An emphasis on trees as the primary product, has more difficulties because of the longer time for the benefits to be realized and because of the lack of appropriate agroforestry technologies..." (p. 8-9)

"o Maintenance -- The need for community responsibility and the low level of productivity (even though significantly greater after improvement) combine to make maintenance of resource improvements difficult. When the improvements relate directly to production there is a incentive for maintenance. Where the improvement has a relatively long time horizon, or is of primary benefit to others (rather than to the residents of the village) there are few incentives for individual investing in maintenance. This is not unique to India or to the poor. Farmers in developed countries rarely invest in 'conservation' practices without significant and sustained subsidies. In many of these situations, the most effective 'conservation' occurs when using the 'problem' area represents a net cost to the user, at which time the area is 'abandoned' and maintenance is assumed by 'nature'. This is unlikely to occur in the marginal areas of India because of the basic need for these resources and the relatively low cost of extraction. If we assume that sustained subsidy for conservation is unlikely in India, then maintenance will not occur unless the practices have some relatively direct relation to increased profitability for the adopters of the conservation practices..." (p. 10)

"o Appropriate Technologies -- The development and implementation/adoption of technologies that can improve the livelihoods of the poor who are dependent upon marginal lands and related resources present a set of difficult challenges. The first is to gain the confidence of the villagers. This is an essential to develop understanding of the conditions in which the technology is to be applied and to obtain the participation of the villagers, which we have argued is fundamental to success. Experience in all of the cases we have examined suggests that this confidence is generated after efforts over years -- not days or weeks or months..."

"The second challenge is to understand the conditions under which villagers, and especially the poor, earn a livelihood. Unlike many in more favored environments, villagers dependent upon common property obtain their livelihoods from a complex mix of resources and activities. Identifying these and understanding their interrelations are difficult. It is especially difficult since women usually are very important in the entire system of activities, yet in many ways are 'hidden' from outsiders. This hiding may be physical, as part of the culture, but often is inadvertent, due to the 'blindness' of the outsiders. But almost all of the projects illustrate the importance of women in the livelihood activities of the poor..."

"The third challenge is to develop appropriate improvements for the 'production system'. With a reasonable understanding of these complex environments, the identification/development/adaptation of more appropriate technology (organizational as well as physical) is feasible. But the test of appropriateness is in use, and this poses special problems. Poor villagers have little margin for experimentation. They are not 'resistant to change', but cannot adopt new ideas and practices which have not been demonstrated to be effective in 'their' settings..."

"This need to identify potential opportunities for technological improvement, to develop appropriate technologies, to evaluate them in realistic field conditions presents a challenge to the governmental research and extension establishments which will require special efforts to meet..."
(p. 11-12)

DISCIPLINE: Economics
APPLICATION: Theory and concepts; and measures
COUNTRY: India
EMPHASIS: agroforestry; dryland watersheds; research

Romm, J. 1986. Agroforestry Research for Watershed-based Strategies of Dryland Agricultural Development. A Report To ICRISAT. 13 pp.

"Agroforestry is commonly defined as systems of resource management that simultaneously produce combinations of food, wood, and fodder, as well as other desired outputs, on a sustainable basis. The term is an inclusive rather than analytical one; it offers little conceptual guidance for research purposes. The purpose of this report is to define agroforestry research prospects in a manner that allows ICRISAT to evaluate its possible role in the field. The report gives particular attention to the roles of agroforestry in agricultural watershed systems." (p. 1)

"Agroforestry systems can be studied at four different levels of analysis...the choice depends on the key production constraint that the research is intended to relax."

"The chosen level of analysis determines the appropriate scale of analysis. The scale of analysis must be sufficient to comprehend the opportunities for achieving some minimum leverage upon the key production constraint..."

"The potential for generalization from experimental results tends to be inversely related to the scale of analysis. Thus, the choice of level affects the relative roles of conceptual and experimental research and the precision with which experimental goals must be defined. In general, the larger the scale of analysis, the stronger must be the justification for experimental relative to methodological research..." (p. 2)

"The four paradigms of agroforestry research are as follows:"

"1. The plant or species"

"Agroforestry research can focus upon the productive and adaptive properties of individual species. At this level of analysis, agroforestry research is governed by the prevailing theoretical content of genetics and autecology. The scale of analysis is limited to the individual plant and the environment affecting its growth..."

"2. The cropping system"

"Agroforestry research can focus upon the productive qualities of crop combinations that include woody perennials. Research at this level is governed by the theoretical content of agroecology. The scale of analysis is limited to the area a particular combination occupies, e.g. the farm field, and to the environment affecting the combination's biological performance..."

"3. The farming system"

"Agroforestry research can focus upon the economic relations among activities within a given decision-making unit. Theoretical content for this level of analysis is drawn primarily from economics, if the farm household is the decision unit of interest. Principles of sociology and anthropology gain importance if the village is the unit of interest. The scale of analysis includes all land the unit uses, as well as, the environment that affects land use decisions. This scale of analysis is appropriate if the target constraint is the availability of labour or capital for, or the degree of risk in, agricultural activities. Methodological research is more important, relative to direct experimentation, than is true at preceding levels because we as yet have little conceptual basis for explaining the immense variability among farming systems, even in the same environmental conditions. Current examples of such research include analyses of farm adoption of agroforestry technologies and of the effects of agroforestry programs on overall patterns of village land use..."

"4. Multi-ownership and multi-jurisdictional systems of resource allocation and use"

"Agroforestry research can focus upon the organizational relations among owners or groups whose resource use decisions affect one another. Organization and political theory is the common basis for such research. A second level of theory depends upon the particular interdependence among decision-making units that is of interest...Economic theory dominates if, for example, changes in relative prices between eucalyptus and millet are producing individual shifts in general land use that are considered undesirable from a collective point of view. The scale of analysis is the minimum area in which organized control of the key constraint can be obtained. At this level of analysis, methodological research is much more important than direct experimentation, for results from the latter are unlikely to be generalizable in our current state of theoretical knowledge. Current examples of such analysis include watershed-oriented research, where capacity for water control is the key constraint, and studies of regional adoption patterns for improved crop and management techniques..." (p. 2-4)

"Three agroforestry systems are prevalent in household-based farming systems throughout the Indian SAT. All provide mixes of food, wood and livestock products and reflect economic interests in efficient resource utilization. One or more of the systems occur in the same farming system. The intensity and combination depend upon the resources available and the relative economic returns to their alternative uses."

"a. The cultivated savannah"

"Households grow particular tree species in fields and on bunds for mixes of wood and fodder products that generally have market value...The pattern is so prevalent that it creates landscapes that appear agricultural if one peers toward the ground, wooded if one looks across fields toward

the horizon. Although the pattern is ubiquitous and valuable, foresters and agriculturalists typically don't see it because of their own specialized professional gaze. As the tree and crop species are generally competitive biologically to some degree, it is apparent that farmers make definite economic choices about the mix of products for which they manage..."

"b. Tree gardens"

"Farmers grow abundant mixes of perennial crops wherever drainage problems or water would otherwise occur. The mixes produce a wide variety of household products, from timbers to bamboo to fruits and nuts. They are used for fieldcrop nursery sites, perhaps because of the shade they afford. They occur near tanks, wells, water outlets, or poorly drained sections of field. The mixes are generally planted with specific outputs in mind."

"c. Wood-and-fodder lots"

"Larger farmers commonly reserve agriculturally marginal parts of their holdings for two-tiered systems of wood and fodder production...The availability of these wood-and-fodder lots appears to reduce farm need to obtain these products from cropped fields or bunds."

"The three kinds of agroforestry components in farming systems obviously represent different kinds of opportunity cost that households consider when contemplating alternative claims on land, labor and capital that some possible change in one part of the farming system may require. Some choices seem amenable to generalization, e.g. the adoption of a fieldcrop technology that would wipe out Prosopis (or babul or neem, etc.) is directly related to the availability of alternative fodder, fuel, and timber supplies and the income streams they may provide; adoption is directly related to moisture supplies and, thus, to the availability of alternative conditions in which these supplies and income streams can be produced."

"In pursuing research for dryland agriculture at the farming system level of analysis, it seems important to focus upon identifying (1) the general conditions that determine how tree crops affect what households do or might do in response to agricultural innovations, (2) the criteria for stratifying conditions for experimental purposes, (3) the conditions in which developing fieldcrop technologies without an agroforestry component makes and does not make sense, and (4) the conditions in which one or another agroforestry component best satisfies the conceptual and methodological emphases that can result in sharper field analysis, experimental design, and research strategy than is currently possible."
(p. 7-8)

"Watershed based systems of agricultural development have been adopted where capacity for water control is the limiting constraint on agricultural production. These systems create interdependence among farmers through structural changes that modify the availability, accessibility and timing of water supply to lands throughout the area of the system..."

"The structural changes increase the economic value of interdependence among farm fields. One farmer's success or failure in maintaining bunds and contours affects another's production possibilities. The common facilities, such as drainage canals, create similar interdependence. Their on-farm contributions depend upon the willingness and ability of all farmers to maintain them. The willingness of farmers to maintain the water control facilities presumably depends on the extent to which the facilities contribute to their economic wellbeing. Ability to maintain the facilities depends as well upon farmers' capacities to organize their collective efforts and/or governmental capacities to function in their stead."

"The structural changes directly create new production opportunities as well as future maintenance costs. Farmers in Madhya Pradesh, Bihar and Orissa, for example, have used trench fences and bunds to plant food, bamboo and tree crops they would not have been able to grow without the moisture conditions the trenches created. Farmers in Andhra Pradesh plant agroforestry gardens to convert poorly drained land into productive sites. Farmers in Karnataka typically plant wood and fodder crops on their bunds. To the extent that such techniques are used in watershed systems, they should increase the economic returns to structural facilities and, thus, farmer motivations to maintain these facilities."

"Perennial vegetation is also a means to stabilize the structural modifications without labor. An effective vegetation strategy can reduce the level of recurring maintenance costs. This can also reduce the pressures on farmer or governmental organizations for maintenance, thereby increasing organizational effectiveness at some given level of participation and releasing time for other production activities."

"The challenge is to find vegetative systems that both stabilize structures and increase the economic benefits that farmers realize from them. Such vegetative systems will be agroforestry systems..."

"The structural changes in a watershed system increase the instability of the land system and the amount of human effort that must counteract this instability. Agroforestry techniques provide means to reduce instabilities and their costs. They can also increase farmer motives to absorb the necessary maintenance costs while reducing the burden that is placed on farmers' or governmental organizations for maintenance tasks." (p. 8-9)

DISCIPLINE: Economics
APPLICATION: Theories and concepts; Technology Transfer
COUNTRY: India
EMPHASIS: Participation; incentives; farm and community forestry;
distribution of benefits

Sen, D. and P.K. Das. 1987. The Management of People's Participation in Community Forestry: Some Issues. ODI Social Forestry Network Paper 4d. London: Overseas Development Institute, Agricultural Administration Unit. 12 pp.

"...The success of social forestry programmes...depends largely on effective people's participation at various stages of their implementation. Above all, of course, the question of people's participation is most vital in community forestry and farm forestry. In these two cases the people's direct involvement in the programme is necessary right from the project formulation stage where decisions are taken regarding selection of site and species, mechanism of protection and maintenance, distribution of benefits and marketing of forest produce..."

"As everyone knows, farm forestry turned out to be of great interest and benefit to big farmers and industrial houses. Contrary to expectations, the interests of the weaker sections of the rural population were not especially addressed by the programmes. Indeed, the commonest charge levelled against the farm forestry programme is that it has been cash-crop oriented, rather than aiming to supply subsistence fuel, fodder and timber."

"Community forestry on the other hand...has by and large failed to muster the participation of villagers in the implementation of the programme...As a matter of fact, our experience shows very little involvement of people in the various activities of establishment, and management of the plantations during the initial period when they remain under the custody of forest department. Thus they never view the plantations as their own, rather they consider them merely as a forest department activity wherein they find some scope of employment as wage labourers..."

"Thus the basic difference between the two models, farm forestry and community forestry, lies in the element of individual profit motive. The promise of individual profit has encouraged participation, one result of which can be seen in the large scale tree plantations in private agricultural fields in states like Gujarat, Haryana, Punjab or UP. The common allegation is that only the big farmers are benefitting from farm forestry programmes. But when we see marginal farmers and landless tribal beneficiaries of the laterite tract of West Bengal allotted absolutely marginal land on lease, yet actively contributing their labour for planting and maintenance operations in the evening even after a day of hard work, the conviction grows that the social forestry programme can be a means for economic upliftment..."

"Community forestry on the other hand does not promise any direct individual benefit, other than uncertain access to fuel, fodder and timber...Moreover the methods of distribution of such commodities being not very clear, the common man is not sure about his share from such a communal

asset. There is an argument that people would realise the importance of communal forestry and participate increasingly, when they would start getting the benefits out of such plantations. But even then, under the present mechanism, with panchayats as custodians of community plantations, it is quite unclear how these bodies propose to serve the interests of the various segments of the rural population, specially the weaker sections. At present, it has been observed in many cases that there is lot of confusion regarding the mechanism of distribution...All such factors lead us once again to the individual incentives motive. So long as community forestry cannot offer each individual incentives either in the form of cheaper way of procuring forest products (especially fuel) than the presently adopted method, or hold a promise of direct economic benefit or both, the chance of securing people's participation in the programme will continue to be low..."

"The basic assumption underlying community forestry is that there is a crisis of fuel, fodder and timber in the countryside and the people will participate in the programme as it promises to fulfil those basic needs...; and that this will generate additional employment particularly among the rural poor in various plantation activities. However the validity of such assumptions remains to be examined in the light of various reports related to the consumption pattern of such items."

"It has been observed that although people have their requirements for such commodities, they invest very little cash expenditure on them. While the richer section fulfil their requirement mainly from their own fields, the poor in the forest fringe areas manage to utilise the forest and adjoining areas for such purposes and those who are in non-forest areas look for such items from the village common lands, agricultural fields etc. Their utilisation of such commodities particularly fuel, is actually extremely limited. In case of fodder, most of the villagers are dependent again either on forest and village grazing lands or on the crop residues produced in their fields. Since most of the cattle population in the countryside are low-grade, there is also no immediate need for high quality fodder. Moreover, the class of people who really need firewood, small-timber and leaf or grass fodder are the people who own little or no land, but even they do not look upon providing voluntary labour on a community plantation as a profitable proposition as they are not sure if ultimately they will be allowed to reap the harvest..."

"...It might be argued that people would realise the importance of community forestry and participate increasingly, when they started getting the benefits out of such plantations. But even there, there remains an important question which relates to the power structure in the countryside. The panchayats tend to concentrate power in the hands of rural elites and it is anybody's guess what opportunities they provide to the poor to make demands or air grievances. Although there are exceptions, the general observations regarding Panchayats are that the benefits are manipulated in favour of the elites, affecting the interests of downtrodden people...This leads to the basic question, how to ensure the flow of benefits of community forestry to the rural poor? Will the delegation of legislative control to the forest department, be able to restrict such manipulation effectively?...Under such circumstances many people think in terms of abandoning the idea of handing over the plantations to panchayats, and keeping them under the control of the forest department. But then it becomes one among numerous government programmes without people's involvement..."

"Another possibility lies in making community forestry programmes weaker-section-oriented...This question merits proper attention as social forestry is conceived as one possible form of intervention in the amelioration of rural poverty. In view of this it will not be out of context if the target group of community forestry is specified as the rural poor...In the existing strategy for community forestry involving all sectors of village population, it has by now been clear that the undemocratic power structure in the countryside, and the diverse interests of different sections of people are the major impediments in the successful operation of community forestry. If distributive justice is to be achieved under such circumstances, the need for projecting community forestry as a means of economic development of the rural poor cannot but be over-emphasised..."

"Benefits in the form of forest products from community plantations may be conceived primarily as fuelwood which is obtained from the main tree as well as twigs and branches through periodic lopping etc. Besides, there may be some other products like fodder, fruits and other minor forest produce. It is commonly observed that there is no clearcut procedure for the distribution of such produce from the community plantations. Neither the social forestry personnel, nor the panchayat has any definite idea about the probable mechanism to be followed. It is commonly argued that the product out of a community plantation, specially fuelwood, should be equitably distributed according to the requirement of the villagers in general. In such cases the economically weaker sections may not be able to procure them by paying the price. As a solution to such a problem it has been recommended that the weaker section should get their requirement at concessional rate. As discussed earlier, the villagers, specially the weaker section generally procure their fuelwood from forests, agricultural fields, village common lands etc free of cost. Even if concessional rates are offered to them, whether they would be ready to incur cash expenditure for such commodities needs to be assessed."

"In view of such critical analysis of the problems of implementation of community forestry programme at the field level, certain basic issues emerge, which require immediate attention. Unless they are taken into consideration while formulating future strategy for social forestry programmes, the large majority of community plantations established so far will continue to be departmental activities or will be extinct, in the absence of people's active involvement in their maintenance and protection."

Discipline: Economics
Application: Methods and Measures
Country: India
Emphasis: Economic perspectives on agroforestry

Sharma, Kamal, ed., Economics of Wastelands Development, Seminar Proceedings. Society for Promotion of Wastelands Development, India: Sponsored by National Bank for Agriculture and Rural Development Bombay, 112 pp.

NOTE FOR TECHNOLOGISTS, by Kamal Sharma (pp.9-14)

"...Though the entire cultivated area in India is 360 million acres, roughly two-thirds more, about 220 million acres consist of wasteland and degraded forests which is outside the ambit of the agricultural production cycle. Little of these 220 million acres is suitable for regular agricultural practices to produce food for human consumption without an intensive scientific analysis of constraints and an application of integrated management practices over lengthy periods".

"The poorest sections of our urban and rural populations depend upon fuelwood for their daily cooking energy needs and on fodder grasses for their animal needs. Land fit for rice-wheat cultivation is not required to be put into sub-optimal use for fuel and fodder needs but the wastelands can be reclaimed to meet these very urgent needs."

"It is possible that some of the recommended technologies may not be financially viable on the basis of returns. However, they might be justified on the basis of social benefits that may accrue. In such cases, subsidies and grants may become necessary."

DESIGNING, PLANNING AND FINANCING OF TREE PLANTATION PROJECTS OVER WASTELANDS, by K.G. Venkataraman (pp. 15-18)

"The Characteristics of Wasteland"

"...The extremes of climate, soil conditions, biotic factors and inconsistent rainfalls are characteristics of these sites. These conditions of 'extremes' are difficult to define but applies [sic] to sites where special establishment methods are needed without which the trees may not grow."

"Effective watershed management involves forestry, agriculture, water authorities, electricity boards, etc. requiring a comprehensive organization. In these projects it is necessary to gain the interest and involvement of the local people. The project has also to come to terms with the socio-economic conditions of the people. The projects also require adequately trained personnel to supervise the project."

"Planning Projects"

"The decision as to the type of plantation to be established in wasteland will depend upon the objects of plantation and the ecological conditions

prevailing in that area. The objectives are:

1. Need for more wood,
2. Public demand for land,
3. Concern for environmental conservation.

Thus it is necessary that the management of wasteland ought to be in harmony with public concern for environmental conservation."

"The 4 major types of plantation that may be established are:

Production plantations...
Plantations for environmental improvement...
Soil stabilization plantations...
Amenity plantations"

ECONOMIC VIABILITY OF TREE/GRASS CROPS ON HIGHLY ERODED SOILS, by V.V. Narayana and Ram Babu (pp. 37-45)

"India has all the ingredients of climate, soil and vegetation favourable to make it fit to be an ideal forest region of the World. ...the actual productive forest area is reported to be only about 35 million hectares (Anonymous, 1974). This is about 11% only of the total geographical area of the country. ...It was also shown that the approximate annual water holding capacity of an average forest area of 25 million hectares will be equivalent to 2.5 times the storage capacity of the Bhakra reservoir. This literally means that every year, two and a half Bakhra Dams are bursting in the rainy season, as a result of the denudation of these 25 million hectares. It is, therefore, no wonder that this is reflected every year in the ferocity of the devastating nature of floods in our country."

"...Out of 328 million hectares of our geographical area, 68 million hectares are critically degraded while 107 million hectares are severely eroded. About 43 million hectares of this land is classified as non-arable and barren which include nearly 4 million hectares of the ravine lands. Even out of the 75 million hectares of the land classified as forests, about 20 million hectares are reported to be in degraded condition (Tiwari, 1982)."

"These degraded lands can be reverted back to their original productive conditions through forestation."

"Systematic economic analysis was conducted at CSWCRTI, Dehradun [sic] and its regional Centres on the benefits that can be derived from utilization of the degraded lands for fuel and fodder production (Table 10). The economic analysis show that in all the cases the B:C; [Benefit:Cost] ratio is more than 1.4. In most cases, these ratios are much higher. This only shows that conversion of the denuded lands into fuel-cum-fodder areas is an economic proposition.

Table 10: Economics of utilization of degraded lands

Land Use	No. of yrs after which income is expected	Yield (t/ha/yr)	Cost per ha (Rs)	Benefit/ha (Rs)	B:C ratio
<i>HILL REGION</i>					
<i>Dehradun</i>					
1. Fuel and fodder (a)					
C. fulvus +	1	5.5	6635	18,800	2.75
D. sissoo -	17	3.8			
(9 × 9 m)					
E. binata +	1	5.3	11100	38,150	3.43
A. catechu	17	4.2			
(4.5 × 4.5 m)					
2. Fodder alone (a)					
C. fulvus	1	7.5	4000	11,400	3.02
3. Fuel alone (b)					
Eucalyptus	10	7.1	5400	9,130	1.68
Dalbergia	17	6.6			
sissoo					
4. Fibre alone (c)					
Eucalyptus	1	5.6			
binata					
<i>Chandigarh</i>					
5. Fuel and fodder (d)					
Bhabar +	1	3	6800	12,200	1.79
A. catechu	17	1.2			
D. sissoo					
<i>Ootacamuna</i>					
6. Fuel alone					
Eucalyptus (a)	10	10	8100	32,500	4.00
<i>RAVINE REGION</i>					
<i>Kota</i>					
7. Fuel and fodder (f)					
A. nilotica +	20	6.5			
P. juliflora +					
D. annulatum +	1	3.4	12840	19,820	1.55
C. ciliaris					
+ Bamboos	4(20)	1833 culms			
<i>Vasud</i>					
8. Fuel alone (g)					
D. strictus	5(30)	2200 culms	3380	44,475	
Eucalyptus	8(24)	7	2824	13,500	
9. Fuel and fodder (h)					
A. nilotica	15	26	9700	13,500	1.38
D. annulatum					
+ C. ciliaris	1	5.2			
10. Fodder alone (i)					
C. ciliaris	1	5.0			
D. annulatum	1	5.3			
<i>Agra</i>					
11. Fuel alone (j)					
Acacia nilotica	15	4.4			
(gully top)					
12. A. nilotica (k)					
P. juliflora	15	8.0	2960	5,375	1.80
+ C. ciliaris	1	1.0			
(gully bed)					
<i>Semi arid black soils</i>					
<i>Bellary</i>					
13. Fuel alone	(1)				
Eucalyptus	10	1.5	-	-	1.90

A Net return/ha/year

a) Mathur *et al.* (1979); b) Ram Babu *et al.* (1982), Hukum Singh (1982); d) Vimal Kishore *et al.* (1982), e) Samra *et al.* (1983); f) Puri & Khybr (1975), g) Bakshish Singh (1972), h) Vimal Kishore *et al.* (1982), i) Tejwani *et al.* (1975), j) Puri (1977); k) Ram Babu *et al.* (1979), l) Subbayan (1980)

"The question then is why this is not being done. This is enmeshed in the sociological complications and public policies with regard to ownership and public lands. At Chandigarh, it was shown that by treating a portion of the village land intensively with soil and water conservation measures, it is possible to produce enough for meeting the fuel and fodder demands of the village people. Simultaneously, the grazing and felling pressures on the rest of the village land were reduced which resulted in a natural regeneration of the area. For undertaking such a model on a large-scale in the country, suitable village level organizations and appropriate changes in public policies will be needed."

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- j) Tejwani, K.G., Gupta, S.K. and Mathur, H.N. (1975). Soil and Water Conservation Research, 1956-71. Indian Council of Agricultural Research, New Delhi, pp 358.
- k) Puri, D.N. and Singh, J.P. (1977). Economic utilization of ravines for fuel-cum-fodder. Annual Report, CSWCRTI, Dehradun, pp. 237.

- l) Ram Babu, Puri, D.N., Singh, J.P. and Sharma, S.K. (1979). Economics of river bank stabilization along Yamuna river at Agra. Annual Report, CSWCRTI, Dehradun, pp.220.
- m) Subbayan, R. (1980). Conservation forestry. 25 Years Research on Soil and Water Conservation in semi-arid deep black soils. Monograph No.1, CSWCRTI, Research Centre, Bellary, pp. 189.
- n) Tiwari, K.M. (1983). Role of forestry in improving productivity from land and water. Soil Conservation Newsletter, 2(4):5-6.

ECONOMICS OF AGROFORESTRY FOR WASTELAND RECLAMATION by R.K. Mathur, I.F.S.
(pp. 56-63)

"This paper reviews the Statistics of the Forest resources of India in the context of the growing needs for fuel, fodder, industrial wood etc. It suggests management practices for wasteland reclamation. ...The total production is not proportional to the overall requirements for local and commercial consumption. In addition, the transport costs are high which make trade & transport of few raw material a highly expensive component."

"Any programme of forest development (including agroforestry) must form a part of the social and economic policy of the country and has to be integrated with the development of all the other sectors of the economy. India has a total forest area of about 75 million hectares which forms about 22.8% of the total geographical area of the country. The average per capita forest area is around 0.12 hectare (1976-77)."

GUIDELINES FOR FINANCING FARM FORESTRY SCHEMES (pp. 85-112)

1. Requisite of the programme

"Farm Forestry varies from one type of society to another as also from one locality to another. Farm Forestry involves growing of trees on farm lands along with agriculture. The size and the duration of the programme may initially be on a modest scale and allowed to grow in size and speed as experience and confidence is gained. The limiting factor is absence of adequate trained personnel in extension services at all levels. The initial size of the programme will therefore depend on their availability. In respect of location of farm forestry projects, they should be strategically sited, so that it may be extended outwards. Farm Forestry Project should enable communities to produce what they need at an economic cost and they should be helped to develop marketable produce. Since linguistic or ethnic differences are added to those of income and education, a good extension service staff is a pre-requisite for successful implementations of such programmes. The farm forestry programme should be designed around the people that are available to run it in each location. In these projects, the farmer's own labour is utilised for which payment has to be made. Farm Forestry Programme should relieve unemployment/under-employment, and involve the local population. In the financing pattern, appropriate ways of disbursements as wages must be built in the costing of the programme."

2. Nature and Basic Features of the Scheme

"The farm forestry programme involves a set of inter connected action and works executed primarily by the local community to improve their own lot. The basic focus is on community involvement. The main thrust of the programme is not only to increase the production of wood but also contribute to food production, whether directly by fruit or fodder trees or indirectly by giving shelter from wind and sun, restoring nutrients from deeper layers and increasing nitrogen fixation."

3. Area Approach

"The scheme should have essentially [sic] an area approach. The areas should be by catchments, satisfying the ecological needs, indigenous requirements or consumption and industrial uses. They may cover recognized agricultural zones based on potential productivity, current uses of produce as spelt out in Annexure I, legal status of land and also on research on matching trees to the appropriate systems of agricultural practices. Compact and contiguous blocks should be selected so that better supervision and monitoring are easily ensured."

4. Selection of Beneficiaries

"The schemes drawn up should aim at benefiting as large number of farmers as possible. However, a single or group of farmers separately taking up tree farming on owned or leased lands may also be encouraged provided they conform to economic units."

5. Selection of Species

"The tree species proposed to be grown, should be selected keeping in view the soil and agro-climatic conditions of the area, etc. They should match the appropriate system of agriculture as per examples provided in Annexure I. They should be sufficiently quick growing and capable of yielding high economic returns. The selection of species should be based on range of agricultural crops and managerial treatments that may be available in combination with the tree crops. The trees themselves may be required simultaneously for a wide range of produces and end uses so that careful character weighing may be needed."

6. Raising of Nurseries

"It should be possible to locate nurseries with a minimum production unit of say 50,000 plants. These nurseries may be situated in appropriate sites with water supply and good soils, etc. The areas selected for nursery have to be within the easy reach of the catchment areas of plantations to be raised. One nursery may be necessary for every 2 sq. kms. of potential plantable area.

The nursery cost will include:

(a) Plant production, (b) Labour component, (c) Soils, (d) Fertilizers, (e) Polypots, (f) Insecticides, (g) Irrigation facilities and (h) Miscellaneous costs such as transportation etc. Based on the minimum production of 50,000

plants per nursery, the miscellaneous costs can be put up to 10% to 15% of the production cost."

7. Planting material

"...The establishment of nurseries could also be by the user industries such as paper mills or match boxes making units, or chemical industries using tree products like non-edible oils etc."

9. Investment outlay

"Financial assistance may have to be provided to meet the cost of plantation which may include expenditure, initially for land development work, raising of mounds/digging of pits, cost of planting material and cost of fertilizers, labour, etc. Apart from the initial cost of raising the plantation in the first year, capitalisation may have to be done in respect of maintenance expenditure in subsequent years till the trees come up to the yielding stage which depends on usufructs. In farm forestry projects, no cost for infrastructure development like roads and buildings need to be included."

10. Farmers contribution

"The farmer beneficiaries may contribute towards down payment of 5% to 15% of the capital cost depending upon the status i.e. whether they are small, medium or large farmers in accordance with NABARD [National Bank for Agriculture and Rural Development] norms."

12. Economics

"The capital expenditure in respect of the first and the subsequent years of plantation include the various inputs such as irrigation, fertilizers, pesticides and planting material, and other miscellaneous charges, etc. till the trees come to the yielding stage. Yields and usufructs in respect of some species are given in Annexure III to serve as a guideline."

16. Security

"The banks will lend against security by way of mortgage of land and hypothecation of tree crops in accordance with the guidelines issued by the RBI from time to time."

17. Insurance

"The banks may ensure that the tree crops are insured against risk of fire."

18. Working capital

"The financing banks should ensure that working capital requirements of the beneficiaries are adequately met for the proper implementation of the scheme."

19. Marketing

"...While formulating the scheme, it has to be ensured that there is a tie-up arrangement, with any of the marketing agencies in the area for purchasing of

the marketable surplus after the farmer's own requirements of fuelwood, etc. are met with. Where large farm forestry programme is proposed to be undertaken at the instance of any state government, the feasibility of promoting a separate marketing agency may be thought of. It may also have to be ascertained whether the Forest Corporation of the State Forest Department would make arrangements, undertake the marketing of the produce, either through its own depots or through the state owned forest/plantation corporation set up in the state. In case user industries like paper mills, match making units come forward with farm forestry proposals covering a region, marketing may be easy."

20. Co-ordination

"...co-ordination committees may be set up by the State Governments with the representatives of the concerned departments, agencies, and financial banks which will periodically meet to monitor and review the progress of the scheme."

ANNEXURE-II [part]

Farm Forestry Guidelines - Yields and usufructs

Given as Example

Srl. No.	Year 6		Year 7		Year 8		Year 9		Year 10		Remarks
	Kg.	(Rs)	(Kg)	(Rs)	(Kg)	(Rs)	(Kg)	(Rs)	(Kg)	(Rs)	
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	
1. Acacia arabica											
Bark 1 Rs/Kg	—	—	60	60.00	—	—	120	120.00	120	120.00	Based on 300 minimum trees. Espacement 2.5m x 2.5m Bark at 200 g./ tree in the 5th, 7th years & 400 gs. in the 9th and 10th year.
Fodder 0.50 Rs/Kg	240	120.00	300	150.00	420	210.00	480	240.00	600	300.00	
Fuel 1.00/Kg	600	600.00	600	600.00	800	800.00	800	800.00	1000	1000.00	
Fruits	—	—	—	—	—	—	—	—	—	—	
Poles Rs 5/Pole	—	—	—	—	—	—	—	—	100	500.00	
Gums Rs 25/Kg	—	—	10	25.00	10	25.00	20	1000.00	20	1000.00	
Others	—	—	—	—	—	—	—	—	—	—	

Fodder: (Pods) Fodder at Rs 0.50/Kg per tree at 200, 400, 800, 1000, 1400, 1600, and 2000 gs. from 4th to 10th years.

Fuel: Fuel is assumed on the basis of lopping done at Rs. 1.00/Kg at 1.2Kg per tree in the 4th to 7th years and 2.5 Kg in the 8th and 9th year and 3.5 Kg per tree in the 10th year. The trees have to be lopped every year as is the usual practice.

Poles: The density of 300 trees per unit gets reduced to 200 in the 10th year for thinnings. This value is added at Rs 5/pole - 100 poles in the 10th year. This is inclusive of fuel value of trees.

Gums: Gum is assumed at 30 Kg in the 7th & 8th years and 60 Kgs. in the 9th and 10th year.

DISCIPLINE: Economics
APPLICATION: Technology Transfer
COUNTRY: Philippines
EMPHASIS: incentives

Gregerson, H.M. 1984. Incentives for forestation: A Comparative assessment. In: Strategies and Designs for Afforestation, Reforestation and Tree Planting: proceedings of an international symposium on the occasion of 100 years of forestry education and research in the Netherlands. Wiersum, K.F. (ed.) Wageningen: PUDOC. pp. 301-311.

"Summary

"Worldwide, few private sector activities are subsidized in so many different ways as forestation. The effectiveness of the different subsidies or incentives has varied widely from program to program. Some examples of effective programs are provided. The final part of the paper reviews some of the factors which generally influence the effectiveness of incentive mechanisms and programs. These factors include the following: (1) size of subsidy relative to total cost of forestation; (2) substitution of public for private capital; (3) size and location of subsidized plantings; (4) continuity from planting to harvest; (5) equity and income redistribution considerations; (6) building in flexibility; and (7) budgets, administration and political climate. Finally some generally underutilized incentive mechanisms are mentioned." (p. 301)

"Incentives are defined as public subsidies given in various forms to the private sector to encourage socially desirable actions by private entities...It is generally accepted that incentives are needed to overcome three main types of problems [Gregersen & Houghtaling, 1978] One is a lack of financial or physical ability on the part of private individuals to undertake certain activities. Cash flow problems are common with many land owners. A second is lack of motivation to invest on the part of the private sector, generally due to perceived low rates of return... The third problem is lack of knowledge or understanding of what to do with private forest lands. Public services provide free information about opportunities or about what to do technically with given, known opportunities." (p. 302)

"...the Development Bank of the Philippines, together with the Paper Industries Corporation of the Philippines (PICOP), developed a program for smallholders to encourage them to plant trees on part of their property [Arnold & Contreras, 1979; Hyman, 1983]. A variety of incentive mechanisms were used to encourage smallholder participation and forestation activity. For example, to get farmers interested in the program, it was linked to a livestock and fish program, where farmers received various subsidies in the form of free pigs, rabbits and other animals. Those who were chosen for the livestock program also participated in the forestation program... the animal/food project became partly an incentive for participation in forestry. Once the first plantations were thinned commercially, the results provided all the incentive that was necessary. Incomes from forestry were substantial relative to normal farmer income.

Another incentive used in this program was low interest credit... Loan terms were very favorable and grace periods and repayment periods were set up so that repayment did not start until returns were received from wood sales." (p. 304)

"There often is a conflict between equity and efficiency considerations in the design of incentive programs. For example,...it often is more efficient to deal with large landowners because of economies of scale. However, larger owners normally have access to more resources, and,...they usually profit more from development projects than smaller owners. Thus, if income redistribution from rich to poor is a main objective, then one has to deal with smaller owners. Particularly when one is dealing with the poor one has to keep in mind questions of lack of interest, ability and knowledge. The problems of the particular poor clientele group being dealt with have to be studied in the field in order to design an effective incentive program. There is no question that income redistribution is a major implicit and in many cases explicit objective of incentive programs..."

"If one wishes to reach the poorest population classes, then a good rule of thumb is to keep an incentive program very simple, very easy to explain, very easy to administer, and very easy in terms of red tape for the participants. Related to this point it makes a great deal of sense to build a number of checks into an incentive program. This is particularly important if a large number of landowners is going to be reached, and a large number of public servants (e.g. extension agents) is going to administer the program. Constant adjustments will have to be made as feedback comes from the monitoring of activities." (p. 308)

"Based on the experience of several countries, there is some indication that indirect incentives in the form of educational programs and direct technical assistance to landowners in the form of help with preparation of management plans are underutilized types of incentives...in many areas private landowners have more interest, willingness and ability to undertake forestation programs than was generally thought in the past. What the landowner lacks is the knowledge, the technical expertise, and the understanding of what needs to be done. Thus, the major void in many cases...is lack of knowledge...In such cases, there is the major challenge, therefore, for public extension and training programs... (p. 309)

Arnold, J.E.M. & A. Contreras (Eds), 1979. Economic Analysis of forestry projects: case studies. FAO Forestry Paper No. 17, supplement 1. FAO, Rome.

Gregerson, H.M. & T.W. Houghtaling, 1978. Government subsidies to stimulate forestry at the farm and community level. Proceedings Eighth World Forestry Congress, Jakarta, Indonesia. Paper FRC 1/4-1. 10 pp.

Hymen, E. 1983. Pulpwood treefarming from the viewpoint of the smallholder: an ex-post evaluation of the PICOP project. Agricultural Administration 14(1): 23-49.

DISCIPLINE: Economics
APPLICATION: Methods and Measures
COUNTRY: Philippines
EMPHASIS: Social forestry; impact analysis

Segura-de los Angeles, M. 1986. Upland Economics and Economic Impact Analysis. In: Man Agriculture and the Tropical Forest: Change and Development in the Philippine Uplands. Bangkok: Winrock International. Fujisaka, S.; Sajise, P.; and Castillo, R. del (eds.). pp. 169-188.

"...The objectives of social forestry include the upliftment of the standard of living of upland communities, stabilization of forest occupancy, prevention of further forest destruction, rehabilitation of degraded forest lands, and minimization of soil erosion."

"Upliftment of the standard of living is to be achieved by improving land productivity and by increasing employment-generating activities. While this first activity may be linked to the intended beneficiary's concerns, the last four are largely societal goals. Economic impact analysis of SF projects thus necessarily needs to be conducted from both private and public viewpoints. Analysis is needed of both on-site and off-site effects of soil conservation."

"Project evaluation may be conducted during at least two points in time: 1) before a project is implemented, during which its *ex-ante* feasibility and hypothesized effects are projected, and 2) *ex-post*, or after it has begun (upon completion or later). In general, the term 'project evaluation' refers to assessing projects in terms of monetary measures of costs and benefits. On the other hand, impact analysis has been taken to mean assessment of project effects after a project has been completed or has reached an advanced stage of implementation. Economic impact analyses are usually *ex-post* evaluation studies."

"The analysis of potential project impacts, even hypothetically, is included among the following steps of project evaluation: 1) identification of costs and benefits (negative and positive impacts, respectively), 2) transforming costs and benefits into comparable units, such as money terms, through a system of prices, and 3) using a criterion to measure the project's desirability."

"*Ex-post* impact assessment may thus be used to verify *ex-ante* project evaluation, especially when the impacts are valued in monetary terms. Alternatively, when benefits are expressed in units other than money values (e.g., decreases in soil erosion rates), impact assessment may also be extended into evaluating the cost-effectiveness of various attempts/alternatives of rehabilitating the uplands."

"The project evaluator may proceed from the viewpoint of intended beneficiaries, from project management's financial standpoint, or from societal concerns. Selection of a particular viewpoint affects the choice of indicators of project effects as well as economic valuation of project impacts..." (p. 174-175).

"Ex-ante evaluation of upland development may be conducted to form the basis of project feasibility studies or to examine policy options open to decision makers."

"...none of the feasibility studies attempt to incorporate varying rates of adoption of suggested cropping patterns or the various degrees of participation in upland development efforts. Indeed, most feasibility studies are quite optimistic in this respect. The assumption of full cooperation by intended beneficiaries is often made. This optimism is true not only for Philippine research, but also for many project feasibility case studies conducted elsewhere (e.g., UN-FAO, 1979)." (p. 175-176).

"Studies of social forestry projects conducted after project commencement may be classified into those which look into project participation, management concerns, changes in the beneficiaries' welfare, or societal concerns..."

"These studies yield insights into site-specific factors affecting adoption of soil-conserving technologies. They do not, however, provide firm conclusions about the effects of the policy variables of land tenure status and credit. Lack of variation in these variables among the cooperators examined and the one-shot nature of the studies conducted made the investigation of such policy variables unfeasible. Indeed this is a prominent research gap in upland development..." (p. 177-180).

"Impact analysis may be conducted through the application of the experimental design, use of quasi-experimental designs, or conduct of the non-experimental design [Weiss, 1972]. The ideal experimental design involves observations of the variable in question, with observation conducted on project-influenced and control groups for two time periods of observation. A hypothetical impact is attributed to the project if the change in the variable for the influenced group is significantly larger than the change observed for the control group."

"Often, however, the experimental design is difficult to implement because of problems in finding an appropriate (randomly selected) control group with corresponding before-project data. In addition, political problems may disallow research in communities where the project is absent. In such cases, quasi-experimental designs must be employed. Such approximations of the experimental design include cross-sectional studies on influenced communities upon which multivariate analysis may be conducted, use of non-randomly selected control groups, before and after studies or similar time series analysis and case studies."

"Multivariate analysis conducted without a control group faces the problem of factors competing with project-related variables. A similar confounding problem may likewise be experienced with time series studies if non-project events are also important determinants of economic impacts. For case studies, the problem of generalization of findings is often encountered. In practice, these quasi-experimental designs are generally used simultaneously to minimize their individual weaknesses."

"I measured economic and social impacts of agro-forestation [Segura-de los Angeles, 1983]. Comparison of project cooperators' incomes across time was feasible for Diadi, Nueva Vizcaya, since income data were consistently investigated by the project implementors. Caveats with respect to attributing increases in income over the duration of the project are, however, offered because the composition of the surveyed sample changed, alternative sources of income such as logging emerged, and inflationary effects needed to be accounted for. The observed increase in real income of project cooperators was not wholly attributable to the project but was instead traced to the conduct of destructive forest activities. That is, small-scale logging by shifting cultivators (in forests where timber licences had been cancelled as punishment for destructive logging practices) was cited during later surveys as an income source."

"The same research looked into a pilot agroforestry project in Pantabangan, Nueva Ecija. While apparent gains from a demonstration farm was noted, no conclusion was made about similar experiences for the other participating farmers. A range of adoption of recommended agroforestry practices prevailed in the farms. Their corresponding effects on farm yield had not been measured at the time of the study. Detailed economic studies were not feasible because of cooperators' resistance to be queried repeatedly about the extent of their poverty. The study then examined interaction among various forestry activities and development projects in the area, their effects on farmer knowledge about soil conservation and the environment, and attitudes towards various government agencies in the area. The need for coordination among project implementors and among various development projects was noted. The study also collated information which could be used as benchmark figures for future studies..."

"None of the studies which looked into economic impacts (in terms of direct effects such as cooperators' income, labor use, and productivity) and ecological effects (as measured by biophysical indicators) have yet attempted to value, in economic terms, the environmental costs and benefits of upland cropping systems and interventions. Thus a wide gap exists in research on economic impacts on society of social forestry..." (p. 180-182)

Food and Agriculture Organization of the United Nations (UN-FAO). 1979. Economic analysis of forestry projects. FAO Forestry Paper No. 17. Rome. FAO.

Segura-de los Angeles, M. 1983. Economic and social impact analysis of agro-forestry development projects in Villarica, Diadi, and Norzagaray. An Economic and Social Impact Analysis/Women in Development Project. Micro Component (ESIA/WID) Report, Working Paper 83-08. Philippine Institute for Development Studies.

Weiss, C. 1972. Evaluative research. Methods of Assessing Program Effectiveness. Prentice-Hall.

DISCIPLINE: Economics
APPLICATION: Theory and concepts; methods and measures
COUNTRY: Asia (General Applicability)
EMPHASIS: fuelwood studies

Magrath, W. 1984. Microeconomics of Agroforestry. In: Agroforestry in Developing Countries. University of Michigan Center for Research on Economic Development for USAID/PPC/PDPR/RD. pp. 73-143.

"Most attention to wood consumption in developing countries has focused on fuelwood which counts for some 80 percent of all wood harvested in less developed countries (LDCs). At the same time, however, trees provide a number of other goods and services that are of value to rural people. These include building materials, fodder, and so-called 'minor products' and services such as erosion control, crop protection and other amenities. From an economic perspective the most striking and problematic feature of these is the extent to which consumption takes place outside of a functioning market. Two implications of this absence of effective markets are that those prices which do occur are poor measures of value and that quantities are seldom meaningfully recorded.

Consequently WTP (willingness to pay) estimation for agroforestry project evaluation is more difficult than for conventional investment projects. The selection of shadow prices for wood and environmental services necessitates the use of one or more approximations... In order to select the most appropriate shadow pricing approach, it is necessary to consider the role of the consumption of wood in rural communities. The most important aspects to consider are: the quantities involved; the effects of changes in prices/costs and income; and the availability of substitutes..." (p. 78-80)

"The services that are provided by trees are often given as one justification for agroforestry projects. Some of these services such as soil and crop protection are reasonably well documented in physical terms. Less easily measured are the economic aspects of these services. One important economic dimension of these services is the extent to which services can be captured by individuals. Trees less closely integrated with crop production or on public lands may provide other services which are of a public-good nature. In these cases individuals are less likely to exert an effective demand for these benefits.

Certain ways of integrating trees and agriculture generate service benefits that can be appropriated by individuals. This would seem to make them more likely to gain acceptance. For example, shelterbelts have been shown to have a measurable impact on crop yields and are valued by farmers for their effects..." (p. 92)

"Only a small number of well-documented benefit-cost studies of agroforestry or social forestry projects are available. Those that have been prepared can be divided into two categories, ex ante and ex post, depending on whether the analysis was conducted before or after the project was initiated, respectively. The majority of available studies (75%) are ex ante...

The average internal rate of return (IRR) for 43 of the projects summarized... was 19.5 percent...The most striking result of this analysis is the difference in average ex ante and ex post profitability between Asia and Africa. Overall, the agroforestry projects in Asia earned 25.6 percent while those in Africa only 9.1 percent...

...several factors appear to be responsible for both the absolute profitability of individual projects and the relative advantage of projects in Asia. A major consideration is the existence of established markets for product output...This probably reflects two issues, one being methodological: the quality of shadow price estimates for nonmarket values of wood and nonwood products; the other, the difficulty that managed stands have in competing with underpriced stumpage available from natural stands.

Another factor that contributes to the apparent superiority of Asian agroforestry is the, perhaps disproportionate, representation of projects in physical climates conducive to tree growth. For example, high growth rates are key to the profitability of the Philippines Small-holder Tree Farming project...

An additional advantage that many Asian countries possess is institutions with greater experience in forest management. This experience reflects itself in more desirable projects and less tentative project plans." (p. 103-110)

"One difficulty in interpreting the results of much of the agroforestry benefit-cost literature is the identification of the relevant with/without choice. Essentially this is a problem of assigning the correct opportunity cost to land. This arises from several aspects of the nature of agroforestry projects, the most important being the joint product character of most projects. Additional issues are lack of data, the difficulty of forecasting without project trends and, related to the joint product aspect, the multiplicity of possible alternative project designs. (p. 112)

Although nonwood values are one of the key justifications for recent emphasis on agroforestry, with the exception of agricultural crops they receive essentially no attention in economic analysis...almost no attempt has been made to evaluate environmental benefits such as crop and soil protection, erosion control, or amenity values..." (p. 117-118)

"Shelterbelts provide an example of reasonably easily measured environmental benefits from agroforestry. In addition to standing timber...shelterbelts provide protection to crops from wind-blow, improve

conditions for evapo-transpiration, and reduce soil erosion...While these and other outputs... can be measured, the research is expensive, time-consuming and skill-intensive. Moreover, benefits may vary over time requiring prolonged monitoring. For example, the yield effects of shelterbelts is partly a function of height and age, and also depends on the severity of weather in a particular year.

Presuming that the physical effects of trees are in fact known, expressing them in value terms may be difficult...if the effects are only expressed in terms of reduced wind velocity or water balance changes no direct valuation is possible. An indirect approach would need to be based on some technical hypothesis relating these changes to crop yields and hence to monetary benefits. Similarly reduced erosion from steep hillsides needs to be valued in terms of the future production made possible by soil stability and/or reduced maintenance costs in downstream irrigation facilities... Volume of soil-loss prevented is necessary but not sufficient datum for such a calculation..." (p. 119-120)

"Once converted into cash units, labor time can be directly used in benefit-cost calculations. Clearly the same wage rates should be used in calculating labor costs and benefits..."

Practical implications of this approach for the results of the benefit-cost analysis arise from technical requirements of plantation production and from the way in which farm labor time allocation has typically incorporated firewood collection... it is critical that seedling planting take place within relatively narrow time constraints ... to receive maximum benefit from the onset of rains. Unfortunately this time tends to be the peak agricultural labor period... the benefits occur during the remainder of the year when demand for labor is slack and wages are low.

Agroforestry projects thus face two difficulties in discounted cash flow analysis when labor time is employed as the principal valuation tool. First, projects tend to consume high-value labor and to release low-value off-peak labor. Therefore, nonlabor costs aside, projects must release more than an equal number of hours of time to be justified. Moreover, the discounting of net time savings that occur later at the date of harvest requires even larger time savings to justify projects...

An additional difficulty is the determination of the actual impact of the project on labor allocation and output. For example, time spent in the collection of wood may have other joint uses such as foraging for wildstuffs or socializing. Thus, even if firewood collection is completely eliminated, the amount of labor time released for new uses may be less than expected..." (p. 136-137)

DISCIPLINE: Economics
APPLICATION: Theory and concepts; Methods and measures
COUNTRY: Asia (General Applicability)
EMPHASIS: Intercropping

Raintree, J.B. 1983. Bioeconomic Considerations in the Design of Agroforestry Cropping Systems. In: Plant Research in Agroforestry. Huxley, P.A. (ed.). Nairobi: ICRAF. pp. 271-289.
(WI Library)

"ABSTRACT. The productivity of multipurpose agroforestry systems cannot be assessed on the basis of conventional measures of productivity in monocultural fields. Indices such as the land equivalent ratio, developed for arable intercropping systems, will prove useful in the development of improved agroforestry based land use systems, but the ultimate unit of evaluation in agroforestry is the enterprise, not the field. Even the most sophisticated index of yield per unit of land will be the most relevant index of productivity only where land is the limiting production factor. The relationship between trees and their understory intercrops can be competitive, complementary, supplementary or some composite of these relationships; which of these predominates in a given intercropping system depends not only on the genotype, number and espacement of components, but also on which growth factors are limiting for the respective components under realistic field conditions. An analysis of interactional effects indicates that certain highly promising agroforestry complementarities are significant only under low input production conditions. This suggests that a number of synergistic intercropping potentials in agroforestry will remain seriously underdeveloped if agroforestry research retains the traditional experiment station orientation to production systems characteristic of 'high access' farmers, rather than concentrating on the low input conditions typical of the majority of farmers and potential agroforestry technology adopters in developing countries. Following a discussion of bioeconomic considerations involved in deciding when it is advantageous to add trees to arable crop fields, the main bioeconomic principles for a decision on the optimum number of trees are presented. Budgeting techniques are discussed and an illustration is given of the use of linear programming as a practical bioeconomic design tool in agroforestry." (p. 271)

"The concept of sustainable land use is basic to a definition of agroforestry. Consequently, the development of objective indicators of 'sustainability' is high on the agenda of research needed to develop adequate evaluation and design methods for agroforestry systems...One bioeconomically significant factor, however, is that conservation benefits in themselves are seldom viewed as sufficient incentives for adoption of a new technology. Farmers the world over respond favourably to innovations in conservation technology only if they entail additional short-run economic incentives. In advanced economies this often takes the form of government subsidies on designated land use practices. In agroforestry systems for developing countries, adoption incentives will probably take the form of economic 'byproducts' (Raintree, 1980a). If this is so, then it becomes imperative for agroforestry researchers to identify and develop suitable multiproduct components and intercropping systems.

One immediate consequence of the multiproduct nature of agroforestry production systems is that their productivity cannot be assessed by conventional measures of the per hectare yields of the separate crops taken individually. This is true for the simple reason that, although the yields of the individual intercrops may be depressed relative to their yields in monocultures, the total production of the field may be higher...

The concept of land equivalent ratio (LER) has been developed to deal with this aspect of nonagroforestry intercropping..., and it is equally applicable to agroforestry systems. Assuming equivalent levels of management, LER may be defined as the relative land area under sole crops that is required to produce the yields achieved by intercropping...the practice of intercropping is assumed to be beneficial when $LER > 1$, of neutral value when $LER = 1$, and detrimental to yields when $LER < 1$...The ratio should prove useful in agroforestry applications, providing some additional means is used to assess differences in duration of the production period... (pp. 272-273)

It is often tacitly assumed, even by proponents of agroforestry, that the addition of a tree component to a field crop situation will almost always decrease the yield of the field crop, although the additional tree crop production may offset this decrease to give an overall $LER > 1$. The assumption that understorey arable crop components in mixed agroforestry systems will suffer from association with trees is usually based on the notion that the trees, being the dominant partner in the association, will compete with understorey crops, particularly for light, and that as a result of this competition the arable crop yields will be depressed....

This type of problem has been given a general treatment in economics by means of production possibility curves. Under the assumption of fixed resources (the isoresource condition), production possibility curves show what happens to the quantity of each of two products when resources are transferred from one to the other... (pp. 273-274)

...there are three general relationships possible between two products under iso-resource conditions: supplementarity, complementarity and competition.

Two products are supplementary if the production of one can be increase with neither an increase or decrease in the other, that is the outputs are essentially independent within the range of supplementarity...

Two products are complementary if increasing the production of one results in a corresponding increase in the other...

A search for examples of complementary relationships among agroforestry intercrops quickly leads one to the conclusion that interactional effects are important in determining which growth factors are limiting and, therefore, which plants are complementary in a given environment...

Two products are competitive if increasing the production of one results in a decrease in the production of the other, given a fixed level of resources. The products of trees and associate arable crops which are limited by the same factors, which draw these factors from the same

environmental resource pools, and which have no compensating interactions, will stand in a relationship of net competition... (pp. 274-278)

"Supplementary product relationships should be taken advantage of by increasing production at least to the point where the products become competitive. In the case of complementary products, resources should be transferred from one product to the other as long as doing so increases the production of both. Increasing the transfer of fixed resources (land) beyond the range of complementarity into the range of competition will decrease the production of one of the products. How far into the competitive range it is profitable to go will depend on the relative prices of the products...

...the rational producer will continue to transfer resources (land in this case) from one product... to another product... as long as the value of increased production of the one... is greater than the cost in decreased production of the other... This is the principle of equimarginality...

In more concrete terms, the principle states that it pays to go on adding trees to an arable crop field until the point at which the value of an additional tree is equal to the opportunity cost to the intercrop of the land allocated to the tree. Given the relative prices of the two products and data on their physical rate of substitution, the principle of equimarginality can be applied to ascertain the optimum intercropping combination... (p. 278-279)

In the foregoing discussion... we have tacitly assumed that profit can be maximized by maximizing returns to the land. In as much as agroforestry is an approach to improved land use systems it is useful and necessary to develop techniques to evaluate the productivity of land under alternative agroforestry systems, but it would be misleading to imply that returns to land are always the best indication of productivity. The unit of success or failure in agroforestry is the enterprise, not the field. As with other forms of agricultural production, the appropriate general criterion for evaluation of agroforestry systems is maximum returns to the most limiting production factor. Yield per hectare, or more sophisticated measures of returns to the land, such as LER, will be the best index of productivity only in cases where land is the most limiting factor...

The analytical procedures for going beyond purely physical measures of productivity to compare diverse output/input ratios in a common analytical framework and come to an overall assessment of net return are collectively known as 'budgeting' techniques... As the name implies, the common thread is money. The reason for choosing money as the common unit of the analysis is that it affords a means to take account of the entire range of inputs and outputs involved in a production process and arrive at a figure for the whole net return or gross margin (GM) of the enterprise as a whole...

The decision criterion in budgeting is not essentially different from what we have already discussed as the principle of equimarginality. Generalizing to the multiproduct, multifactor situation, we may restate the principle as follows: the maximally profitable combination of products is achieved when the value productivity of the final increment of the most limiting factor is equal for all products. In practice the identification of this combination is usually accomplished with the aid of linear programming. (pp. 280-281)

Discipline: Economics
Application: Methods and Measures
Country: Asia (General Applicability)
Emphasis: How to evaluate a community fuelwood project on economic and sociopolitical grounds in a manner that facilitates success.
Brief section on how to translate specific resource information into policy relevant information.

Sarvate, Sarita, "Social, Economic, and Technical Criteria for Assessing Fuelwood Energy Schemes", Working Paper WP-81-2, Hawaii: East-West Resource Systems Institute, East-West Center, 1981, 50 pp.

"ABSTRACT"

"Aggregate fuelwood consumption data for various countries in the Asia-Pacific region appear to be based on very rough estimates and sometimes vary greatly from one source to another."

"...the magnitude of the fuelwood energy supply and demand problem is enormous. Various fuelwood supply schemes aimed at solving this problem are possible. Three main categories of such schemes are: government forestry projects, privately-owned tree plantations, and community woodlots. ...Several community woodlot projects will be discussed in this paper and the critical technical, economic, and sociopolitical variables involved in determining their feasibility will be examined."

"Policymakers at the national, regional, and local levels in the developing world frequently have to make decisions on forestry policy or fuelwood energy policy without adequate information. By putting oneself in the role of policymaker at each of these levels, one can anticipate the types of questions that they are likely to ask. In this way, a few key technical, economic, and sociopolitical parameters or criteria can be identified." (pp. 1-3)

"INTRODUCTION"

"...fuelwood is scarce or potentially scarce in many developing regions, as indicated by its price, the difficulty of gathering it, a decrease in the amount of cooking done, or the substitution of other energy resources for fuelwood."

"Community woodlots, although discussed extensively in the current literature on "fuelwood energy", have not been implemented and proved on a significant scale in most developing countries. (Korea is one country where they have been very successful.) Yet the idea of community woodlots, if successfully implemented, is very promising and involves many complex issues of social and political organization."

"A significant amount of anecdotal information is available about community woodlots and the social, economic, and technical criteria involved in their establishment (Devres 1979; Knowland 1980). However, much of this information is available as case studies, or pertains only to the micro or the macro aspect of the problem, or is available in a format that is not of great use to policymakers in developing countries."

"A Feasible Community Woodlot Project

The land necessary for the project might be contributed by each villager or by the forestry department, or else marginal lands in the village could be used. A village committee could appoint a supervisor for the project, to be paid a regular wage. Initial capital for the project could be borrowed from a national bank or cooperative credit institution, with the loan to be repaid out of income from the plantation. This necessitates planting trees that will not only produce wood but also other products such as fruit or gum. Until the trees reach maturity (a range from 5-10 years), there will be no income and the expenses such as labor will have to be met from the initial loan or from contributions. The harvested product could be sold in the marketplace and the income obtained credited to the loan account or to another bank account for payment of labor and other expenses. The supervisor and the staff would have to organize the harvesting and distribution of wood. Since the demand for fuelwood will be different for each household, several questions arise as to the utility of such an approach. If fuelwood is distributed in equal quantities, it is likely that people who do not need much sell it to those who need more. Thus, it would be necessary for all households in the community to participate in the project. Some latitude would have to be allowed for it to succeed."

"According to foresters, the best method of harvesting the woodlot would be to divide the plantation into a number of plots and harvest one each year. The number of plots would have to be equal to the number of years needed for the plantation to mature. ... The other possibility is cutting a plantation bit by bit every day, but this would be impractical because green wood cannot be burned. Also, the random cutting of branches might hamper a tree's growth.

However, yearly harvesting of wood would raise several problems in the community such as:

1. The need would arise for storage space in the community or in every household. A storage place in every household might be a better alternative, because protecting a large amount of stored wood would be difficult although not impossible.
2. The creation of storage space in each household would involve a substantial expenditure for most households.
3. In order to procure enough labor, the harvesting of wood would have to be timed as not to interfere with planting or harvesting of crops.

The project would vary according to whether the plantation consists only of trees or produces a combination of products such as forage, grain crops, and fruit. If a variety of products is desired, each of these must then be harvested."

"...additional complexities of harvesting and distributing manure and forage will have to be taken into consideration." (pp. 4-11)

"ECONOMIC VARIABLES AND CRITERIA"

"Demand is an important economic variable that will indicate the need for a particular fuelwood project in the first place. ...given the non-market characteristics of the rural economies in most countries, end-use analysis would probably be the best approach."

"The need for firewood in a particular community could be estimated by means of a demand survey. ...problems that arise from such an evaluation include:..."

1. Villagers indicate their consumption of fuelwood in "bundles" or "head loads".
2. Estimation of the calorie and moisture contents of wood used.
3. Questionnaires have been found to have shortcomings because villagers tend to overestimate or underestimate their consumption of fuelwood depending on the ulterior motives that they ascribe to the surveyor's activities."

"In any formulation of fuelwood policies at the local, regional, and national levels, projection of demand into the future will be necessary. This mainly involves analysis of historical rates of population growth and projecting future rates."

"Consumption rates can change over time due to several factors, some of which are:

- o Rate of urbanization of the population (Koppel 1980).
- o Rate of change in the accessibility of outside markets to the community through introduction of public services such as roads (Koppel 1980).
- o Introduction of new fuel supply schemes, such as a biogas plant, or increase in supply of traditional fuels, such as kerosene.
- o An increase or decline of population in the village.
- o Price of fuelwood.
- o Shadow price of fuelwood as indicated by the difficulty in gathering it...
- o Agricultural residues, such as bagasse, rice and wheat stalks, and chaff, are extensively used by many rural communities as cooking fuel as well as fuel for small-scale industries. Because these residues are normally used to supplement fuelwood, the magnitude of their use is difficult to estimate unless direct observations are made over a long period to take seasonal variations into account. Dung is also used as fuel in many communities.

"In a community that has significant quantities of dung or other resources, but insufficient to provide an alternative to a fuelwood plantation, a careful evaluation of the existing pattern of use will be needed."

"...Even though a more efficient (in terms of nitrogen use) and economical use for the dung might be as manure, the community is unlikely to change its pattern of use of cowdung (as free fuel) unless a cheaper alternative fuel is available."

"The assessment and projection of fuelwood demand will involve considerations of all the above factors."

"Supply is the second most important economic variable affecting the fuelwood question. Supply has several dimensions and raises some classical economic questions such as the optimum allocation and use of a resource. In order to analyze the fuelwood supply situation in a community, both the boundaries of the community and the rate of regeneration must be considered."

"Because a community may draw upon forest resources some distance from it, one has to be careful in drawing the boundary when analyzing the stock of wood resources. Some resources might be reasonably accessible to the community, but might not have been used yet because of abundance of other more accessible resources."

"Traditional forestry utilizes techniques for monitoring the rate of regeneration of forests with a view to timber production. Since fuelwood is obtained mainly from branches of trees, methods different from those in traditional forestry will be needed to evaluate the rate of regeneration of existing stock. Some method of estimating the whole mass of the tree is needed. Net rate of regeneration of the forest could be defined as: Rate of regeneration of the forest minus rate of consumption of fuelwood from the forest equals net rate of regeneration. ...This would have to be a time-series analysis because the rate of regeneration of the forest, as well as the rate of consumption of fuelwood, will change over time."

"...Insofar as our aim is to augment existing forests, the norms for a desirable rate of regeneration should take into account both ecological and fuelwood supply considerations. Having established these norms, the next consideration would be how to achieve the norm for the desirable net rate of regeneration of the forest, as opposed to the existing net rate of regeneration."

"The next step would be to analyze the economics of demand and supply of related resources for fuelwood plantation projects. These resources may be classified as natural resources, other material resources, and human resources. Natural resources are water, land, and organic fertilizer; and other material resources are forestry equipment and fertilizer."

"The question of competition for resources is interesting because, in most instances, rural communities have reached a steady-state situation with regard to the allocation of resources such as agricultural residues, fuelwood, land and water according to the dynamics of the competition for these resources from different end uses. The existing allocation has been arrived

at through some natural optimization process inherent in the rural lifestyle. To introduce a new optimum pattern of use of these resources in the community will be a necessary goal of any energy development activity, but ought to be done only after careful analysis."

"The demand and supply of land will be the most crucial issue regarding related resources."

"The nature and magnitude of competition for land in the community is important. One method of introducing a community woodlot might be by leasing to the community a patch of forestland belonging to the national forest department. The village committee could be responsible for supervising and organizing the project. The forest department could provide seedlings if necessary, and could also provide technical guidance for the planting and maintenance of the trees. In this way, the issue of competition for land would be less critical. However, in other cases the procurement of land and a determination of the competitiveness of that land used as a tree plantation, as compared with crop production or forage, will be necessary. Competition is a variable that is hard to quantify, yet indicators of competition can be developed. For example, in order to determine whether land will be made available for a certain fuelwood project, the following considerations will have to be taken into account."

"...the desired rate of increase of fuelwood production will have to be determined."

"The economic variables crucial to resolving the issue of competition for land would be:

1. Quantities of land of various classifications available in the community (e.g. forest lands, crop lands, marginal or fallow lands).
2. Determination of output of crops in the community--whether food production is more than equal to, or less than, the needs of the community.
3. Projection for the future food demand and supply situation in the community.
4. If croplands are found to be available beyond the needs of the community, these can be taken into account in our economic analysis; otherwise, only marginal lands can be considered.
5. The analysis of allocation of land to and production of forage in the community would be somewhat complicated because forage can also be grown as part of the tree plantation -- either by growing grass under the trees, by using the leaves from the trees as forage, or by some combination of these methods."

"Demand or competition for water resources is another consideration."

"Time could be taken as an economic parameter responsible for determining the cost-benefit aspects of various projects."

"Labor requirements could be a positive or a negative aspect of the project, depending on the availability of labor in the community. However, in most rural communities, labor is in short supply only during planting and harvesting of grains. As long as the tree-planting project is organized in such a way that its labor demands do not clash with the demand for labor for agriculture, the fuelwood project should provide valuable additional employment in the community."

"...fuelwood project...its cost effectiveness can be analyzed. ...The specific factors involved in determining the costs and returns of the project are listed below:

1. Cost of preparation of soil, if the soil is marginal, will include labor, water, fertilizer, and equipment.
2. Cost for preparation of seedlings. This will most probably be done by an extension service.
3. Labor for planting the trees, preparing fences, and digging a well, if necessary.
4. Cost of maintenance as reflected in:
 - a. Costs of employing labor for watering the trees, weeding, pruning, applying pesticides, fertilizing, and so on.
 - b. Costs of maintaining a water supply for the plantation, such as electricity to pump water from a tubewell.
 - c. Cost of fertilizer, applied from time to time.
 - d. Cost of pesticides.
 - e. Machinery or tools for the maintenance of the plantation, such as cutting tools.
 - f. Labor for harvesting wood and selling or distributing it.
 - g. Labor for pruning the trees.
 - h. Replanting of trees.
 - i. Leaves of species such as leucaena, since they have high N-content and can be used as green manure as well as forage. This will necessitate harvesting leaves on a more or less regular basis and will require labor for harvesting and distribution as well.
 - j. Cost of labor for guarding the plantation."

"Returns from the plantations may include income from the wood..."

"...The environmental benefits might include: soil conservation, improvement of the water table, increased rainfall, maintenance and rebuilding

of the topsoil, reduction in noise pollution (IIM 1979) and provision of shade and improvement of the microclimate by reducing the ambient temperature (IIM 1979)." (pp.15-34)

"SOCIOPOLITICAL CRITERIA AND CONSIDERATIONS"

"Sociopolitical considerations with regard to fuelwood projects may be divided into two categories: sociopolitical parameters and policy implications of those sociopolitical considerations."

"The first consideration will be to ensure that the mechanics of the project are such that it does not give undue advantage to any one occupational or income group".

"Interest Groups"

"...many of the above interest groups, (e.g., women and student groups) are not very highly organized and do not have a strong lobby in rural politics..."

"The more homogeneous a community in terms of religion, caste, income distribution, occupation, and so on the more chance the community has of making a cooperative project successful."

"Land management policy would be the most important consideration. Land tenure, land ceiling, and other legislation might be re-evaluated to determine its significance or necessary change in the context of fuelwood policy (IIM 1979; FAO 1978).

In many parts of Asia, land legislation requires continued use of land for the same purpose. In other words, land classified as cropland has to be used for grain crops every year or its tenure might pass to the government if it is classified as fallow. Such legislation encourages the use of marginal lands and croplands, although it might be much more economical to use that land for a fuelwood plantation. A change in legislation would facilitate including that land in a fuelwood project (IIM 1979)."

"Education could be an important instrument for shaping policy."

"Another policy consideration of importance would be the management and supervision of the project. Management and supervision would involve the following tasks:

1. Hiring and supervision of labor.
2. Supervision of the security of the plantation (through guards) against theft, animals, and so on.
3. Collection or purchase of materials such as fertilizers, pesticides, equipment for pruning, and thinning.
4. Supervision of the distribution or sale of the produce of the plantation.
5. Accounting tasks, for example, making payments to the bank,

collecting the payments for wood and other products."

"...it would be advisable to have the various interest groups discussed above represented on the supervisory team."

"A prerequisite for establishing a community fuelwood project would be a well-established linkage between the community and the local, regional, or national governments." (pp. 34-42)

"SPECIFIC INFORMATION USEFUL TO POLICYMAKERS"

"After discussing the technical, economic, and sociopolitical aspects of community fuelwood projects, one could translate the criteria or parameters into specific information or data that policymakers at the national, regional, and local levels would find useful. First, consider the sort of issues that policymakers at the national, regional, and local levels are likely to address.

National Level

1. What are the regions in which acute scarcities of fuelwood exist?
2. What are the options for domestic energy supply in these regions -- for example, biogas, fuelwood, kerosene?
3. What sort of measures can be taken to solve the problem and what policy changes are involved at the national level, particularly with regard to research priorities, objectives of rural education, government subsidies for projects, financing development projects through national banks (special interest notes, etc.), land tenure, irrigation, and setting up forestry extension services and creating other new organizations?

Regional Level

1. Classification of various districts in the region according to energy supply and demand.
2. A regional picture of land, water, and other resource availabilities and distribution, disaggregated at the district level.
3. A knowledge of those subregions most suitable for pilot or demonstration projects.
4. Knowledge of subregions where the problem is most acute and where immediate solutions are needed.

Local Level

1. What sort of fuelwood projects are possible?
2. How can they be technically and economically feasible?
3. What are the ways in which the local government can organize the community, as well as establish linkages between governments at

different levels to successfully implement fuelwood projects?" (pp.42-46)

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Discipline: Economics
Application: Theory and Concept
Country: Asia (General Applicability)
Emphasis: Brief case studies of projects or management of tropical forest areas.

Tropical Forests: A Call for Action Part II Case Studies, Report of an International Task Force convened by the World Resources Institute, The World Bank, and the United Nations Development Programme, 1985, 55 pp.

FUELWOOD AND AGROFORESTRY

"The following examples of successful fuelwood and agroforestry projects reflect varying social, cultural, and land tenure situations, and they take into account the economics of forestry in different marketing situations."

"FARM AND COMMUNITY FORESTRY" (pp. 1-9)

"Many tree-planting programs were launched with the aim of producing more fuelwood. However, it has become clear that people are particularly interested in planting trees that provide fruit, fodder, and building poles, as well as fuelwood."

"Farming systems that incorporate trees have the potential for being more productive and sustainable than those that do not. Not only does the farm produce wood, fruit, and other products along with cultivated annual crops, but integrating trees and farm crops in agroforestry systems decreases farmers' exposure to environmental risk by increasing the stability of the farming system. Furthermore, trees often grow better on agricultural lands because of better site conditions. Most important, agricultural crops often grow better because trees help to maintain or even increase soil fertility."

"Cash-crop tree farming in India"

"...The markets for building poles, fuelwood, and charcoal can be substantial, and in some situations have provided a significant incentive for farmers to take up farm forestry.

The demand for wood-based commodities has been the driving force behind most cash-crop tree farming success stories. Perhaps the most widely reported example is Gujarat, India, where markets for construction poles (and for fuelwood) have provided a significant incentive for farmers to plant trees. This scheme was started by the state's Forest Department in the early 1970s as one part of its social forestry program."

"As the project evolved, some farmers realized that it was more profitable to grow trees instead of the usual cash crops, primarily cotton. Trees turned out to have several advantages over conventional crops. For instance, it was found that farm forestry was less labor intensive, and labor requirements could be spread out more evenly over the year. This meant that trees could be harvested during dry seasons when demand for labor was less. Reduced labor demands lessened household labor requirements and reduced

management problems where farm laborers had been hired."

"...A financial analysis of tree farming by one of Gujarat's first farm foresters (who intercropped eucalyptus and cotton during the first year) showed investment costs of around US\$1700 per hectare and total returns, after 5 years, of US\$5900 per hectare. While the internal rate of return was 129% in the first rotation, it increased to 213% for each successive coppice crop."

"An important feature of this project has been the involvement of schools and private farmers in growing seedlings under guaranteed buy-back arrangements with the government's Forestry Department."

"Another noteworthy feature of the Gujarat experience is the successful introduction of low-cost technologies for distributing seedlings. Farmers are given bamboo baskets about a half meter in diameter and several centimeters deep in which about 2,000 eucalyptus seedlings have been germinated. These baskets can be transported more easily and over longer distances than if the same number of seedlings had already been transferred into the commonly used polyethylene pots. When farmers return home, they can transplant the young seedlings into larger containers and are encouraged to sell them to other farmers."

"The Gujarat farm forestry has not been without its critics. The criticism can perhaps best be understood in light of the fact that the main goal of the activity was to produce fuelwood, but the primary output has been construction poles."

"...farmers will be unlikely to plant trees primarily for fuelwood until it becomes more profitable for them to do so."

"Reforestation and improved management of privately- and communally-owned forests in Korea."

"Nearly three-quarters of the forest lands in South Korea are privately owned; yet a lack of policy guidance and support at the village level in the past resulted in progressive overcutting and depletion of large areas of these forests."

"...the government of Korea launched a Village Fuelwood Program in 1973. The program centered around the establishment and intensive management of tree plantations to meet village fuelwood needs."

"To organize local community participation, the government encouraged the establishment of Village Forestry Associations (VFAs). The VFAs were locally elected organizations that operated as village cooperatives. Financial support for reforestation was provided through a specially created Village Forestry Authority. ...During 1973-78, total program costs were US\$600 million."

"...The Forest Development Law of 1972 empowered the government to require landowners to reforest private lands through community-based efforts. In return, the villagers could keep 10% of the output from their lands. Owners entered into contracts with the local VFAs. At first, local participation was the result of authoritarian government pressure, but the VFAs provided an exceptionally strong base of local support that helped make village forestry a

popular movement."

"To reduce fuelwood consumption, the government began efforts to improve the efficiency of the traditional "cndol" system for heating and cooking. A more efficient system of underfloor heating developed at the Forest Research Institute can reduce fuelwood consumption by 30%. The new system is now in widespread use."

"Because of the efficient administration of the program by the Village Forestry Authority, villagers were provided with the financing, materials, and information they needed promptly and regularly. The program was supported by well designed research and development to select the most appropriate species and planting techniques."

"Community Forestry in Nepal"

"...Historically, communal forests around villages in the hills of Nepal were managed by the local people."

"In 1957, the government nationalized forests with the aim of introducing more intensive forest management. Subsequent legislation included lands adjacent to the forests that had been left fallow for at least 2 years. In the absence of communal control, forests were progressively overused and degraded.

In response to the worsening situation, a new law was passed in 1978 that began to reverse nationalization by gradually transferring control of the forest back to local populations."

"Two new forms of forest management were introduced — the Panchayat Forest (PF) and the Panchayat Protected Forest (PPF). Panchayat Forests are new plantations of up to 125 hectares that are planted and protected by the local panchayat on government wastelands. The panchayat has all rights to the produce of these forests.

Panchayat Protected Forests are areas of natural forest of up to 500 hectares that need protection and management. Panchayats that undertake these activities are allowed to keep 75% of the revenue generated by the forests."

"Experience to date suggests that the panchayat may be too large an organizational unit to manage communal resources. Many of them cover a large area of severe terrain and lack basic communication and transportation facilities. Panchayats are often composed of a large number of heterogenous groups which can make management of common lands difficult."

"Reforestation in China"

"Reforestation and afforestation have had high priority. Using such slogans as "Green the Nation" and "Cover the Country With Trees", the leaders are enlisting the support and participation of the people. Forest area in relation to total area increased from an estimated 8.6% in 1949 to 12.7% in 1979. The national goal is 20% by the year 2000. China is reported to have reforested nearly 30 million hectares since 1949 and has an additional 136 million hectares classified as potential forest land."

"...As a rural forestry success, it remains the single largest example in the world. Despite the differences in political systems and means of mobilizing popular participation, the Chinese experience in designing optimal approaches to farm forestry that maximize both food and tree crop production contains much relevance to other countries."

"LAND USE ON UPLAND WATERSHEDS"

"HIGH RAINFALL UPLANDS"

"Watershed rehabilitation under subsistence farming in Nepal" (pp. 16-17)

"The essential lessons from the Nepal experience are that - Existing technologies succeed in restoring eroded hill slopes where rainfall and temperature support vigorous growth of vegetation.

Even the best known technologies must be tested by trained staff under local conditions before implementation on a large scale.

Even the most resistant subsistence farmers react positively when they see their neighbors showing a profit, but a substantial subsidy is needed to ensure change in their practice."

"In-service training in the necessary technology is an urgent requirement within Forest Departments.

Protection of forests from destruction depends on the development of sustainable supplies of fuelwood, fodder, and building materials to be grown in cooperation with neighboring communities.

Watershed rehabilitation and long-term management will succeed only when a strong extension service is built up and trained. Improvements begun in earlier projects have lapsed when the project staff departed and government support dwindled."

"FOREST MANAGEMENT FOR INDUSTRIAL USES."

"Small holder production of pulpwood in the Philippines." (pp. 29-31)

"The pilot tree-farming project"

"In the late 1960s, PICOP [The Paper Industries Corporation of the Philippines] launched its Agroforestry Development Plan to ensure raw material supplies for its mill complex and improve the socioeconomic position of small farmers surrounding the company's concession. Under the plan, a participating farmer would devote 20% of his land to food and livestock production and 80% to fast-growing pulpwood trees on an 8-year rotation. PICOP would supply the seedlings (at cost) and technical assistance (in exchange for first rights to the mature pulpwood).

At PICOP's request, beginning in 1972 the Development Bank of the Philippines (DBP) agreed to finance the establishment of tree farms by smallholders. To qualify for a loan, a farmer had to have titled possession of

at least 10 hectares and a signed marketing agreement with PICOP. The loan was mainly to cover the cost of planting 8 hectares of Albizzia falcataria, and the balance was for crop and livestock development. Planting was to proceed at 1 hectare per year. The loan was at 12% interest for 15 years, including an 8-year grace period. Close supervision and technical assistance would be provided by DBP and PICOP.

By 1948, 868 tree farms had been established under this scheme, of which 127 had applied for and received DBP financing. A total of 1,816 hectares had been planted."

"The expanded project"

"A number of changes were introduced with the expanded project. First, farmers would be required to contribute at least 25% of the cost of their plantation establishments in the form of labor. Second, the minimum landholding for eligibility was reduced from 10 to 5 hectares. Third, smallholders who had occupied suitable land for at least 10 years were to be eligible, even if they did not have legal title to the land. Fourth, there would be no restrictions on the annual rate at which land could be developed. The terms of the loan to the farmers would remain the same...

"...a major typhoon hit the area in March 1982, seriously damaging company and private tree plantations in seven municipalities. The damage was particularly bad in plantations over 7 years old. To help the tree farmers, PICOP bought all the wood they could salvage and deliver to the mill. This helped substantially, but a number of farmers became discouraged. To make matters worse, in August 1982, the Development Bank of the Philippines suspended its financing program, thus slowing down the development of new areas. However, in mid-1983, the Development Bank began a program to finance rehabilitation of typhoon-damaged tree farms originally financed by them.

In 1982, several large agribusiness corporations planting oil-palm, coconuts, coffee, and cacao began operating in the Agusan area not far from the PICOP project. A number of tree farmers shifted to these crops, and it is estimated that 2800 hectares of tree farms have been converted. However, in 1983, Taiwan started importing Albizzia logs grown in tree plantations. While only the best and largest logs are exported to Taiwan, interest in the tree farms is reviving."

"Two elements that have been crucial to the success of the PICOP project are

-The marketing and technical assistance agreement with PICOP for the production and purchase of the pulpwood

-The financing package offered by the Development Bank of the Philippines".

"...PICOP agrees to provide the landowner with tree seedlings at cost and free technical advice on pulpwood planting, development, and management. Assistance is also given on production, processing, and marketing of food and other agricultural crops and livestock and in other self-help community projects.

The agreement obligates the landowner to sell, and PICOP to buy, pulpwood based on PICOP's specifications and standards. The pulpwood price is defined in the agreement as the "current price", although minimum prices were set for stumpage alone. PICOP withholds part of its payment for pulpwood to repay the farmer's loan from the Development Bank. The landowner retains the option to sell his wood to any purchaser prepared to pay a higher price (after notifying PICOP), but PICOP has the right of first refusal at this higher price."

"...More than half the farmers did not need any external financing. Nevertheless, the availability of financing was clearly important in the decision of many farmers to participate in the program."

"STRENGTHENING INSTITUTIONS FOR RESEARCH, TRAINING, AND EXTENSION"

"...The case studies presented here demonstrate the significant contributions of well developed research, training, and extension programs to forest conservation and development. In addition to expanding and improving the technical basis of these programs, greater attention needs to be given to social and economic considerations." (p. 43).

Readings in Political Science

DISCIPLINE: Political Science
APPLICATION: Theory and concepts
COUNTRY: China
EMPHASIS: land tenure and land use

Yiqiu, Chen. 1985. Man-Development-Environment. In: Environmental Degradation and Rural Development Strategies, Society for International Development (SID). Vanore, R. (ed.) pp. 39-44.

"To man, the environment acts as a development resource as well as a development constraint. Development constraints, acting upon man, are changing uninterruptedly. They can be turned favorably and unfavorably to the development of man. China has suffered not little in ignoring development constraints. For instance, the lack of family planning in 1957 resulted in an 'overburden of 300 million Chinese people'. In 1958, the putting forward of slogans 'man must conquer nature' and 'the land is able to produce as much as man dares to conceive', followed by a series of erroneous agricultural policies, resulted in serious environmental degradation..."

"It is true that China has vast stretches of land and plenty of reserves of natural resources. But when they are divided by a large denominator - the population - the land becomes not large and the resources not rich... The farmland is diminishing incessantly." (p. 39).

"...Annual soil erosion amounted to 5 million tons--equal to an annual loss of 1 cm. of fertile topsoil of all cultivated land. Desert acreage expanded by 20 million ha. during the period 1949 - 1983 and sandy and degraded pasture increased by 47 million ha. There are now 323 cities short of water supply, while many regions have their ground-water level sinking every year..."

"Man acting as a 'mouth' is a development constraint; man acting as 'working hand' and 'thinking brain' is a valuable development resource..."

"Based on...analyses of China's development constraints it is easy to conclude that the basic development strategy of China must be directed, at one end of the formula of man and environment, to controlling the growth of the population, to converting the 'mouth' into hardworking 'hand', devoted to becoming better off through diligence, to converting the 'hand' into more valuable 'brain' and, at the other end of the formula, to optimizing the utilization of very limited physical and capital resources with the aim of multiplying their economic effectiveness..." (p. 40-41)

"China has won great success these years in promoting its agricultural production, mainly by introducing agricultural production responsibility systems which aroused the enthusiasm of the vast rural masses. It is closely connected to the fundamental ethic problem - the active effects of the individual on society, even the socialist society..."

"China's practice of dealing with public ownership of the means of production is to now separate proprietary rights from the rights of use by introducing, for instance, the agricultural production responsibility system - i.e. letting the peasants have the right to use the land, with the ownership right still belonging to the collective...The serious degradation of China's rural environment is closely related to its erroneous rural development strategy in past years. The State is unable to allocate large amounts of funds for environmental preservation. The only way out is to solve the environmental issues in the rural economic development. Once the peasants have a protracted right to the use of the land they know how to preserve it..." (p. 41-42)

"...China has 960 million ha of territory... but utilizes only 100 million ha. of farmland. Almost all attention is paid to rice fields and irrigated land, while over half of the cultivated land which is rain-fed is neglected."

"It has been decided to turn the vast stretch of seriously eroded loess highland into forestry and husbandry bases, mobilizing the vast masses of the Gansu Province to plant trees and grass..." (p. 42-43)

"The peasants were once restricted from migrating into cities. The practice now is to encourage the peasants 'to leave the land but not the countryside'..." (p. 44)

DISCIPLINE: Political Science
APPLICATION: Methods and measures, technology transfer
COUNTRY: India
EMPHASIS: Chipko

Bandyopahyay, J.; and Shiva, V. 1987. Chipko: Rekindling India's Forest Culture. *The Ecologist*: 17 (1): 26-34.

"Forests have been central to the evolution of Indian civilisation, India being known in ancient times as 'Aranya Sanskriti' or a 'forest culture'. Under British rule, however, forestry became commercialised. The access of peasants to the forests was restricted and management practices aimed at maximising timber output were introduced. This led to widespread satyagrahas - campaigns of non-violent civil disobedience - being organised throughout India in defence of forest rights. The modern Chipko Movement is the natural heir to those early protest movements. Today, however, the focus of the forest rights campaign has shifted. The critical problem no longer revolves around who should be allowed to exploit the forests but how India's forest wealth can be restored. Environmental issues have now moved centre stage and, in the process, Chipko has become truly 'Green'." (p. 26)

"...By questioning the destructive process of growth, ecological movements like Chipko have earned a reputation for obstructing the process of development. In fact, by constantly keeping ecological stability in focus, they provide the best guarantee for ensuring a stable material basis for life for all." (p. 31)

"In the final analysis the dichotomy between 'development' and environment boils down to differing views of what 'development' involves, and how scientific knowledge is generated and used to achieve it. This dichotomy is very clearly illustrated in two popular slogans, one emanating from the ecological concepts of Garhwali women, the other from the sectoral concepts of those associated with the trade in forest products. Thus the Chipko movement expresses its ecological basis in the slogan:

'What do the forests bear?
Soil Water and Pure Air.'

This is a response to the slogan promoted by the forest industry:

'What do the forests bear?
Profit on Resin and Timber.'" (p. 32)

"The Chipko slogan embodies the scientific and philosophical message of the movement, and has laid the foundations of an alternative forestry science, oriented to the public interest and ecological in nature. Commercial interests have the primary objective of maximizing exchange value through the extraction of commercially valuable species. Forest ecosystems are therefore reduced to the timber of commercially valuable species..."

"Forest movements like Chipko offer both a critique of reductionist 'scientific' forestry and an articulation of a new frame-work for forestry science which is ecological and which can safeguard the public interest. In this alternative forestry science, forest resources are not viewed as isolated from other resources in the ecosystem. Nor is the economic value of a forest reduced to the commercial value of timber. 'Productivity', 'yield' and 'economic value' are defined in relation to the ecosystem as a whole and for multipurpose utilisation. Their meaning and measure is therefore entirely different from the meaning and measure in reductionist forestry..."

"...What has been called the 'Eucalyptus controversy' is in reality a conflict of paradigms, between an ecological approach to forestry on the one hand, and a reductionist, partisan approach which only responds to industrial requirements on the other. While the former views natural forests and many indigenous tree species more productive than eucalyptus, the reverse is true according to the paradigm of Commercial Forestry. The scientific conflict is in fact an economic conflict over which needs and whose needs are important. In such a clash paradigms, dominant scientific assumptions change not by consensus but by replacement. Which of the two paradigms becomes dominant is determined by the political strength of their backers." (p. 32-33).

"The philosophical confusion generated by taking sectoral growth as synonymous with development has permeated movements like Chipko too...Increasingly, there are mentions of a 'split' in the Chipko Movement and growing tension between the two 'streams' - one supposedly headed by [Sunderlal] Bahuguna and the other by [Chandi Prasad] Bhatt..."

"...Bahuguna believes that development, as practised today in official programmes, is going to be unsustainable if ecology is not considered as an imperative. Accordingly the ecological rehabilitation of the Himalayan regions, the source of the major regions, has become his first priority. The material foundation of economic development, as Bahuguna believes, cannot be divorced from the productivity of ecological systems and their stability. Thus, Bahuguna maintains economic development in the Himalayas must be based on an expansion of trees and not agriculture."

"...Bhatt...strongly favours the introduction of modern development in the Himalayas. Bhatt firmly believes that the acceptance of present modes of resource use - but with a new emphasis on the location of manufacturing activities in the hill areas and a strengthening of their raw material base - will lead to development and accelerate the fight against poverty. Underpinning this view is a model of development which explains poverty as the absence of processing industries and recommends solutions in technology transfer. Poverty is seen by Bhatt as having a technological solution, in contrast to Bahuguna who sees the solution to poverty in the ecological rebuilding of the productivity of natural resources. For Bahuguna, material benefits arise from lowering the ecological costs due to resource destruction and the increasing productivity of natural and man-made systems. For Bhatt, material benefits are not directly seen in the conservation of essential ecological processes, and productivity is defined in the terms of the classical concept in industrial management, through the technological productivity of labour alone..."

"...The programme of ecological development as propounded by Bahuguna requires a serious change in consumption patterns and the reorganisation of interest groups in society. The programme of Bhatt, however, can be realised within the present social structure and commonly goes under the name 'eco-development'." (p. 33).

"The other major difference between them arises from their work strategies which are complementary not contradictory. Bahuguna believes in spreading the idea of ecological development in all parts of India, since his model requires a fundamental change in public opinion and political alignments at the national level... On the other hand, Bhatt,... believes in concentrating his efforts in his region of influence and working towards consolidation...The issues of awareness at the national level and the question of a new ideology of development based on ecological stability is much less prominent in Bhatt's immediate programmes. It is based on the hope that one successful example may open the flood gate of similar projects elsewhere."

"The difference between the methods of Bhatt and Bahuguna have often been described, somewhat naively, as the difference between 'activism' and 'populism'. This is mischievous and deflects attention from the very real differences in philosophies of development, technology policy, democratic values, self-help and survival strategies, concepts of productivity and efficiency, which are of extreme significance and which need serious analysis." (p. 34).

"Chipko's search for a strategy for survival has global implications. What Chipko is trying to conserve is not merely local forest resources but the entire life-support system, and with it the option for human survival..."

"...The spread of the message of an alternate world-view is crucial to the creation of a sustainable world, particularly in the context of a highly integrated global economic system. The ecological world-view of Chipko - the civilisational response of India - provides a strategy for survival not only for tiny villages in the Garhwal Himalayas, but for all human societies threatened by environmental disasters." (p. 34)

Discipline: Political Science/Sociology
Application: Theory and Concepts
Country: India
Emphasis: Focus on the use of common property resource lands: who uses
and who controls

Blaikie, Piers M., John C. Harriss and Adam N. Pain, "The Management and Use of Common Property Resources in Tamil Nadu, India", in Proceedings of the Conference on Common Property Resource Management, April 21-26, 1985, Prepared by Panel on Common Property Resource Management Board on Science and Technology for International Development Office of International Affairs National Research Council, Washington, D.C.: National Academy Press, 1986, pp. 481-504

INTRODUCTION

"Tamil Nadu is the state at the southeastern tip of the Indian peninsula. It is traversed from the higher west to the coast by several major river valleys where the cultivation of irrigated rice predominates. ...Common property resources play some part in agricultural systems throughout the state, the most important of them being surface water and groundwater for irrigation."

"...our research has been focused rather upon land-based resources: principally fuel, fodder, and grazing, but also construction timber, green manure, and a variety of minor forest products with domestic, craft, or sometimes industrial uses."

"The "commons" of Tamil Nadu are now those lands defined under this system as: (a) poromboke: "lands incapable of cultivation or set apart for public or communal purposes," (including, sometimes, public grazing lands) that are not generally liable for revenue; (b) "waste," which may be either "assessed waste" ("cultivable lands which have been left uncultivated, lands relinquished by cultivators, and lands bought in by government in revenue sales") or "unassessed waste" ("lands to which no classification or assessment has been assigned because they are considered unfit for cultivation"); and in addition, (c) areas designated under the terms of the forest act as either reserve forest or revenue forest."

"Fuel, fodder, and other products available on poromboke and waste lands may be freely collected, except in the case of designated trees or bushes (such as palmyra palms or tamarind trees), the rights to which are in the control of the local administration and are usually auctioned annually. ...In addition, fuel and fodder may sometimes be obtained quite freely from private land, where there are generally accepted common rights, for example, to dig up the stumps and roots of harvested plants for fuel, to graze animals after harvest, or to cut grass from field edges."

"In the majority of cases, users of the poromboke and waste lands close by a village tend to be the villagers themselves."

"Figures suggest that while the forest area has remained constant over the last 21 years, the areas of culturable waste and of permanent pasture have

undergone a general, steady decline."

"Field investigations at the village level show that there is a good deal of diversity in the importance of common property resources (CPRs) in the economy."

"In villages in areas of old, established, and quite intensive cultivation, CPRs may in fact be of rather marginal importance..."

"In contrast with these circumstances are those of villages in more marginal environments such as the hilly areas of Dharmapuri and Salem districts and in the western areas of the state. Here, a "frontier" of waste still exists and offers livelihood possibilities even for poor people. Fuel and fodder are extensively obtained from the "commons" by all classes of people, and soil fertility may be closely bound up with the numbers of livestock that can be maintained. These CPR-dependent villages are often situated in the west of the state where the forest still covers a significant percentage of the land area."

"Tamil Nadu has a wide range of vegetative formations reflecting a diversity of rainfall regimes. This vegetation provides the productive base for CPRs."

"We will discuss them under the two broad headings of timber and fuel and grazing resources (although for many purposes there is no need to distinguish between them). With regard to jointness of supply of these CPRs, clearly they all can be used by a number of people simultaneously, and that use can subtract from the per capita benefit."

"Data on the production and productivity of CPRs is very scarce."

"The excludability of CPRs is an issue that is constantly at the centre of contradiction between the rural population and government departments. It is physically feasible to fence off forests, but very expensive. It is estimated that fencing social forestry plantations doubles the costs of establishment."

"There is another aspect of excludability that depends upon the location of the CPR relative to potential users. The friction of distance derives from relative location and not from the technical attributes of the CPR, but it is an important aspect. Development of the road system even to the remote parts of Tamil Nadu has opened up many forest products to commercial pressures."

"Decision-making arrangements regulating the use of CPRs in Tamil Nadu have these characteristics: first, the development of institutions for collective choice within the groups involved with these "commons" is very restricted indeed; second, there is extensive bureaucratic control under rules that are partial and often unclear, and that leave a great deal to the discretion of field officers in matters of enforcement; and third, following from these features, the arrangements are highly susceptible to manipulation by those with local power."

"Few local institutions regulate choices over the use of CPRs in Tamil Nadu."

"The official panchayats have assumed some responsibility for the management of some CPRs." (p. 488)

"In sum, the use of CPRs of fuel, fodder, and other produce from poromboke, waste and forest lands is subject to a high degree of personal discretion (individuals are generally able to act on the basis of personal discretion in matters of common concern).

"In circumstances such as those just described, the operational rules affecting CPR use exist on two levels. On the one hand, bureaucratic rules regulate access to and use of poromboke and waste lands and their products; these are enforced by the revenue department; rules regarding officially designated forests are enforced by the forest department. The former include a scale of fines that should be levied in cases of cultivation of poromboke; the latter, such rules as giving rights to collect fallen wood, but not to cut standing trees.

On the other hand, informal rules arise from the nature of the local power structure and the interactions of people with the bureaucracy. Thus the revenue and the forest departments are empowered to enforce rules that, in principle, prevent partitioning of CPRs and establish strong boundary lines. Local officials of the revenue department should prevent encroachment upon the poromboke lands and regulate the use of designated waste, and forest officers control access to the forests. In practice, these rules can be bent systematically in favor of the relatively rich and powerful, for whom the fines imposed by the bureaucracy and/or the bribes paid to local officials for turning a blind eye on infringements may be treated as acceptable "costs of production." For the officials concerned, on the other hand, these payments are part of a kind of bureaucratic rent."

"Users usually compete for CPRs, and competition among individual households for CPRs is encouraged by the lack of institutions at the local level (or at any other level) to manage the commons in a cooperative way. Each household thus competes against the others and against the state, and in this interaction the notion of access is crucial.

Access to CPRs has many dimensions. It implies that the would-be user has sufficient labor to use the resource (this is particularly important for fuel collection and grazing). It also implies that the potential user has spatial proximity to the resource and either the funds to purchase access from state officials (the payment of bureaucratic rent) or sufficient political power and coercion to gain access without paying the fee. Such power usually is the result of land ownership and facilities dealings with official regulations over CPRs and with other competing households who are also direct users of the CPR. Thus the access position of the user largely determines the choice of strategy to obtain CPRs, and therefore the pattern of interactions among users themselves, and between users and the state.

The first and most common interaction between users and the state is the "legitimate" use of the CPRs."

"Patterns of interaction involving illegal use of CPRs are of two major types: (1) instances when the illegal use constitutes overuse or overextraction by an individual of a common resource over and above the limits

set by the state, and (2) cases when the illegal use involves a theft of state property (such as sandalwood). The two major resources that are most often overextracted are fuelwood and grazing lands for goats, both of which are found on revenue and reserved forests."

"The other main type of interaction between state and user is the privatization of CPRs through encroachment. Successful encroachment of poromboke lands and other common lands (such as uncultivated waste lands) depends upon the access position of the individual encroacher, both with regard to other villagers and to the bureaucracy of the land revenue department."

"Local revenue records show that most of the encroachment takes place on land designated as poromboke, cultivable waste, permanent pastures and other grazing lands, and only to a very limited extent onto land under the jurisdiction of the forest department." (p. 495)

"The outcomes of the political economy can be summarized by seven major points discussed below.

It will already be clear that the state has taken control of virtually all lands on which common property resources are to be found. The social forestry program, as it is currently conceived, is merely an extension of the state's control and a further restriction upon the use of common property resources. At the local level, too, no institutions take a major part in managing these resources. In sum:

- (1) The state seeks to regulate most CPRs in Tamil Nadu.
- (2) Marginalization of poorer rural people has led to increased use of CPRs and their encroachment through illegal squatting.
- (3) Increases in irrigated area have tended to ease the shortage of pastures on common land, but may also have increased the demand for green manure, particularly near forests.
- (4) There is not yet a widespread nor severe shortage of combustible fuel.
- (5) There is severe pressure on grazing land, and this is partly associated with a decline in the numbers of cattle.
- (6) Most minor forest products have ceased to be CPRs either because they have been overused to the point of extinction or because they have been commercialized and taken out of the realm of CPRs for local use.
- (7) The area of village lands from which CPRs are obtained has been diminishing over a long period, and has left very little common land under the control of the village."

"It is difficult to be precise about the efficiency of use of CPRs in Tamil Nadu because of the general dearth of accurate physical information on their potential and actual levels of productivity."

"Verbal reports and some physical evidence do suggest that overall usage rates of CPRs has led to a depletion of resources. Productivity has actually increased in one case where tank foreshores were planted with Acacia nilotica (babul) under social forestry schemes; however, this has not necessarily enhanced common benefits."

"CPRs are of varying importance as sources of food, fodder, fuel, manure, and minor products; these products, in turn, are the basis for livelihoods in villages in different parts of Tamil Nadu. The bureaucratic regulation of CPRs is of particular concern in CPR-dependent villages, for this regulation is often subject to manipulation by local power to the disadvantage of poorer people."

"But in both CPR-dependent and CPR-limited village economies, CPRs present livelihood opportunities that are either not pursued or that are inefficiently pursued from the point of view of poor peoples' welfare."

DISCIPLINE: Political Science
APPLICATION: Theory and concepts
COUNTRY: India
EMPHASIS: Participation

Shingi, P.M.; Patel, M.S.; Wadwalker, S. 1984. People's Participation-Some propositions. In: Development of Social Forestry in India. Indian Institute of Management Monograph Series No. 110: 190-196.
(In reader)

"A major criticism against the method of enlisting people in development programmes is that it is anything but self-management. The approach generally has been 'I manage, you participate'...The most important and relevant questions by the people who are expected to participate are: 'Participation for whose benefit and under whose management?' 'What reward will be given to me, when and in what form?' 'Who is benefitting from my participation?'

Similar questions are most likely to be raised regarding the social forestry programme, which is thought to be managed, financed and controlled with the aim of securing peoples' participation. Even if we set aside the question of immediate gains to individuals which by any standard is the motivating factor for participation, what opportunities does the concept of social forestry offer for people to participate?..."

"For us participation means associating oneself, individually or as a member of a group, with a legitimized task, be it a programme, scheme, project, an activity, or a movement, with an appreciable degree of either adaptive, emotional, expressive or instrumental involvement inclusive of positive and negative connotations. For example, criticising the implementation of the social forestry programmes, or stopping foresters from cutting trees could also be considered as forms of participation.

The ... involvement referred to above can be conceptualized as process participation, cognitive participation, interactive (communicative or persuasive) participation, and material participation, respectively.

Process participation would involve participating in processes which lead to better decision making.

Cognitive participation means identifying oneself with the concept, idea, or task but not necessarily participating in it physically. Old people, for example, may not be able to provide manual labor, but can encourage able-bodied persons to participate in afforestation.

Interactive participation connotes educating, motivating, organizing, guiding, and preparing people for a particular task. The activities of the preparatory and planning phase, and those related to leader-follower relationships may fall under this category.

Material participation would include individual contribution by way of time, money, labour or other resources necessary for achieving the stated goals and is not restricted to digging pits or planting saplings. A person giving his barren land for growing trees, or allowing use of his tubewell to water young plants, or visiting officials in connection with social forestry projects, or donating money, are examples of material participation.

These four types of participation refer to the planning, promotion, public education and implementation functions...however...the separation of propositions in different categories is only for analytical purposes. In practice, these propositions may overlap conceptual boundaries."

DISCIPLINE: Political Science
APPLICATION: Methods and measures
COUNTRY: India
EMPHASIS: Chipko

Shiva, V. and Bandyopadhyay, J. 1986. The Evolution, Structure, and Impact of the Chipko Movement. Mountain Research and Development. 6(2): 133-142.

"ABSTRACT The traditional Indian strategy of resolving conflict by non-cooperation, the satyagraha, has been revived in the Chipko, or 'Embrace the Tree', movement to protect forests from commercial felling. This paper traces the development of the philosophy and the non-violent resistance activities from the beginnings of Chipko in the early 1970's in Garhwal to its present role throughout most of India. It is unique in that it is based not on the politics of the distribution of wealth but on that of sustainable ecological stability, and it is dominated by women. Today the Chipko search for a strategy for human survival from ecological disaster has world-wide significance." (p. 133)

"...During the past century, there has been a progressive encroachment by the State on the rights and privileges of the people to forest resources. The people have resisted this encroachment in various parts of India mainly through the Gandhian non-cooperation method of protest, well known as 'Forest Satyagraha'. In the forest areas of the Garhwal Himalaya this style of protest was revived in independent India as the 'Chipko' or 'Embrace-the-Tree' movement to protect trees marked for felling. Although Chipko was first practiced in the Garhwal Himalaya, it has now spread to most of the country, especially the hilly regions..."

"...The Chipko Movement, however, is unique in a fundamental way. Although it had its roots in a movement based on the politics of the distribution of the benefits of resources, it soon became an ecological movement rooted in the politics of the distribution of ecological costs. Further, though the visible leaders of the movement are men, the strength of the movement lies in the support from women." (p. 133)

"Forest resources are the critical ecological elements in the vulnerable Himalayan ecosystem. The natural broadleaved and mixed forests have been central in maintaining water and soil stability under conditions of heavy seasonal rainfall. They have also provided the most significant input for sustainable agriculture and animal husbandry in the hills. Undoubtedly, the forests provide the material basis for the whole agro-pastoral economy of the hill villages." (p. 136)

"The Chipko Movement is, historically, philosophically, and organizationally, an extension of traditional Gandhian Satyagraha. Its special significance is that it is taking place in post-Independent India...The rapid spread of resistance... in the hills of Uttar Pradesh and its success in enforcing changes in forest management was largely due to the awareness created by folk poets...and grass roots organizational efforts of a number of activists..."

"...The organizational platform for the Chipko Movement was ready... when in the 1960s destruction of the Himalayan forests through commercial exploitation became the major cause of ecological instability in the Himalaya. Since forest exploitation was carried out by private contractors, the Movement, in its initial stages, attempted to stop the auctioning of forests for felling by contractors. Auctions were held up by protesters in Nainital, Dehradun, Narendranagar, Tehri, and Uttarkashi. Songs by the folk poet Ghanashyam Raturi were central to the mobilization of support for these protests. The songs reminded the hill people of their forest-based culture and created an environment within which the hill people became more aware of the need for forest protection...It is this cultural and political climate and heritage which marks the birth of the now famous Chipko Movement..."

"...the movement is not the conceptual creation of any one individual. It is the expression of an old social consciousness in a new context. Chipko, like the earlier forest satyagrahas and movements in Garhwal, is aimed jointly at protecting forests, preserving a culture, and maintaining livelihoods. It is the response of a whole culture to the central problems related to the survival of the hill people. Today, the women of Garhwal are the main bearers of this culture..."

"The cumulative impact of the sustained grass-roots struggles to protect the forests was a re-thinking of the forest management strategy in the hill areas. The Chipko demand for declaration of Himalayan forests as protection forests instead of production forests for commercial exploitation was recognized at the highest policy-making level. The late Prime Minister, Indira Gandhi,...issued a directive for a 15-year ban on commercial green felling in the Himalayan forests of Uttar Pradesh." (p. 136-138)

"Both the earlier forest satyagrahas and their contemporary form, the Chipko Movement, have arisen from conflicts over forest resources and are similar cultural responses to forest destruction. What differentiates Chipko from the earlier struggle is its ecological basis. The new concern to save and protect forests through Chipko Satyagraha did not arise from a resentment against further encroachment on the people's access to forest resources. It arose from the alarming signals of rapid ecological destabilization in the hills. Villages that were self-sufficient in food had to resort to food imports as a result of declining food productivity. This, in turn, was related to the reduction of soil fertility in the forests. Water sources began to dry up as the forests disappeared. The so-called 'natural disasters', such as floods and landslides, began to occur in river systems which had hitherto been stable..."

"The over-exploitation of forest resources and the resulting threat to communities living in the forests have thus evolved from concerns for distribution of material benefits to concerns for distribution of ecologically-generated material costs..."

"The contemporary Chipko Movement, which has become a national campaign, is the result of these multi-dimensional conflicts over forest resources at the scientific, technical, economic, and especially the ecological levels. It is not a narrow conflict over the local or non-local distribution of forest resources, such as timber and resin..."

"This is clearly seen in the slogan of the Chipko Movement which claims that the main products of the forests are not timber or resin, but soil and water. Basic biomass needs of food, fuel, fodder, small timber, and fertilizer can, in the Chipko vision and the Garhwal practice, be satisfied as positive externalities of biomass production primarily aimed at soil and water conservation to stabilize the local agro-pastoral economy..."

"...Unfortunately, the Chipko Movement has often been naively presented by vested interests as a reflection of a conflict between 'development' and 'ecological concern', implying that 'development' relates to material and objective bases of life while 'ecology' is concerned with nonmaterial and subjective factors, such as scenic beauty. The deliberate introduction of this false and dangerous dichotomy between 'development' and 'ecology' disguises the real dichotomy between ecologically sound development and unsustainable and ecologically destructive economic growth..." (p. 140)

DISCIPLINE: Political Science
APPLICATION: Theory and concepts; methods and measures
COUNTRY: Nepal
EMPHASIS: Deforestation; fuelwood

Bajracharya, Deepak. 1983. Deforestation in the Food/Fuel Context: Historical and Political Perspectives from Nepal. Mountain Research and Development 3 (3): 227-240.
(In: reader)

"ABSTRACT The thesis of this paper is that the primary cause of deforestation in Nepal is the clearing of forests to increase land for agriculture and fodder, and not as generally assumed, the need for fuelwood. To successfully counteract deforestation and the resulting ecological damage, it is necessary to consider the full range of needs of the rural people: food, fodder, building materials, and fuel. This paper first examines the history of government concerns in Nepal from the eighteenth century to 1950. At that time, the peasants were conditioned into a life of subsistence while deforestation enriched the elites, who ignored scientific farm and forestry management. The second part of the paper focuses on post-1950 government policies designed to conserve forest resources. It documents the influence of the global energy crisis on proposed solutions to Nepal's deforestation problem, especially in the area of international assistance. In 1957, the government attempted to alleviate the deforestation problem by nationalizing the forests. Because this policy ignored the customs and needs of the local rural people, it was not effective in meeting its objective. The 1976 Forest Plan recognizes in principle the need for local participation in forest conservation, but this concept has yet to be successfully implemented." (p. 227)

"There is the apparent conviction among influential foreign observers that the tremendous influence of fuelwood demand on deforestation is reaching crisis proportions...

...Is the fuelwood scarcity as bad as these impressions suggest? Despite its seriousness a more sober approach is necessary to assess the present situation in Nepal...I have not observed during my travels through the Hill Region, excepting the far-western districts, any evidence of people who shifted from wood to dung. Others have confirmed this observation...Does it mean, then, that the Hill Region is not yet experiencing fuelwood scarcity, and that only the Terai is in the grip of the energy crisis? If...the logical tendency is to switch from wood to dung, why then do the hill migrants in the Terai continue to burn wood?..." (pp. 236-237)

"Deforestation is a serious problem in Nepal. It needs, however, to be understood in the context of the total resource-use pattern that prevails in each rural area..."

Despite growing recognition that a broader perspective is necessary for the solution of this problem, the fuel problem still overshadows other aspects, mainly because of the world-wide focus on the energy crisis. While the emphasis on deforestation has appropriately surfaced, this limited perspective implies the use of measures that may not, in the long run, be effective in controlling deforestation...the often-mentioned approach includes large-scale afforestation and/or reforestation, promotion of the use of improved stoves, and introduction of technologies to replace fuelwood. The success of this approach, however, requires that the local people place a high priority on the fuelwood crisis, feel the need for new technologies, and possess the capability of absorbing them. More important actual control of deforestation depends on how the forest resource is used for non-fuelwood purposes....

"Historical evidence suggests that inadequate food supply in Nepal's rural areas has been a chronic problem, and that people have been resorting to forest clearance to increase the food supply. There is no evidence yet that the forest clearance has come to a halt or that the food supply situation has improved recently. In fact, all evidence... suggests that the food problem has intensified with the increase in population. Expansion of agricultural land into the forest will continue as the most obvious way of increasing production, and deforestation will continue to be a consequence. This leads to major policy implications: To control deforestation (1) forest clearance for the expansion of agricultural land has to be recognized as an important cause...and (2) suitable alternative ways of increasing food and fodder production must be integrated with the effort of increasing fuelwood supply by emphasizing optimal resource use patterns and giving credence to local people's perceptions, needs and problems..." (pp. 237-238)

DISCIPLINE: Political Science
APPLICATION: Technology transfer
COUNTRY: Thailand
EMPHASIS: agroforestry; integrated development

Pinyosorasak, P. 1984. Strategies adopted in the development of diversified forest rehabilitation project, North-east Thailand. In: Strategies and Designs for Afforestation, Reforestation and Tree Planting: proceedings of an international symposium on the occasion of 100 years of forestry education and research in the Netherlands. Wiersum, K.F. (ed.) Wageningen: PUDOC. pp. 180-192.

"Summary

"The first part of the paper deals with the history of a request, in the early 1970's, to UNDP by the Royal Thai Government for assistance for the initiation of a pilot reforestation project for north-east Thailand. It discusses the original decision of the 1940's to reserve over 50% of the total area of the kingdom as forest and the slow pace of the subsequent reservation and reforestation. This process is contrasted with the rapid deforestation by the insatiable demands of a growing economy for timber, fuelwood and agriculture."

"The second part of the paper covers the planning phase of the project. It gives detailed data on land, forest and human resources, which determine the conditions for the attainment of the reforestation objective. Based on this information, on recommendations of the World Conference on Agrarian Reform and Rural Development and on the FAO Committee on Forestry and on policy decisions of the Royal Thai Government, a strategy emerged which aims at reforestation of some parts of degraded forests, coupled with socio-economic development of rural people, changes of mutual attitudes between foresters and rural people, and inter-agency cooperation."

"Once the strategy was adopted, it was easy to design a project document, summarized in the last part of the paper, for implementation of the strategy." (p. 180)

"Reports of socio-economic surveys showed that the pilot project area was occupied by 1300 households of average size 5 persons, mainly semi-literate farmers who consume rather large amounts of wood for fuel and dwelling construction. They occupy on average nearly 4 ha of land, and produce on average about 2.9t ha⁻¹ a⁻¹ mainly of maize. The reports also revealed that most farmers have patronage relationships with merchants who buy farm produce and who offer seemingly generous loans for instance with easy rescheduling terms for food, tillage, land-rent payment, labour employment and hospital treatment. But in the end these arrangements cripple the poor farmers to the extent that they lose ownership of their lands and become tenants to the merchants..."

"Report on studies of forest legislation revealed the complexity of forest laws, their incomprehensibility to the ordinary forester, and the deep concern by RFD of the unabated destruction of reserved natural forests. This destruction is mainly caused by shifting and sedentary cultivators, whose presence in the reserved forests with its potential and continued impact had been ignored at the time of reservation. Their influence is continuing even now in forests classified as managed. The report praised the RFD for its farsightedness in preparing a new forest policy which seeks to integrate forestry with agriculture as the only lasting alternative, and recommended the formulation of a new set of forest laws consistent with RFD's new forest policy..."

"Report on agro-forestry studies explained that forestry and agriculture play interactive roles and that it is beneficial to integrate the two in reforestation projects..."

"Results of contacts with governmental and other agencies indicated that the public is much aware of the problem of forestry and at the local level that there are abundant resources in men, materials and technical know-how to be tapped for integrated rural development projects. A prerequisite for such projects is that the problem of financing be resolved early in order that budgetary provisions can be made to the agencies, and that the competitive spirits of agencies are channelled into cooperative endeavours..." (pp. 185-186).

"The information revealed in the reports is not unique to the Kingdom of Thailand. Indeed in many developing countries, the benefits of the forests go to the articulate urban minority, and the strict forest laws are unenforceable...These laws have been passed on recommendations of foresters only and ensure that forests are protected for the urban minority, while creating barriers between rural peoples and their environments..."

"Regarding the mutual roles of forestry and agriculture, many foresters agree that both forestry and agriculture aim at the most effective management of the soil for the benefit of man. Agriculture in most developing countries is practised by agricultural scientists; and yet, forestry practice, unlike agriculture, is encysted in mysterious jargon understood only by the forester. In the long run foresters may be obliged to take on a similar role to agriculture scientists."

DISCIPLINE: Political Science
APPLICATION: Theories and concepts; Methods and measures; Technology transfer
COUNTRY: Asia
EMPHASIS: Land tenure, role of women; Common Property Resources; agricultural and forestry institutions; nurseries

Sheperd, Gill. 1986. Social Forestry: The Current State of Play. Workshop on "Strategies for Improving Effectiveness of Asia-Pacific Research Forestry for Sustainable Development, East-West Center. 9 p.

"Social Forestry is proving more difficult to institute than was at first hoped."

"Yet the obstacles are becoming clearer as the same problems recur over and over in different geographical locations. Villagers' priorities have not always been elicited; the village, and within that the household, have often not been sufficiently disaggregated and understood. Foresters often lack the social science skills which Social Forestry demands of them, since they have been taught to try to keep trees and people separate. Villagers may be reluctant to grow trees, or to have trees planted on their behalf, for reasons which gradually become obvious..."

"The following are key village variables..."

"(i) Land tenure"

"...Often first 'ownership' of land goes to those who first change its natural condition by clearing it (of bush or forest) or by planting trees on it (open savannah). But land tenure arrangements are progressively tightened everywhere as pressure upon the land increases..."

"As land itself becomes short, security of tenure becomes important. No long-term activity - especially tree-planting - will be undertaken without it. Shadowy usufruct rights on others' land are too uncertain over the long term, so that tree tenure without land tenure gradually becomes an impossibility."

"Many of the problems which have arisen over tree-planting have sprung from the difference between theoretical and actual land tenure arrangements in a particular site."

"(ii) Common Property Resources"

"Since so many rural dwellers still depend, or expect to continue to depend, on Common Property Resources (CPRs), it is very important for planners to understand the peculiar fragility of these institutions..."

"CPRs arise in areas of moderate demand for semi-available resources. Where resources are ample they are a free good. Where they are scarce, CPRs break down into private ownership. CPRs may be land, water, wood, grazing etc..."

"Management systems for CPRs vary widely in detail, but probably all have in common the fact that powerful, senior individuals manage them on behalf of the broader community. Their incentive to do so justly, if it exists, grows out of the extent to which they need local goodwill to prosper..."

"It has to be assumed that individuals are tempted to break CPR rules whenever it is to their own advantage. Infringements may be noted disapprovingly by those whose rights are being imposed upon, but if they or their leaders are unable to impose sanctions on wrongdoers because they are weak and the wrongdoers are strong, then the rights are becoming a fiction, and the CPR is ceasing to exist..."

"If we define a CPR as 'a resource held in balance by the equitable relationship with one another of its users', then it is clear that natural resources become degraded when the human balance has gone. Many well-wishing outsiders would like to help CPRs to maintain or even improve upon their original functions, but the current prospects for this would seem poor."

"(iii) Social stratification - the sexual division of labour"

"Women are doubly disadvantaged in many ways in the village situations we are examining. Firstly, they are almost always relatively poor. They have all the disadvantages that poor men experience - of weak land rights, a weak political voice, and poor access to benefits such as extension advice and credit..."

"Secondly, the woman's economic sphere is distinct from the man's. In ideology, the two are complementary. In practice there is tension between these economies, for the male sphere usually generates more wealth, more prestige, and more leisure, little of which benefits the whole household..."

"Rural women are occupied above all in subsistence production. Yet this fundamental task is rarely performed on land which women own themselves. Although at least a third of the world's households are headed by a woman, these households tend to be clustered among the world's poorest..."

"Agencies and Third World governments have consistently undervalued women's productive activities and been vague about what, and how much, women actually do. The assumption that their time will be available for new tasks, for instance, often betrays real ignorance about on- and off-farm subsistence activities and the amount of time they take up..."

"From the point of view of Social Forestry planners, women are important for three reasons."

"Women are the very category who have the most to gain from tree-growing. Yet they are likely to lack the land and the labour to allocate the task."

"Secondly, it is women who are aware of the diverse uses of the trees they regularly gather from, and what the losses would be if bushland or forest were lost."

"Thirdly, women cooperate with one another already, and tend to be permanent village residents; they often constitute the very categories of villager that Social Forestry projects could most rely on."

"(v) Social stratification: the poor, weak and landless"

"The poor access of society's least advantaged people to trees and tree products lies at the heart of many social and environmental problems."

"One-time safety valves - such as commons, or clientage to the rich - are rapidly ceasing to exist. The poor cannot make risky innovations, so they watch what happens while richer farmers plant trees. Meanwhile, they must take wood where they can find it..."

"(vi) Village institutions suitable for tree-growing"

"...Part of the reason why villagers have not wanted to grow trees is that the idea was presented to them within local institutional frameworks about which they had their doubts."

"In some situations, no group larger than the household can probably manage tree-growing - and even within the household there may be conflict between the husband's and the wife's priorities. Investigators should look at villagers' other activities. If they are already cooperating to manage terraces or irrigation schemes, it might be that trees could be grown by the same groupings..."

"Foresters involved in Social Forestry have to think about tree planting, not in a tenurial vacuum, as it were, but in competition with other agricultural or pastoral uses of land. And they must become social actors themselves: it is common for forester-instigated tree-planting in common land to be seen by villagers as a State land-claim..."

"Where the short-term benefits to poor villagers involved in forestry projects are not properly considered, any wood produced will be merely yet another rural-urban subsidy..."

"When Social Forestry is first begun in a country, the numbers of nurseries may well be low. The need is for nurseries to decrease in size and increase in number, to the point where villagers (or even households) can manage their own small nurseries..."

"To encourage villagers to plant trees, seedlings available at local nurseries should offer them not only the chance of growing trees as a cash crop, but also of choosing species suitable for living fencing, fruit, fodder, etc. Good multipurpose agroforestry species are needed. Individuals can then choose the balance between subsistence needs and investment most attractive to them..."

"The most successful arrangement for Social Forestry extension seems to have been that where forestry personnel train groups of agricultural extensionists several times a year, and then visit them informally in their villages while they teach."

"In this way, villagers are not receiving conflicting messages from different extension agents, and are encouraged to see trees as part of other agricultural activities..."

"For foresters to become involved in agroforestry, they will have to work with agricultural extensionists and keep in close touch with research initiatives in their country or elsewhere. Logically, it has the potential to become the most important Social Forestry activity."

"As soon as agriculture and forestry can be taught to villagers by the same cadre, or by cooperating parties, the better. Agroforestry will follow as villagers and extensionists address the problems."

"Staff retraining and reorientation for Social Forestry work is needed by forestry employees in most places. In order to facilitate this, social scientists with land tenure and forestry expertise ought to be employed in forestry training institutions and ideally in ministries involved in Social Forestry."

Discipline: Political Science
Application: Theories and concepts
Country: Asia (General Applicability)
Emphasis: Fuelwood and tree selection

Arnold, J.E.M. 1983. "Replenishing the World's Forests: Community Forestry and Meeting Fuelwood Needs" Commonw. For Rev., 62(3), pp.183-189

"...As most users gather their own fuelwood, new supplies must be created close to them. Meeting the fuelwood demands in the Third World can therefore seldom be achieved with large blocks of planted forests in the remote areas available for forestry. Rather we are confronted with the need to create or maintain a dispersed resource of woody plants within existing agricultural land use patterns, either in a scaled down form of plantation such as the village woodlot, or by inserting trees even more intimately into the agricultural landscape at the level of the farm and the household. Evidently this can only be achieved with the agreement and involvement of the people who work and control that farm and communal land."

"The challenge of building up fuelwood supplies is thus one of breaking down these component parts that can be implemented as small self-help activities Community forestry - or social or village forestry as it is also called - is an attempt, which has spread rapidly through the developing world in the past few years, to harness forestry to such a task. Its basic features are twofold: active involvement and participation of local people in the planning and execution of tree growing and management to meet their own needs, and provision by governments of the support that people need in order to be able to grow and manage trees."

"Benefits People Derive from Trees

Severe though these problems are, they have seldom by themselves stimulated local remedial actions. People seldom isolate their fuelwood problem in this way. A fuelwood shortage is only one of several or many problems they face. Moreover, fuel is seldom the only product they get from trees, and often not the most important. A recent survey of people's attitudes in an area of Malawi with growing fuelwood shortages showed that people were much more concerned with the shortage of timber, because poles of the size and quality needed to build houses had become even more difficult to find than fuelwood. In hill areas in Nepal a similar survey disclosed that the overriding concern was with tree fodder for their buffaloes, again because it had become more difficult to obtain than fuelwood."

"Fuelwood, and the possibilities for increasing fuelwood production, must therefore be seen in the context of the multiple functions of trees and forests in the life of rural people. At the village and household levels fuelwood is usually a by-product or co-product of some other good or service from trees. People are therefore likely to respond to projects that enhance this broader set of values than to projects that try and address fuelwood alone."

"...Community forestry thus rests not only on an accurate identification of how it can best benefit people, but also on a clear understanding of what constraints and possibilities they confront in trying to grow trees."

"Constraints and Possibilities in Tree Growing

...The use of land for trees is widely perceived as being at the expense of food production or other agricultural crops, or the use of land for grazing livestock."

"The plains of Java in Indonesia are amongst the most densely populated and intensively cultivated areas in the world. Yet anyone traveling through these plains will be struck by how much of the area is occupied by trees, tightly clustered in 'home gardens' around the houses. They are fruit trees, fodder trees, trees that produce spices, shade trees, live hedges, etc. Trees are an integral and highly productive part of this agricultural system, from which the people also obtain fuelwood. The carefully structured mixtures of trees, shrubs and other plants in these 'home gardens', with their different crown structures and rooting patterns, make more efficient use of sunlight and soil nutrients than the food monocrops that surround them, and often bring higher returns to the farmer than do these crops."

"While it would be unwise to minimize the importance of competition for land as a factor in community forestry, this has probably been overstated as a reason why people do not plant more trees. In recent attitude surveys on the subject in a variety of different situations in Africa and Asia people have seldom listed shortage of land to be a major impediment to their growing trees..."

"... in most community forestry programmes to date communal activities have in fact made less rapid progress than private planting. Tree planting by the individual household or farmer, depending as it does only on considerations of self interest, will often be easier to install."

"In the State of Gujarat, in India, where the programme contains both components, while there has been some increase in village woodlots the growth in private planting has been explosive. Starting only a few years ago, the number of trees planted annually by farmers had risen by last year to nearly 100 million, and is expected this year to reach 200 million."

"This upsurge in private tree growing in Gujarat was stimulated by the existence of cash markets for fuelwood and poles in nearby towns."

"...For the poorest, the price of planting stock, and the income foregone by spending time to plant and protect the seedlings, can be more than they can afford. To enable the poor to participate, community forestry programmes therefore widely provide seedlings free and meet or subsidize other cash costs."

"...However, over much of the Third World the availability of fuelwood and other tree products has moved from abundance to scarcity within present lifetimes. People consequently have difficulty in adjusting to the need to apply the concepts of scarcity to fuelwood. Understandably it tends to continue to be thought of as a 'free good' after it no longer is so, with

indiscriminate use persisting into periods of scarcity."

"In such situations, community forestry is likely to entail a major effort of education and persuasion, to create an awareness of what tree husbandry can contribute. In Gujarat, such a change in attitudes was achieved by strip plantations along roadsides and canal banks planted by the forest service which provided visible proof that trees would grow locally and produce outputs useful to the people nearby."

"Providing Government Support"

"...The species that will best produce fuelwood are usually quite different from the species that will best produce timber or paper fibre. Trees that can be grown by a poor farmer or a group of villagers will probably have quite different characteristics from trees grown in industrial plantations or state forests. Little of the research effort in forestry in the past has been oriented towards research for community forestry."

"In order to divide the policing role of government with respect to forests from its developmental role, many countries have created separate forest organizations, or separate branches of the latter, to handle community forestry. Others work through some form of intermediary organizations...."

"Conclusions"

"...A variety of impediments limit the access of some people to land for trees; physical and economic factors prevent others from growing trees; and institutional restrictions exclude yet others from participation. However, in its different forms, community forestry already appears to be accessible to most rural people in most situations. Moreover, not all the impediments are immutable, and an important component of government intervention in support of community forestry is usually to widen access to its activities."

Discipline: Political Science
Application: Theory and Concepts
Country: Asia (General Applicability)
Emphasis: Social forestry project development and analysis

Blair, Harry W. and Porus D. Olpadwala, 1988. Forestry in Development Planning: Lessons From the Rural Experience, Westview Special Studies in Social, Economic, and Political Development, Westview Press, Boulder Colorado, 205 pp.

"PART I: INTRODUCTION"

"In this introductory chapter, we explore the relationship between forestry and rural development, than briefly examine a single social forestry project to see how it would look from a rural development perspective. Finally, we endeavor to nail down a few definitions for terms we will be employing as we go on." (p. 1)

"CHAPTER 1. OVERVIEW"

"During the early years of this effort to bring about development, the focus was mainly on the industrial and urban sectors, with the countryside seen largely as a resource base that would provide much of the manpower, the funding and some of the foreign exchange needed to direct the national development effort...."

"In the middle 1960s and subsequent years, however, two things happened to change these guiding ideas. First, there was increasing concern with the prospect of widespread famine, ... Second, it was just about at this time that the long work involved in creating "Green Revolution" technologies for increasing foodgrain yields became ready for use. These two factors combined to prompt a change of focus on the part of developers to include a much larger agricultural emphasis."

"By the early 1970s the agricultural emphasis had begun to pay off with substantially increased foodgrain production in many LDCs. But at the same time it became clear that the benefits of agricultural growth had not "trickled down" very far into rural society." (p. 3)

"It was in this atmosphere that the various programs of "redistribution with growth," "new directions," "basic human needs" and the like were launched — to bring development to the "poor rural majority" that had thus far been left out of whatever economic growth had taken place."

"This enlargement of the development mission in the countryside meant that a number of other sectors beside agriculture had to be brought into play. The poor rural majority could not be attended to without involvement of health and education departments, for example ..."

"Until quite recently forestry both as a practice and as an intellectual discipline has not been part of rural development, mostly for historical reasons...."

"Two central concerns of the 1970s brought forestry as a field into the international development picture. The first was the environmental concentration on deforestation and allied problems of soil erosion and flood control that gained widespread attention in that decade." (p. 4)

"... The second factor was the successive oil shocks that inspired concerted efforts to find alternative sources of energy. One of the most obvious options was fuelwood..."

"The result of this interest has been an explosion of forestry projects for development in the LDCs."

"As the forestry sector has taken up activities in such areas as agroforestry, community forestry and reforestation, it [sic.] has not surprisingly run into many of the same situations as RD [rural development] has experienced over the last thirty years. Projects are abandoned by their supposed beneficiaries, implementing bureaucracies are unresponsive to the new challenges posed by social forestry, research cells are totally out of touch with the practical problems they are supposed to be working on, extension agents seem unable to communicate with villagers, and projects when they do meet targets somehow seem to benefit the local rich rather than the poor rural majority."

"... When forestry was practiced more or less exclusively on isolated tracts of reserved lands, it could afford to ignore its human environment, though not without considerable cost, as alienated forest dwellers contributed their own (p.5) depredations to the overall deforestation process. But when forestry took on the tasks of social forestry programs, it had to deal with the rural population outside the reserved forest areas. This much larger population had to be convinced of the worth of the ideas that foresters were now presenting; it could not be ordered about as had forest dwellers (however ineffectual such management practices may have been). ... As Romm (1986) points out, forest policy cannot be pursued apart from the socio-economic environment in which it must function...."

"To give a more concrete idea of the linkages between rural development and forestry, and to begin to look at the forestry sector from a rural development perspective, it would make sense to look briefly at an example. The Social Forestry Project in India's Gujarat state offers an excellent case study in this regard, for it is one of the more outstanding stories in the whole field of development forestry." (p. 6)

"There are at least two aspects of the CFW [Community Forestry Wing of the Gujarat state government's Forest Department] experience that tally with what has been learned over the years in RD [rural development]. The first is that success took a considerable time to come about...

The second lesson stems from the first and centers on the CFW's ability to use the project as a learning experience over the years. ..." (p. 7)

"There are also several cautionary tales that emerge from the Gujarat experience. The first is a big farmer bias to the program...

A second problem lies in the way administrators tend to manage programs,

pressing its field agents to meet quantitative targets, if necessary at the expense of such program equity goals... (p. 8)

A third cause for concern in the program centers on the type of land being used for forestry. (p. 9) ...

The fourth word of caution deals with employment generation. It is noteworthy, as already observed, that in its first two and a half years the project generated some 16 million work-days of employment of which more than one-third went to women. But what was the opportunity cost of that employment?...

A fifth and last concern is the motivations people have for growing trees. The evidence so far indicates that among both community forestry groups and individual farm foresters, there is much interest in growing poles and small timbers for commercial sale, as well as pulpwood for paper mills and fodder for animals, but virtually no enthusiasm for producing fuelwood for domestic use. What this pattern appears to reflect is the fact that while women who gather most of the cooking fuel would be the beneficiaries of an increased fuelwood supply, it is the men who make the decisions on what to market or keep for domestic use. Thus women's interests are systematically ignored and a major project goal is left unfulfilled. (p. 10)

Gujarat community forestry, in sum, like any RD development project, is a mixed bag. It has some real lessons for success, that could and should be emulated. But there are also some real causes for concern." (p. 11)

"The main argument of the book begins in Part II with an analysis of the context of RD, laying particular stress on the various types of constraints to development which have been identified by students of the subject so far... ... we go on in Part III to analyze some of the RD strategies that have been successful in surmounting these constraints. Later in Part III we endeavor to put some flesh on our theoretical skeleton by offering several case studies as illustrations of success and failure in implementing RD strategies. Finally in Part IV we lay out what we think are some of the major pitfalls that development forestry can avoid by taking advantage of the lessons to be derived from the RD experience. We then draw some conclusions." (p. 11)

"PART II: CONSTRAINTS TO DEVELOPMENT: LIMITS TO CHANGE"

"Constraints are dynamic and so always in a state of flux. ...This constant flux does not mean, however, that the assessment and analysis of constraints is a waste of time. Quite the contrary it suggests that our understanding of the whole process and web are even more important in RD planning and implementation....

For our purposes, the major constraints on RD are grouped into four basic categories. Resource constraints (Chapter 2) reflect shortages in natural and/or human resources.... Organizational constraints (Chapter 3) affect RD efforts through their presence both within and between organizations. Policy constraints (Chapter 4) are principally the unintended results of well meaning policy interventions, which turn out to have at least as many (and often more) negative effects as positive ones. ... Finally structural and systemic constraints (Chapter 5) are identified. These are socio-political boundaries

to action and development in all societies, created by and arising out of the essential relationships governing human interaction therein -- the basic rules of the game, so to speak. They are directly concerned with such major issues as the differential access to resources in society, the related distribution of benefits, and the social balance between efficiency and equity." (p. 13-14)

"CHAPTER 2. RESOURCE CONSTRAINTS"

"B. The Unique Case of Time as a Special Natural Resource"

Everyone involved in the business of economic development wants quick results, ... Forestry planners charged with putting together woodlot schemes, for example, think they will have a much better time of it if they can include in the scheme something like Leucaena leucocephala that will produce some cuttable fodder within the first year or so. At least something must be "delivered" in fairly short order if popular support is to be maintained, a pressing concern indeed in social forestry, where plant protection in the early stages is absolutely vital to project success..." (p. 18)

"CHAPTER 3. ORGANIZATIONAL CONSTRAINTS"

"Most of the constraints involving an implementing organization occur within the structure itself, and are part and parcel of its own nature. However, there are also some constraints that emerge in the linkages that join an organization to its social environment." (p. 20)

"A new variety of rice, for example, is developed at the International Rice Research Institute at (p. 19) Los Banos in the Philippines that is perhaps two or three times as productive as the traditional varieties that are customarily grown in a country. But these new "miracle rice" strains are bred to grow under comparative laboratory conditions: the best soils, controlled water supply through sprinklers, drainage systems with underground pipes to remove the water from each field exactly on schedule, electric fences around each plot to keep out rodents, precise applications of fertilizers and pesticides, virtually complete weeding, etc. Small wonder, then, that when an LDC farmer attempts to try the new variety on poor soil with bad drainage and uncertain water supply, without proper fertilizer application or enough labor to weed properly, the improvement in yield over the older strains is nothing like what was obtained at Los Banos.

Much the same is true in the organizational sense. Pilot projects in RD tend to be characterized by a number of artificial conditions that will not obtain once the project is expanded to full-scale. First, there is the quality of leadership...A second factor is the cadre of field workers that an inspired leader can attract in the pilot phase...

A third characteristic of the RD pilot project is a heavy infusion of funds. (p. 22)...

Sponsors who provide special funds to ensure success will generally also supply a fourth special factor -- direct communication between the pilot project in the field and higher levels, sometimes at the cabinet or chief-of-state level....

"This special link means that the bureaucratic bottlenecks and slippage are promptly rectified and that intermediary government officials, aware of the high-level patronage, are less likely to interfere....

A fifth characteristic often present in laboratory projects is a willingness to learn from mistakes,...

Sixth, the experimental pilot stage tends to encourage significantly more participation from below, both within the project staff and from potential beneficiaries....

Finally, there can be and often is a rigorous monitoring of every facet of project activity in the pilot phase." (p. 23)

"The result of all these factors is that when projects grow from pilot to full-scale, enthusiasm evaporates, control atrophies, efficiency withers, corruption flourishes, vested interests move in, and the original purpose gets lost altogether. These negative tendencies are further exacerbated when growth is overrapid." (p. 24)

"Foresters (and project planners) also tend to think that, because they know what is best ecologically on a large scale and what the macro-economy most needs in the way of forestry products, they should decide what local people must do to preserve the environment and meet macroeconomic needs. The local people themselves, in this view, need only to be mobilized into action and given orders. The thought that those who are to do the work should be consulted about what they want is not considered.

Fuelwood projects are an excellent case in point here. In many African areas such efforts have failed, principally because fuelwood is commercially feasible only when it can be gathered as a free good (generally from public lands) to be sold. If commercially valuable land is to be used the "opportunity cost" (i.e., the sacrifice made by not using the land for other purposes) becomes too high, and the projects fail." (p. 34)

"CHAPTER 4. POLICY CONSTRAINTS"

"The effects of "urban bias" would seem a priori to be less obvious in the forestry sector, but nonetheless may be very real. One example might be governmental encouragement, either direct or indirect, of charcoal consumption in the cities without any concomitant effort to promote greater or more efficient production in the countryside. This could result in wasteful amounts of fuelwood resources being used for making charcoal, as well as rural consumers losing out to their more privileged urban counterparts in the heightened competition for fuel." (pp. 41-42)

"CHAPTER 5. STRUCTURAL AND SYSTEM CONSTRAINTS"

"The development plans of many, perhaps even most, developing countries, tend to treat rural societies as neutral structures which are affected by, but do not influence, government RD strategy. Actually, of course, they are highly structured webs containing political, social and economic dimensions which were very firmly in place long before any RD efforts arrived on the scene. These dimensions form the human and power environments within which

development projects are then introduced. Further, such environments are never neutral. Development, after all, means change, and change means that people's interests are affected. Naturally, people will try to deal with that change to their own best advantage. Those at the bottom of the rural social ladder have only labor to offer in exchange for benefits from any new RD activity. Those more fortunately positioned are able to draw on other resources (land holdings, bribe money, political influence, etc.) that are unfailingly more powerful in commanding RD benefits in the form of profits, patronage, corruption, status, and so on. This political economy of rural reality can and very often does have severe constraining effects on any RD efforts, both at local and at national levels." (p. 56)

"... we might consider the issue of tree tenure, which has become a topic of considerable interest in the forestry community in recent years (e.g., Fortmann and Riddell, 1985; Raintree, 1987). If the pattern for tree ownership follows that of the ownership of the land on which they grow, as is the case for the most part in South Asia, then it will surely happen that farm forestry projects will favor those who own the land, with those owning the most land getting the most benefit, whatever equity goals the planners might have had in mind." (pp. 62-3)

"PART III TACKLING THE CONSTRAINTS: DEVELOPMENT INITIATIVES"

"Yet some RD projects do succeed in promoting both economic growth and improvement in the lot of the rural poor, while others have been able to deliver sustained non-economic benefits to a wide audience including the rural poor, such as a real enhancement of rural health standards or lasting adult literacy. In Part III we will look at some of the approaches, strategies and methodologies that have facilitated such successes. We begin in Chapter 6 with a consideration of rural institutions in the rural development process, particularly what can be called local institutions. Chapter 7 focuses on a number of rural development strategies that have proved successful, emphasizing particularly four that have enjoyed considerable attention in recent years: adaptive development administration; privatization; decentralization; and farming systems research. Finally, Chapter 8 will endeavor to bring in some answers to the questions about equity and balance in rural development that we raise at several points in Part II." (p. 67)

"CHAPTER 6. RURAL INSTITUTIONS AND DEVELOPMENT"

"By custom in the social sciences, an institution is defined as any human activity that is repeated systematically over time. It follows, then, that all rural development strategies adopted by governments must necessarily be fashioned in one way or another, around rural institutions (RIs). This chapter briefly examines the kinds of RIs that are involved in RD, and then focuses upon one particular form of RI considered especially effective for promoting RD -- that of local organization (LO)....

RIs are perhaps best thought of as channels through which rural people govern local activities, organize themselves both for economic endeavor and to obtain public goods, and articulate their problems and needs to "higher level" political administrative systems....

These channels have been identified by previous studies of rural institutions and participation in rural development. They represent seven major categories of communication and cooperation between rural people and their economic and administrative environment, arranged along a rough public-to-private dimension:

- A. central/federal government agencies
- B. parastatal bodies
- C. local government
- D. local organizations
- E. political associations
- F. local (small scale) private enterprise
- G. large-scale private enterprise" (pp. 69-70)

"CHAPTER 7. RURAL DEVELOPMENT STRATEGIES"

"Every institution is always in a state of some change, even if strenuous efforts are expended to prevent any change from occurring." (p. 89)

"The Spectrum of Institutional Change

- 1- Status Quo 2- Upgrading 3- Restaffing 4- Improvement
- 5- Reform 6- Restructuring 7- Revolution" (p. 91)

"The PICOP fuelwood enterprise in the Philippines offers a number of examples in this regard as to how ADA [Adaptive Development Administration] could be put into practice. The initial scheme called for planting phased over a four-year period, so that the mature pulpwood trees could be cut over a similar timespan, but economies of scale in land clearing and tree planting made the phasing impractical. Consequently farmers planted all their land at the same time. Next, the agroforestry aspect envisioned in the plan was not accepted by farmers, who found that bank branches would not give loans for mixed plantings. Third, the recommended technical packages were often ignored, as farmers found they could use less fertilizer and weed less often than they were urged. And finally, the fact that they had planted their trees all at once meant that the farmers insisted on cutting them all at once on their maturing, and this in turn created labor problems, since available household hands were not enough to do the work and expensive outside contractors had to be hired. Also it might be mentioned that an extremely rare (for this particular area) typhoon devastated much of the planted area midway through the project.

Altogether, there were a number of prime opportunities for ADA. Some acquaintance with farmers' needs, wants and constraints could easily have elicited the problems they would face with the phased planting scheme." (pp. 96-97)

"CHAPTER 8. EQUITY AND BALANCE IN RURAL INSTITUTIONS"

"The twin considerations of equity and balanced growth have cropped up time and again in our discussion so far, in conjunction with a large number of topics and issues. Obviously, the two are key elements in the proper planning and development of rural institutions and enterprises. Overlooked or neglected, they are the cause of considerable frustration and turmoil, yet there does not seem to be any clear indication so far about how they might

best be assimilated into RD plans. The present chapter explores this topic in detail from four perspectives.

Employment and employment creation is considered first, because decent and well-paid jobs are the cornerstone for equity and balance within a community or region. Next, balanced growth between regions is discussed, through an evaluation of the potentials and pitfalls of area development and planning. Third, the role of women in agricultural production is examined, with special reference to the historical inequities suffered by them, and the steps currently being considered and undertaken to redress matters. Finally, a case is made for forest enterprises as having special potential for delivering relative equity in rural areas." (p. 116)

"We tend to make an equation between "big farmer" and "rich farmer," and in an area of irrigated wheat or lowland paddy agriculture, such an equation is by and large true. But where land is hilly, soils thin, or rainfall scanty, the equivalence often does not hold. Poor people often do have relatively large landholding, but then, of course, the land they hold is not good for much of anything in the way of agricultural crops, for if it were they would not be poor. This degraded, eroded or arid land, in many cases (perhaps even most) does have the potential for growing trees that will hold soil, fix nitrogen, supply humus and in general provide not only an eventual harvest, but also an improvement of the land resource." (p. 134)

"CHAPTER 9. LESSONS IN RURAL DEVELOPMENT: SOME ILLUSTRATIONS"

"The preceding chapters have provided us with a theoretical framework with which to analyze rural development, particularly that of rural institutions and enterprises. Here we turn to a consideration of a few well-known RD cases. Our object is to use the concepts and approaches developed earlier to first describe the projects, and then to attempt to derive some lessons and guidelines from them.

The cases chosen for this chapter meet a number of criteria. They are all well-known and established, and therefore have been scrutinized at some length, providing us as a result with as much information as we need for analysis and comparison. In addition, they deal with the full range of RD sponsors and facilitators, from NGOs through to national governments and international aid agencies. They cover two major social formations -- agrarian capitalism and incipient socialism (in the Tanzania case) -- and a number of intermediary types as well, such as cooperatives. Two cases are clear successes (Amul and Ayni Ruway), one is a distinct failure (Ujamaa) and two are seeming fiascos that at least in one case (Community Development and Panchayati Raj) may be turning into a success, while in the other (Comilla) some few signs of longer-term success are beginning to be discernable. Finally, the five cases are geographically dispersed, dealing with subjects in Asia, Africa and Latin America." (p. 137)

"PART IV FITTING FORESTRY AND RURAL DEVELOPMENT TOGETHER"

"Today, after long isolation from the agricultural sector and the wider sphere of activity that has come in recent decades to be known as rural development, forestry and particularly social forestry have taken on similar

concerns: working with peasant communities, improving the lot of the poor rural majority and increasing aggregate rural incomes. Given the longer experience of rural development practice and theory in working this terrain, it follows that there are a good number of valuable lessons for forestry in the overall RD experience, which will become increasingly worth knowing as development planners, international donors and host-country governments seek to make forestry a more integral part of their total RD enterprise. Many of these lessons relate to successful approaches and strategies that might be adopted by forestry for its own needs and agendas, and these positive experiences were the central focus of Part III. But there are also specific cautions distilled from the RD experience that need to be heeded if unnecessary pitfalls are to be avoided." (p. 157)

"CHAPTER 10. POTENTIAL PITFALLS FOR FORESTRY IN DEVELOPMENT"

"As should be clear from previous chapters, we see a multitude of obstacles, roadblocks and hurdles in the way of rural development that are relevant to forestry. We have tried to analyze and illustrate these constraints in some detail, as well as strategies to circumvent and surmount them. In this chapter we focus on four pitfalls that we see as particularly germane to development forestry and which can serve as a summary of what we have examined earlier at greater length." (p. 159)

"A. Building on the Best" as an Extension Strategy

Most of the extension community's attention in RD has been directed towards those farmers who are interested in innovation and willing to take risks. ... (p. 159)

The drawback to this approach of course is that the "progressive" farmer is also generally the rich one. This is the person with more education to apply, more land to experiment with and more surplus income to provide a cushion against the risks of a new technology...

There is a balance then between strategies that "build on the best," getting quicker results of a sort by widening the gap between rich and poor, and other approaches that reach more evenly across the whole social spectrum to "build on the rest," albeit in slower and less spectacular ways." (p. 160)

"B. Cash-cropping Biomass at the Expense of Food Crops

An especially distressing problem in RD has been the tendency for successful cash crops to displace staple food crops, and the people who grow them as well." (p. 161)

"C. Shrinking Employment Rather than Providing it

The problem of public policy decreasing food production carries over into the employment sector as well. It is well known that what is good for an individual or a particular firm may not be good for the society at large, and vice versa." (p. 163)

"As we have seen, forestry is scarcely immune from these considerations, especially the types of farm forestry that have been promoted in India and other countries. Public policy in such projects as farm forestry may very well serve to shrink employment opportunities rather than enlarge them. To do

so may be a tradeoff that planners and political decision-makers are willing to undertake, given their priorities and assessments of where the greatest societal needs lie, as we outlined at some length for the case of eucalyptus farming in the previous section. But these decisions cannot be taken lightly and must only be taken in full knowledge of the consequences for rural employment." (p. 164)

"D. People, Government and the legacy of History

The problem of transforming forestry services from regulatory agencies to RD extension organizations is a topic frequently encountered in forestry circles in recent years. It is often depicted in terms of turning forest guards into extension agents, or changing policemen into salesmen, and is rightly considered a difficult goal to achieve, albeit one well worth striving for.

The roots of the matter go far deeper than forestry, though, and extend far beyond the forest sector. Rural people have long distrusted government, mostly for good reason, as historically its relation to the rural citizenry has been substantially one of overseer and distant feudal lord..." (p. 165)

"CHAPTER 11. CONCLUSIONS"

"In this book we have dealt with a multitude of rural development issues spread over a range of topics. ...

In the process a number of patterns emerged. First, it became abundantly clear as we proceeded that RD and forestry share a common environment -- not only the geophysical one of the rural countryside, but also and more importantly, the socio-economic one of common structural and system constraints. The major constraints upon development in RD are paralleled and replicated in the forestry sector, in particular an egregiously biased distribution of productive assets and income, a proclivity among development specialists to work with those already advantaged and better off, and a pronounced tendency for all manner of development programs to be co-opted by these same rural elites in good time, even when the specific intent of the programs is to assist those at the lower end of the rural social ladder.

Second, and no less important, the book throughout presented strong evidence for and advocated people's participation in the development process." (p. 169)

"Participation is greatly facilitated through local organizations, which form a third theme....

Also closely linked to participation was, fourth, the need to employ an adaptive development administration approach in all development activity, both RD and forestry, project-related or otherwise....

Fifth, the book has pointed to the importance of decentralization in designing and implementing development projects, so as to take maximum advantage of local knowledge and resources, also to permit maximum flexibility in dealing with local peculiarities of physical, cultural and socio-economic environment....

Sixth and finally, we noted in several places the critical importance of

adopting a medium-to-long-term outlook in conceiving and implementing development projects. Social change is always a long (and from the vantage point of the instigators often tedious) process, and attention must be paid to providing it an adequate time horizon in which to take place. Otherwise frustrations and disappointments arise which in fact need not occur....

It should be clear by now if it was not so at the outset of our endeavor that the union of the forestry and rural development sectors is long overdue; instead of continuing to labor in isolation, the two should be working as partners in the overall development enterprise itself." (pp 170-171)

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Raintree, John B. (ed.) 1987. Land Trees and Tenure: Proceedings of an International Workshop on Tenure Issues in Agroforestry, Nairobi, May 27-31, 1985. ICRAF, Nairobi, and Land Tenure Center University, University of Wisconsin, Madison.

Discipline: Political Science
Application: Theory and Concepts
Country: Asia (General Applicability)
Emphasis: Integration of theory and practice and the philosophical orientations of development aid efforts

Chambers, Robert, 1983. Rural Development: Putting the Last First, Longman, Inc, London, 246 pp.

"PREFACE ...The book is for people who are concerned with rural poverty and rural development. Some are from rich countries, but the great majority are professionals in Third World countries, working in government departments, voluntary agencies, political parties, commercial organizations. It is an attempt to speak to both practitioners and academics, and to both social scientists and physical and biological scientists, without distinction of profession or discipline....

The focus is deliberately limited to rural poverty and the Third World....

I have restricted the subject matter in two further ways. First, I have not presented case studies or detailed analyses of programmes and projects which seek to reach and help poor people. Careful evaluation and comparison of such initiatives is a continuing need but it is a huge topic and deserves separate treatment. Second, I have limited the discussion to deprivation which is material and social. This is something which outsiders and the rural poor can agree in saying no to. But the material and social are not the whole of life. There is also the spiritual side and the quality of experience and being. For those who have a decent and secure livelihood, the relationship between more wealth and greater happiness is an open question. For those at the lower end of the scale, trapped in poverty, things are clearer." (pp. vii-viii)

"CHAPTER ONE Rural Poverty Unperceived"

"Rural poverty unobserved: the six biases:

- spacial biases: urban, tarmac and roadside
- project bias
- person biases
- dry season biases

... And bureaucrats, that urban type,
wait prudently till crops are ripe,
before they venture to the field
to put their question: 'What's the yield?'

... And northern academics too
are seasonal in their global view
For they are found in third world nations
mainly during long vacations (pp.20-21)

- diplomatic biases: politeness and timidity
- professional biases"

"CHAPTER TWO: Two Cultures of Outsiders"

"...the divide among rural development outsiders between those who analyse and those who act, between academics and practitioners. At one pole we have academic social scientists preoccupied with the 'What?' and 'why?' of development and underdevelopment, with political economy, especially who gets what, why and how, and with the processes which they see as determining the answers; and at the other pole, we have practical administrators and technical scientists who concern themselves with the 'how?' of development, with trying to change things, and with trying to get things done. The physical, linguistic and experiential distance between these two groups, each with its own culture and mores, is wide; and often there is little sympathy or communication between them. To hear a seminar in a university about modes of production in the morning, and then attend a meeting in a government office about agricultural extension in the afternoon, leaves a schizoid feeling; one might doubt whether either discussion had anything to contribute to the other.

The depth of the division is reflected in the way extremists in each culture view the other. To some critical and intolerant academics, practitioners are narrow-minded philistines and at best naive reformists, part of a system of exploitation of which they are largely unaware, while technical scientists, for their part, serve their own class, producing technologies which are not for the poor." (p.29)

"The difficulty of straddling between the academic and practical cultures varies by discipline, profession and country. Economists and statisticians have been generally successful in moving from one sphere to the other, being at ease either in a university department or in a planning office. Geographers and agricultural economists, both with hitherto rather low academic status, have made many of the best contributions. A growing band of rural development consultants contrive to have their feet in both camps." (p.45)

"CHAPTER THREE: How Outsiders Learn"

"Among the outsiders there is a difference between what practitioners want and what academics can or will provide. One part of this is the choice of topic and emphasis. What a practitioner thinks 'useful' an academic may not find 'interesting'. Both are right in their own ways. A practitioner has a responsibility for results; an academic, for understanding. Bridging the gap, research commissioned by practitioners can exercise a healthy discipline on academics, concentrating their minds and efforts. At the same time, it is difficult to overstate the value of concerned independent observation and analysis in the traditions of critical scholarship, pursuing questions which are out of fashion, out of favor, or out of bounds. There is a danger that universities and research institutions may become too much the handmaids of governments, doing only what they are told or commissioned to do. Nothing in this chapter should be taken as undervaluing independent and heretical research. Where the rural poor are oppressed, independent writing provides one strong lever for change.

There remains, moreover, a large area of overlap between the 'useful' and the 'interesting' where governments or aid agencies commission research from universities and research institutes. And here a major problem is a

difference of time scales." (p.48)

"...Economists are better able than those in most other disciplines to straddle between practitioners and academics. They therefore unduly influence the nature and style of collaboration. Statisticians, for their part, whether in ministries or research institutes, must justify their existence; and to do this they need numbers. So economists and statisticians, both numerate, both acceptable to both cultures [theory and practice], and both required in 'planning', demand surveys and the statistical data which they generate, and which allow them both to consummate their professional skills and to be, or at least appear to be, useful." (p.50)

"This is a description of the pathology of surveys. Not all are so bad. There are 'good' surveys. But the difficulty is to know how good they really were. When probed, the results of supposedly good surveys are sometimes alarming." (p.55)

"...Many social anthropologists have been unable or unwilling to give practical advice." (p. 60)

"The benefits of improvisation and inventiveness in methods of appraisal and research can be illustrated by four examples. They are not presented as ideals, but to show that very different approaches can be effective, and to see what they have in common.

- i) Ladejinsky's tourism and the green revolution (p. 65)...
- ii) Senaratne's windows into regions (p. 66)...
- iii) Reconnaissance for crop improvement (p. 67)...
- iv) BRAC and the net (p. 69)..."

"These four approaches appear cost-effective in generating insights and action to improve the livelihoods of the poor, whether directly or through influencing opinion, policy and other research." (p. 70)

"Let us then see what these four approaches and experiences have in common.

All are eclectic and inventive. None involves either the extensive questionnaire survey or prolonged total immersion...

All the approaches are, by the same token, adaptable and open to information other than that which is directly sought.

All spanned the two cultures, addressing both practical problems and the academic world.

Finally, all made use of experience." (p. 72)

"Finally, the conclusion from this discussion is that conventional and professionally respectable methods for rural research are often inefficient. The search is for approaches which are open to the unexpected, and able to see into, and out from, the predicament of the rural poor themselves. For the future, three poles of concentration may serve well: first, long-term, careful investigating, including statistical analysis, and involving social, medical and natural scientists; second, ad hoc, inventive work, improvising and

adapting for the sake of timeliness and cost-effectiveness; and third, sensitive research which shifts initiative to rural people as partners in learning, enabling them to use and augment their own skills, knowledge and power." (p.74)

"CHAPTER FOUR: Whose Knowledge?"

"...Rural people's knowledge and modern scientific knowledge are complementary in their strengths and weaknesses. Combined they may achieve what neither would alone. For such combinations, outsider professionals have to step down off their pedestals, and sit down, listen and learn." (p.75)

"In rural development, the center-periphery biases of outsiders' knowledge are reflected in the concentration of research, publication, training and extension on what is exotic rather than indigenous, mechanical rather than human, chemical rather than organic, and marketed rather than consumed. It is reinforced by other biases - towards what concerns men rather than women, adults rather than children, the clean rather than the dirty, and pervasively, the rich rather than the poor. Some of these points can be illustrated from research and extension in the three domains of crops, livestock, and forestry." (pp. 76-77)

"...in each case, the unexpected was noticed and in each case the revelation was available from rural people. One may wonder how much goes unknown because of unseeing eyes, unhearing ears, professional conditioning, and the biases of rural development tourism. Neither rural people nor outsider scientist can know in advance what the others know. It is by talking, travelling, asking, listening, observing, and doing things together that they can most effectively learn from one another. For that, special attitudes and behavior are called for from both parties but especially from the outsiders since it is with them that more of the initiative lies.

Finally, some of the greatest challenges are where both outsiders' and rural people's knowledge have been found wanting." (p. 100)

"CHAPTER FIVE: Integrated Rural Poverty"

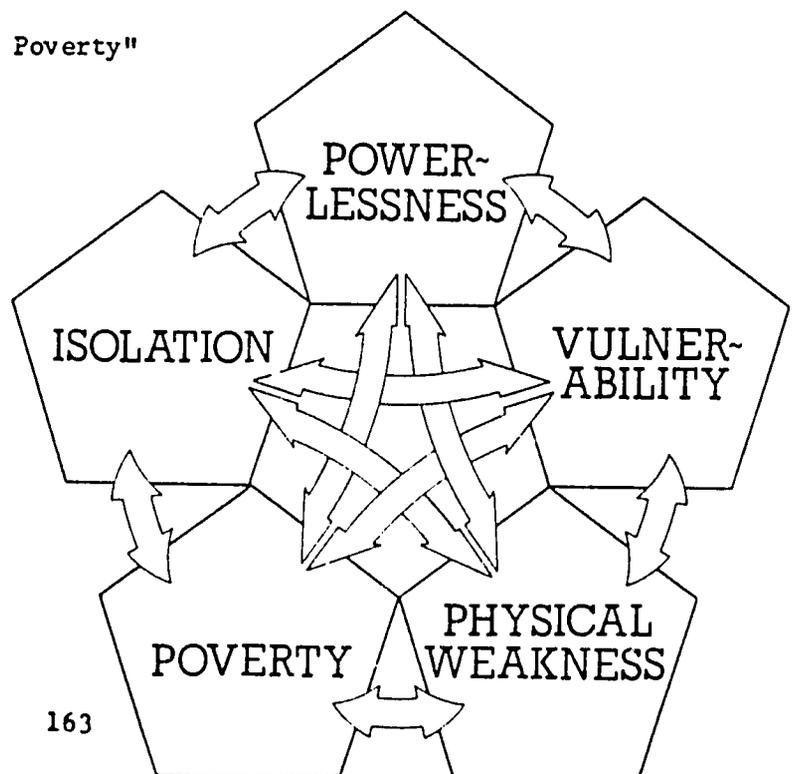


Figure 5.1 The deprivation trap

"CHAPTER SIX: Seeing What to Do"

"In trying to see what to do, outsiders' unavoidable paternalism can be offset in two ways: first, by starting with the priorities and strategies of the rural poor themselves, noting that though some are 'fixes' with a varied repertoire of petty activities and others 'hedgehogs' locked into one relationship, all share the aim of a secure and decent livelihood; and second, by concentrating on what outsiders and the rural poor can agree in saying no to." (p. 140)

"Errors enter and chances are missed not only through habits of action, like programmatism, but also through defects in analysis. Ways of thinking about rural development are rarely thought about. Though basic, they are taken for granted. Yet there are many different ways of analyzing rural environments and deprivation. Of these four stand out: costs and choices; causes and constraints; opportunities; and political feasibility." (p. 152)

"CHAPTER SEVEN The New Professionalism: Putting the Last First"

"... 'Everyone is ignorant, only on different subjects.'
Will Rogers, The Illiterate Digest

"... For the rural poor to lose less and gain more requires reversals... Reversals require professionals who are explorers and multidisciplinarians, those who ask, again and again, who will benefit and who will lose from their choices and actions." (p. 168)

"In Indian forestry, timber resources have been classified as 'major forestry produce' and non-timber as 'minor forestry produce'. Sharad Sarin has pointed out that this distinction of 'major' and 'minor' has led to a certain orientation and perceptions... which are far removed from reality. For instance, the entire orientation and thus organizational/administrative arrangements in the form of structures, systems, training of manpower, procedures, planning, etc. of the forest department appears to have been around major forestry produce. Little attention has been paid to the management of minor forestry produce. (Sarin, 1981, p. 398)

Yet most of the 40 million odd tribals in India, among the poorest and most despised of people, directly depend on the collection of minor forestry produce, and for many of them it is a key source of livelihood. Moreover, its recorded value during the first half of the 1970s, even at the low prices paid for it, was over one-quarter of the value of total forest produce (ibid., p. 140). But 'major' timber involves larger lumps of money, the use of machinery, commercial contracts, and people who are well-off, organized and influential, while 'minor' forestry produce (leaves, seeds, gum, honey and the like) involves smaller lumps of money, collection by hand, informal sale, and those who are poor, unorganized and uninfluential." (p.174)

"It is easy to write about what ought to be. The hard question is how, in the real, messy, corrupting world to encourage and enable more people to move in these directions..." (p.189)

"CHAPTER EIGHT: Practical Action"

"Although the freedom and power of individuals vary enormously, all can do something." (p. 190)

"These six approaches - sitting, asking and listening; learning from the poorest; learning indigenous technical knowledge; joint R and D; learning by working; and simulation games - all reverse the learning process. They encourage and enable those being trained or educated to learn from the many below and not just from the few above. They vary in ease and utility. But they share strengths; they transfer initiative to rural people, for them to volunteer information and develop ideas; they encourage an equal relationship between questioner and informant, and the attitude which Peter Berger (1977) calls 'cognitive respect' - respect on the part of the more educated and more influential for the less educated and less influential; and they add to the body of centralized knowledge and understanding. For both rural teachers and outsider students, they can be acts of sharing and learning together." (p.209)

[EXTENSIVE BIBLIOGRAPHY]

Sarin, Sharad, 1981. Management of Minor Forest Produce: Perspective and Alternative Frameworks for Research and Analysis. *Indian Forester* 107, July, pp. 397-411.

Discipline: Political Science (Biology)
Application: Technical Transfer
Country: Asia (General Applicability)
Emphasis: An indepth evaluation of sixty tree species for use as fuel wood

Firewood Crops Shrub and Tree Species for Energy Production, Report of an Ad Hoc Panel of the Advisory Committee on Technology Innovation, Board on Science and Technology for International Development, Commission on International Relations, National Academy of Sciences, Washington, D.C. 1980, 237 pp.

Each species cited (16 for humid tropics, 9 for tropical highlands, 35 for arid and semi-arid regions) is given by botanic name and family, is shown by photograph, and listed by: main attributes, description, distribution (geographic), use as firewood, yield, other uses, environmental requirements, establishment, pests and diseases, limitations, a few species have related species given. Each description covers between two and four pages. There is an excellent list of selected readings, general readings, species specific sources, extensive list of research contacts from throughout the world on topic. Contact list is both general for firewood crops and for specific species.

"More than one-third of the world's population depends on wood for cooking and heating. Eighty-six percent of all the wood consumed annually in the developing countries is used for fuel, and of this total at least half is used for cooking. The situation is growing so desperate that wood is poached from forest reserves; hedges planted around homes are stolen at night; and even scaffolding is stolen from building sites to meet shortages in firewood supplied."

"This report does not suggest a solution to the whole firewood crisis. It examines but one part of the solution: the selection of species suitable for deliberate cultivation as firewood crops in developing countries."

"Primary emphasis here is on species suitable for growing firewood for individual family needs. However, species suited to plantation cultivation for fueling small industrial factories, electric generators, and crop driers are also considered. Most of the plants are little known in traditional forest production. Some are woody shrubs rather than forest trees, but even these many-branched, crooked, sometimes short-lived species may meet many requirements for small-scale village use.

The panel particularly looked for:

- * Multiple-purpose plants that have uses in addition to providing fuel;
- * Plants that adapt well to different sites, that establish easily, and that require little care;
- * Plants for problem environments such as steep hillslopes, low-nutrient or toxic soils, arid zones, and tropical highlands; and
- * Plants not consumed by goats and wildlife.

Special consideration was given to such characteristics as:

- * Nitrogen-fixing ability;
- * Rapid growth;
- * Ability to coppice;

- * Ability to produce wood of high calorific value that burns without sparks or toxic smoke; and
- * Ability to grow successfully in a wide range of environments, including different altitudes, soil types, rainfall regimes, amounts of sunlight, and terrain."

"Most of the plants described in this report are so little known that information about their requirements and performance in fuelwood plantations is sparse. The panel would greatly appreciate hearing from readers having useful additional details for inclusion in subsequent editions of this report...."

"If misunderstood, this book is potentially dangerous. Because of the severity of the firewood crisis, the panel has selected trees and shrubs that are aggressive and quick-growing. These seem appropriate for cultivation in areas of extreme fuel shortage, particularly where climates and soil conditions are harsh. But in more equable environments and where no fuelwood shortages exist, such potentially invasive plants should be introduced only with great care. The threat of their weediness is too great. In any trials of fuelwood plantations local species should always be given first priority."

"...In most poor countries today, 90 percent of the people depend on firewood as their chief source of fuel, and each year the average user burns anywhere from a fifth of a ton (in extremely poor, wood-short areas such as India) to well over a ton (in parts of Africa and Southeast Asia)...."

"Firewood scarcity is probably most acute today in the countries of the Indian subcontinent and in the semiarid stretches of Africa below the Sahara, although it affects many other areas as well....One of the obvious results of this scarcity is that as firewood prices rise, so does the economic burden on the poor. In some cities the price of firewood has risen by more than 300 percent in 2 years. Government agencies have collected few statistics on this trend, but firewood prices seem to be rising beyond the reach of many city dwellers."

"...The populations in many of the countries facing the most severe wood shortages may double over the next 25 years, putting unbearable pressures on their remaining woodlands."

"...Between 300 and 400 million tons of wet dung — which shrink to 60-80 millions tons when dried — is annually burned as fuel in India, robbing farmland of nutrients and organic matter. Looking only at this direct economic cost, it is easy to see why the country's National Commission on Agriculture recently declared that "the use of cow dung as a source of noncommercial fuel is virtually a crime."

Fortunately, trees, when properly managed, are a renewable resource. The immediate logical response to the firewood shortage, one that will have many incidental ecological benefits, is to plant more trees in plantations, on farms, along roads, in shelterbeds, and on unused land throughout the rural areas of poor countries...."

"The concept is simple; its implementation is not...."

"...To be successful, reforestation efforts require a formidable administrative effort to protect the young trees for years until they are grown -- and once they are grown there is the problem of monitoring timber harvests and of systematic replanting as the trees reach maturity.

Reforestation also requires massive popular support. In country after country, the lesson is plain. Tree-planting programs are most successful when local communities are most involved and when the people perceive clearly that success is in their self-interest. Central or state governments can provide plans, money, and advice, but unless community members understand why lands to which they have traditionally had free access for grazing and wood gathering are being demarcated into a plantation, they are apt to view the project with suspicion."

"...Since energy for rural development has become one of the more crucial issues, firewood is beginning to enter the mainstream of national and international priorities and policies. Now there is a new regard for foresters and appreciation of the importance of their skills to a nation's present and to its future. Many government ministries other than forestry have suddenly become interested in funding tree-growing -- for example, ministries of energy, agriculture, rural development, conservation, natural resources, and community services."

"...'Forestry supports agriculture,' said Mao Tse Tung, and agricultural scientists and planners attest to the wisdom of his words."

"The lumber and paper industries have long used bark and waste to generate steam and electricity. Indeed, 8 percent of Sweden's energy and 15 percent of Finland's energy is generated from wood; in the United States in 1974 more energy was generated from wood than from nuclear power...."

"The government of the Philippines plans to support rural electrification with several wood-fueled power plants...."

"Firewood production can be good for economic development in rural areas. Growing trees for firewood can be successfully combined with the production of posts, poles, and timber. The production and sale of wood to nearby urban centers can provide many jobs and much rural cash income...."

"But there is little modern experience with growing trees explicitly for firewood, even by most foresters. Fuel production has long been considered the lowest use of wood, and foresters have traditionally cultivated trees primarily for other purposes, such as for timber and pulpwood. For these products, the species they choose to grow are not those that would be grown purely for fuel. Moreover, the yield measurements reported, the management techniques devised, and the varieties (provenances) selected almost never reflect potentials for firewood production."

"Wood plants can provide more than fuel calories. They can also be sources of:

- * Vegetable oil and fruits and nuts for food;
- * Edible leaves and shoots for sauces, curries, salads, and beverages;
- * Honey;

- * Forage for livestock and silkworms;
- * Green manure for fertilizing soil;
- * Tanbark for the tannin used in leather making;
- * Medicines and pharmaceuticals;
- * Extractives such as resins, rubber, gums, and dyes;
- * Timber, lumber, posts, poles, and pulp for paper, cardboard, and construction boards; and
- * Shade for pastures or plantation crops such as coffee and cacao.

Some of these uses are inimical to fuel production, but they give the tree owner more flexibility; he has the option of using some specimens perhaps for forage, while keeping others for fuel...." (pp 10-20)

"Today, international aid agencies and foresters in the Third World are receptive to new notions about the purposes and practices of forestry. In essence, they recognize the modern necessity of taking forestry outside the forests — of involving people throughout the countryside in growing trees to meet their own requirements as well as to protect the land off which they and their livestock live.

Firewood production is particularly appropriate to this philosophy...."

"However, although the cultivation of firewood species does not demand continuous professional supervision, a forest service may be needed to provide seed or planting stock and advice for getting the trees established. Further, silvicultural practices (such as weeding and pest control) can greatly increase yields. What is sorely needed is the greater involvement of trained forest experts in firewood production at all levels from the village woodlot to the national forest."

"Rural areas can probably supply their own fuelwood from small, local plantings, but urban areas can be supplied from concentrated large plantations, strategically located and possibly government administered.

Firewood plantations, if carefully managed and protected from fire, animals, and 'poachers,' can be self-renewing...."

"Trees most likely to prove useful for fuelwood plantations are those termed 'pioneers.' which in nature colonize deforested areas. These withstand degraded soils, exposure to wind, and drought. Many are rapid-growing legumes that fix atmospheric nitrogen...."

"The ability to coppice or grow rapidly from root suckers is exceptionally important in a firewood species. The stumps of coppicing plants do not die; instead, dormant or adventitious buds regenerate new shoots. This allows repeated harvest without the cost and effort of replanting seedlings each time...."

"Most woods burn, but there are properties that differentiate their relative value for fuel. Density is the most general gauge of a wood's burning quality. The heavier the wood (when dry), the greater its calorific value....Green wood has a lower heating value than dry wood because energy is used in evaporating the moisture. The loss may reach 20 percent, which represents the wastage of 1 growing year in every 5. Air drying the wood

yields more calories per unit of time than does tree growth in the forest. Air drying is thus a critical firewood conservation measure."

"...Since the late 1960s, however, the production of firewood by the old woodsmen's techniques has increased steadily. Woodsmen used species that coppiced; i.e., that could withstand cutting to the ground and would regrow shoots from the root crown. This remarkably trouble-free coppice-farming technique has been practiced since the Stone Age in northwestern Europe. It is so gentle to the land that medieval earthworks and even Ice Age glaciation can still be easily detected among the trees...."

"Some woods are poor fuels for use in unsophisticated stoves because they spark excessively or because their smoke is odorous, toxic, or irritating. The species catalogued in this report generally do not have these characteristics."(pp 21-28)

"Tradition remains the most serious barrier to the use of new stoves. Considerable extension work and demonstration may be needed to convert people to the use of new stoves. In some cases unexpected problems may arise. For example, some Nepalese villagers recently abandoned highly successful and widely adopted stoves when their roof thatch, no longer infiltrated by smoke, became infested with termites."

"Nearly everywhere, reliance on charcoal as a source of fuel is increasing....In principle this is discouraging, because in preparing the charcoal more than half the wood's energy is wastefully burned away. But charcoal makes wood energy easier and cheaper to transport, and the growing reliance on it is a result of the increasing distance from harvest site to the user. Also, charcoal is preferred because of its steady and concentrated heat, its smokeless burning, and because it can easily be extinguished when the fire is no longer needed. Charcoal also can substitute for fossil fuels, which in some places is an urgent need. Regardless of overall inefficiency, it seems clear that more meals will be cooked over charcoal in the future."

"What is needed is a change in priorities in the use of trained foresters and agronomists. Forests for fuel can be treated as just one more farm crop. This makes firewood production more suitable for developing countries with few foresters. It seems possible that agronomists, rather than foresters, will be responsible for much of the small-scale firewood production in the future.

The existing forests are too important and too vulnerable to be abandoned by foresters in favor of village woodlots in the farm lands. In addition to making fuelwood production an agricultural responsibility, the suggestion has been made that what is needed are "barefoot foresters" to persuade small farmers (whose economic horizons usually extend only to the next harvest) to plant trees for the future, to teach how to do it, and to introduce cook stoves that conserve firewood...."

"To be successful, fuelwood programs should fit into the social, cultural, economic, religious, political, and legal framework of the local area where plantations are to be established. Projects are often doomed from the outset by religious or cultural taboos, resistance to change, attitudes toward property ownership, or government intervention. Without the commitment of local residents to the orderly management and protection of the fuelwood

plantings, they are likely to fail. Projects that demand basic changes in lifestyle are more likely to fail than those that adapt to existing lifestyles and outlooks."

"Local communities must be motivated to assume responsibility for the management of all vegetation, including trees, in their area...."

"In all trials of exotic species, local species must be included for comparison."

Characteristics of the trees that should be assessed include growth rates by volume and dry weight (of stem and branch wood), wood and chemical properties, and resistance to pests. The importance of selecting and using the best seed within a species cannot be overemphasized."

"Most of the species selected are likely to be grown mainly in woodlots and backyards or planted to double as living fences, or shade trees in pastures, or in plantations of coffee, cacao, or other crops. Testing should therefore be done over a range of such conditions."(pp 28-31)

"It is thought that perhaps one billion people live in the humid tropics, with about 200 million of them living within or on the fringes of the forests. Each is thought to burn an average of 0.5-1.3 m³ of firewood per year. Moreover, they ship substantial amounts of fuelwood and charcoal to distant urban markets. The wood taken out of tropical moist forests and used for fuel each year has been estimated at some 150 million m³."

"This section describes species worth testing as fuelwood crops in the humid tropics...."(p 31) [16 species described, pp. 34-69].

"A major problem in the hill lands of the tropics (those areas above 1,000 m elevation) is the indiscriminate cutting and clearing of native forest...."

"While 10 percent of the human population live in the highlands, another 40 percent live in the adjacent lowlands, and their future is intimately bound to developments on the slopes and plateaus above. Overgrazing and firewood collection despoils the environment and has far-reaching effects. For example, when the highlands are denuded they do not retain rainwater. This can render fertile valleys unproductive as a result of flash flooding and siltation or streams drying up when water is urgently needed for irrigation and livestock."

Reforestation of tropical highlands is crucial to developing countries where subsistence farming is the predominant way of life. Efforts to isolate those tree species best suited for tropical highlands are underway."(p70) [9 species described, pp. 72-89].

"...Yet some 450 million people inhabit the low-rainfall areas of developing countries, and a large portion of the earth's biomass -- 0.6 billion hectares -- is considered to be semiarid to arid because it receives less than 500 mm of annual precipitation. In addition, there are seasonally dry tropical regions that may receive more than 500 mm annual rainfall but

suffer 6 or more completely rainless months."

"The fuelwood species described in this section are suitable for cultivation in hot, arid sites: scrub, open woodland, grassland, even sand dunes in some cases. They have shown a capacity to survive sites where annual rainfall is 500 mm or less (often much less) and where rainfall is extremely variable....Many of the species described in this section are adapted to the high salinity often found in the soil moisture in arid areas."(p90) [35 species described, pp. 92-163].

"Improved stoves can probably achieve an overall efficiency of between 20 and 30 percent and they have the potential for reducing wood requirements by five- to tenfold. In addition to reducing the devastation of the world's trees, the wide dissemination of such stoves could reduce the time, energy, and cash that Third World women now spend acquiring fuel and cooking. It will also help eliminate smoke-filled homes, sooty hands, and the pain and eye defects caused by smoke, fumes and sparks.

However, the claims about efficient stove designs have seldom been substantiated in unequivocal tests. Therefore, it is important that any new stove be field tested on site before it is widely promoted for local use. Perhaps the best measure of performance is the weight of fuel needed to cook a number of typical meals. This result should be compared with those of other stoves, including traditional ones.

Many factors, other than efficiency, complicate the acceptability of a cooking stove: cost, availability of materials, size and type of wood available, family size, cooking practices, and types of dishes to be prepared. These vary greatly from region to region, which means that any given stove design may not be accepted or used efficiently outside the area where it was designed."

"The rest of this appendix depicts some wood-burning devices claimed to be fuel efficient."(pp 164-165)

Case Study Ethiopia

"Eucalyptus assured a supply of firewood, permitting the peripatetic government to come to rest, and Addis Ababa, the 'New Flower,' became the permanent capital and not just another way station. At least 15 eucalyptus species have been brought into Ethiopia since the early years of the century, but E. globulus has always been the one cultivated most extensively, followed by E. camaldulensis.

Photographs taken in 1906 reveal only a few scattered clumps of eucalyptus trees, but by 1910 some landowners had densely planted a few hectares with the tree in hopes of making their fortunes. Imperial incentive, including tax relief and the distribution of free seeds, encouraged the tree's spread in the early years. By 1920, the streets and paths of Addis Ababa began to look like clearings in a vast, continuous forest, and it was even

suggested that the city's name might appropriately be changed to Eucalyptopolis. By 1935, just before the Italian invasion, the city, seen from Entoto, appeared to be a green mass of forest.

The Italians were apparently the first to seriously study the forest, which they estimated covered at least 4,000 hectares. The European portion of Addis Ababa was relatively free of trees, but the Ethiopian section was merely an extension of the forest.

Aerial photographs taken in 1957 showed that the forest (excluding the trees in the builtup area of Addis Ababa) covered 100 km². The furthest limit extended 10 km along the Ambo road from the heart of Addis Ababa."

"The explanation for the survival of eucalyptus, however, is simple. The two species chosen, better than any other, combine good adaptability to climate and soil with the necessary toughness that enable them to survive the crude planting techniques applied by Ethiopian farmers. It may be all wrong scientifically — but it works."

"At the onset of the rainy season, the farmer prepares his land for planting and waits for a cloudy, windless day, preferably with a slight drizzle. The plants are then lifted from the nursery bed with a small forked hoe, damaging the delicate root systems as little as possible. The long, slender stems are neither pruned nor stripped of leaves. The farmer simply bundles them together and carries them to the planting area. From a forestry perspective, the plants are doomed. The shoots are too long for the roots, especially as the roots often become seriously mutilated during lifting and transportation. A professional forester would expect that the roots would be too short to sustain evapo-transpiration of the long stem.

The seedlings are planted very close together, with a density of between 40,000 and 100,000 seedlings per hectare. The textbook forester would insist that even 10,000 seedlings per hectare is too dense, and if one visits a plantation a couple of days after planting, he would seem to be right. The top-shoots of the plants hang limply and many leaves wither. Surprisingly, however, as many as one-quarter -- sometimes even half -- of the plants survive the rough treatment. Farmers do not expect survival rates higher than that. If the final result of their efforts is a plantation containing 10,000-25,000 plants per hectare, they are pleased.

The dense plantation closes canopy within a few months, eliminating the problem of severe grass competition and making weeding unnecessary. If the trees remain small and slender, so much the better -- most Ethiopian houses, both in town and in the country, are of a mud-plastered wattle type that need small stems for their construction. After thinning, the farmers' stands produce larger stems that are marketed as fuelwood and building poles."

"Residents of Addis Ababa are so dependent on the eucalyptus trees that the city probably could not exist without them. Eucalyptus wood is used for fuel and building materials. Eucalyptus lumber frames the majority of its structures. Much of the cooking in the city is done with the wood and the leaves. Eucalyptus leaves are now thought to be essential for making good quality enjera (the unleavened bread that is a traditional Ethiopian staple) because they burn with a quick, hot flame. Eucalyptus wood is also used for

tool handles, furniture, telegraph and telephone poles, fences, particle board, and for numerous other products. Moreover, the trees are important for the beautification they provide.

The eucalyptus tree was introduced to Ethiopia at a time when residents were desperate for a solution to the wood-shortage problem. Even today, no replacement for the eucalyptus is in sight. Now, the people have developed a rapport with the tree, which is not a burdensome crop and does not require special handling. Today, the "tree from across the sea" has become an integral part of the Ethiopian landscape and has clearly become one of Ethiopia's important resources."(pp 178-182)

Case Study: South Korea

"Large areas of South Korea have been transformed from lands of barren hills into lands of young pines. According to government figures, more than one-third of the national land area is stocked with trees less than 10 years old. While official statistics here, as anywhere, should be taken with a grain of salt, the country is clearly in the process of changing its face."

"While desultory efforts at village forestry had been tried since the 1950s, the really dramatic turnabout occurred in 1973, when the government devised a new forestry policy. Before then, the national emphasis had been on reducing the industrial timber deficit, relying mainly on the work of the government's forestry department. Village-level forestry groups -- which had emerged spontaneously in some areas over the previous several centuries -- were encouraged in principle but not given the strong support that would later result in their establishment throughout the country. Since 1973, in contrast, priority has been placed on meeting the needs of the rural population by enlisting their energies and unused lands. That a community-based approach could simultaneously provide more wood for the forest-products industry was also recognized."

"Following in the same spirit, the new forestry campaign has tried to mobilize villages to plant public and private lands, to form cooperatives to produce and market assorted products such as mushrooms and valuable leaves, and, above all, to establish firewood lots to meet local needs. The program has been implemented through an unusual combination of private and governmental organizations. Building on Korea's long history of village cooperative societies and the scattering of forest associations already in existence, the government encouraged the establishment of Village Forestry Associations (VFAs) in nearly every village. Nominally a private body (a local association consists of a representative from every household in the village), membership is mandatory and is directed by an elected chief. The VFAs are all part of a nationwide nongovernmental network, the Korea National Federation of Forest Association Unions, which is headquartered in Seoul.

South Korean villages are administrative entities with precise boundaries. Often they comprise a natural geographical unit, such as a farmed valley and its surrounding hills. As a first step in carrying out a firewood plantation project, officials from the government, federation, and village association together calculate wood requirements for the community and

identify suitable lands -- usually hillsides of little agricultural potential -- for meeting this need. Most of the chosen lands are privately owned; the owners are given the option of either reforesting the areas themselves, or turning them over to the VFA in return for one-tenth of future proceeds from their plots. Though this share of eventual profits is not great, most landowners, who have received virtually no income from their plots in the past, give the land to the VFA.

Through this profit-sharing mechanism the Koreans have managed to co-opt private land for public purposes, overcoming the constraints that private land ownership had previously placed on forest improvement. The landowners have no choice about participating in one way or another, but they also receive tangible benefits as a result. Such a combination of latent stick with visible carrot seems to characterize many of South Korea's rural development programs."

"...Korea's Confucian tradition, with its emphasis on obedience to hierarchical authority and on social cohesion, undoubtedly helps explain the success of the program. But beyond that, the glue binding people together in these efforts may be the genuine personal benefits they receive from their participation. For the many families who had been forced by wood scarcity into buying coal for home heating, for example, the switch to locally grown wood has meant an average 15 percent increase in income." (pp 183-186)

Discipline: Political Science
Application: Theory and Concepts
Country: Asia (General Applicability)
Emphasis: Theoretical basis for analyzing common property resource structure, simple model provided.

Oakerson, Ronald J., "A Model for the Analysis of Common Property Problems", in Proceedings of the Conference on Common Property Resource Management, April 21-26, 1985, Prepared by Panel on Common Property Resource Management Board on Science and Technology for International Development Office of International Affairs National Research Council, Washington, D.C.: National Academy Press, 1986, pp. 13-30

"...All common property nevertheless faces one problem: how to coordinate individual users to attain an optimal rate of production or consumption for the whole community.

More precisely defined, a commons is an economic resource or facility subject to individual use but not to individual possession."

" A scholar and practitioner who is familiar with a certain problem situation will have access to a large body of technical, historical, cultural, economic, and political information concerning that situation. The model presented here invites the analyst to sort this body of information into four mutually exclusive subsets: 1) the technical and/or physical attributes of the specific resource or facility; 2) the decision-making arrangements (organization and rules) that currently govern relationships among users (and others relevant); 3) the patterns of interaction among decision makers; and 4) outcomes or consequences (V. Ostrom 1974:55; Oakerson 1981:81).

"COMPONENTS OF THE MODEL"

"Technical and Physical Attributes"

All common property problems are rooted in some set of constraints either given in nature or inherent in available technology. The technical and physical constraints can be analyzed against three concepts drawn from economics literature: (1) jointness of consumption or supply, (2) exclusion, and (3) indivisibility."

"...Jointness means that no single beneficiary of some good subtracts from the ability of others to derive benefits; it ordinarily refers to simultaneous use, but can be modified to include serial use. ...All common property falls, by definition, into the broad range of partial subtractability. Each individual user is potentially capable of subtracting from the welfare of other users; but, within limits, all users can derive benefits jointly." (p. 15)

"The "exclusion principle," also used by economists to differentiate private from public goods (Musgrave 1959), ordinarily refers to the ability of sellers to exclude potential buyers from goods and services unless they pay the stipulated price."

"Is the commons divisible?"

"Underlying boundary conditions derive from nature or technology and should not be confused with legal boundaries, that is, boundaries imposed by rule."

"...In general, common property is characterized by partial jointness and the probability of some difficulty with exclusion within a limited set of boundaries."

"The second component of the model consists of rules-- those rules that structure individual and collective choices with respect to the particular "commons" defined by the first component."

"Rules that establish the ability of some group to act collectively (to make decisions common to the group), are especially relevant to the management of common property."

"...Four different relationships can be considered to affect the conditions of collective choice. (1) the capacity of individuals to act solely on the basis of personal discretion in matters of concern to others; (2) the availability of potential sources of remedy to individuals adversely affected by others; (3) the capacity of an affected population to relax the rule of willing consent and make a collective decision binding on all parties; and (4) the presence of potential veto positions in any process of collective decision making — opportunities for one or more decision makers to say "no."

"The content of collective choice is the "operational rules" that regulate use of the commons. Three types of rules can be distinguished... (1) Partitioning rules... (2) Entry and exit rules... (3) Any organizational arrangement for governing a commons must stipulate a set of jurisdictional boundaries."

"Decision-making arrangements external to the community of users will also be relevant in most cases."

"...but so do such other arrangements as a bureaucratic hearing officer or a traditional local chief in areas with a tribal history. ...market arrangements external to the commons may be relevant in establishing economic parameters within which management of the commons can be undertaken."

"...what patterns of interaction characterize the behavior of users and other decision makers in relation to the common? It is assumed that the important elements of individual behavior are interdependent (Runge 1981)."

"Behaviorally, a cost can be treated as any perceived obstacle to the choice of some alternative (Buchanan 1969). Conversely, a benefit is any perceived inducement to choose an alternative over another. Individual choices thus derive from a mental image of obstacles and inducements of one's environment. Patterns of interaction cannot be understood except in terms of these elements of choice."

The basic pattern of interaction on which successful joint use of the commons depends is reciprocity."

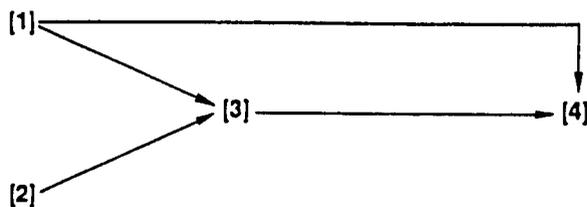
"Within the community of users, the degree to which individuals attempt to monitor one another's behavior and to hold one another accountable to common standards of behavior is a relevant variable."

"If reciprocity among users is fully abandoned, what follows is some pattern of mutually destructive competition and/or conflict. ...Relevant patterns of interaction may include concealment, deceit, intimidation, threats, and violence."

"Patterns of interaction produce outcomes. To supply information for this fourth component of the model, the analyst is required to (1) stipulate the use of evaluative criteria and (2) search for consequences that affect users and decision makers (and others involved) in accordance with these criteria. ...The most commonly used criteria are efficiency and equity. The analyst, however, must somehow convert these abstractions into operational measures of social value that can be used to appraise specific outcomes." (p. 21)

"RELATIONSHIPS OF THE MODEL"

"The first two components of the model can be thought of broadly as independent or exogenous variables in the short term. The third and fourth components are endogenous, the third intervening. The basic relationships are depicted in Figure 1 below:



- [1] Technical/Physical Attributes
- [2] Decision-Making Arrangements
- [3] Patterns of Interaction
- [4] Outcomes or Consequences

FIGURE 1 Relationships among independent variables

Individuals choose strategies in [3]. These choices reflect the combined set of constraints and opportunities found in [1] and [2]. The mutual choice of strategies comprise some pattern of social interaction. From interactions, consequences [4] follow, subject to evaluation."

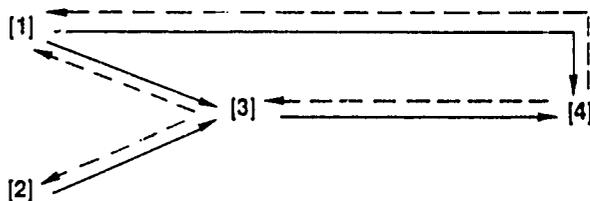
"Each component of the model separately summarizes some portion of a problem. When an outcome [4] is evaluated negatively, one should then work backward through the model to determine relationships. How do adverse consequences [4] flow from the prevailing patterns of interactions [3]? What strategies are inherent in those patterns? What structure of obstacles and inducements contributes to those choices? How does the structure of obstacles and inducements derive from elements of decision-making arrangements [2] and the technical and physical attributes [1] of the commons?

Consequences disclose the effect [4] of a difficulty. The difficulty is manifest behaviorally in patterns of interaction [3]. The source of the

difficulty, however, lies in some lack of symmetry or congruence between [1] and [2] -- a mismatch between the technical and physical nature of a commons and the decision-making arrangements used to govern its use. The lack of a good "fit" between these two components of the model sets up a perverse structure of obstacles and inducements leading individuals into patterns of interaction [3]."

"Having diagnosed the problem conditions by working backward through the model, one can turn to questions of design: how to rearrange decision making by adjusting rules to better fit the nature of commons."

"A long-run analysis, however, must allow for change in both sets of variables. The model is modified by adding a set of long-term relationships, shown by the broken lines in Figure 2 below:



- [1] Technical/Physical Attributes
- [2] Decision-Making Arrangements
- [3] Patterns of Interaction
- [4] Outcomes or Consequences

FIGURE 2 Long-term relationships among independent variables.

"The purpose of the model presented here is to aid in the collection and assimilation of case-by-case analysis."

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Discipline: Political Science
Application: Theory and Concepts
Country: Asia (General Applicability)
Emphasis: Adoption of agroforestry technologies

Raintree, J.B., 1983, Strategies for Enhancing the Adoptability of Agroforestry Innovations, Agroforestry Systems, 1(2): 173-187.

"Abstract...As a new and explicitly interdisciplinary field of applied scientific research and technological synthesis agroforestry is in a unique position to benefit from recent advances in our understanding of the rural development process which, if properly integrated into the emerging paradigm for agroforestry research and development, will greatly enhance its chances of fulfilling its potential as a source of solutions to many interrelated problems of tropical land use."

"1. Introduction

The premise on which this paper is based is that no agroforestry technology, no matter how technically correct or elegant, will have a significant impact on the landuse scene unless it is adopted by a significant percentage of the intended users.

... As a late arrival on the applied science scene, agroforestry has a unique opportunity to avoid the mistakes of the past by incorporating relevant lessons into the very foundations of its approach to technology-generating research. If the emerging field is to have anything approaching the kind of impact which it is expected of it on the ground, the criteria for assessment of technological innovations in agroforestry must be threefold: productivity, sustainability and adoptability."

"2. What do we know about the adoption-decision process?

What is the process an individual goes through in deciding whether to adopt or reject a new technology? What factors influence this process? These questions are dealt with at considerable length in the literature on the adoption and diffusion of innovations (38). For our purposes here it is sufficient to note that, broadly speaking, there are three main types of factors affecting the outcome of the adoption-decision process: 1) the characteristics of potential adopters (including their situational constraints and potentials); 2) the manner in which the innovation is communicated to them (i.e. the extension process), and 3) the nature of the innovation itself (i.e. the attributes of the candidate technology)."

"One obvious possibility for boosting the adoption rate would be to work only with the upper part of the adoption curve, i.e. the 'key farmer' emphasis found in many R&D programmes. But this strategy has many pitfalls. The main danger is that the technologies developed for the early adopters may reflect special circumstances obtaining on this group's farms and may not, in the end, be adoptable by the majority of less advantaged farmers in the area. A more effective strategy is to concentrate on developing technology for the broad majority of farmers while judiciously involving the innovators and early adopters in the programme as early demonstrators of the new technologies. Primary feedback on the adoptability of new agroforestry technologies, however

must come from farmers more typical of the majority."

"Several new participatory extension strategies based on a two-way flow of information between researchers and the local community have been proposed [7, 22, 33], and some of them are specifically addressed to agroforestry R&D [35, 46]. With the use of such models we stand a far better chance not only of increasing the adoptability of the candidate technologies, but also of paving the way for a smooth extension followup."

"3. What are the attributes of technologies which make them adoptable?"

"...Rogers and Shoemaker [38] have identified five major technology attributes associated with higher adoption rates:

- (1) Relative perceived advantage
- (2) Compatibility with local culture
- (3) Low technical complexity
- (4) Trialability
- (5) Observability

West [47], applying principles derived from adoption-diffusion research to the special problems of forestry projects, has called attention to the difficulties arising from the long time frame associated with tree production, which tends to reduce the relative economic advantage, the trialability, and the observability of tree-based innovations. While these constraints are to some extent unavoidable when dealing with trees, there are a number of strategies which can help mitigate such constraints in the case of agroforestry innovations."

"4. Strategies for adoption-oriented agroforestry research and development"

"...but as a first principle of an adoption-oriented approach there is much to be gained on concentrating R&D efforts on making incremental improvements in existing land use systems. In seeking to maximize the compatibility and relative perceived advantage of agroforestry innovations it is necessary to work with the cultural grain rather than against it [47]."

"In carrying out such an approach it is necessary to have a clear perception of the existing landuse system, which may be highly differentiated with respect to both biophysical parameters and social differences among members of the local population which condition the appropriateness of candidate technologies for different agroecological units [11] and socioeconomic groups [17, 30] within the project area. Where such differentiation exists it may be helpful to first stratify the project area into a number of different landuse systems, each with its own distinct set of agroecological and socioeconomic characteristics, before attempting to design technology for these systems."

"Another important but somehow overlooked requirement is to first gain an adequate understanding of existing traditional agroforestry systems [29] before attempting to introduce improved 'modern' ones. As a negative example, Hoskins [18] cites the case of a forestry project in Upper Volta which required the clearing of a tract of 'useless bushland' for planting of a fast-growing exotic fuelwood species. Unbeknownst to project planners this land was part of an indigenous agroforestry system used by local residents (mainly

the women) as an important source of not only fuelwood but also a variety of foodstuffs, cottage industry materials, medicinal plants and other useful products. Little wonder the fuelwood plantation later mysteriously burnt to the ground!"

"Given the focus on agroforestry improvements in existing systems, we are faced with two priorities: 1) to develop latent potentials within the system, and 2) to address its inherent weaknesses and solve existing problems....The preference for a diagnostic or problem-solving approach is based on the assumption, borne out by experience, that those technologies which realize potentials for solving perceived problems in the existing landuse system are more likely to awaken the client's adoption interest than those which do not. Such technologies would tend to rate higher on all of the attributes of adoptability and achieve greater relevance to the farmer's decision-making process by addressing perceived needs. This approach contrasts strongly with the more common approach which seeks merely to realize biological or, at best, bioeconomic potentials within the system which, although, they exist, may or may not have a high priority in the farmer's thinking."

"Agroforesters should strive to play the role of 'honest brokers' in land management decisions [41], although at this early stage in the development of agroforestry, when the actual performance measurements on many of the hypothetically promising agroforestry systems have yet to be made, we may perhaps be excused for recommending unproven but functionally relevant agroforestry technologies on an experimental basis. Once we have the performance data, we can then assess the relative economic advantages of different agroforestry and non-agroforestry alternatives and make the appropriate choices."

"One simple way to enhance the relative advantage of agroforestry designs is to recognize from the beginning, that yields-per-hectare are not the only, and often not the most relevant, criteria of agroforestry design. The unit of success or failure in agroforestry is the enterprise, not the field. Yield/ha or more sophisticated measures of returns to land will be the best index of productivity of agroforestry systems only where land is the most limiting production factor. In labor scarce economies, those technologies which give higher returns to labor will have the greatest perceived advantage. Agroforestry designers will stay on good terms with the adoptability criterion only if they forgo the usual 'per hectare bias' in favor of designs which satisfy the more generally applicable and adequate criterion of maximum returns to the most scarce production factor, whatever it might be."

"One such application, the MULBUD 'economic sliderule', a practical budgeting tool for dealing with multiperiod multicrop agroforestry systems, has been developed by Etherington and Mathews [9, 10] of the Australian National University. This user-friendly microcomputer software package is currently the focus of further development efforts in a joint ICRAF/ANU project with additional input for the Center for Research on Economic Development of the University of Michigan. MULBUD III will be ready for dissemination in the latter part of 1983. Such tools hopefully will aid agroforestry designers in qualitatively appraising alternative technologies and selecting the most adoptable designs."

"The idea that farmers respond to an economic threshold (changing relative advantage vis-a-vis returns to labor) in the adoption of more intensive landuse systems has received considerable empirical support from researchers in a variety of different environments [3, 23, 24, 43], but the thesis is less successful in predicting technological change in non-subsistence oriented production systems and situations of imperfect knowledge of technological options [2, 8]. Nevertheless, the principle has clear implications for an adoption oriented approach to agroforestry design: the labor-requirements of candidate technologies should not grossly exceed the normal level of expected labor input in the existing system. Incremental increases in labor input can be tolerated if the relative advantage of the new technology is made clear, particularly in systems under pressure. On the other hand, it is no use trying to introduce agroforestry technologies appropriate to the land use and labor intensities of places like Central Java [48] into extensively-oriented systems like those of the Amazon frontier."

"5. Special problems and tactics"

"...Even though undeveloped land might in some respects be regarded as a blank slate, the minds of the people who will be brought in to settle the area will not be blank. As members of culture bearing populations they will bring with them a landuse tradition which, even though it may not lead to the re-establishment of an exact duplicate of the old system in the new environment, it will certainly influence the settler's technology preferences. This must somehow be taken into account in the design of agroforestry technology."

"Instead of analyzing existing landuse in the resettlement area, one analyses landuse traditions and tendencies in the source area of the migrants and tries to extrapolate them into the target area, with the idea of avoiding problems likely to crop up in the new environment. This is not a foolproof guide to adoptable technologies, but it is a far better preparation for relevant agroforestry design than simply ignoring the characteristics of the settlers while dwelling only on the environmental potentials of the site."

"Given the need and the potential of agroforestry systems to address future as well as present problems, preadaptive designs should be encouraged whenever they can be linked to presently adoptable technologies."

"An example brought to our attention by S.D. Richardson at a recent conference in Nairobi on Professional Education in Agroforestry [20] is that of a commercial fuelwood project in which the designers sought to insure its clients against a possible future collapse of the local fuelwood market by substituting rosewood for eucalyptus in the design. Unlike eucalyptus, high quality rosewood can be sold for timber as well as fuelwood. This is a good example of the kind of design flexibility which is possible with multipurpose trees."

"Landuse systems are highly dynamic in this age of rapid population growth and trees, alas, take a long time to grow. Moreover, once established as functional components of landuse systems, tree-based production systems may commit the land to a specific form of use which is not lightly changed. It therefore becomes incumbent upon responsible agroforestry designers to give thought to the future and, whenever possible, to strive for designs which incorporate flexibility and scope for gradual intensification to meet the

needs of future generations living on the land at substantially higher levels of population density."

"6. Conclusion"

"This paper has focused on adoptability as an attribute of technology and a criterion of good agroforestry design. A number of research strategies and design tactics have been discussed in relation to the types of problems confronting designers of agroforestry systems."

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Discipline: Political Science
Application: Theory and Concepts
Country: Asia (General Applicability)
Emphasis: Cooperatcn in use of a common property resource or difference
between resource use with free or open access and a common
resource

Runge, C. Ford, "Common Property and Collective Action in Economic Development", in Proceedings of the Conference on Common Property Resource Management, April 21-26, 1985, Prepared by Panel on Common Property Resource Management Board on Science and Technology for International Development Office of International Affairs National Research Council, Washington, D.C.: National Academy Press, 1986, pp. 31-60

"In much of the developing world, common property provides a complex system of norms and conventions to regulate individual rights to use a variety of natural resources, including forests, range, and water. ...With the forced enclosure movements of the fifteenth and sixteenth centuries, the common property typical of early Western Europe declined, although it did not disappear."

"The European experience with enclosure provides a rich background for this study. The immediate purpose of the study, however, is to explore contemporary problems of common property resource management in developing countries."

"...A fundamental issue in much of the developing world is the degree to which resource mismanagement has actually been caused by common property arrangements."

"...Not unlike the European experience with enclosure, lands formerly held in common are often transferred to individuals (such as high-ranking government bureaucrats) who can exercise influence in the allocation of use rights. These individuals have then failed to manage these resources effectively."

"This paper ... describes a number of reasons why common property may be as viable as private property on grounds of both efficiency and equity."

"...Often, what appears to the outside observer to be open access may involve tacit cooperation by individual users according to a complex set of rules specifying rights of joint use. This is common property. Empirically, it is crucial to distinguish between open access and common property if appropriate policy is to be formulated."(pp. 31-32)

"To appreciate the traditional role of common property resource management, three stylized characteristics of village life in less developed economies must be understood. The first, which follows almost from the definition "less developed," is relative property."

"A second characteristic of life in a village economy is that it is critically dependent on a local agricultural and natural resource base.

...Because the distribution of basic natural resources such as soil and water (including rainfall) is often quite random over both time and space, the assignment of exclusive use rights to a given land area can yield an inherently unfair distribution of resources, as compared to the more equitable results of assigning joint rights of access to these resources."

"A third characteristic of life in a developing economy is a consequence of the first two. Poverty, together with a dependence on low value-added outputs and relatively randomly distributed natural resources, results in a high degree of uncertainty with respect to income streams."

"...In the face of this environmental uncertainty, common property institutions may be created; rather than emphasizing the right to exclude some, these institutions provide instead for the right of many to be equally included as a hedge against uncertainty. The expectation is that when one is in need, aid will be forthcoming from others in return for a like commitment; this may indeed be more agreeable than "going it alone" in the face of nature."

"Poverty, natural resource dependency, and resulting uncertainties thus create an incentive structure that may make common property a comparatively rational solution to certain problems of resource management. In what follows, I will call this a solution to the "Assurance problem..."

"The free rider problem results when an individual shirks responsibility to the community or group."

"Some argue that the proper solution for overgrazing a common range is therefore to "internalize" its costs by making the public aspects of the range private. Instituting a scheme of such rights, if they are properly enforced, is argued to be a necessary (though not a sufficient) condition for creating a market for private grazing rights. This approach has led a number of economists to argue that the mere existence of common property rights over a scarce resource will lead to a tragedy of the commons."(pp. 33-36).

"...this position ignores considerable historical and empirical evidence to the contrary and is due in part to a lack of familiarity with common property in practice, and the associated failure to distinguish problems of free and open access from those of common property."

"A somewhat contradictory result, especially when the argument is used to support privatization, is that the strict dominance of individual free rider strategy is argued to be accompanied by rational individuals who will husband and conserve their own private range area at a rate more consistent with the preferences of society as a whole."

"Three key difficulties with this model render it unreasonable on empirical grounds. First, its assumption of dominant free rider behavior leaves no place for cooperative rules unless they are imposed and enforced from outside. Second, the dominant strategy mechanism, by ruling out the importance of changing expectations of others' behavior, fails to capture the interdependence of decisions in a village economy. Third, by sidestepping the importance of mutual expectations in the formulation of individual strategy, it fails to deal explicitly with the problem of uncertainty regarding the

actions of others (Runge 1981).

"The very nature of village-level decisions makes dominant free riding implausible. Such decision making involved interdependent choices in which the benefits and costs of resource use are not a function of the total actions of the group, but in which decisions to use (or overuse) resources will be affected by the expected decisions of others. If the use of common resources is conditional on these expectations, this interdependence places a premium on mechanisms that coordinate community decisions."

"The model says that the free rider problem can be solved—not that it will be solved.

When elaborated to describe problems of resource management, this model provides an intuitively appealing way of looking at common property as a solution to coordination problems. First, coordinated strategies can evolve inside the structure of the game, rather than always being imposed from without. In this sense, such strategies model innovative, endogenous property rules initiated by a village or group. By providing security of expectation, property institutions are responses to the uncertainty of social and economic interaction (see Schotter 1981; Johnson and Libecap 1982). Second, the model places central emphasis on the interdependence associated with group decision making, and the multiple outcomes possible when agents are engaged in a search for rules of coordination when there are no dominant strategies. It allows for either cooperation or free riding, rather than saying that free riding will dominate. Third, it emphasizes the key obstacle of uncertainty, emphasizing the fact that opportunity costs must be paid to develop support for new rules or norms of coordination."

"...An inferior outcome is no longer inevitable; if everyone is assured that a critical mass of others will obey a common property agreement, then it is in each person's individual interest to do likewise, since this outcome is preferred."

"The key element that determines the success or failure of institutions is therefore the extent to which the institutions foster coordinated expectations in relation to a particular physical and social environment (Ullman-Margalit 1977).

In this framework, it is easier to see how internal group incentives to maintain and enforce common property rights may be as strong, if not stronger, than those restricted to private exclusive use."

"...The social overhead costs required to maintain common property rules may be substantially lower when they are already a part of the customary structure of rights and duties. ...Recognized interdependence makes the costs of reputation loss high, much like losing one's credit rating in a developed economy. Other, more severe sanctions may be imposed by the village on its own noncooperative members."

"Finally, the fairness implicit in joint access may prove a highly assuring feature of common property agreements, even if the relative benefits accruing to individual members of the group on average are somewhat less than under a system of exclusive use-rights."

"This does not deny that enforcement from outside may help achieve improvements in the institutions, if the costs of such enforcement are affordable. Where local level rule making has broken down, such interventions may be necessary. In many cases, local interests may request assistance in enforcing property rights, including private rights, which local authorities alone cannot guarantee. The lesson of the assurance problem is simply to let individuals have full freedom to create self-binding property rules that best serve their needs before adding enforcement mechanisms from outside."

"Furthermore, enforcement of private property rights from outside the group or village is not a sufficient condition for optimal resource utilization. Not only are the costs of such "top-down" enforcement likely to be high; they also may lead to attempts to impose patterns of land use incompatible with local needs, causing lands to be brought into or taken out of production based on criteria developed at "the top" rather than the village level (see Bromley and Chapagain 1984). This may be especially true when control over land use is in the hands of those with fewer incentives for efficient and equitable local management, such as absentee owners."(pp. 42-48).

"If a variety of responses to problems of resource management are possible, the incentives leading to a particular institutional choice must result from the physical and social environment in which choice is made."

"A second reason for the survival and utility of common property is that close dependence on natural resources makes survival more subject to a variety of unpredictable natural events that are likely to fall unequally in both time and space on the local population. ...By institutionalizing a degree of fairness in the face of random allocation, common use rights may contribute to social stability at the same time that they promote efficient adaptation to changing resource availability over time.

Common property may be an appropriate institutional adaptation to resource management at the village level for a third reason: the right to be included in a group provides a hedge against individual failure."

"The tenacity of traditional institutions cannot be explained simply as the manifestation of "backwardness" or "irrationality." A more logical explanation is that rational individuals are not inclined to relinquish institutional arrangements that have promoted survival, even if survival has not been especially comfortable."

"This discussion, while essentially theoretical, directs attention to the specific resource constraints faced by groups at the local level. Rather than invoking the general superiority of one type of property institution, this analysis suggests that different institutions are responses to differing local environments in which institutional innovation takes place. Such innovations are likely to range along a continuum of property rights, from pure rights of exclusion to pure rights of inclusion, depending on the nature of resource management problems (Runge 1984b).

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DISCIPLINE: Political Science (?)
APPLICATION: Theory and concepts (of agroforestry)
COUNTRY: Asia (General Applicability)
EMPHASIS: Policy issues

Shapiro, K.H. 1984. Agroforestry in Developing Countries: Selected Policy Issues. In: Agroforestry in Developing Countries. University of Michigan Center for Research on Economic Development for USAID/PPC/PDPR/RD. pp. 1-27.

"2. Objectives

...At least five broad objectives can be identified. Many times several objectives are served by the same type of agroforestry undertaking, but there are also many cases in which one objective is clearly dominant. Five common, general objectives are:

- (1) improving agricultural production...
- (2) improving forest production...
- (3) protecting or improving the environment...
- (4) increasing energy supplies...
- (5) creating a local industry...

This simple listing of objectives raises several interesting issues. First, obviously, is the diversity represented above. Agroforestry is multifaceted not only in its operational characteristics as indicated in the definitions but also in the nature of benefits it can generate. Second, the different objectives tend to fall into the domain of different specialists and different ministries. Many governments have separate organizations to deal with each of the five objectives--agriculture, forestry, environment, energy, and industry. Third, the different objectives imply different client groups and different mixes of private and public goods and hence different decisions about government's role and subsidies." (pp.8-9)

"10. Summary

Agroforestry has been practiced in various forms for centuries. Its scientific study is much more recent, and economic analysis of agroforestry is in its infancy. Thus this literature review may have been somewhat premature. Biological questions have received the most analytical attention. Socioeconomic issues have thus far been treated primarily in a descriptive manner and even this is somewhat limited with very few studies covering periods from tree planting through maturity. Most economic analyses have been standard benefit/cost exercises, but there have not been enough to draw generalizable lessons. Indeed, since most authors emphasize the site-specificity of results, there may be few generalizable lessons to draw.

Readings in Sociology

DISCIPLINE: Sociology
APPLICATION: Methods and measures; technology transfer
COUNTRY: Bangladesh
EMPHASIS: homestead agroforestry; fuelwood

Leuschner, W.A.; and Khaleque, K. 1987. Homestead Agroforestry in Bangladesh. *Agroforestry Systems*: 5: 139-151.

Abstract. The homestead agroforestry system is very important in the economy of Bangladesh. The many woody species grown in the homesteads are a significant source of fuelwood; they also provide fodder, building materials and other forms of wood. In the context of the prevailing shortage of fuelwood and excessive deforestation in Bangladesh, this homestead agroforestry system needs to be strengthened.

A field survey was undertaken to assess the prospects and feasibility of initiating a programme for the improvement of homestead agroforestry systems. It showed that the prospects for improving homestead agroforestry systems are good because most respondents own their own homesteads and believe there is room for more trees on them. Although they know that raising trees is relatively difficult and requires special practices, they are familiar with the government nurseries and local agricultural extension officers, and are confident about the success of the programme. Results also indicate that multipurpose trees and specific modules for involving women in the farm operations are likely to enhance success of the programme." (p. 139).

"...This paper evaluates the general conditions with respect to homestead agroforestry in Bangladesh and reports the results of a field survey conducted to assist the Project Design Team" (p. 140).

"The proposed programme hopes to capitalize on the existing system by promoting plantings on unused spaces which still exist and by eventually distributing improved plant materials..."

"Several potential benefits are anticipated. The most obvious is the increased production of fuelwood and ancillary products for household consumption and cash income. Another potential benefit is decreased labour expenditure for gathering fuelwood, the distance travelled to collect fuelwood being less as it becomes less scarce. The labour so released might find better rewards in alternative activities, such as craft production for personal use or sale..."

"The system and the proposed project sound logical and simple, but there are many necessary conditions for it to function properly. Seed and/or seedlings must be grown, the desired improved plants developed, plant materials distributed, farmers informed and convinced of the system's merits, and so on. Many of these conditions will require government activities because they are not currently present in the private sector..."

"The likelihood of fulfilling these conditions should be assessed. One subset of these conditions center around the farm household and its perceptions. Is collection of fuelwood and fodder time-consuming enough to make new plantings worthwhile? Is there space on the homestead which can be planted? What species are preferred? Are farmers familiar enough with planting and maintenance of trees as well as government institutions for the programme to work?" (p. 143-145.)

"A survey was made of farmers throughout Bangladesh to help answer these questions. A purposive sample was taken in seven districts which are a cross-section of Bangladesh's agroecological zones... One village was selected in each district. Only villages near or associated with existing or proposed agricultural demonstration sites were selected. This was done because these would be the first villages where the homestead forestry programme would be implemented."

"Thirty households were interviewed in each village. Village leaders and influential persons were included because their attitudes would help shape village opinion. Unreceptive attitudes by these persons could make programme implementation difficult. Male heads of households were generally interviewed because local custom discourages strangers from talking to female household members. However, there were some female respondents."

"A schedule of interview questions was used rather than a formal, structured questionnaire. This was necessary because language and customs can differ by locale and because the survey was too small to develop several regional questionnaires. Two hundred and ten households of the total 1790 households in the seven villages were interviewed." (p. 145)

"The survey showed that most farmers owned their homestead site, even if they did not own the land they farmed. Land ownership is important to foster fuelwood plantations because these plantings take at least two to four years before a first harvest and often longer. There is little incentive to plant and cultivate such species on another persons' land because the planter may not be able to harvest the crop. The large number of owned homesteads and farms is a positive influence on a homestead agroforestry system."

"The presence of fruit trees on homesteads, as well as informal conversations with farmers during the interviews indicate the farmers' preference for fruit trees and species other than those traditionally managed by foresters. New plantings will not be limited to these plants but the strong implication is that foresters interested in social forestry and agroforestry must have expertise in managing non-traditional forestry tree species. Foresters who might be required to supervise or advise on such tree plantings must also have expertise in managing individual or small groups of trees which will fit on the limited land areas available on small homesteads and farms."

"Several conclusions can be drawn from the responses about fuel type, collection patterns, and alternative uses. First, a great deal of time is spent collecting fuel and fodder - an average of over 30 hours per week by a household. Respondents report agricultural residues may be carried from distances as great as 1.6 to 6.4 km. There is a great potential for freeing

labour for other uses if fuel and fodder sources can be located closer to the residence. Secondly, there are other uses for nonwood fuels. Availability of fuelwood would free these materials for other uses and thus increase farm productivity. Finally, the large proportion of females collecting fuel supports the general concept that improved techniques and practices must be communicated to women because they are the persons implementing them..."

"Experience in planting trees, knowledge of cultural practices, and belief that room exists on homesteads for additional plantings were widespread among farmers. These factors are important if a successful agroforestry programme is to be initiated. Thus, the prospects seem favourable for improving agroforestry on Bangladeshi homesteads..."

"Knowledge of and contact with the extension workers may also be important for successful project implementation because they often provide information about cultivation techniques and new plant materials. One-third of the households have a personal acquaintance with the extension personnel despite the general transportation and communication difficulties. The conditions thus seem favourable for extension activities, however, this link in the implementation chain needs to be strengthened." (p. 148-149).

DISCIPLINE: Sociology
APPLICATION: Technology transfer
COUNTRY: India; Nepal
EMPHASIS: Involvement of women; fuelwood; species preference; subsistence forestry

Fortmann, Louise P. 1986. Women in Subsistence Forestry: Cultural Myths Form a Stumbling Block. *Journal of Forestry* 84 (7): 39-42. (Reprinted from the *Journal of Forestry*, published by The Society of American Foresters, 5400 Grosvenor Lane Bethesda, MD. 20814-2198)

"...Forestry is not synonymous with timber production. In developing countries, commercial forestry is distinguishable from the subsistence forestry practiced by a vast majority of people. In subsistence forestry, trees and tree products are used for fuel, food, medicine, dyes, fodder, house and fence poles, agricultural implements, and raw materials for crafts. Both non-disruptive uses (gathering fallen produce) and consumptive uses (felling and burning trees to clear agricultural land) are included..."

"In India in the early 1970s, minor forest products, despite low prices, constituted 25 percent of the total value of forest production (Chambers, 1983)...In 1975, of all wood used in India, 90 percent was fuelwood (Burley, 1982). The figures may underestimate fuelwood use and production, because much fuelwood never enters the formal sector..."

"Whatever the product and whatever the use, subsistence forestry is practiced primarily by women. In a profession where masculine images predominate, this may be a startling fact. In the developing world, women are local forest experts, managers, and laborers. Consultation with local people, men and women, is essential before designing or undertaking forestry projects in developing countries."

"Almost without exception, women are the primary collectors of fuelwood. In Nepal, women collect 78 percent of the fuel; women and girls combined account for 84 percent (Bennett 1981)...The exceptions to this rule occur when fuelwood becomes a commercial commodity, in which case men generally collect and sell it, or when fuelwood is gathered from a great distance by animal-drawn carts or tractors... Even then the bulk of the work may be done by women, who collect and pile the fuelwood to be picked up later by the men on tractors."

"Women are also the primary users of fuelwood. Cooking, cleaning and child care require fuel for heating water. In many parts of India... women are also responsible for gathering tree fodder for livestock. Responsibility for family food and health makes women the prime users of minor forest products. Wild foods are collected from trees (fruits, nuts, leaves, roots, bark) or tree surfaces (snails, honey, caterpillars, birds' nests)."

"Women contribute to family incomes by selling minor forest products, by using them to produce crafts for sale, or by using fuelwood to cook foods sold in the market..."

"Why do forestry projects fail in developing countries? Some projects are destroyed by local people and others are ignored. When foresters fail to

consult with local forest experts, projects are designed with an inadequate information base. Because of extensive contact with the forest, local women may have a more detailed understanding of forest resources than local men or than foresters from other localities..."

"...Foresters who fail to consult women, the major users of wild plants, may inadvertently destroy an economically productive area that appears to be useless bush. In such cases, villagers have been known to return the favor by uprooting or burning down the foresters plantation."

"Women's knowledge about tree qualities can be helpful in designing fuelwood plantations. Foresters are often partial to fast growing exotics, but such species may not meet local requirements for fuelwood... Local women can tell which species provide a long lasting, low heat, which provide a quick high heat, which smoke, and so on. With fuelwood used for cooking and lighting, such characteristics can be decisive. Without the right information, foresters could produce a plantation of quick-growing wood that does not meet local needs."

"By equating management with professional training, foresters may overlook the managerial function of women in subsistence forestry. Women assume these functions because misuse and mismanagement of forests affect them directly. When deforestation occurs, women must walk longer distances to collect fuelwood and fodder...It is the women who must search out new, more distant water sources as springs go dry...Third World women bear the results of poor forest management in the form of a longer and more arduous work day."

"Foresters have found women in developing countries practicing forms of forest management on their own. In many places, women have rules about fuel collection that expressly prohibit the cutting of green living trees. Dead and downed wood is preferred. In addition, certain species may be protected by custom or religious sanction. In parts of India, women water the peepul tree as an act of piety."

"Women are often the ones who turn out for conservation projects. The Chipko (Embrace-a-Tree) movement in India depends on their support. Women have been at the forefront of the movement, confronting loggers to prevent deforestation and themselves undertaking reforestation. Also in India, female forest guards have been found effective in controlling women's use of forest products..."

"...Women laborers are crucial in village forestry, because new seedlings require water. In most parts of the world, water is collected and carried by women. Men are generally unwilling to take on this work. Much of the food in developing countries is grown by women...If tree planting coincides with the normal cropping season, women may not be receptive to diverting their time from food production to watering trees... Projects are best designed after consultations with local women on work schedules..."

"Local cultural values and myths also impede the integration of women in forestry. These myths often fly in the face of readily observable fact... Women who are considered too weak to plant or water a seedling put in hours hoeing the fields. Women who are considered the intellectual inferiors of

men and unable to participate in decisions about village forestry provide the know-how in agriculture and forestry to feed their families. Women who are thought to have no interest in trees and no contact with trees plant them in their compounds."

"Cultural impediments are not insurmountable, but myths need to be identified and ways found to work around them..."

"...Forestry involves the right to use land and the right to use and plant trees. A person who has no right to land has nowhere to plant a tree. A person who does not have the right to use a tree has no incentive to plant it. A person who is forbidden to plant trees cannot participate in a forestry or agroforestry project. Women in developing countries commonly lack one or more of these rights..."

"Even where statutory law grants equal land rights to women...women are less likely than men to own land in their own right, in part because the land rights of women are often extinguished in the process of formal registration of title. Those women who do own land tend to have smaller acreages than men."

"The answer for forestry may lie in 'women's niches,' land to which women have access even if they may not own it - the commons, the compound around the house, home gardens. In developing countries, women's land rights are likely to differ from men's. Women also have different rights to trees than men. Because of the household division of labor, women and men may use different parts of the same tree or different trees altogether. In many places, customary law recognizes these differing rights to trees or their parts. Thus certain fruit-bearing trees that grow only in the wild may be children's trees. Other food-bearing trees may be women's trees, while timber trees are men's trees..."

"In some places, planting a tree gives the planter rights to the land on which it is growing. For this reason, particularly in places where women are not allowed to own land, women may be forbidden to plant or inherit trees. Since women may be the only source of labour, this prohibition can pose a serious problem to the forester."

"...Where forestry projects require credit for buying seedlings or other inputs, women are again at a disadvantage.. they may lack the necessary collateral, most notably clear right to real property. Or they may simply not be given credit no matter the law. Foresters cannot base projects on the assumption that existing modes of credit will serve women."

"In no country are anywhere near half the professional foresters women...The lack of women foresters in developing countries is especially serious because of the problems involved in forestry extension."

"Women are the most effective communicators of new forestry information to other women. In many places, this principle is enforced by cultural prohibitions or restrictions on interactions between men and women other than spouses. In parts of rural Nepal, women speak primarily with other women and will not speak to men from outside their own community (Stewart 1984). Beliefs that women are technically incompetent impedes communication between male extension workers and women."

"Some projects have proceeded on the belief that male extension workers or foresters can simply talk to the men and all will be well. The literature is replete with examples of failed projects based on this notion. It doesn't work because the men may never pass the information on to the women, or they may pass on the wrong information. Also, between a quarter and a third of rural households in the developing nations are headed by women. These households are even less likely to be reached by male extension agents."

"Forestry is no longer limited to big trees and chain saws wielded by men. It is also small crooked trees; those standing alone in fields as well as in forests and plantations; indigenous species as well as exotics... The fate of forestry projects is decided not in air-conditioned offices in capital cities but in hot, dusty villages and not by bureaucrats but by local people and often by women. Subsistence forestry projects are failing at a time when the need for success is visible to the world. Our ability to respect the expertise of local people and to recognize their problems will signal the coming of age of our profession."

Bennett, L. 1981. The Parbitiya women of Bakundal: the status of women in Nepal, Vol. II. Part 7. Cent. Econ. Dev. & Admin., Kathmandu. 290 p.

Burley, J. 1982. Obstacles to tree planting in arid and semi-arid lands: comparative case studies from India and Kenya. NRTS-18/UNUP-391. UN Univ., Tokyo. 52 p.

Chambers, R. 1983. Rural development: putting the last first. Longman, London. 246 p.

Stewart, J. 1984. Community forestry development in Nepal. Commonw. For. Rev. 63(2):121-27.

DISCIPLINE: Sociology
APPLICATION: Methods and measures; Technology transfer
COUNTRY: India; Nepal
EMPHASIS: community woodlots, common property resources, equity, women's participation

Molnar, Augusta. 1986. Social forestry experience in India and Nepal: A Review of Community Woodlots, The Involvement of Women, and the Introduction of Wood-saving Devices in the Various Projects. Report to the World Bank. 48 pp.

"There has been considerable discussion about the experience in social forestry projects in India and Nepal... the projects have been highly successful in generating a large amount of wood and fodder products, particularly through the overwhelming success of planting on private lands (farm forestry) and considerable infrastructure has been developed to undertake social forestry activities..."

"...this report focuses on the sociological issues in three areas of activity: community planting, particularly village woodlots, the involvement of women, both as beneficiaries and as active participants, and the introduction of wood-saving devices... These involve important socio-economic issues and have all proven much more difficult and problematic than had been anticipated in the earlier project documents..."

"Establishment of Community Woodlots"

"The community woodlot component has been a central part of the overall strategy in social forestry in both India and Nepal, making use of degraded community lands for village plantations and aiming to foster a communal process of decision-making for long-term resource management. Emphasis has been on common village lands because of the important traditional role they have played in supplementing villager needs for grazing area, fuelwood and minor forest produce, such as rope fibers and bamboo for handicrafts or fruit for medicinal and food purposes. While many village areas are too degraded to provide much more than a cattle exercise ground, others continue to provide significant quantities of produce, particularly for poor and marginal households."

"Implementation of the community woodlot scheme has been much more problematic than had been anticipated in all the projects in India and Nepal. Encouraging the necessary village and panchayat level interest and participation has been very difficult. In India, availability of appropriate common land has been a constraint. Organizing panchayats and committees effectively to take responsibility for management decisions has been largely unsuccessful, except in recent years in Nepal, and hampered by the lack of appropriate extension within the forest departments (FD), by the need for more monitoring and experimentation with different participatory models, and the unexpected trend towards management of the woodlots as a cash crop, rather than as a resource primarily for local consumption. In light of the perceived problems, some alternative schemes are being tried which provide poor and landless farmers with tree tenure on public lands. While these have

considerable potential to generate more equitable benefits, they cannot replace the kind of common resource planning that the woodlot schemes hoped to engender."

"...Overall the experience with woodlots in India and Nepal indicates that the projects are now reaching a crossroads at which the trends and main constraints are identified but not clearly understood. There is presently great need, therefore, to closely monitor and analyse cross-project experience in several areas -- harvesting patterns, changing species choices, methods of produce distribution, and the decision-making role in different panchayats..." (p. 1-3)

"Two different lines of action are warranted in terms of woodlots. For all woodlots, more concentrated planning needs to be done on the management and transfer of responsibility, collecting case material for as many woodlots as possible, preferably from all state projects, not just by those of one particular donor, so that all projects can gain from each other's experiences. In addition more attention should be paid in establishing criteria for the selection of future woodlots, including the expressed willingness of panchayats to cooperate, the availability of land not under conflicting use by private farmers or villagers, and of sufficient size to yield significant benefits. The last condition should be determined for different regional areas through some careful analysis on the basis of existing growth data and consumption estimates to generate a reasonable picture of supply and demand."

"For woodlots where produce is not planned to be sold, but distributed locally, more monitoring of individual cases needs to be done to generate information on the patterns of distribution and the problems encountered... There are two different ways to approach the perceived problem of a lack of locally-distributed benefit. One is through a concentration on increasing overall productivity through the use of improved models and better management practices. The second approach is to redefine the FD-supervised and self-help woodlot schemes..."

"One suggestion for a solution to the problem of equity has been to encourage the panchayat and community members to give preference to the needs of the poor and marginal farmers at the time of harvest, in light of their inability to plant trees on their own limited land. Besides the obvious problems involved in encouraging such a degree of altruism, one serious problem with this suggestion is that community lands are legally seen as an extension of individual land holdings, particularly in the northern states. Community lands are lands allocated by the state to villages, originally on the basis of their livestock holdings, for use as grazing lands. In many states, landless individuals have no legal rights to these grazing lands, particularly recent migrants to the area, since they own no land in the village. Skewing distribution of benefits towards landless could only serve to alienate small farmers, who feel they have a greater right to the produce of that land than the landless, and wealthy farmers, who have an even greater right as large land holders..." (p. 19-21)

"The Involvement of Women"

"There are a number of very central reasons for involving women in social forestry projects in India and Nepal, not the least of which is the fact that women make up 50% of the target population and are the primary gatherers of forest products: cooking fuel, fodder, and minor forest produce. In addressing the wood and fodder scarcity and implementing plantation programs that alleviate pressure on government and other public forest areas, a number of behavioral changes are required of the rural population, and... those changes must actively involve women...Alleviating some of the time wasted in collection of scarce resources could add considerably to women's productive contribution to household income in other sectors of the economy, both agricultural and non-farm income generation."

"...There are several problems with implementing successful activities for women's involvement. First, and probably most crucial, has been the fact that forestry is a male-dominated sector in both countries with virtually no women professionals available to assist in planning. The projects have been faced with myriad difficulties in all areas of implementation due to the newness of social forestry, the lead time required to train and re-orient FD staff to the changed nature of extension and other work duties, and the lack of prior research data on appropriate plantation approaches and silvicultural models. FD staff have...been reluctant to invest valuable resources in solving the problem of women's involvement, an area in which they have initially had no idea how to proceed, at the cost of other implementation problems. Second, and common to many development programs, there is a tendency to assume that addressing women's needs and evaluating women's involvement within a more general problem is extremely time-consuming and costly..."

"As a result of this attitude, in India much of the kinds of information that could have been collected on a routine basis with little added staff time or expenditure to assess project impact on women and suggest areas for improvement has not been included in the monitoring and evaluation structure of the projects. For example, information by sex has not been collected at the local levels in most projects on the distribution of private seedlings, mandays of employment generated by the project, preferences for various species in public and community plantations, and preferred management practices for communal plantations... While it is virtually costless to collect such information in the regular course of the monitoring or survey operation, trying to disaggregate aggregate figures later or adding last minute evaluation surveys to the work program become extremely time-consuming and costly. When not gathered initially, such information becomes lost permanently. A third factor impeding implementation of measures that directly involve women in states with improved stove components is that there is a tendency to assume that since improved stoves directly affect and benefit women, this obviates the need for so much attention to women's participation in other sectors of the project..." (p. 24-25)

"As a result of women's greater involvement in fuel collection and fodder collection for animal feeding, women have more direct interest than men in types of plantations and choice of species which help to meet these subsistence needs. While men tend to be more interested...in the sale of wood for cash income from both the community woodlots and from private tree

stands where there is a perceived market, women are often as or more concerned with household needs. Their lack of involvement in decision-making becomes extremely detrimental to project targets, therefore as benefits become skewed in the direction of men towards sale of wood, usually to outside markets. Part of the problem stems from the fact that men usually have a very poor idea of the amount of fuel required by the household and the amount of time spent in its collection. In Nepal, for example, when forest department staff would hold discussions with male villagers about the village need for fuelwood as opposed to construction wood from the nearby forest, they invariably referred to the women to get reasonable answers. 'What do we know about fuelwood' was the male response..." (p. 28-29)

"There has been an attempt in various projects to involve women in the decision-making process. Nepal forest committees have been required to have at least one woman member. The same is the case in Tamil Nadu, where each disadvantaged group, including women, have to be represented on the committee. Including one woman on a committee does not, however, necessarily change the decision-making pattern. In most cases, the women do not contribute significantly to the discussion out of shyness. Particularly in India where women are more reluctant to speak publicly than in Nepal, it might be more effective to form two committees, one of women interested in forestry and one village forest committee. Then the female representative to the village committee could be someone from the women's committee, and this representative would be more outspoken as the representative of an organization rather than a single individual. Whatever the solution is tried, it is probable that involving women as decision-makers will be a long, drawn-out process and require considerable experience over time..." (p. 34-35)

DISCIPLINE: Sociology
APPLICATION: Theories and Concepts; Technology transfer
COUNTRY: Indonesia
EMPHASIS: Home gardens; traditional agroforestry; resource allocation

Christanty, Linda and Johan Iskandar. 1985. Development of Decision-Making and Management Skills in Traditional Agroforestry: Examples in West Java. In: Community Forestry: Socio-Economic Aspects, Y.S. Rao, N.T. Vergara, G.W. Lovelace (eds.). Bangkok: FAO/RAPA, pp. 198-214.

"Agricultural development is usually focused on increasing productivity of land units, which involves changes in the kinds of crops grown and in the way in which they are grown. Traditional agricultural systems are products of centuries of trials and errors that have adapted them to long-term ecological, socio-cultural and economic factors. To understand the production systems of traditional farmers, one should take into account farmers' agricultural decision-making, such as how they arrive at decisions to farm, how they cope with temporal changes, and what are the important factors that determine agricultural decisions. Unfortunately, decision-making analysis is usually concerned with better cropping patterns, input subsidies, better marketing and transport facilities to increase production output, and income of traditional farmers who have access to them, but ignores the complexity and heterogeneity of rural farmers themselves."

"Agronomic behavior has a close relationship with social, cultural, economic and political behaviors of village life. For example, choice of agricultural practices is influenced by household and market demands, resources available, culture, social relationship among community members, and existing political institutions. As all components interact between each other, a multidimensional approach to decision making analysis needs to be considered (Thandee, 1983)."

"This paper attempts to examine the development of decision-making and management skills in a traditional agro-forestry system in West Java."

"There are two common agroforestry systems which have been traditionally practiced by farmers in West Java:"

"Pekarangan (home garden) ... consists of a mixture of annual crops, perennial crops, and animals...on the land surrounding a house. This system originated in Central Java and spread to West Java in the middle of the eighteenth century (Terra, 1953)..."

"The talun-kebun system...usually consists of three stages: kebun (annual crop garden), kebun campuran (mixed garden), and talun (perennial crop garden)... The talun-kebun system is a native system in the Sundanese area and has been developed before the eighteenth century (Terra, 1958)..."

"Decision making in traditional agroforestry systems includes determination of:"

Crop choice
Cropping pattern
Planting sites
Planting time and labor allocation
Rotation length
Field size for cropping
Planters..."

"Management strategies and practices in traditional agroforestry systems can be categorized into:"

- "- Minimization of risk and uncertainty
- Income assurances
- Time and labour allocation"

Minimization of Risk and Uncertainty

"Polyculture systems are employed to minimize risk of harvest failure. With a high plant diversity, production failure of one species can be recovered by the success of harvesting other species."

"Farmers are usually reluctant to gamble with uncertainties. They tend to grow crops which have been familiar to them and on which they already have enough knowledge on growth requirements and maintenance."

"Some farmers, however, are risk takers who have the ability to play with uncertainties. These farmers are willing to experiment with new crops to increase production. Only if these farmers succeed will others follow."

Income Assurance

"The income from homegarden comes from selling fruit and other cash crops (e.g. banana, rambutan, dorian, jackfruit, clove and coconut) to local brokers or merchants. Some species (cocoanut, banana and jackfruit) bear fruits throughout the year, while other perennials have restricted fruiting seasons...This pattern of harvesting ensures cash income throughout the year and provides subsistence income for fulfilling daily needs of the owner."

"As cropping systems in the talun-kebun last for about one to two years, farmers set their strategy for income assurance by opening a part of their land annually. Therefore, when a field ceases to provide marketed products, other fields will take over the role successively."

Time and Labour Allocation

"Time allocation for work in homegarden is determined by family status (father, mother, children and grandparents). On the average, the father works for 8-9 hours a day and the mother works for 7-9 hours a day. In homegarden related activities, however, the mother spends more time working in the garden than the father does..."

"Activities in talun-kebun can be divided into three stages: clearing, cropping and harvesting. During the clearing stage, weeding and collecting litter are usually done by women and children, while tilling, cutting and burning are done by men. Women do most of the cultivation during the cropping stage, though men usually help by making holes, preparing seed beds, and shallow furrows. Weeding is done by women and children. Both men and women are responsible for harvesting..."

"Farmers' decision making is determined by their goals. In the decision making process, availability of resources is the main consideration for designing goals. Achievement of the goals, however, is limited by several constraints, i.e. skill/knowledge, land, capital, labour, saving, transportation, marketing, and risk/uncertainty. Therefore their decision for action is largely a result of careful combination between availability and constraints."

"In traditional agroforestry systems, cropping decision is determined by the goals of each farming practice. In homegarden system, farmers put the emphasis more on subsistence needs than on commercial purpose. Therefore cropping decision is influenced by biophysical and social factors rather than economic factors. Whereas, in talun-kebun system, economic factors are more critical than other factors."

"Strategy to minimize risk and uncertainty and to ensure continuous flow of income is reflected in the cropping pattern and field size determinations."

"The effort to maximize profit is done by optimizing the use of family labour and by limiting the use of wage-labour to farming systems that are considered to have high economic returns."

Terra, G.J.A. 1953. The distribution of mixed gardening in Java, Landbouw 25: 163-223.

Terra, G.J.A. 1958. Farm system in Southeast Asia. Neth J. Agric-Sci., 157-182.

Thandee, D. 1983. Decision strategies of subsistence farmers in Southeast Asia - Working paper, Environment and Policy Institute, East-West Center, Honolulu, Hawaii. 21 pp.

DISCIPLINE: Sociology
APPLICATION: Methods and measures; Technology transfer
COUNTRY: Indonesia
EMPHASIS: Home gardens; land use; tree products markets

Van der Poel, P; and Van Dijk, H. 1987. Household economy and tree growing in upland Central Java. Agroforestry Systems 5: 169-184.

"Abstract. This article tries to identify the key variables that determine landuse patterns and the strategies of households towards tree growing in two upland regions in Central Java. A household's access to land and market opportunities appear to be such key variables. Households with little land use their land more intensively with respect to crop, livestock and tree production. So do households with access to market opportunities. Based on this type of diagnostic research more appropriate tree-based designs could be developed to contribute to the solution of landuse problems in the uplands of Java..." (p. 169)

"Various agricultural systems can be found in upland Java. Many of these systems incorporate trees... Normally, one farm comprises various agricultural systems. In the present study the following systems are of most importance:

- (a) the homegarden (pekarangan); the area next to the homestead, often dominated by trees, but also planted with vegetables and food crops.
- (b) the dry field (tegal); the area located at some distance from the homestead, where most food crops are grown, often in combination with trees..." (p. 170-171)

"The farming system consists of several components, which are linked by the household decision-making process. The household has various assets (land, labour, capital, knowledge) which can be put to use in the farming system. This results in a certain type of land use and the choice of a number of off-farm activities. Thus land use is the result of the decision making process of the household. The products produced are those preferred by the household, within the limits set by household assets and by the bio-physical and socio-economic environment..."

"The aim of this research is to analyze the role of tree growing in upland farming systems. More specifically, the research emphasizes the relation between the household economy and tree growing; which factors within the household (e.g. access to land and off-farm activities) and from outside (e.g. market situation, government programmes) determine actual land

use and tree growing activities of farmers' land. Through a better understanding of the farmers' strategy towards tree growing it should be possible to develop more appropriate innovations which may improve the results of the Penghijauan [Regreening program on private lands]..."

"The study was done in Bunder in the Regency of Gunung Kidul, and Merden in the regency of Banjarnegara... In both areas a random sample of households was taken: 22 households in Bunder and 50 in Merden. Over a period of two months these households were interviewed with the help of a checklist, and their fields were surveyed. In addition, key informants were interviewed and general information was gathered from village records. For the analysis of data households were classified according to their access to land. This classification was based on the assumption that the upland farmers are subsistence-oriented and therefore will regard land as their most important resource. Consequently, the amount of land will have considerable influence on household decision-making. In this article the households will be divided into two categories: farmers that have access to less than 0.5 ha of land (A), and those that have access to more than 0.5 ha of land (B)..." (p. 172-173)

"Both in Bunder and in Merden households need cash to supplement agricultural production (crops, livestock, trees), to pay for taxes, social obligations, school fees, health care, etc. Most of this cash income is generated via off-farm activities. Next to income in kind, agricultural production may also provide a cash income, when products are sold... Total cash income in Merden is much lower than in Bunder, because off-farm activities have very low returns on labour compared with Bunder. Furthermore, cash income from agriculture is very small, because of the absence of cash crops and a sufficient tree stock to generate surpluses...it is expected that cash income from livestock in Merden is much less than in Bunder."

"The tree species grown and their spatial distribution can be explained both from the characteristics of the trees and the requirements from the farming system. In Merden Albizia falcataria is grown randomly over the field for it does not strongly compete for light with maize and cassava because of its open crown. Moreover, it yields a large amounts of timber, fuelwood and fodder on relatively little space within a short period of time. Acacia auriculiformis, Tectona grandis, and Swietenia macrophylla are popular species in Bunder, because they yield good prices at the fuelwood and timber market and are preferred for house-building. They are, however, planted in hedges to reduce competition for light. Furthermore, planting in hedges leaves the fields clear for ploughing with cattle traction."

"With decreasing size of the holding and increasing stress on the household resources the trees are distributed more evenly over the homegarden and the dry field. This occurs on the smaller category A holdings in both Merden and Bunder. In this way dry fields begin to resemble homegardens. Households in category B separate trees more from crops, so that two distinct land utilization types can be discerned."

"The survey areas are very different with respect to off-farm sources of cash income. In Bunder important amounts of cash income are generated via the government. Households in Bunder have more jobs outside the village,

whereas in Merden few people have regular jobs. Important off-farm activities, like the quarrying of minerals and the extraction of sand, moreover, not only owe their existence to the high erosion rates in Merden but contribute to erosion too. Bunder has received much more attention from government programmes, directed towards improving agricultural practices, in the past and present. In Merden, farmers have received little extension or other help from government programmes. Penghijauan programmes influence land use and tree growing. It was observed that recently introduced plant species that fit into the farming system or give high returns are successful. Examples of this are A. falcataria in Merden and Pennisetum purpureum in Bunder, because they fit into the farming system, and Citrus spp. and clove in Bunder for their high returns. Species that are unpopular give too low returns; e.g. Calliandra calothyrsus in both areas."

"A further very important difference between both villages is the existence of a market outlet. The market serves as a commercial outlet for tree growing activities. Fuelwood, charcoal and timber fetch good prices in Bunder and this has promoted tree growing, whereas in Merden these stimuli are almost absent. The market outlet also contributes in other ways to more profitable farming in Bunder. The wide opportunities to market cattle indirectly boost the growing of grasses and fodder trees."

"Market outlets are not absent in Merden, but they are less developed in the case of agricultural products. The markets for minerals and sand are organized in a monopolistic way. Returns on labour for the quarrying of minerals and the extraction of sand are low. Moreover, these activities contribute to environmental degradation in the area."

"In response to various local circumstances, farmers in upland Java follow different strategies towards farming and tree growing. Access to land and market opportunities are key variables in this respect. Households with little land use their land more intensively with respect to crop, livestock and tree production. Householders with access to market opportunities also use their land more intensively. We have shown that the production systems (crops, livestock, trees) are strongly interrelated. Interventions in the tree production system will only be successful if they can be integrated in the farming system by the farmer and if they give sufficient returns."

"The presence of a market outlet can provide an impetus to more intensive land use and to the development of a farming system. This is only the case, however, when production opportunities for the market can successfully be integrated in productive (Bunder) and not exploitive (Merden) land use systems. The Penghijauan programme does not pay sufficient attention to local differences and though it will be successful in some areas it will result in many failures in other areas. Decentralizing the organization of the programme will greatly improve its results." (pp. 182-183).

DISCIPLINE: Sociology
APPLICATION: Technology Transfer
COUNTRY: Nepal
EMPHASIS: Extension; training

Pelinck, E.; Manandhar, P.K.; Gecolea, R.H. 1984. Training and extension for community forestry. In: Strategies and Designs for Afforestation, Reforestation and Tree Planting: proceedings of an international symposium on the occasion of 100 years of forestry education and research in the Netherlands. Wiersum, K.F. (ed.) Wageningen: PUDOC. pp. 331-347.

"Summary

Extension and training is a continuing process of transfer of information required for implementing a particular programme at a particular time. Forestry extension poses two special problems. First a long period must elapse before improved forestry practices produce benefits; secondly, communal custody and management of forests can only succeed with the consensus of, and concerted action by, entire communities. This paper is largely based on experiences in Nepal. A good institutional basis is recommended to support community-oriented forestry activities and should include appropriate policy and legislation, a positive attitude of potential beneficiaries and adequate staffing of the implementing agency. An initial strategy for extension and training is described, together with the need for a continuing modification based on participatory evaluation by those directly involved in field implementation, both government staff and actual or potential beneficiaries. A comprehensive package activities and support materials designed for different target groups is described. Monitoring and evaluation of the programme has indicated a considerable increase in knowledge and interest among the 300 participating villages. Much of this can be attributed to implementation of field extension and training." (p. 331)

"Much literature on forestry extension pays attention to the need to persuade people to protect forests and plant trees. In 25% of the communities visited in Nepal, however, a local forest management committee already existed; more than 90% of those interviewed felt the need for forestation; and 85% indicated that grazing lands in their community could be made available for forestation purposes. The same survey revealed, however, that many people did not have sufficient knowledge of the Government's policy and legislation on community forestry nor of the availability of seedlings free of charge." (p. 333).

"Extension services were originally established in agriculture to help farmers increase their income and raise standards of living by improving farming practices. Forestry extension essentially adopts the same objective and can use many of the methods used in agriculture. However, forestry extension and in particular community forestry extension in Nepal poses two special problems not commonly found in agricultural extension. The first is the long period that must elapse before improved forestry practices produce benefits. Where agricultural crop calendars can be

measured in a few months, it takes years or decades for trees to deliver their rewards."

"Secondly, communal custody and management of forests can only succeed with the consensus of and concerted action by entire communities. In agriculture, an extension programme can be pointed towards success by initially convincing and aiding only a handful of farmers to try new practices on their farms. In Community Forestry, such small trials cannot be depended upon. It will not do for a handful of dedicated villagers to plant tree seedlings in a communal forest, only to be trampled on the next day by cattle being grazed by other villagers."

"Ultimately, however, the programme will only succeed to the extent that it can gain the whole participation of the hill communities. The style of extension work must therefore be entirely participatory, from the time the villagers are made aware of the programme through planting of trees and finally to community management and use of forests..." (p. 339-341).

"Much emphasis is given to participatory evaluation by those actively involved in the implementation of the programme. The following illustrates the variety of ways...employed to monitor and evaluate programme progress and impact:

- visits by central programme staff to project Divisions, with each division visited at least once a year;
- district, regional and national seminars in which central and field programme staff, village leaders, and local government officials discuss programme problems and possible solutions;
- various questionnaires administered to DFOs (Divisional Forestry Officers), CFAs (Community Forestry Assistants) or expatriate volunteers/associate experts assigned to project divisions;
- a systematic survey of 900 village households and 180 ward leaders in project and control (non-project) panchayats;
- surveys of seedling survival in 74 panchayat forests and in private plantings of 328 seedling recipients;
- survey on use of improved stoves among 690 recipients;
- information regularly obtained through field reporting forms devised by the Monitoring and Evaluation Unit."

"The information gathered through the above methods has been valuable in modifying and strengthening the programme's training and extension activities. Some examples of findings and how they have been used to adjust the programme are as follows."

"Some CFAs were found not to be using the extension flipcharts as frequently and effectively as expected due to shyness, lack of skill in using them, or failure to create situations where they can be used with villagers. The Training Wing therefore included practice in the use of flipcharts as part of CFA refresher training. An extension manual for CFAs and other forestry field staff is also under production."

"The 1982 survey of 900 households indicated that the level of minimum knowledge about the community forestry programme among people in project

panchayats was double that in the non-project panchayats. However, about half of the people even in the older project panchayats did not know that seedlings were available free of charge in the village nurseries. As a result, the programme is now undertaking a more intensive communication campaign to publicize availability of free seedlings in project villages."

"Surveys revealed that survival rates of seedlings were satisfactory at 70% in panchayat forest plantations and 62% in private lands. The causes of seedling mortality were both technical (e.g. poor-quality seedlings, poor plantation methods, wrong species) and social (damage by grazing livestock, inadequate care). Therefore, the programme is strengthening technical training...on planting methods as well as emphasizing this aspect in extension work among village people." (p. 344-345)

DISCIPLINE: Sociology
APPLICATION: Technology transfer
COUNTRY: Pakistan
EMPHASIS: Farm forestry; farmers' 'tree-mindedness"; institutions

Dove, Michael R. 1987d. Village Interest in Farm Forestry: Punjab, NWFP, Baluchistan. Forestry Planning and Development Project, Office of the Inspector General of Forests and Winrock International Technical Assistance Team, Government of Pakistan-USAID, Islamabad. 11 pp.

"FARMER PRACTICES"

"1. Protection"

- "Farmers in the study villages protect trees from livestock by:
- i. Using thorn, mud, and brick fencing or walls.
 - ii. Planting trees within a courtyard or in proximity to a farm house or tubewell.
 - iii. Planting food or fodder crops among newly planted trees, to garner for the latter the 'off-limits' status of the former.
 - iv. Enforcing village-wide rules against free grazing (the penalty for violation is often holding the offending livestock in a phattok 'pen' until a fine is paid).
 - v. Summoning village-wide parties (shalgoon in the NWFP) for protection of village lands against nomads' herds.

These methods demonstrate that many farmers are already 'tree-minded', they care about their trees and actively try to protect them. These traditional methods, moreover, provide a starting place for project outreach activities."

"2. Curing"

"Farmers in some study villages, especially in the NWFP, say that they use traditional desi 'village' methods to treat ailing trees. These involve applying to the tree roots lime, animal blood, and burnt camel bones - the first to ward off pests, and the latter two to nourish the tree. In the event that this treatment does not work and the tree continues to weaken, the response of farmers in all study villages is to fell the tree and use it for fuelwood, which enables the farmer to salvage some economic use from the tree, while deterring the spread of the malady to other trees. These methods, although crude and capable of improvement, again demonstrate the existing 'tree-mindedness' of many farmers."

"3. Religion"

"The sacredness of trees is explicitly discussed in the holy Koran (Ahmad 1984), and is commonly invoked by farmers as a reason for planting trees. The greatest impact of religion in the past was not to encourage the planting of trees, however, but to prescribe their cutting, most commonly within or about graveyards and shrines. The stark contrast between the vegetation within and without these holy places, in areas where the nearest

alternative source of fuelwood, fodder, or timber may be many miles away, is impressive evidence of the force of religion in man's interaction with his natural environment. This power is relevant to the development of farm forestry, one of the major problems of which is the protection of plants."

"4. Village Institutions"

"Formal institutions are present in 63% of the study villages in the Punjab, 25% in the NWFP, and 6% in Baluchistan. The most common and successful of these are the cooperative societies (whose principal task is to loan farmers fertilizers and seed on credit) and welfare committees (whose tasks include the construction of village mosques, roads, and schools, and the support of the poor). It is unlikely that these or similar institutions can be of much use in developing farm forestry. Whereas the success of the cooperative societies is based upon the high cost of capital inputs into agriculture, there are far fewer such inputs in farm forestry. Whereas the success of the welfare committees depends upon their focus on the social welfare of the village as a whole, farm forestry is explicitly focussed on the property and economic needs of individual households. Thus, attempts to create village institutions such as cooperatives or committees to assist in farm forestry development on private lands, are likely to be unsuccessful."

Ahmad, Salahuddin. 1984. 'The Holy Quran and Vegetation.' Pakistan Journal of Forestry 34,1: 49-52.

DISCIPLINE: Sociology
APPLICATION: Methods and Measures; technology transfer
COUNTRY: Philippines
EMPHASIS: Social forestry; community forestry

Fujisaka, S.; and Sajise, P. 1986. Change and "Development" in the Uplands: A Synthesis of Lessons, Unresolved Issues, and Implications. In: Man Agriculture and the Tropical Forest: Change and Development in the Philippine Uplands. Bangkok: Winrock International. Fujisaka, S.; Sajise, P.; and Castillo, R. del (eds.). pp. 337-360.

"Social forestry programs require either collective or individual action. Collective action programs include, among others, village based community forestry. These are difficult to implement since they require consensus and coordinated action. Individual action social forestry programs - trees for farms, trees for residual areas, and contractual programs - have been more successful..."

"Community forestry - a social forestry program requiring collective action - is a response to several needs. Development needs to reach all strata in a community, including the landless and unemployed, rather than further benefit only the relatively better-off. In some projects, benefits have accrued to the better-off, and individual activities have been detrimental to community well-being. The PICOP project (Philippines) benefitted land owners, but not the intended poor kaingineros or unemployed. Individual Indian farmers planted Eucalyptus in place of food crops, decreasing employment opportunities and food availability."

"Community forestry projects are difficult to implement. They 'cannot be imposed from the top down' and need the involvement of women, prior specification of the distribution of benefits, government commitment, technical experience, foresters willing to assume new roles, credit, short-term benefits and long-term goals, and understanding of local economic, cultural and political structures..." (p. 352).

"We can also mention that development activities necessarily differ in the uplands and lowlands. Compared to the lowlands, the uplands are more heterogenous in terms of physical factors - slope, slope aspects, vegetation, water and soil resources - and in terms of peoples and cultures. As one result, a mosaic of 'micro-patches' must be considered in developing appropriate improved upland systems of land use. As has been demonstrated, there is a relative dearth of baseline data that can be used for planning such introduced change in the uplands. Because of such diversity and lack of basic information, a 'menu' of technologies for site testing is often more appropriate for the uplands rather than a technology 'package' of the type used in the lowlands (table 1). The 'menu' technologies are currently usually based upon in-place or indigenous technologies, which are often identified through ethnographic methods (e.g., 'rapid rural appraisal'), and are heavily subject to farmer selection and testing. On the other hand, improved lowland technologies can be, to a much greater extent, generated at research stations." (p. 352-353)

"Table 1. Upland and lowland technology generation compared

CHARACTERISTIC	LOWLANDS	UPLANDS
1. Variability	Relatively homogeneous, some micro-environmental variation	Very heterogeneous
2. Baseline Data	Considerable	Very little
3. Obtaining Information for Design of Appropriate Technologies	Standard survey, extension agents, research stations	Adapted ethnographic methods, 'rapid rural appraisal'
4. Technology Generation	Heavily based on research station work	Heavily based on indigenous practices, knowledge
5. Technology	'Packaged'	'Menu'

(p. 353)

DISCIPLINE: Sociology
APPLICATION: Technology Transfer
COUNTRY: Philippines
EMPHASIS: agroforestry, social forestry

Polisco-Botengan, M.A.; Dawang, C.G.; Follosco, H.J.B.; and Galuba, A.B. 1985. Conditions for Participation in an Integrated Social Forestry Program (Barangay Ambassador, Tublay, Benguet). In: Agroecosystem Research in Rural Resource Management and Development. University of the Philippines at Los Banos Program on Environmental Science and Management (PESAM) and Southeast Asian Universities Agroecosystem Network (SUAN). Sajise, P.E.; and Rambo, A.T. (eds.). pp. 10-41.
(WI Library)

"The peoples' fear of fully participating in such projects as bench terracing and agroforestry is justified by past experiences of some farmers who were relocated to Palawan at the onset of the FOM (Forest Occupancy Management Program). The respondents viewed participation as a preparatory step to ejection since the lands they are to develop would eventually turn to forests.

In essence, this paper attempts to establish conditions for participation...:

1. Determining/enhancing capabilities of the people - this is determined by first, accumulating baseline data as starting points on program activities. As in the case of the labor-intensive bench terracing, benchmark information should be looked into like the availability of labor, cash inputs, time and the like. If this is established then the program could work along these lines with program operating on what is existent and not on ideals.
2. Mass base information dissemination about ISFP (Integrated Social Forestry Program) mechanics and activities - this could be attained if SFO's (Social Forestry Officers) give due consideration to the people. The task may be laborious and tedious but the participants' need for face-to-face, personal lines of communication should be considered. A case in point is the lack of knowledge of the participants about the shading requirement of newly planted coffee seedlings...
3. Due consideration of biophysical characteristics - the limits defined by the ecological setting should be settled before the program is implemented...
4. Better working conditions for program implementors - Some program implementors were found to be less motivated, thus achieving ISPF objectives quite poorly. Since this can be attributed to the various physical problems and administrative constraints encountered by the implementor, the working conditions in terms of transportation, allowances, workload, work schedule and delineation of functions should be given due consideration...

5. Equitable distribution of information and inputs - Other program members were not able to avail of seedlings, fertilizers, and information due to the availability of only one ISPF station. SFO's were also highly selective of the people they dealt with in the project site.

6. Ironing out policies that give rise to conflicting positions - This is made at the policy-makers' level. However such problems are not acted upon because the policymakers may not be aware of the interplay of all factors at the microlevel hence hand data have to be provided to the policy-makers.

7. Installing the feeling of security among participants - Fear of ejection is a predominant feeling among participants. This could be alleviated through constant interaction between the SFOs and the people. In the process, efforts could be made in making the program objectives coherent not hypothetical, for the people. The use of phrases conditional in nature may breed mistrust among those involved...

"...The ISFP should ...be able to approach sociocultural and ecological problems/issues holistically without overlooking unique experiences of a project site or even just one member household. A single element of the national program could contribute greatly in the overall success or failure of the program hence should never be construed as irrelevant and insignificant." (pp. 35-37)

Discipline: Sociology (with section on Economics)
Application: Methods and Measures / Theory and Concepts
Country: Thailand
Emphasis: A case study and analysis of a community forest project from implementation through evaluation.

Forestland For the People: A Forest Village Project in Northeast Thailand,
Editing Stephen A. Dembner, Food and Agricultural Organization of the United Nations, no date given circa 1986, 82 pp.

"This publication is one of a series of case studies of FAO-assisted community forestry projects. The series forms part of FAO's Forestry for Local Community Development (FLCD) Programme."

"The purpose of this study is two-fold. The first is to provide a detailed analysis of the processes of achievements of an FAO-assisted project to rehabilitate a degraded area in the Khao Phu Luang National Reserved Forest in Northern Thailand through the community forestry approach."

"The second, more far-reaching purpose of the case study is to draw attention to elements of international relevance. ...the case study can be applied in a wide variety of socio-economic conditions. As a still relatively new concept, every community forestry effort has lessons to teach about forestry as a tool and a resource for rural development.

The forest village project in Thailand is attempting to address a number of common problems with an approach which is not at all common... it is attempting to provide a socio-economically viable stable alternative to shifting cultivation through an integrated land use approach combining food crops and forestry activities.. It is also addressing the dual and sometimes conflicting goals of forestry, i.e. watershed protection/ reforestation and utilization of forestry resources to provide a better livelihood and socio-economic environment in a basically land poor agrarian society. Finally, it is a voluntary resettlement scheme based on providing roads, water points and other social service and production supports thereby allowing isolated forest encroachers an opportunity to enter the mainstream of Thai society."

"The first phase of project activity concentrated on infrastructure development. ...The value of starting the project with an activity that immediately was viewed as worthwhile by the local inhabitants should not be overlooked.

The second phase of project implementation initiated a broad range of activities using forestry as the lead agency, and gave foresters, who had long been feared in the region, the role of advocates for rural people."

"All activities scheduled under the four components -- forest rehabilitation, socio-economic development, project staff development, and infrastructure development -- were executed and in most cases the target was achieved or exceeded."

"Dr. Amyot also examines areas of the project in which problems were encountered. For example, planting targets for reforestation were

underachieved by some 20 percent. The labour pool was limited and payment for Government reforestation work tended to lag behind performance."

"Finally, the author discusses problems, the resolution of which are beyond the capability of this type of project, for example equitable land redistribution."

"Khao Phu Luang National Reserved Forest, located some 250 km northeast of Bangkok, covers an area of 1 178 km² of rolling hill country. As recently as 40 years ago, the whole area had a dense natural cover of dry evergreen and dipterocarp forest with many streams flowing in the valleys between the hills."

"By 1980, however, less than 10 percent of the natural and undisturbed forest remained and many of the streams had run dry; ...Successive waves of encroachment by legal and illegal loggers were followed by subsistence farmers who penetrated the forest along the loggers' trails to practice shifting cultivation, and later by commercial farmers and entrepreneurs who further exploited the forest land for cash crop production. There was a considerably larger resident population but it was mostly dispersed throughout the area rather than concentrated in village communities. The people were poor and lived in generally depressed conditions. As encroachers on a national reserved forest, they were illegal squatters with no status or rights. Government infrastructure and services such as health, education and agricultural extension services were virtually non-existent.

During this period...Trees were the foresters' main concern. How people were affected by forestry measures was not considered part of their professional responsibility.

More recently, however, there has been a growing awareness among development planners of the need to also consider the potential social role of forests in forestry strategies. ...Past forestry production has mostly benefited the urban-industrial sector, often at the expense of rural populations. Well-planned forest-based activities, however, have significant potential for alleviating poverty in rural areas. To develop this potential, foresters and forestry departments must extend their concern and interest beyond the trees to the people.

This concept is usually referred to as community (or social) forestry."

"The project reviewed in this study clearly falls under the community forestry umbrella -- it is a voluntary resettlement scheme based on an integrated land use approach combining agricultural and forestry activities."

"The most frequently cited cause of deforestation in Thailand is excessive and uncontrolled tree felling by the commercial lumber industry. ...Thailand, an important exporter of lumber in the not distant past, is now a net importer.

The conversion of forest land for agricultural purposes also figures importantly in the process of deforestation."

"In the last 30 years or so, forestland encroachment and clearing for

crop production has not been limited to poor landless farmers. ...Many established commercial farmers, as well as urban and town entrepreneurs using hired labour, cleared vast tracts of forestland for cash cropping."

"Thai policy makers have long been aware of the need to protect national forests."

"The Royal Forest Department (RFD)..."

"The RFD has consistently lacked the personnel and financial resources to effectively protect reserved forests, national parks and wildlife preserves, or to enforce forestry laws in relation to encroachment and damage."

"Forest Industry Organization (FIO), a Crown corporation which generally acts in accordance with Government policy."

"Of particular relevance to community forestry project implementation in Thailand are the remedial measures taken to deal with deforestation and forestland encroachment by landless farmers."

"In a statement made at the end of 1985, the Permanent Secretary of the Ministry of Agriculture and Cooperatives noted that the total area then being reforested was only 10 percent of the annual rate of natural forest destruction.

Many factors contribute to this state of affairs,..."

"The forest village concept as developed by FIO in its concession areas stemmed from the need, on the one hand, to control shifting cultivation by forestland encroachers and, on the other, to create a pool of workers to work on tree plantations."

"By all accounts, the record of the FIO forest village approach is excellent, both in terms of cost effectiveness of reforestation and of benefits to forest village members. However, it falls far short of meeting the demand for reforestation and needs of the rural poor."

"A distinguishing feature of the RFD villages is that members are given usufructuary rights to designated agricultural land set aside for permanent cultivation within the village territory. In FIO villages, members with no such permanent holdings but intercrop in the plantation area on a rotating basis corresponding to the growth cycle of the trees planted. Theoretically, therefore, the RFD villages have greater potential for the villagers to achieve self-reliance and independence because their land holdings provide more opportunity for self-generated income."

"The RFD approached the UNDP/FAO for assistance in the early 1970's. Several options were examined and the alternative seen as most feasible was an integrated interdisciplinary effort originally formulated as a project involving "small scattered fuelwood plantations in combination with agro-forestry and resettlement". The Government agreed that a pilot project should be implemented and, if successful, replicated throughout northeastern Thailand."

"Several tasks related to project preparation were accomplished during the planning phase which lasted one and a half years. These included the identification, demarcation and survey of the area for the pilot project. The site selected was an area of some 9 600 ha located within the Khao Phu Luang national reserved forest. It was characterized by a relatively harsh climate by was nevertheless suited to upland agricultural crops. The site was deemed to be representative of the problems of deforestation of northeastern Thailand. Several surveys and studies were conducted to gather and collate data of relevance to project preparation, including socio-economic surveys; a forest inventory; a review of forest policy and legislation; and agroforestry application studies. Contact was established with Governmental and other agencies having expertise and services which could be useful to the project including provincial and district Government offices, agricultural extension, community development, public health, non-formal education, fishery, as well as banks.

Meetings with residents of the project area were arranged at household, village and sub-district (tambon) levels to discuss the project with them and elicit their reaction. ...Phase II...a 16 km road to improve access to the project area; a tree seedling nursery on an area of about 1.6 ha; a small trial planting to test the suitability of available species; and constructing semipermanent field offices and staff accommodations.

The project document for Phase II set out the objectives under four headings: forest rehabilitation; socio-economic development; project staff development; and infrastructural development."

"The project laid strong emphasis on staff development, especially in different aspects of community development. The foresters were also intended to play a leading role in getting agencies concerned with rural development to actively cooperate with foresters and, at the appropriate time, take over the responsibilities in these new settlements that are theirs by custom."

"This chapter describes the physical and socio-economic environment in the project area at the start of activities in late 1981."

"Nakhon Ratchasima Province (also known as Korat) in which the project is located is the gateway province of the Northeastern Region of Thailand. The Northeast is the poorest of the four regions of Thailand and is characterized by poor soils, harsh climate and shortage of water."

"Concern about deforestation led to the first boundary surveys of the National Reserved Forest of Khac Phu Luang in 1962 but it was only in 1973 that the area was officially designated a reserved forest."

"Although tree felling for the lumber industry was a major factor in the deforestation of the area, the promotion of maize as a major export commodity from the mid-1950s onwards was also critical."

"Precise information on the movement of the population into the forest during the maize boom is difficult to obtain but the overall picture is clear. After the original forest and plain dwellers penetrated the forest, a second group to play a significant role in the area was the road construction workers, especially those employed for the construction of Highway 304 from

1966 to 1969. Many had been maize growers who stayed behind to grow maize after the highway was completed. Through them, word spread quickly to their home villages that new fertile land was available in the Khao Phu Luang forest. The result was a large influx of maize growers who came to settle permanently on land that they either purchased from previous occupiers or cleared themselves, mainly by burning whatever trees and brush remained."

"Even though cultivator settlers had already begun to occupy the Khao Phu Luang forest area, a 1976 US Army map based on aerial photography gives no indication of villages in the area. In early 1982, it was still difficult to identify meaningful village community units and the area was characterized mainly by scattered homesteads spread over the countryside. ...The most common form of penetration was for individual farming households or small groups of households to acquire land and build their huts close to sources of water or by the side of a road track. As more and more newcomers came in from different locations, each household tended to cultivate an independent and self-sufficient style of life. All spoke the same language and shared a common culture, but the bonds based on kinship and long association characteristic of older and traditional Thai rural communities were absent. There was less motivation therefore to engage in cooperative ventures serving group interests."

"The project area extends over approximately 9 440 ha in the north-western sector of the Khao Phu Luang reserved forest."

"The natural vegetation of the area is dry evergreen and mixed deciduous forest."

- "(1) 18.1 percent of the area (1 705 ha) consists of mountainous and hilly slopes with gradients exceeding 16 percent and should be kept under permanent forest cover to prevent erosion. ...
- (2) 21.6 percent of the area (2 039 ha) consists of soils which are shallow, of poor fertility, or on slopes. It is to be used for forest plantation of fast growing tree species with some agroforestry [sic]."
- (3) 32.1 percent of the area (3 020 ha) consists of shallow slopes or soils which may become degraded. Recommended use is a mix of perennial fruit trees, annual crops and village woodlots. Good management is necessary to maintain soil fertility.
- (4) 28.2 percent of the area (2 658 ha) is made up of flat land with deep soils and should be used for permanent agriculture. ..."

"According to a 1982 survey, the number of households was 1 293 for a total population about 8 000."

"According to the 1982 survey, 69 percent of the residents interviewed had migrated to the project area in the preceding one to two years while the remaining 31 percent had been there three years or more, some for as long as 30 years.

The village structure of the project area was still very amorphous and as new settlers moved into an area it was not always clear to which

administrative villages they belonged. Village territorial boundaries were vague and there was little sense of community identification due to the dispersion of homesteads and to the problems of group formation among unfamiliar people."

"Although the communities described had little in common with traditional long established rural communities, their culture was remarkably homogeneous."

"The families in the area at the start of project activities were predominantly (85 percent or more) nuclear rather than extended families. The average age of the household head respondents to the 1982 social survey was 41.6 years. Sixty five [sic] percent of their spouses were in the 20-39 years age group, hence in the child-bearing period. This is of particular significance given the fact that families were already large with a mean of 4.7 children per family.

The level of education was generally low: ..."

"Information on the physical living conditions of these households is provided by a village study conducted in a new community in the area (Ban Sai Ngam) in September 1984. ...Fewer than 10 percent of the homesteads had toilets of any kind. Garbage was usually disposed of by burning."

"Eighty-three percent of those surveyed replied that their diet consisted principally of rice, vegetables and chili sauce. Those living close to streams had better access to fish."

"Common ailments in the area at this time were malaria, influenza and stomach disorders."

"More than 60 percent of all children were born in the home..."

"Notwithstanding difficulties of road communication, all reports on the population of the project area at this time indicate that it was not isolated and was subjected to considerable urban influence. ...The cinema was already a favorite form of entertainment and open-air all-night showings of films organized by outside entrepreneurs in the project area villages were already fairly frequent. There were also battery-operated TV sets in local shops where villagers could watch news broadcasts and movies."

"The overall distribution of farmers sampled in the 1982 economic survey into marginal, small (10-19 rai) medium (20-49 rai), and large farmers is shown in Table 3. The mean size of holding for the whole sample was 24.9 rai (4.0 ha). It was estimated that in 1981, the land occupied by some 1 300 farming households was about 30 300 rai (4 848 ha). This was 85 percent of the land considered suitable for agriculture."

"It should be noted, however, that claims to ownership were recognized by the local population so that the claimants could dispose of their land just as any other owner would — exploiting it, selling it, renting it out, giving it in inheritance to heirs, etc. Almost one half of these "owners" even paid the land tax for their holding at the District Office and the fact that this was accepted and a receipt issued for the payment was taken as at least implicit recognition by a Government office of their rights as owners. The discussion

of ownership that follows should be interpreted in the light of these qualifications."

"Maize was by far the most important single crop and the main source of income. ..."

"Approximately 20 percent of the sampled households had fruit trees..."

"A small percentage of the population was made up of non-farmers. ..."

"There is a huge demand for agricultural labour during the maize cropping season for planting, weeding, and harvesting."

"The writers of economic survey report estimated the mean household gross annual earnings for 1981 to have been approximately Baht 15 700 (\$686) of which Baht 14 575 or 93 percent was derived from maize production."

"Three items dominated the maize production expenses of most of the farmers interviewed: tractor hiring, labour, and transportation of the maize harvest to the market outlet."

"Recurrent household expenditures listed by the social survey report in order of magnitude were food, medicine, clothing and schooling."

"The project site was divided into three sectors, Sector I in which the project field headquarters was located (in Sai Ngam Village) comprising the northern arm of the area, and Sectors II and III covering the eastern and western portions respectively of the southern section of the area."

"As mentioned earlier, the road network in the area was so poor that a stretch of road had to be built before project implementation (Phase II) could begin."

"Weirs and dams were also constructed in conjunction with road construction to impound water in reservoirs for local use."

"Electricity was not yet available in the project area at the end of 1986 but as the power lines of the Provincial Electricity Authority (PEA) were only about 20 km away, it would be fairly easy to introduce."

"The need for forest rehabilitation for environmental protection and economic benefits was a central concern of the project. The approach followed included deliberate efforts to enlist the cooperation of the local people. ...A work plan was drawn up for establishment and maintenance of nurseries to produce the tree seedlings needed for forest plantations; for establishment, maintenance and scientific management of project forest plantations; and for protection of the remaining pockets of natural forest in the project area."

The species selected for planting in the project area were mainly Eucalyptus camaldulensis (Petford and Katherina provenances) and Leucaena leucocephala. ..."

"In areas where agroforestry was practiced, the tending was done by farmers themselves. In other areas, labourers were hired for weed removal..."

"Roads were constructed through blocks of plantations to facilitate access and to serve as fire breaks. Villagers were educated as to the dangers of using fire for land preparation."

"The majority of wage labourers appeared to be women."

"The main cause of the 20 percent shortfall in achieving the project target of 1 452 ha of forest plantation was the de facto [sic] rights of squatters in project area reserved forestland. The reforestation programme could only proceed with their consent and this required time-consuming discussion and persuasion."

"The socio-economic development strategy of the project rested upon the double foundation of village community consolidation in an agro-forestry context and land allocation in terms of STK programme. ...As most numbered village administrative units were composed of homesteads scattered through their territory without any obvious nucleus, their identification as village communities was difficult to determine."

"New surveys were conducted in late 1985 and it was found that the project area population had grown to 1 560 households (about 9 516 individuals)...Compared to the period immediately preceding the 1982 surveys, this rate of increase was relatively low. Because of the project, a much more visible RFD presence in the area made new permanent encroachment difficult. In addition, as the 1982 population already occupied an estimated 85 percent of the tillable land, there was little land remaining to attract newcomers. The 1985 population already occupied an estimated 85 percent of the tillable land, there was little land remaining to attract newcomers. The 1985 surveys also revealed a change in the configuration of village communities. The social survey report lists 23 villages (see Table 5). Although most of these villages still included scattered homesteads, there was evidence to suggest some consolidation of homesteads into enucleated communities."

"The main thrust of the project to achieve village community consolidation was the development of forest villages. The original target was the creation of six such villages. ...To achieve this, each community was provided with basic physical and social infrastructure."

"The rate of occupation of the new villages was slower than anticipated due to problems in persuading some farmers to relocate and the problems some groups had in selecting leaders."

"The land allocation activity of the project was carried out in accordance with the Government-sanctioned STK programme. By law, the STK certificate can cover only up to 15 rai (2.4 ha) of land and this land can be transferred only by inheritance to direct descendants. It cannot be rented, given away or sold. STK holders are required to report to the forestry authorities all illegal activities which they observe in their neighborhood. Failure to do so can result in relocation of their occupier rights without recourse to appeal or compensation."

"Claimants were screened to establish their eligibility, for example, those who owned farmland elsewhere did not qualify. If the residence registration of a claimant had not been transferred to the project area, this

had to be done before an application for a usufructuary certificate could be acted upon. The most time-consuming part of the exercise by far was the discussion needed to get the people to accept the rule limiting land entitlement to 15 rai. Those who resisted most, of course, were big land holders. ...Another thorny issue was how to deal with the land of absentee claimants, for example land acquired by influential town-based entrepreneurs as a result of debt defaulting. The RFD officials responsible for administering the programme chose to be flexible and pragmatic, identifying packages of land for allotment that could be acted upon with too much difficulty and leaving the final disposition of problem cases for a later date.

Because of these problems, the process of land allotment and of conferring usufructuary certificates took longer than anticipated and targets had to be reduced."

"Farmers are also allowed temporary use of land ear-marked for forestation but not yet planted."

"Past experience in all land settlement programmes in Thailand for rural poverty alleviation has shown that the allocation of land to poor farmers is a necessary but not sufficient condition to ensure success. There is a need to guarantee that the situation created is indeed financially viable,..."

"A more workable approach and, in fact, the one pursued by the project was to get the farmers to make more efficient use of available land by better farm management and to introduce various sideline activities to supplement farm income, for example, cottage industry and part-time off-farm work on tree plantations.

The strategy employed by the project implementors to help the farmers to enhance their income earning capacity drew heavily but not exclusively on agroforestry. ...A number of village leaders or outstanding farmers were selected to receive more intensive or more specialized training and were taken on study tours to successful development projects in various parts of Thailand."

"Given the disadvantages and inefficiencies of maize monocropping diversification of annual cropping was seen as an important measure to improve efficiency of farm management practices. ...Promotion of diversified cropping activity was coordinated by the project agronomist and executed mainly by the staff of the Agricultural Extension Offices of Pak Thong Chai and Pak Chong Districts in conjunction with local and regional agricultural experimental stations."

"The main additional crops proposed were cotton, mung bean, soybean, castor bean, ground nut (peanut), upland rice and kenaf. ...A small number of farmers were trained in mushroom production."

"Demonstration was an important component of the promotional programme..."

"Project-initiated agroforestry included forest and fruit tree planting by the people for their own use; forest pastoralism; forest-related

apiculture; and charcoal making. Extension was provided by project staff and Associate Experts as well as by locally-based workers from the Department of Agricultural Extension."

"All species promoted in the project area were fast-growing varieties. ...The project supplied 167 950 seedlings to farmers and to schools, both in the project area and outside in response to demand. Instruction was provided in the planting and care of trees. Schools were a focus of this activity. Some project staff taught agroforestry lessons and the school children planted trees on the school grounds."

"Response to forestry extension efforts was lukewarm at first for several reasons. As there was no critical shortage of fuelwood in the area, there was little perceived need to plant trees for this purpose. In addition, the people felt it would not benefit them to plant trees for, in their experience, it was illegal to fell trees in a reserved forest area. The very concept of agroforestry was alien to these maize farmers who felt that planting trees in their fields would interfere with tractor plowing. Gradually, however, interest in planting trees began to gain momentum."

"Although the practice of planting trees had become fairly well established by 1985, silviculture as such had not yet become a source of income. ...Clearly, the economics of silviculture had not been worked out for the project area. To help remedy this situation, the project retained the services of a marketing expert who conducted a study on supply and demand for wood products in northeast Thailand in December 1985.

The study confirmed that farmers in Nakhon Ratchasima Province producing the fast-growing trees recommended by the project for sale faced many problems. ...Nonetheless, the study concluded that in spite of initial difficulties in this enterprise, in the longer term, the net profit per unit of land used for tree plantation would be high compared to its use for other crops."

"This optimistic view of potential economic opportunities from silviculture was bolstered by the study's projections of greatly increased demand over the next 15 years for trees for housing and furniture, pulp and paper production, fuelwood and charcoal."

"While the idea of planting trees for sale to wood-based industries might have been viewed with skepticism by the forestland encroachers, the alternative of transforming the trees into charcoal for their own use or for sale was immediately attractive. ...Although 28 percent of the households interviewed purchase their charcoal, most of the charcoal, most of the charcoal consumed was produced from local forest wood by the people themselves.

The situation entails problems of considerable consequence for the forest resources of Thailand. ...The project provided an ideal setting to work out a solution that was consistent with both the forestry and developmental objectives of the project and which could be replicated by rural charcoal producers in other parts of the country."

"The approach adopted was a two-pronged effort. First, local charcoal producers were encouraged to shift from dependence on natural forests to the use of their own plantation trees. Second, the project attempted to introduce more efficient but inexpensive charcoal production technologies. A minimum objective was to meet local domestic demand for charcoal on the basis of legitimate enterprise."

"The reforestation programme of the project provided considerable scope for the promotion of silvo-pastoral activity in tree plantations. Surveys conducted at the inception of the project reported little cattle raising but when the project area was visited in mid-1986, there was evidence that this had become a rather important activity."

"It should be mentioned here that agricultural extension for animal production was not limited to cattle raising in the forests. Local raising in the village environment was practiced and special attention was given to upgrading this enterprise as well as to duck raising in and around the water resources of the area."

"Besides promoting village-level forest tree plantations, the project also supported planting of fruit trees and the establishment of orchards. Fruit trees provided a kind of psychological point of convergence catering to the interest of both foresters and local people, and leading to better mutual understanding and more positive attitudes."

"Fruit tree seedlings were distributed to the farmers at the very beginning of the project as a good will gesture."

"Many different kinds of fruit as well as other tree crops such as coconut, cashew, bamboo (to be harvested in the form of edible bamboo shoots), were grown. The most popular fruits were mangoes, jackfruits, custard apples and sweet tamarinds, but papayas, bananas and limes were also produced. ...While by the end of the project, the acreage in fruit orchards was still relatively small compared to that in field crops (about 11 percent), it had grown significantly in the lifetime of the project."

"Apiculture was included in the project socio-economic development plan and arrangements were concluded with the Faculty of Agriculture of Khon Kaen University for provision of a staff apiculture expert. At the end of March 1982, eight farmers were sent to Khon Kaen University for a one week training session covering basic knowledge of bee keeping [sic] and the production of boxes for bee hives [sic]. Each farmer was loaned three bee hives [sic] with colonies purchased by the project and beekeeping commenced in early April using the European bee Apis mellifera. ...Success in bee raising was highest in the south-western sector, apparently because fewer crops there required heavy applications of insecticide."

"It is interesting to note that although the training in bee keeping [sic] had been given to men, it came to be practiced almost exclusively by women who presumably acquired the skill from their menfolk."

"A video tape and manual on bee keeping [sic] were produced as training aids. However, marketing issues are yet to be adequately addressed."

"Fish raising was another option introduced to the area by the project. At its simplest, it involved supplying fingerlings provided by the Korat Fisheries Station to the various public ponds and water reservoirs created by the project in the area. In order to promote more scientific fish raising, 18 farmers and two project staff were given a five-day training course in practical aquaculture at the Korat Fisheries Station in May 1983. At the close of training, the trainees were provided with fingerlings to raise in their own ponds.

Very little resulted from this exercise for several reasons. ...no follow-up was made in the project area...the farmers were not motivated to set up ponds of their own as fish were already available for catching in the public ponds."

"The dependence of local farmers on informal sector creditors was discussed in Chapter 3. A major stumbling block dealing with formal sector credit institutions such as commercial banks was the routine requirement of collateral for loans, usually in the form of a land deed in the case of a farmer. As has been pointed out, the project area farmers initially had no land holding rights whatsoever."

"In late 1982, discussions were initiated with the Government Bank for Agriculture and Agricultural Cooperatives (BAAC) on the prospects of providing loans to farmers in the project area. ...BAAC loans could only be used for agricultural production and not, for example, for the purchase of household consumer goods such as food. Loan funds were used for labour hire, field preparation, fertilizer and insecticide. Reasons for disqualification, apart from credit risk, included age, failure to produce a marriage certificate, and lack of local residence registration. District Office personnel were instrumental in helping to correct these irregularities. In one week, for example, the Pak Thong Chai District Officer issued marriage certificates to 170 couples. All loans were paid on time."

"Overall achievements of the efforts to make agricultural credit available to project area farmers exceeded project targets by 21 percent."

"Although the main thrust of the project was economic development through agriculture and agroforestry-related enterprises, several activities bearing on social development/social welfare were also part of the programme. Most important were those dealing with health care and education."

"The national health development policy stated that medical services, primary health care, vaccination of children, and health and sanitary education were to be provided to rural areas lacking such services due to remoteness and poor road conditions. The Korat provincial health authorities had planned to implement this policy in the project area in 1985 but given the clear need for these services, they agreed, at project request, to advance their schedule by two years."

"A major health-related issue is that of the quality of drinking water. Normally, the population uses stored rainwater for drinking and cooking and water from wells or ponds for other household purposes. The method of storing rainwater is to collect the run-off from the house roof in a large cement jar. A farmer having several of these jars can store enough water to last him until

the next rainy season and not have to draw on stagnant and unhealthy sources of water for drinking. At the beginning of the project period, there was an acute shortage of storage jars in the area, at least partly because those sold in the market towns were too expensive. To remedy the problem, farmers were taught how to make the cement jars themselves and the availability of good drinking water on a year-round basis greatly increased in the project area."

"REF foresters trained in traditional forestry were often poorly equipped to cope with the human, socio-economic development aspect of community forestry. They needed to be trained in the "forests for people" idea."

"REF field staff were constantly under a form of on-the-job training. They were involved in virtually all development activities of the project and often joined the farmers in training exercises, e.g. in apiculture, in order to be better able to assist them in putting [sic] theory into practice. Project staff always accompanied area farmers on the study tours. Because of the camaraderie that developed, the staff were able to get to know the farmers better and hence to work with them more effectively.

Formal training was also provided within the framework of the project."

"It is clear from the review of project implementation made in Chapter 3 that the project implementors merit a high grade for project administration. The project had four components: forest rehabilitation, socio-economic development, project staff development, and infrastructural development. All activities scheduled under each component were executed and the target achievement performance for each activity was, by and large, excellent. However, the project must be judged by the extent to which its forestry and socio-economic objectives were met."

"The best way to answer the question and to judge the impacts of the project is to consider the changes that have taken place in the project area since 1981."

"The forestation of 1 163 ha of degraded forestland reported in Chapter 3 has considerably improved conditions in the project area."

"The sections that follow describe the 1986 project area society as reflected by socio-economic sample surveys and studies conducted in late 1985 and 1986, complemented by the writer's own observations during visits to the project area in mid-1986."

"No formal census of the project area population was taken but the number of households is estimated to have increased by 267 to about 1 560 households."

The educational level of heads of households and their spouses as regards formal schooling remained substantially unchanged... The social survey report provides no information on the educational status of other household members of the sample but as several new schools had been opened since 1981 and as most schools teach the full six years of the elementary cycle, one can assume that the younger generation was getting more education than had its parents."

"The pattern of villages was less amorphous than that reported earlier..."

"Many of the new villages were developing service infrastructures and institutions catering to the needs of the community as a whole. ...Villagers began building simple temples at such a rate that religious authorities had to moderate their ardor as there were not enough people to support clergy in all desired locations. There were nine elementary schools in the project implementation area in 1985. ... Many of the villages also had small shops selling household necessities, and food stands providing places for villages to meet and socialize."

"Although project staff and villagers continued to indicate that the population was individualistic, untrusting and lacking in community spirit, the examples of community action in relation to school and temple building indicate that community consciousness was not lacking."

"As a result of road development and the availability of public transportation, communications within the area and with the outside had vastly improved."

"The physical living conditions, at least of the households living in the new forest villages, had improved as the villages were well planned by RFD architects and properly landscaped."

"In 1985, FAO undertook a systematic survey of the food intake of 484 families in the project area. The major dietary components were found to be rice, fermented fish, and the three vegetables which grow well, leucaena, basil and morning glory, along with bananas, oranges and papaya. Pork lard or vegetable oil was used frequently to fry foods. Many other foods were consumed on a less than daily basis, including fresh fish, eggs and surprisingly, bread. Child nutrition was still inadequate."

"According to the same records, common ailments among children were bronchitis, anaemia and typhoid. Among adults, the common ailments were headache, backache, peptic ulcer, otitis media, chronic eczema, acute tonsillitis, abdominal and chest pain, muscle pain, insomnia, etc. Significantly, there is no mention of malaria which was common in 1981."

"The mean size of holding for all categories of farmers had increased from 25 to 31 rai. Most significantly, those of the marginal farmers went from 5 to 8.16 rai. ... The situation of medium farmers was relatively unchanged but for large farmers, the mean size of their holdings increased dramatically from 59.6 to 92.9 rai. This latter statistic is quite serious given the goal of the project to help farmers earn a livelihood from 15 rai plots and thereby address the problem of forest encroachment."

"How this situation of greatly expanded area of land under cultivation developed in the 1981-1985 interval and, more specifically, how the relatively small number of 1985 large farmers were able to so dramatically increase the size of their holdings and consequently the extent of their control over the whole area, requires further examination."

"In the 1985 crop year, maize continued to dominate farm production but other crops which represented an insignificant quantity in 1981 were beginning to take on more importance."

"Non-farm activities provided another source of income for the project area population. Those listed by the economic survey report include: employment by the project to tend tree plantations; casual labour; trading; charcoal making; fishery; and other. This last item presumably includes such activities as bee raising, carpentering, vehicle operation, dress-making, etc."

"The analysis that follows is based on the data of the 40 household survey report, the only source supplying comprehensive and consistent data."

"Income in the project area can be grouped for purposes of accounting into four broad categories. The first and most substantial is maize production. The second is the production of other crops, the most important of which are cassava, fruits (mostly mangoes), cotton and mung beans. The third category is livestock production: cattle, buffaloes, pigs, chickens and ducks (birds as well as eggs). The last category groups all other on-farm or off-farm activity including apiculture, fishery, charcoal production, trading, casual labour, etc. The mean gross income per household in the 40 household survey study was Baht 41 322 (US\$1 590). The breakdown by source is as follows:

	(Baht)
maize	24 963 (60%)
other agricultural products	3 626 (9%)
livestock	3 142 (8%)
other	9 593 (23%)

This is considerably higher than the corresponding figure for 1981 of Baht 15 700 (US\$686)."

"About 40 percent of the sample households achieved the mean range of income and 60 percent earned less than that [sic]."

"More information than that provided by the 1986 studies is needed to fully evaluate this situation. From a study of covariation [sic] between the most important interactive variables, the researchers of the 40 household survey found that the ratios of correlation between total amount of loans and credits, size of holding, total inputs value, and income are significant. Minimum implications are that income related to the correct use of agricultural inputs which in turn underlies the necessity of a credit system enabling the farmers to buy the inputs."

"This section focusses on the extent to which the specific forestry objectives of the project were achieved."

"On the whole, the population affected was very positive about the project."

"A most visible and outstanding accomplishment of the project was the

transformation of the area from a disorganized and backward frontierland to what by Thai national standards is a nearly normal rural social environment. The people enjoy legitimate status as occupants on the land. ... Although the level of social development still leaves room for much improvement, at least mechanisms by which it can be brought about are in place."

"Community forestry is fostered with the expectation that popular participation in tree plantation will not only contribute to an increase in resources for local farmers but will also contribute to the replenishment of national forest resources. This is beginning to happen in the project area; enthusiastically in relation to fruit trees, much more haphazardly for other species."

"Most of the problems referred to so far might be described as transitory and correctable within the capacity of current project procedures."

"The long-term solution built into the project is to bring all project area farmers under the STK programme, each 15 rai holding becoming financially viable through the practice of agroforestry-related enterprises. Any land left over would constitute a communal pool to be rented out for orchards, village woodlots, etc. While theoretically sound, the practical difficulties of implementing such a plan are formidable."

"It is clear that despite some negative outcomes due to factors beyond the control of the implementors, the achievements of the project have been substantial."

"A major problem with the project was that it was planned and imposed from the top on a population that was not consulted and which was not given a choice to accept or reject it."

"Another characteristic of the project which should be highlighted is its coordinating role in relation to cooperating Government agencies and its advocacy role in favour of the people."

"The potential problem in relation to the involvement of the several Government agencies participating in projects is sluggish cooperative and poor coordination. Government departments are traditionally jealous of their autonomy and there is a reluctance to act on directives from another department or to make contributions to a project for which another agency will get the credit. Coordination mechanisms tend to be weak and ineffective. When effective interagency coordination takes place, it is usually on the basis of personal relationships."

Beyond the commitment of the Royal Thai Government, two other factors also contributed to the success the project achieved in marshaling cooperation and fostering coordination in this multi-agency venture. There is no doubt that two factors were of particular importance; the special status of the project as a United Nations-sponsored enterprise; and the effectiveness of the FAO Chief of the prestige of his position."

"Finally, but not least importantly, an aspect of project implementation that contributed significantly to its overall effectiveness was the flexibility of management style."

"The main task of the RFD in the follow-up phase of the project will be to assume full responsibility for the coordination of the continued interdisciplinary development of the project area including the establishment of working relationships with other rural development agencies. There is also the unfinished business of full developing the practice of agroforestry as a profitable enterprise for farmers through the continued supply of inputs and the provision of improved forestry extension."

"In the course of this study, the author had conversations with representatives of the several Government cooperating agencies who had personally been involved in the implementation of the project. All were unanimous in the view that the project was worthwhile and had generated many benefits. All were concerned about the future of the project under RFD management without UNDP/FAO involvement. Most had reservations reflecting biases derived from their own specialized backgrounds and perhaps, to some extent, from inter-agency rivalry. Some of their concerns were as follows: there was overemphasis on cash crops to maximize income, and not enough attention was paid to the production of food to improve the people's nutrition; there was overconcern for material development and not enough emphasis was placed on social development and, in particular, the development of rural institutions; the UNDP/FAO intervention was too paternalistic and did not sufficiently stress popular participation and the need for residents to assume the responsibility of doing things for themselves instead of relying on the project staff; participating Government agencies took advantage of the special status of the project as a United Nations- funded activity and redirected their budget allocations to other areas under the pretext that this project was already provided for; RFD officials are had to work with because of their proprietary attitudes toward forestland."

"Effective socio-economic development takes time; it is a process in which even limited accomplishments must be deemed worthwhile, even though all possible efforts must be made to maximize them."

DISCIPLINE: Sociology
APPLICATION: Methods and measures
COUNTRY: Thailand
CONTEXT: Fuelwood study

Grandstaff, S.W.; and Grandstaff, T.B. 1985. Semi-Structured Interviewing. Paper Presented at the International Conference on Rapid Rural Appraisal, Khon Kaen, Thailand.
(JLC's files)

"Rapid Rural Appraisal (RRA) might be defined as a rapid learning process with the following essential features or criteria:

- Methodology is such that questions and hypotheses are able to be progressively revised during the study, based primarily on the acquisition of new information.
- Most of the activities are cyclical, or iterative in order to gain and assess new information as quickly as possible, in order to progressively revise questions and hypotheses.
- Important parts of the new information acquired during an iteration result from questions that were not known at the start of the study.
- A large portion of the new information used comes verbally from rural inhabitants.

If the above features are indeed essential for good appraisal to occur as quickly as possible in rural areas, the use of semi-structured interviewing as a principal method in RRA is virtually mandated, since no other known method can meet these criteria so well. Semi-structured interviewing thus may well be 'the heart of RRA.' Guidelines, hints, tools and techniques for semi-structured interviewing are then a priority area for methodological development...

Semi-structured interviewing is...guided in the sense that a set of subtopics (or other form of 'interview guide') is identified before any interview and with it the researchers always bring some 'structure' to the interview. It is 'semi-structured' as opposed to the survey method which is 'fully structured,' because not all questions are designed and phrased ahead of time but in fact the majority of the questions are thought up during the interview, thus allowing the researcher the flexibility to probe for more details and better understanding of the local situation.

Semi-structured interviewing is also 'structured' by other tools and techniques which the team uses both within the interview and in the choice of interviewees...The use of rapid rural appraisal usually means the coverage of so small a 'sample' that the usual rules of sampling used in formal survey work become non-applicable, but their principles can be retained in other ways... by applying the principle of 'triangulation,' overall validity and reliability can be improved and assessed...

Triangulation is a technique employed in choosing methods, sites and interviewees (and team members and their disciplines) so that more than one of each, usually a minimum of three, is used, thus the term 'triangulation.' The choices are made in as systematic a way as possible so that a range can be covered. In choosing methods or tools (or disciplines of team members), the variation is qualitative, to get more than one perspective on what is being studied. For example, on the subject of fuelwood situation and farmers' adjustment in Northeast Thailand, semi-structured interviewing was used in combination with: existing survey reports and statistics, direct measurement of the sizes, volumes, and weights of fuelwood; and direct observation and observational indicators...

In choosing sites and interviewees, the researchers take into account whatever variables are hypothesized or found to be important influences on the topic or subtopics. In choosing the major sites for the fuelwood study the availability of forest was used as one of the variables; in a study on natural sources of food, yearly rainfall was one of the major site selection variables (and seasonality, which led to doing RRA work in three different seasons)...

Another aspect of triangulation on sites and interviewees is that it can be accomplished at various hierarchical levels in the 'system' (e.g., agroecosystem) and different variables may be chosen at different hierarchical levels... Villages were chosen in the fuelwood study based on a fuelwood problem index compiled by the NERAD project. The RRA team decided that the size of land holding, among other things, would potentially affect household fuelwood availability and use, and thus chose households to get variation on this factor... Land size and type, household size and composition, and income often come up as important variables in most rural resource or agroecosystem RRA's."

Discipline: Sociology / Education
Application: Technical Transfer
Country: Thailand
Emphasis: Brief step by step description of the development of a social forestry program at the university level.

Redhead, J.F. Social Forestry at Kasetsart University: Curriculum Development, Thailand, GCP/INT/363/SWE-Thailand, Field Document No. 1, Food and Agriculture Organization of the United Nations, Rome, 1986, Swedish International Development Agency, 67 pp.

Excerpted text followed by Appendix I: Proposed curriculum course list and brief course descriptions; Appendix II: Project request for phase two. Several publications that were an outgrowth of this project are available in Thai or Thai and English from Kasetsart University, Thailand.

"The Faculty of Forestry, Kasetsart University, Thailand, requested FAO support in developing a curriculum in social forestry so that it could improve the training of graduates who would be employed by Government agencies involving forestry in their rural community development programmes."

"The Faculty of Forestry formed a Curriculum Development Committee to formulate and execute a work plan for carrying out the project. A survey of agricultural and forestry communities determined the attitudes and forestry requirements of these rural communities. An opinion survey of experienced field officers, teachers and administrators obtained their views on priority training requirements. A national workshop enabled the findings of these surveys to be reviewed and discussed."

"The curriculum leads to a B.S. Forestry degree with a Major in Social Forestry, paralleling existing Majors in Forest Resources and Forest Products. The first two years of the new programme cover basic forestry courses common throughout the Faculty of Forestry: courses during the final two years are evenly balanced between Forestry and Social Science courses."

"Today, governments, and especially foresters, realise [sic] that rural development should be based on land use planning in which forestry is integrated into the agricultural system. An important factor which follows is that rural communities should be self-sufficient, as far as practicable, in their requirements from the forests such as fuel and small-sized timber, because of the high cost of transport from elsewhere. Yet, land use planning and tree planting is only implemented by rural people when they are convinced that it is in their own self-interest; that they will be beneficiaries."

"Foresters have been more guilty than agriculturists in being withdrawn from the public; even worse, they are often looked on as enemies of the people, as custodians of the forest lands from which the people must be excluded. The problem today is how to change these attitudes."

"Tropical forest services widely realise [sic] that they should pay special attention to bringing forestry into the well-being of the rural people. But, not having tradition of working with the people foresters are not sure how to go about it. What is agreed is that professional and

technical foresters need to be specially trained for this purpose. A new type of person is needed - not a narrowly trained forester, nor a rural sociologist with little knowledge of forestry."

"The Faculty of Forestry, Kasetsart University, in Thailand has taken a lead in developing a new undergraduate curriculum in Social Forestry within its existing university structure."

"Illegal occupants have now settled on an estimated 51,680 km² of reserved forest and in many cases have destroyed the forest and established farming communities. Satellite imagery indicates that many forests carry a low volume of timber, on average not more than 40 m³/ha. Heavy logging, illegal cutting, often for firewood, uncontrolled fires and, above all, encroachment and forest destruction for agriculture are largely responsible for this situation."

"In 1985 the Thai Cabinet approved a Ministry of Agriculture decision to legalize the majority of forest encroachments so that development resources can be channelled to these communities."

"The current annual domestic demand for forest products is estimated to be over 33 million m³, yet the annual allowable cut is estimated at less than half this demand. This demand volume is based on a Royal Forest Department estimation of per-capita/annum consumption of forest products as follows: sawnwood 0.076 m³, building poles 0.025 m³, and fuelwood 0.510 m³. It is noteworthy that fuelwood is estimated at 83 percent of total wood consumption, although the per-capita/annum consumption of 0.51 m³ is almost certainly an underestimate."

"There are several divisions of the Royal Forest Department which are directly concerned with field activities involving the social aspects of forestry. These include:

- (i) The Watershed Management Division,...manage integrated rehabilitation and protection of watersheds above 500 M.S.L...
- (ii) The National Forest Land Management Division,...to assist Government to solve the problem of farmers encroaching on degraded reserve forest and watershed forest in uplands, usually below 500 M.S.L...
- (iii) The Silviculture Division plans and operates forest practices and research in silviculture and is also responsible for forest protection, including fire.
- (iv) The Forest Management Division, ...It manages natural forest and conducts inventory, including survey, mapping and demarcation, and marking of trees for felling.
- (v) The Forest Products Research Division. This is a long-established Division which carries out a wide range of research activities.

(vi) The Planning Division is responsible for data collection, statistics, economics, planning coordination and programme evaluation.

(vii) The Personnel Division coordinates manpower supply."

"The forestry sector institutions understand well the problems concerned with settling farmers on forest encroachments and a great deal of experience is available. In some respects the National Forest Policy, National Forest Laws, and related land use laws may require bringing up to date and stronger political support given to their implementation. But, the greatest constraint has been lack of forest officers with special training in rural sociology."

"The Faculty of Forestry, Kasetsart University

The Faculty of Forestry was founded in 1936 and is one of the largest Forestry Faculties in the tropics."

"Courses are offered in six departments: Conservation, Forest Biology, Forest Engineering, Forest Management, Forest Products, and Silviculture. The Faculty is well organized and has good facilities for teaching these courses."

"Undergraduate programmes leading to the Bachelor's degree in Forestry started in 1947, and in 1967 the Faculty began postgraduate training at the M.S. level. Plans are at an advanced stage to begin a Ph.D. Programme during 1987."

"The Forest School, Phrae, offers a two-year diploma course in General Forestry to train Assistant Foresters and Rangers..."

"The Tak Forestry Training School

...runs short courses for vocational workers, mainly from the Royal Forest Department..."

"The Royal Forest Department Training Section

...offers short-term training in varied aspects of forestry."

"the new graduate must be a forester, an agriculturist, a sociologist and a community development officer all rolled into one."

"The Project, Curriculum Development in Social Forestry at Kasetsart University"

"...The University appointed a Curriculum Development Committee in October 1983, comprising a member from each of the six Departments in the Faculty, under a National Project Director as Chairman, and the project started soon after, in January 1984."

"The work plan of the project, as detailed by the Curriculum Development

Committee included the following:

- i) Determination of the skills needed by a social forester through the execution of surveys in agricultural communities and forest villages.
- ii) Carrying out of an option survey of foresters, agriculturists and university teachers on their opinions of the essential skills needed by a social forestry graduate.
- iii) Holding of a national workshop to discuss the survey findings and reach a concensus [sic] on the training skills needed.
- iv) Study-tour visits by the Curriculum Development Committee to China, Korea, and Indonesia, to learn from the experiences of these countries in implementing social forestry programmes.
- v) Determination of a curriculum and courses suitable for teaching an undergraduate programme in social forestry, within the framework of Kasetsart University.
- vi) Preparation of didactic material and publishing this in the Thai language in a form suitable as student texts."

"Surveys of agricultural communities and of forest village settlements were carried out based on interview questionnaires."

"The conclusions reached were as follows:

a) Need for public education

Villagers, particularly in agricultural communities, lack an understanding of the role of forestry in nation development. A small effort could make many of them self-sufficient in products such as poles and fuel, with a surplus for sale. The high level of literacy and universal access to radios would make a national programme of forestry education easier to implement.

b) Importance of forestry extension

c) Expertise required of professional forest officers in social forestry programmes"

"Opinion Survey of Priorities for Academic Training in Social Forestry"

"The survey enabled 'essential' and 'desirable' courses to be listed in order of priority and presented a wide body of opinion which guided the Curriculum Development Committee in the planning Curriculum."

"National Workshop on Curriculum Development in Social Forestry

...was held by the Faculty of Forestry, 22-26 October, 1984, attended by

34 participants."

"The papers presented, and the discussions which followed, led to the following resolutions:

- i) The Faculty of Forestry should develop a curriculum on Social Forestry as a new major at undergraduate level, to be followed at a later stage by a programme at a more advanced level.
- ii) The Royal Forest Department should be officially requested to provide organizational assistance to the teaching programme.
- iii) Kasetsart University and the Ministry of University Affairs should be informed about the progress and prospects of this curriculum development.
- iv) FAO who initially supported the programme should be requested to continue to take an active role in its improvement, in convincing the Thai Government of its importance, and in disseminating the curriculum as a guideline for practice in other tropical countries."

"...the Curriculum Development Committee and the consultant travelled widely throughout Thailand to assess the type of work a graduate in Social Forestry might encounter."

"It was decided that Social Forestry should form a Major subject to parallel the existing Majors, Forest Resources and Forest Products, as recommended at the national workshop. These Major subjects follow a four-year programme leading to The Bachelor of Science of Forestry."

"The problem facing the Committee was to choose which Major courses to include without exceeding the permissible number of credits for the second two years of the Bachelor programme.

The Committee had to strike a balance between courses of an anthropological or sociological nature and courses with a specific forestry-related content, bearing in mind the duties expected of a "Social Forester".

"The decision to plan the Social Forestry Major on the same common two-year foundation as the other Forestry Major programmes ensures a basic training in forestry."

"Courses totalling 22 credits are specially designed for the Social Forestry Curriculum for which no text books are readily available. It was felt necessary to prepare special student texts in the Thai language for these new Social Forestry courses."

"The project prepared outline proposals for the contents of the following texts to be prepared on sub-contract student texts in the Thai language:

- i) [sic] Introduction to Community Forestry
- ii) Introduction to Rural Sociology with Special Reference to Forestry

iii) Small-scale Forest Products Industries"

"The seven members of the Curriculum Development Committee visited three Asian countries to learn from their experience of executing social forestry projects. The countries visited were:"

"Republic of Korea"

"Peoples' Republic of China"

"Republic of Indonesia"

"Future programmes

Undergraduate Programmes ..."

Postgraduate Programmes

Concurrent with teaching the undergraduate programme, the Faculty will plan an M.S. programme and formulate appropriate courses."

"Regional and National Training Programmes."

"The Faculty of Forestry is committed to going ahead with teaching an undergraduate programme in Social Forestry. It will be able to do this much more effectively if it continues to receive support during the consolidation of its undergraduate programme."

Discipline: Sociology / Anthropology
Application: Methods and Measures
Country: Thailand
Emphasis: Case study and methods of how to incorporate nutrition considerations into agroforestry projects.

Thompson, Brian, "Introducing Nutrition Considerations into Forestry Projects: Experience from Northwest Thailand", Community Forestry: Socio-Economic Aspects, Ed. Y.S. Rao, Napoleon T. Vergara, George W. Lovelace, Thailand: Regional Office for Asia and the Pacific (RAPA) Food and Agriculture Organization of the United Nations, 1985 pp. 358-397

"Rural development projects are often accompanied by economic, social, cultural and ecological upheavals which are likely to influence the nutritional status of the project area's inhabitants. However, all too often the development planner does not know the specific nutrition/ consumption effects of the various project activities nor even whether their resultant effects are positive or negative."

"Over the last decade foresters have sought to change their "game warden" image and have developed a social or community approach to forestry..."

"...foresters are now recognizing that if forestry is to reduce socio-economic deprivation and promote rural development, the involvement of other disciplines in the planning and implementation of forestry projects is essential. Nutrition, being both a consequence and a determinant of development, is one such discipline."

"...positive nutritional effects cannot be assumed but rather must be deliberately built into development projects at the planning stage to ensure that appropriate resources to improve food consumption and nutrition are channeled to the most malnourished sectors of society or to those most at risk."

"One project which has integrated a range of development activities within a forestry context is Project THA/81/004--Development of Diversified Forest Rehabilitation in Northeast Thailand in the province of Nakhon Ratchasima (Korat)."

"Northeast Thailand is the poorest and least developed of the country's four regions. The harsh climate and limited water supply together with the highest unemployment rates and lowest per capita income are major factors contributing to the migration of the rural poor out of the region."

"The process of deforestation was aggravated in the seventies by the increased rate of road and dam construction and by the increased demand for cash crops, particularly cassava."

"It has been observed that, after large scale uncontrolled logging, the major cause of deforestation is the slash and burn clearance of land for the cultivation of agricultural crops by forest encroachers. ...the project was conceived not as a traditional forestry project but rather as an integrated rural development project with forestry as the core activity..."

"The most important objectives of the project are rehabilitating 3,700 ha of the area's most severely deforested land covering 40% of the project area whilst at the same time encouraging the resettlement of the forest encroachers into nuclear villages by the provision of roads, year round water supplies, health services, and schools. In addition, agricultural extension advice, income generating activities, and credit facilities have been made available to the agroforestry villagers. ...A land reform and redistribution scheme has given the village settlers land rights under a secure, documented but non-transferable tenure for themselves and their direct descendants. This is a major departure from the Royal Forest Department's normal rules and practices which have had to be relaxed to permit the establishment of permanent settlements in this reserved forest area and due to this innovative design the project has had a fair measure of success."

"Initially there was some confusion over the role of a nutritionist in a forestry setting as some believed that introducing nutrition considerations into the project would feature activities designed explicitly to improve nutritional status, e.g., feeding programs, health services, nutrition education, etc. Whilst such interventions have an important role to play under certain circumstances in combatting nutritional deprivation, such direct nutrition interventions contribute to lasting improvements in food consumption and nutrition only when integrated with an overall planning and development process which addresses the causes of malnutrition. ...nutritional status and food consumption are more significantly affected by broader development programs, particularly those related to food, agriculture and rural development, the introduction of nutrition considerations into the forestry project in Korat centered on the appraisal of the project's design and implementation in terms of its impact or potential impact on nutritional status and food consumption."

"The methodology calls for the collection of information in order to answer the following questions:

1. What is the extent of malnutrition? Who is affected and when?
2. What is causing malnutrition?
3. What is being done to combat malnutrition?
4. What can be done to combat malnutrition?

The collection of this data is divided into a maximum of three states--the Desk Review where all available reference material related to nutrition and the project area is examined, the Initial Assessment where unpublished data from the field may be analyzed to more clearly define the major food and nutrition problems, and the In-Depth Study where a more detailed investigation is undertaken which may require the collection of additional survey data or re-analysis existing data."

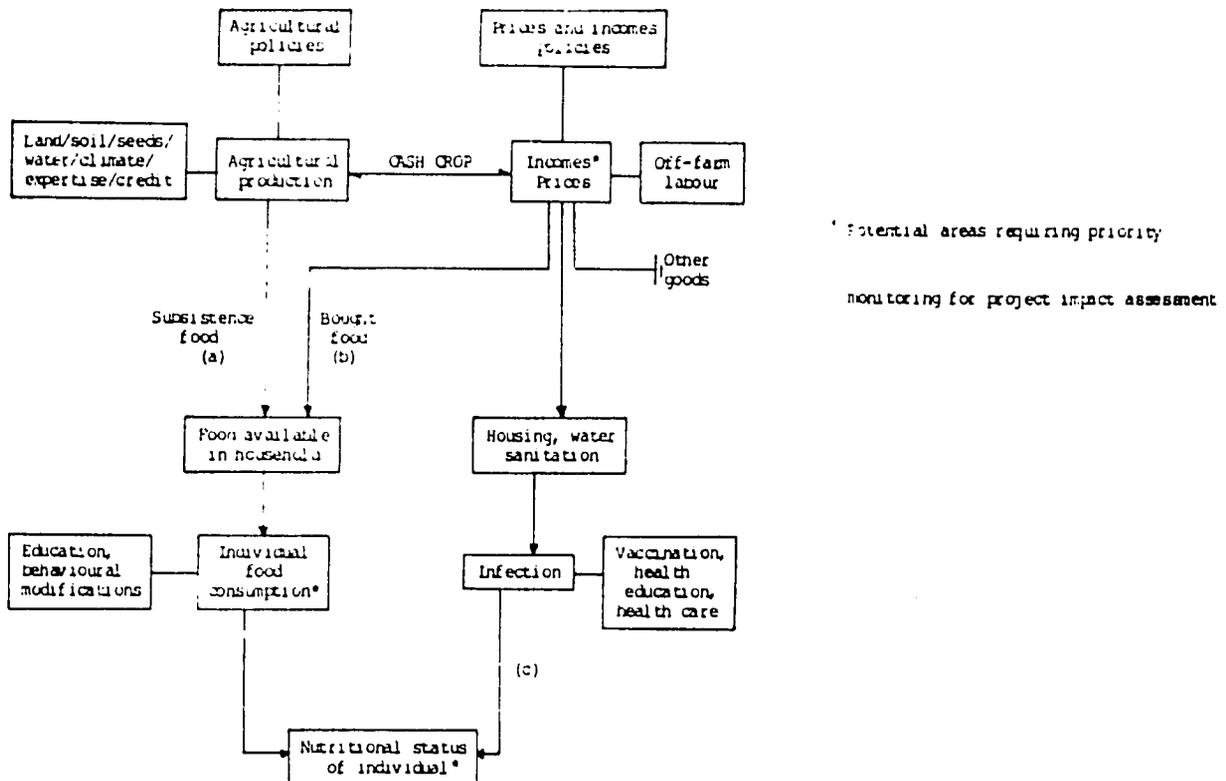
"From this analysis, descriptions of how specific project components are expected to affect nutrition should be forthcoming. In addition, it should be possible to identify areas which exist for influencing the project's design or ranked order of priorities to enhance the positive nutritional impact of the project. Included in this output would be recommendations as how to design a suitable monitoring and evaluation system so that the project's impact on nutrition can be appraised. The findings of this investigation are given below."

"Analysis of nutritional data extracted from the 1982 Social Survey of the project area showed that whilst breastfeeding is common with 87% of all infants being breastfed throughout their first year, as many as 29% were receiving condensed or powdered milk. Inappropriate feeding habits are widespread as indicated by the finding that half of all infants began weaning earlier than four months and 35% are given weaning foods in the first month of life. As hygiene and sanitation are poor, the early introduction of foods is not only unnecessary but also a potential source of infection. Food consumption in the area is mainly rice with some vegetables and fish sauce. Only 12.5% said that they had taken eggs, fish or meat over the recall period. It is estimated that rice provides 80% or more of the total calorie intake and slightly less than 60% of the protein. Malaria is endemic and was diagnosed in 23% of all children under five. The often fatal cerebral malaria is also prevalent in this area. A vaccination program was implemented in this area but at the time of the survey 64% of the pre-school children had not been vaccinated."

"The major factors believed to be causing many of the children to be underweight for their age include inadequate food consumption and a poor sanitary environment. Nutritional status is likely to be affected by changes in the availability of food as influenced by subsistence food production, prices and incomes."

"To assist planners in identifying the possible effects of the project on food consumption and nutritional status, the following questions drawn up by the United Nations Inter-Agency Sub-Committee on Nutrition (ACC/SCN) were applied to the project:

Figure 1. Conceptual framework of the major factors affecting nutritional status (adapted from the FAG manual)



1. Does the project increase the income of "at risk" households?
2. Does the project reduce production of foods for home consumption?
3. Does the project induce an increase in food prices in the project area?
4. Does the project adversely affect the rural people in some years and some seasons?
5. Does the project cause changes in expenditure patterns and/or control of income?
6. Does the project lessen the time available to women for food preparation, child care, etc.?"

"Farm income may be increased by increasing production (so long as price incentives are maintained) and emphasis is being placed on increasing yields as land considered unsuitable for agriculture is being taken out of cultivation and planted with trees. However, the practice of agroforestry in the marginal areas has been able to extend the area of farming land available to the residents. By augmenting farmers' income, agroforestry has acted to smooth the transition from swidden agriculture to a more stable agricultural and forestry system."

"The construction of an all-weather, motorable road linking the project area with the provincial road network has improved farmer access to the agricultural markets, resulting in a positive effect on income."

"Charcoal is the major source of fuel for the residents of the project area and the project acknowledged that charcoal burning is an important source of income for the economically disadvantaged farmers and landless laborers. The project is trying to encourage more efficient methods of charcoal production while at the same time protecting this cottage industry as a supplementary source of income for "at risk" households."

"Of particular significance in this regard, is the growing of upland rice, the staple food of the resident farmers. Since there is no market for paddy, the cultivation of rice in this area will primarily be for home consumption which, by reducing the farmers' dependency on the market, will lead to improvements in food security. However, a degree of caution needs to be exercised here because the transition from the predominantly commercial cropping system in which foods are brought from the market place, to a semi-commercial or subsistence system in which food crops are grown for household consumption, may lead to a change in food purchasing habits and to an attempt by households to make do with what foods can be grown on the farm. Unless the farmer can produce and store sufficient rice to provide the household with its staple food throughout the year, this strategy may lead to a reduction in food consumption and deterioration in nutritional status. Nutrition extension messages and education are needed to prevent the changes in the households' strategy for securing food from having such negative effects."

"...the partial payment of the project laborers with food and other project funds acts to provide subsidized food at less than market cost."

"Whilst the cultivation of maize is the dominant agricultural practice in the area, the project is giving support to farmers who wish to diversify into other crops such as fruit trees, vegetables, beans and upland rice."

"However, although crop diversification will reduce the chances of complete failure, farm incomes will vary considerably and for those whose economic base is weak, the effects of failure will be hardest felt. In such circumstances a "safety net" is required for those farmers most at risk and may include credit schemes for survival in bad years and crop insurance. Since its inception, the project has tried to convince financial institutions to provide these services and whilst crop insurance has not been possible (insurance companies consider it destined to lose money), recent successes have been made in obtaining credit. ...Income generating activities are expected to reduce the impact of crop failure on farmers by increasing the variety of their sources of income, particularly that of off-farm income which plays a significant role in the economy of the smaller, more economically depressed households."

"...with an increase in ground water it is expected that an increase in mosquitoes, the vector for malaria, will result. Fish have been introduced into the reservoirs to help reduce mosquito larvae but the situation needs monitoring. One other possible negative effect of the increased availability of surface water is that the increased consumption of water will lead to increased incidence of water borne infections."

"Improvements in transportation routes have increased the farmers' access to a wide range of luxury goods and consumer items including expensive convenience foods and soft drinks which, in combination with commercial advertising and peer pressure, have influenced household expenditure patterns. ...if money formerly used to buy local products is spent on goods imported into the area, the money is in effect exported out of the area. In depressing the local economy, this is likely to have negative effects on nutritional status."

"...income earned by women is more likely to be spent on food and other basic needs than is income earned by men. Consequently, it is being recognized that it is not an increase in household income per se but an increase in income earned by women that is more likely to result in the improved nutritional status of the family. Although the project is giving support to working women by employing women as laborers and by providing women with vocational training in dress-making and water jar construction, the assistance provided so far has mostly been to improve income saving techniques of women in the household rather than to generate income. It is believed that more attention should be given to identifying economically viable income generating activities for women."

"The growing importance of women as economic providers and their pivotal role in child-rearing and food production, preparation and consumption, places women in a central position for the improvement of nutrition. Whilst there is a need to minimize the adverse effects the time spent by women on such income earning activities may have on food preparation and child care, it is believed that the dual roles of women as both mother and worker are not necessarily incompatible so long as alternative provisions for child care are made."

"In addition, the introduction of appropriate technological improvements to facilitate and speed up other household chores performed by women, e.g., better stoves, kitchen appliances, etc., will likely have a positive impact on nutrition."

"A set of four nutrition indications have been recently proposed as proxies for development indicators by the FAO Regional Office for Asia and the Pacific. These indicators may be collected by the villagers themselves using locally available resources and it has been suggested that they be collected in the project area.

The indicators are (1) birthweight and date of birth, (2) weight and height of children at school entry, (3) food consumption (24 hour recall) of school children in their final year, and (4) average income as a proportion of the cost of 1600 calories of food staple."

"Population pressure on forest lands is expected to increase and with the growth of rural populations, requirements for food will grow. The introduction of nutrition considerations into Project THA/81/004 has therefore been of value in understanding the causes and possible remedies for malnutrition in the context of the project. However, development planners should consider the possible input of their project proposals on food consumption and nutrition before implementation as it has been recognized that people can become worse-off as a result of project interventions if the poor, nutritionally at-risk households are not included amongst the project beneficiaries or if the effects of the project on food prices or food availability, food purchases, intra-family income and expenditure patterns, the time for food preparation, child care, etc., have a negative impact on nutrition. Clearly, if the project recipients believe their household food security is assured, the project will be more successful in reaching its objectives from the forestry side."

Discipline: Sociology
Application: Technical Transfer
Country: Asia
Emphasis: Workshop design for interdisciplinary cooperation to solve agro-ecological issues.

Conway, Gordon R. 1986. Agroforestry Analysis For Research and Development, Winrock International Institute for Agricultural Development, Bangkok, 111 pp.

Acknowledgements

"The agroecosystem analysis workshops have so far involved a total of over three hundred people, too many to name individually here. Each workshop has produced new insights and refinements to the concepts and methods of the approach and I am grateful to all the participants for their contributions." (p. ix)

CHAPTER ONE: INTRODUCTION

"Rural development is beset by a large number of problems. One set is created by the inevitable and ubiquitous bind between agriculture and the environment....

A good example of the ramifying environmental consequences of technological innovation has recently been given by Senanayake (1984). At first sight the substitution of tractor for buffalo power in the villages of Sri Lanka seems to involve a straight forward trade-off between more timely planting and labor saving, on the one hand, and the provision of milk and manure, on the other. But associated with buffaloes are buffalo wallows and these in turn provide a surprising number of benefits. In the dry season they are a refuge for fish who then move back to the ricefields in the rainy season. Some fish are caught and eaten by the farmers and by the landless providing valuable protein, others eat the larva of mosquitoes that carry malaria. The thickets harbour snakes that eat rats that eat rice, and lizards that eat the crabs that make destructive holes in the ricebunds. The wallows are also used by the villagers to prepare coconut fronds for thatching. If the wallows go, so do these benefits. Moreover, the adverse consequences may not stop there. If pesticides are brought in to kill the rats and crabs or mosquito larva then pollution or pesticide resistance can become a problem. Similarly if tiles are substituted for the thatch this may hasten forest destruction since firewood is required to fire the tiles." (p. 13)

"Some [problems] such as the recurrent pest and disease outbreaks, soil erosion, declining soil quality, pollution and increasing inequity, can be more or less directly attributable to the Green Revolution itself; while others, such as desertification, salinisation and widespread malnutrition and famine, have persisted because the revolution, so far, has offered few solutions.

The conventional approach has been to tackle these problems individually as they arise. But there is now a growing realization that they are essentially systemic problems, linked to each other by basic agro-ecological and socio-economic processes and caused, in many instances, by fundamental incompatibilities between these processes and the introduced technology

(Conway and McCauley, 1983; KEPAS, 1984)." (p. 15)

"The next phase of agricultural development would thus seem to require a radically different approach, one that is holistic and also more sensitive to the complexities of agro-ecological and socio-economic processes. The pay-offs would come from the breeding of specifically adapted varieties and the design of inputs and techniques specially tailored to the needs of specific agroecosystems, at the level of the region, the farm and indeed the fields. The target would be a more fine-grained agriculture, based on a mosaic of varieties, inputs and techniques each fitting a particular ecological, social and economic niche.

Multidisciplinary Analysis

A second set of problems facing rural development is posed by the multidisciplinary nature of this task. Successful development requires the genuine integration of a wide range of skills and knowledge, ranging from anthropology to entomology. Bringing such varied disciplines together in efficient and productive ways to produce a common agreement on worthwhile action is an enormous challenge. It is relatively easy to physically bring different specialists together but the process of interaction may remain casual, often producing results that are superficial and mundane. Experience suggests that the generation of good interdisciplinary insights also requires organizing concepts and frameworks and a relatively formal working procedure which encourages and engineers cross-disciplinary exchange.

To date there have been two significant responses to this challenge as it applies to the Third World. The first has been Farming Systems Research (FSR)... The second response has been Integrated Rural Development (IDR)...

Here I present a third approach, Agroecosystem Analysis and Development (AAD). This differs from FSR and IDR in two important respects. First, it can deal with all levels in the hierarchy of agroecosystems, from field through farm, village and watershed, to region and nation. Second, it provides a technique of analysis and packages of technology that focus not only on productivity, but also explicitly, on other indicators of performance - stability, sustainability and equitability - and on the trade-offs between them. However, it is not intended as an alternative to FSR or IDR, but is offered as an approach that can be used within the framework of FSR and IDR and indeed in any multidisciplinary agricultural R and D programme, at whatever level of intervention.

AAD is based on the disciplines of agricultural ecology and human ecology, and in the next chapter I present some of the key concepts." (pp. 16-17)

CHAPTER TWO: CONCEPTS

"The concepts of Agroecosystem Analysis are simple and basic, involving a minimal set of assumptions that are hopefully acceptable to all the disciplines that participate in rural development. The central concept is that of the system; related to it are the concepts of system hierarchy, system properties and the agroecosystem.

A system is here defined as an assemblage of elements contained within a boundary such that the elements within the boundary have strong functional relationships with each other, but limited, weak or non-existent relationships with elements in other assemblages; the combined outcomes of the strong functional relationships within the boundary is to produce distinctive behavior of the assemblage such that it responds to stimuli as a whole, even if the stimulus is only applied to one part." (p. 19)

"The transformation of an ecosystem into an agroecosystem involves a number of significant changes. The system itself becomes more clearly defined, at least in terms of its biological and physico-chemical boundaries. These become sharper and less permeable, the linkages with other systems being limited and channelled. The system is also simplified by the elimination of much of the natural fauna and flora and by the loss of many natural physico-chemical processes. However, at the same time, the system is made more complex through the introduction of human management and activity." (p. 21)

"However this complexity [of agroecosystems], at least in terms of its dynamic consequences, can be captured by four system properties which, together, describe the essential behavior of agroecosystems (Conway, 1983, 1985a). These are productivity, stability, sustainability and equitability. They are relatively easy to define, although not equally easy to measure:...(p. 23)

These four properties are essentially descriptive in nature, summarising the status of the agroecosystem. But they can also be used in a normative fashion, as indicators of performance, and in this way can be employed both to trace the historical evolution of an agroecosystem and to evaluate its potential, given different forms of land use or the introduction of new technologies." (p. 25)

CHAPTER THREE: AGROECOSYSTEM ANALYSIS FOR RESEARCH

"The procedure of Agroecosystem Analysis (Conway, 1985a) has evolved over the past five years from one originally designed for the analysis of natural ecosystems (Walker et al, 1978). It rests on the concepts described above and on four further assumptions:

1. It is not necessary to know everything about an agroecosystem in order to produce a realistic and useful analysis.
2. Understanding the behavior and important properties of an agroecosystem requires knowledge of only a few key functional relationships.
3. Producing significant improvements in the performance of an agroecosystem requires changes in only a few key management decisions.
4. Identification and understanding of these key relationships and decisions requires that a limited number of appropriate key questions are defined and answered.

Experience has shown that the procedure is best followed in a seminar or workshop environment in which meetings of the whole team are interspersed with intensive work sessions involving small groups of individuals. Although the first workshop (Gypmantasiri et al, 1980) ran intermittently for a period of a year, more recently they have been confined to one week, but with a month-long preparatory period for data acquisition." (p. 31)

"As in all exercises in systems analysis the quality of the final results depends crucially on having a definition of objectives at the outset which is couched in simple, precise and unambiguous language and is acceptable to all members of the team. ...

Precise definition of targets is essential. For example, is the objective to improve mean agricultural productivity of an area, or the productivity of the poor farmers in the area (the former may not imply the latter)? Also, is the aim to increase productivity only, or is improved stability, sustainability or equitability to be explicitly included?" (p. 34)

"Discussion of system properties should guide the form of pattern analysis, helping to indicate the likely key relationships and decisions. However, at the end of the pattern analysis phase it may be useful to summarize what has been learnt of system properties and to tabulate the most important contributing relationships and variables." (p. 45)

"Key questions arise throughout the procedure, during system definition, pattern analysis and the discussion of system properties. They should be noted down as they emerge and then collectively revised by the participants in light of all the information available....

Good key questions are usually of a multidisciplinary nature but are nevertheless highly focused. They need to be framed as virtual hypotheses and hence be in a form that is readily capable of being answered.

The remaining phase of the procedure is one of conventional research. The hypotheses are tested as appropriate:..." (p. 47)

CHAPTER FOUR: AGROECOSYSTEM ANALYSIS FOR DEVELOPMENT

"The first half dozen Agroecosystem Analysis workshops were primarily concerned with identifying key questions for research. Participants in workshops were university or research institute workers, although there were usually a number of development specialists present. The outcomes were agreed programmes of research, applied in orientation but not necessarily leading to immediately applicable results. More recently, however, the procedure has been adapted as a tool for setting priorities for development action, the participants being development managers, specialists and extension workers (Conway et al, 1985).

The underlying concepts remain the same but the procedure is modified in a number of respects to make it both more action focused and less time consuming.

A typical research oriented Agroecosystem Analysis workshop is preceded

by a month or more of relatively intensive data gathering in the case study sites and the collection together of all relevant secondary analysis. Development teams, however, can rarely afford this amount of time. The solution is to restrict the preliminary data collection to a one or two days' Rapid Rural Appraisal (RRA) at each site." (p. 51)

"The procedure of analysis as described in the previous chapter had as its outcome the set of key questions. In the development version it is modified by adding an extra phase after the identification of key questions in which guidelines and working hypotheses are then assessed and the final list of development priorities is produced." (p. 52)

"Contained within the guidelines and working hypotheses will be a number of proposed innovations. These may be technological or socio-economic in character. They then need to be assessed by the whole workshop team on a number of criteria and assigned priorities." (p. 69)

CHAPTER FIVE: AGROECOLOGICAL DESIGN

"The key questions generated during Agroecosystem Analysis pose a number of important challenges for agroecosystem design, for technology assessment and development and for implementation, and I discuss these in this final chapter." (p. 71)

"A more recent topic of research interest which is not as yet very well focussed [sic.]. Its greatest potential contribution to the development of sustainable agriculture appears to lie in its role in the control of upland erosion, as an alternative to conventional engineering and forestry approaches. Successful erosion control depends crucially on the provision of incentives to upland dwellers, but conventional approaches are usually inequitable, taking away resources from the upland dweller and providing very little by way of return. Agroforestry can provide both immediate and longer term incomes and, if designed well, can minimize erosion. There is, however, a need for more basic research on the physiological interactions between perennial tree and annual understory crops, particularly with reference to the effects on soil quality and structure." (p. 75)

"This parallels, in terms of objectives, the preceding package, but with the difference that large scale communal control over forest management and exploitation is rarer. The traditions lie mostly with hunter-gatherer and swidden cultivation communities and it is not yet clear how much of this is transferable to the management of forests in the context of settled, intensive agriculture. Probably new forms of communal control need to be developed." (p. 78)

"I want to conclude with a few comments on the implementation of sustainable agriculture....

... As the FSR work is beginning to show, it is virtually impossible, from outside, to optimally design a whole cropping system, let alone a whole farming system, for an individual farm. Only the farmer can carry out the final optimization, because only he or she has access to much of the information, including essential details of the local environment, the local culture and his or her real goals. The R and D worker has a great deal to

offer and can bring about highly significant changes but in the final analysis there is a limit beyond which advice is either irrelevant or counterproductive. It is primarily for this reason that I believe that the future of sustainable agriculture R and D lies in the kind of agroecosystem technology packages I have discussed above." (p. 79)

[This book is filled with diagrams, charts, and tables that clearly depict many of the concepts discussed. Plans and guidelines for organizing a workshop follow the bibliography.]

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Discipline: Sociology
Application: Technical Transfer
Country: Asia (General Applicability)
Emphasis: Explanation of and recommendations for improving communication.

Daosukho, Suchoti, "Communication Media and Utilization" in Regional Training Course in Community Forestry Development Techniques, March 27 - April 29, 1988, offered by the Royal Thai Government and the Government of Japan, 15 pp.

"There are three kinds of communication; written, spoken, and visual. ...While any one of these basic communication forms can be used effectively alone, the experienced extension worker finds that a combination is a better way of getting information to people."

"The communication is an interaction between two or more individuals. In its simplest form, there is a sender and a receiver."

"...to have communication there must be two or more actors involved—that a message must be sent but also that it must be received. ...Both actors must share the same "social environment" so that the symbols used have common meaning."

"...the process of communication is the same, whatever method we use. The basic process involves the following steps:

1. CREATION - a person has an idea which he wants to communicate
2. ENCODING - he translates this idea in his mind into generally accepted symbols (words, gestures, pictures, etc.)
3. TRANSMISSION - he speaks the words, makes the gestures, or shows the pictures, etc.
4. RECEPTION - The communication - partners hear the words, we see the gestures or the pictures, etc.
5. DECODING - the partner retranslates the symbols he has received, into ideas in his own mind.
6. FRUITION - the outcome of the process. If it is successful, a new idea is formed in the audiences mind, identical with the idea that was first encoded."

"Effective communication depends upon the receiver being active. He reacts by answering, questioning, or performing, mentally or physically, There is then a return or response loop of this cycle, from receiver to sender. It is termed feedback."

"Feedback enables the originator to correct omissions and errors in the transmitted message, or to improve the encoding and transmission process, or even to assist the recipient in decoding the message."

"Noise is any disturbance that interferes with or distorts transmission of the message. The factor of noise can have serious impact on the success or failure of communication."

"Here are some of the more common causes of communication-failure."

"...the idea may be vague, or it may be too general and all-inclusive to be clearly formulated in the mind. Such an idea has little chance of being successfully communicated."

"...the person may use symbols which are unclear, or ambiguous."

"...mumbles or stammers..."

"RECEPTION too, may be disturbed..."

"...the idea that is formed in the audiences mind may be different from the idea that was encoded in the first place."

When one or more of these things happen. We have misunderstandings..."

"ANALYSIS OF THE COMMUNICATION PROCESS"

"Knowing what happens when the communication process breaks down, is one thing. But in order to be able to prevent these blockages and failures, we have to find out what causes them to happen..."

"you ...affects the first three stages: creation, encoding and transmission. It is you who have the idea, and it depends on your knowledge, your attitudes and your culture, whether the idea in your idea or not [sic]; and whether you are able to transmit the symbols effectively or not."

"The communication-receiver affects the last three stages of the process, namely reception, decoding and fruition. His knowledge, attitudes and culture determine largely whether the message will be received or not; whether the symbols we have used [sic] are meaningful or not; and finally, whether the idea that is formed in his mind has any resemblance to the idea we had in the first place."

"...a third influence : the communication - situation. What we call the situation, includes factors like geographical distance between source and receiver, the time-lapse between transmission and reception, whether the receiver is one person or many, and whether the source and receiver are familiar or unfamiliar with each other."

Other important factors that affect the situation are the physical and emotional state of the receiver : is he tired, hungry, or uncomfortable. Is he cooperative, angry, frustrated, or bored."

"In order to ensure undistorted and complete reception we must pick our channel of communication to suit both the message and receiver. The message in its turn has to be adjusted to the factors of the situation and to the receiver."(pp.1-12)

"Media Impact to Audiences"

"Extension today must deal not only with the change agents which prescribe amounts of information and knowledge to suit the audience, but also, perhaps most crucially, with what are preferable media to be exposed. What media do we, as an extension worker, want, and what values underlie the media choices. ...media share several root assumptions which concern the pathway of communication between senders and receivers.

Second, media can accelerate the perspective changes. ...Third, media can provoke the beliefs of the target audiences. ...Fourth, media can reflect the needs and fears of the present situation. ...Fifth, media more and more become educative means in the community."

Discipline: Sociology
Application: Methods and Measures
Country: Asia (General Applicability)
Emphasis: Project Design factors needing consideration for successful
community based forestry

Noronha, RaymonJ, "Seeing People for the Trees: Social Issues in Forestry", Conference on "Forestry and Development in Asia", Bangalore India 19-23 April, 1982, under the auspices of the Asia Society on behalf of the Agency for International Development, 37 pp.

"...studies that have been carried out over the past decade provided two major conclusions: first, that in most Third World countries there would be continued dependence on renewable energy resources (mainly wood for fuel) for some time to come. Second, and more importantly, that the search for lands to feed growing populations had resulted in increasing destruction of the vegetative cover with potentially devastating environmental, economic, and social consequences..."

"In the 1970s a new approach was suggested to cope with the diminishing forest resources and increase supplies: "community", or "social" forestry. The approach differs from traditional forestry (and commercial forestry) in several respects. First, it covers the use of forest products in a largely non-monetized sector of the economy; second, it involves the direct participation of the beneficiaries; and, third, it would require, in most instances, a change of approach by the forester against the depredations of the people but would have to work with them in growing trees..."

"The greatest problem is getting people to plant trees. ...In effect "involving" local people requires "attention on energy as it is embedded in a social, cultural, and environmental context" (Schlegel and Tarrant, 1980:1)."

"...there must be a perceived need for trees...the people have to be convinced that after spending time and labor to tend to the trees and fodder, they will have access to the timber, fuelwood, fodder and fruits."

"Knowledge of the socioeconomic and cultural milieu would also assist in determining the type of program necessary so that those who need fuelwood and fodder can receive it; the type of organization and delivery system necessary to reach the proposed beneficiaries; and the need for training, if any is required."

"The extent of socio-cultural heterogeneity is an important issue for project design for, the greater the heterogeneity, the greater the need to carefully assess project components, organizational design, and the techniques of delivering inputs, credit, and technical assistance. Generally, inequality is the rule. ...there must be a careful assessment of power at the local level."

"What is equally important, in the examination of power at the local level, is the realization that the poorer sections and the landless are dependent on the wealthy, the landowners, for employment. ...As a result, the wealthy are in a position both to command the services of the poor and to demand that the latter behave in a manner prescribed by the wealthy."

Although, therefore, rapid enquiries in the local area may lead to the conclusion that the weaker sections desire a project, the answers should be carefully sifted in the light of their dependency."

"Land availability for forestry is crucial to the program. There is also the question of the selection of land — should it be private lands, or public lands? ...With regard to publicly owned lands, however, or lands used in common there are several alternatives that must be weighed before a decision is made to plant on these lands. First, what are the present uses to which the lands are put? Are they used for grazing? Will even the temporary closure of the lands result in economic hardship for graziers, or transhuman groups? If it does result in hardship, what provisions should the project make to tide over the period of loss of benefits from the land now planted, or proposed to be planted, with trees?"

"Traditional systems usually provide for womens' rights to land; the cultivation of trees and the resulting increase in land values, have resulted in many instances in Africa and South-east Asia in the loss of these rights."

"It is a trite, but often ignored, truth that a forestry project is more likely to "succeed" if local priorities are taken into account. That is if the project determines what are the local needs (as the local people see them), and what the ranking of these need is, inter se. It is rare to find that forestry ranks highest among local priorities -- these usually are water (for drinking and irrigation), roads, improved agricultural inputs, and schools.

There are several explanations why forestry is not perceived as an important need. First, it is dependent on who makes the enquiries; second, who is asked what the local needs are; and, third, who actually collects fuelwood and fodder. Generally, missions are comprised only of men; the vast majority of government officials they talk to are men. In the rural areas, conversations are held with men. It is a man's point of view that is gathered. Further, building rapport with the local people takes time; the mission member may be viewed with suspicion -- as a representative of government, as a person making enquiries to raise taxes, or determine illegal cutting of trees. The answers given may be influenced by the need to protect local interests, or to give the questioner the answer the interviewee believes he wants to hear. Again, since government officials tend to contact the powerful, the landed, and the influential most often, the people to whom mission members are most readily taken for these open-ended interviews may not have the same needs, or perceptions of needs, as the majority of the local population -- their needs for fuelwood and fodder may be met through purchase, or through employment of poorer fellow villagers to collect fuelwood and fodder for them, or through their own tree and fodder resources.

But it is generally women and children who collect fodder and fuelwood (except in some instances where higher caste women are not permitted to leave their houses to collect fuelwood and, instead, employ low caste members to do this task). They are in a better position to know how much time is spent in this collection, how much is collected, how long one "bundle" lasts, and what the actual situation is with regard to fuelwood availability."

"Another explanation why forestry may not rank high in villagers' perceptions of needs is the fact that the time horizons of most villagers are much shorter than it takes to grow trees."

"Determination of local priorities must include an investigation of the types of species to be grown. Here too, for the reasons already mentioned above, the priorities of both men and women must be investigated."

"There can be no predetermined choice of species types -- for instance, by foresters -- which can be presented as an unalterable technical package. In each case there should be a determination of preferred species, the purposes for which they are used, and the reasons why they are preferred. ...when one enters the realm of species for cooking, there are a whole range of social, cultural and religious circumstances which have to be taken into account."

"Further reasons for enquiring into local species preferences are, first, that villagers know both their trees and their soils (see Chambers, 1980). Second, if the program uses known local species there is a greater likelihood that the program will be locally accepted and succeed. ...In effect, although an external choice of species types may be technically sound and rapid-growing, the choice may be locally unacceptable."

"Finally, where there may be external perceptions of the need for forestry, and no locally perceived need, it may be necessary to add other incentives which meet local priority needs in order to gain acceptance for the forestry program. An example of this is the Lagbar, Senegal project (Hoskins, 1979, 1982) where local priorities included improved water supplies, health services, and a school all of which were provided by other government agencies as part of the project and facilitated acceptance of the forestry component. An alternative is to use the forestry project and the profits that can be derived from it as a means whereby local priority needs (say for water or roads) can be met."

"Closely related to the discussion on priorities is the examination of decision-making processes at the local level. At the level of the individual household, it is men or women who make decisions regarding expenditure? Is there a division of responsibility regarding the areas of decision-making? Is this division adhered to even though the women may earn a livelihood? There is no universal answer."

"Although progress has been made in this regard, women have not reached a stage where their views are regularly taken into account in public decisions."

The poor, landless, the members of the "scheduled castes" and "scheduled tribes" are in a similar position to women. Though constitutional and statutory provisions exist for their participation in decision-making, in reality, because of their dependence on the more powerful sections of the local population, their participation in decision-making is minimal. And yet these groups need forestry projects more than others."

"Examining, first, the distribution of seedlings to individuals. Undoubtedly, these seedlings will, in the initial stages of a program go to the farmers with larger landholdings. They are in a better position to bear

the "risks" of failure -- every State needs, and probably has, its Kalidasbhai of Gujarat fame. But once these farmers have provided a "demonstration effect", there must be provision and a concerted effort to reach the small farmer and to encourage planting of trees around homestead by the landless. There are additional issues which must be addressed as well. First, the distribution of seedlings to individuals generally reaches those with land -- the landless, who need fuelwood and fodder most do not generally get seedlings. Second, while individual (or private) planting is necessary is this a means of evading land ceilings legislation, or of getting rid of "tenants", or reducing the amount of labor required for agriculture -- labor that is increasingly difficult to obtain? If the answer to any of the immediately preceding questions is in the affirmative, then private gain is accomplished at the cost of social loss. Third, it could be said that private planting for sale does relieve general shortages of timber and fuelwood, but then, could this be termed "social forestry"? It is not the traditional activities of Forest Departments now undertaken by individuals? If a Forest Department undertook such activities would they be termed "social forestry"? Fourth, given the biases of extension services, is there any way of ensuring that the smaller farmer and the landless obtain both seedlings and technical assistance? Fifth, if limits are placed on the number of seedlings which an individual can receive free of charge, what checks can be provided to ensure that no additional seedlings are obtained by the more powerful through others dependent on them? Where, in fact, the Forest Department has concentrated on farmers with large landholdings to the exclusion of small farmers and the landless, the Forest Department would be viewed as the "rich man's" department and its officials would be suspected by the small farmer and the landless."

"First, the term "community" implies in sociological terms, not merely sharing of space (an area in time) but also commonality of interests. Can this commonality, or identity, of interests be found...one of the factors for the success of the village forestry program is the egalitarian nature of most villages. However, as Agarwal summarizes (1980:117):

In villages where land distribution is particularly unequal and where there are a large proportion of very poor and a few well-off farmers, widespread participation has been difficult to organize. The poorer farmers and the landless are reluctant to contribute free labor for communal projects since they feel the benefits would go to the larger landowners."

"The Forest Department (see Karamchandani, 1981) claims that the main reason for the poor performance of village self-help schemes is the lack of finance -- villagers are too poor to afford to establish their own woodlots. Although this may be a reason, it is not the only reason. A brief visit to Gujarat seemed to show that lack of finances was not the general reason why self-help schemes were not flourishing. Equally important were the presence of factions within the village, lack of leadership, and heterogeneity."

"One of the techniques of encouraging greater local participation in village woodlot establishment is to reduce the size of the participating group to less than the villages comprised in the panchayat."

"An issue, at times difficult to resolve, which relates only to community woodlots, is whether the labor involved should be paid or should be provided

voluntarily by the beneficiaries. While in theory it would appear that beneficiaries should provide voluntary labor since this would be "proof" of their interest in the community project and a sign of their sincerity. In practice, however, local conditions should be examined before any provision is made for voluntary participation."

"But a provision for payment for labor does not necessarily mean that local labor -- the potential beneficiaries of the woodlot program -- will be employed. There are several reasons why this may be so. First, as in India, caste prohibitions may prevent an indigent high-caste member from offering his services in the natal village. This person would have to seek employment outside the village in order to avoid ostracism, or charges of lowering caste status. Second, whether local labor is employed or not often depends on who does the employing."

"It is more or less generally accepted that local participation is essential to the spread of "social" forestry, that the program involves education as well about the need for forestry, and a recognition that further forestry depredations can only result in irreplaceable losses affecting food production and the environment."

"As a matter of record, most projects where local needs have not been consulted before implementation, and where local participation has been minimal, have failed."

"..."Participation," in many projects may only pay lip service to a concept. What must be examined is: who "participates," at what stage of project formulation, at what stage of implementation?"

"...Does FD actually practice the concept of participation by making available, for instance, the variety of species which are both technically feasible and wanted by the local population or do they try to compel local residents to accept only one species which FD thinks is the "best" and claim that it cannot obtain other species?"

"...In certain circumstances (the sand dune stabilization case in Haryana is an example), clearly, the view of FD should prevail. But in most other instances, given local knowledge of species and local needs, participation is essential for project success. Further, the process of education and transfer of techniques can only take place in an atmosphere of mutual trust which cannot prevail if only the views of FD prevail, and FD personnel are not willing to listen."

"The amount of fuelwood or dung consumed is related to climate, social status, income availability of fuelwood, and other purposes (for instance, the need for smoke to drive away insects, or to heat a house). Few studies are available which assess the amount of fuelwood necessary to provide balanced meals to a household of average size, or relate fuelwood needs to the income levels of individual households. As a result, most estimates are speculative and could underestimate (or overestimate) actual consumption and needs."

"Nor, again, do many projects estimate the needs for credit and its availability."

"Where a forestry program is likely to include areas where tribal groups reside, or where a project is likely to have an impact on these groups (residing in close proximity to the project area), special care and measures should be taken first, to investigate the likely impact on tribal groups and devise measures for their inclusion in the project, or their protection."

"Generally, the FD would have a major role to play in forestry project implementation. But even this role should be assessed (i) in the light of the type of project; (ii) in the light of the capacity and effectiveness of FD. For instance, in watershed projects, should FD have a major role as coordinator even though forestry and reforestation are major components? Or, should other departments be responsible for coordination?"

An assessment of the capacity and effectiveness of FD is even more important. The issues here are: first, whether FD has sufficient staff to implement the project? If not, should further staff be employed, or should local people be employed temporarily until project concepts are diffused and accepted, or should personnel from another department be employed? Second, what qualifications should the staff possess? This is not merely a question of academic training but also, given the biases of government personnel, whether the staff would go out and meet all segments of the project population and what the receptivity of the population would be to these personnel."

"The next issue is one of organizational structure. Does the structure permit for delegation of authority, and a division of function based on project goals? Does the decision-making process provide for the acceptance of plans made at the lowest level -- a level which is also the main level of implementation? Is there sufficient technical assistance available to advise the local population on plan formulation and assist in implementation? What communications facilities are envisaged, how are plans and goals publicized?"

"An issue crucial to the success of a project is organizational capacity to enforce plans which are generally accepted. ...Costs are not to be measured in terms of financial costs alone but also in terms of time and labor given for the project, other financial gains foregone."

"...Is there a distributive mechanism which can ensure returns to all segments of the local population? ...What will assure the local population that grievances with regard to distribution will receive a hearing, and result in a "just" decision?"

"This issue only enters the social realm in two aspects: first, whether forestry can be diffused if people are charged for, say, seedlings; and second, in the capacity of people to repay.

There are no clear-cut answers. Approaches vary depending largely on policy and an assessment of the economic condition of the population."

"Sociologically, the issues are (i) who are to be benefited? (ii) can these beneficiaries pay (now or later)?"

"...if forestry is to spread to the poorest segments -- the segments that are often accused of being most responsible for forest destruction -- can they afford to pay? Will even a nominal charge for seedlings induce a reluctance

to join in the program?"

"...Does government policy support afforestation or not? This is not merely a matter of rhetoric (of examining policy documents which proclaim the necessity for afforestation and conservation), but examining practices both at the national and local levels. There are three aspects deserving close investigation: (i) land use policies; (ii) budgetary support; and (iii) forest legislation."

"...it is necessary to define the criteria for determining project "success"."

"With regard to forestry projects this means an assessment whether "success" is to be defined in terms of: (i) the absolute number of trees planted; (ii) the planting of trees by the poorer segments of the population; (iii) disbursement percentages; (iv) the number of self-help schemes; (v) ability for self-sustaining development and growth. These criteria are not mutually contradictory. But, whatever criteria are adopted, the bases [sentence incomplete --- page cut off at bottom -- .]

"Project design is, or should be, the result of weighing several alternative methods of reaching stated goals and the selection of that method which would provide the best returns, in the shortest time period, in the light of those goals. The weighing of alternatives is a subjective process involving assumptions about human behavior. The process and the examination of alternatives can only be effective when it is rooted in an understanding of the economic and socio-cultural patterns of the proposed beneficiaries."

"...policy precedes project formulation. Since this policy exists, there is need to press for application of the policy."

"There are some assumptions in projects and in the literature that need both further study and debate.

Increased supplies of fuelwood will result in the substitution of fuelwood for dung presently used as fuel; dung will then be used as manure.

The poor are mainly responsible for forest depredations.

The landless will benefit from forestry projects.

There cannot be an adequate distribution of benefits without, first, redistributive land reform."

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Karamchandani, K.P., 1981. Gujarat social forestry: A case study. (Draft) Rome: FAO.

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Discipline: Sociology
Application: Technical Transfer
Country: Asia (General Applicability)
Emphasis: Specific recommendations for forestry extension

Vergara, Napoleon T., "Forestry Extension" in Regional Training Course in Community Forestry Development Techniques, March 27 - April 29, 1988, offered by the Royal Thai Government and the Government of Japan, 22 pp.

"This paper shall focus on the application of these extension methods in the forestry context; identify the problems and difficulties in implementing forestry extension; and discuss the approaches for overcoming such problems and making extension effective in achieving the twin, sometimes conflicting goals of conserving the environment and increasing productivity for the welfare of rural populations."

"Agricultural and forestry extension are both focussed upon rural rather than urban communities."

"Agricultural extension is primarily meant for cultivators of annual food or cash crops and fruit trees. ...Forestry extension, on the other hand, regards as its major clients people whose interests range from pure forestry to integrated annual/perennial crops (agroforestry)."

"...target audiences of Forestry Extension are:

- a.) Industrially-oriented forest-based firms that extract large quantities of timber from vast forest areas for commercial purposes.
- b.) Forest recreationists who enjoy the aesthetic and recreational values of forest areas in a non-extractive way, or who may exploit non-wood forest products...
- c.) Traditional users of forests for domestic purposes (examples: small-sized timber for home construction, or wood for fuel) or small-scale commercial uses (examples: wood carving or charcoal making)."

"Goals of Forestry Extension

- a.) Conserve the natural environment in order to maintain its capacity for sustainable production of goods and services to meet the basic needs of local communities.
- b.) Improve the social and economic status of rural populations through increased employment and incomes."

"Implicit in the statement of these two goals is the constant effort at resolving the conflict and converting them into truly complementary goals."

"In targetting these small-scale forest users and in zeroing on the problems associated with them, Forestry Extension is, in essence, imposing

upon itself the achievement of the following objectives:

- a.) Minimization of soil erosion and nutrient losses through the increased use of tree crops for both productive and protective purposes in hill land farming systems, and consequently, the stabilization of agroecosystems and the maintenance of productive capacity.
- b.) Sedentarization of shifting cultivation with expanded use of permanent tree crops and the consequent stabilization of local communities and the lessening of encroachment upon remaining forest areas.
- c.) Increased productivity, employment and incomes of rural households, and the resulting reduced people pressure upon the forests.
- d.) Reduction of demand for trees extracted from the forests by filling domestic and commercial wood and food needs with farm-grown trees."

"Certain problems and difficulties are inherent in, and unique to, Forestry Extension."

"Audiences are Varied, Widely Dispersed and Hard to Reach

...Consequently, extensionists will have to prepare a wide array of technologies to fit the variable ecosystems; will have to operate over a much wider area to reach a fewer number of people; and will have to expend a lot more effort to gain access to the remote communities."

"...crops that only produce wood and other non-food products are accorded a lower priority rating. When forestry extensionists recommend forest trees to remedy fuelwood shortages, for example, farmers who cultivate small-sized farms that are barely able to yield enough products to fill the household's food needs would usually be unwilling to sacrifice portions of such farmlands for non-food bearing trees. Only if a tree is multipurpose (i.e. one that yields an array of food and wood products for various uses, as in the case of coconuts) would poor farmers accede to tree cropping or intercropping."

"Late-Maturing Character of Tree Crops

Subsistence farmers who live in what is at times derisively referred to as "hand-to-mouth" existence just cannot afford to wait that long for the benefits and yields. Thus, they are not keen on accepting tree-based technologies that are basically the production systems recommended by forestry extensionists."

"Trees Tend to Dominate and Suppress Farmer-Preferred Crops"

" " Poorest of the Poor" are Usually Conservative"

"Farmers whose land and labor resources are hardly sufficient to satisfy their household demands for food, shelter and other basic necessities would naturally be very cautious about adopting production systems that are "new" (to them) and "untried" (by them). Because their resources and products are so

meager, their "margins for error" are very narrow, and they cannot afford to experiment with untried techniques. Failure in production during such trials would have very deep repercussions (such as household famine).

The other reason could be social or institutional. Many landless farmers in developing countries regard government-owned lands as unoccupied and, therefore, not-owned by anyone. Thus, when they are accused of squatting or encroaching by government foresters, they are both surprised and angered. Still, they eventually realize that their occupancy and use of these lands is "illegal" and they may eventually be evicted by force of law. This sword hanging over their heads prevents them from engaging in permanent cropping as the fruits of their toils may not be harvestable by them when they are forced to abandon their present farmsites. Under such circumstances, forestry extension and the tree-oriented production systems that it tries to promote would fall on deaf ears."

"Various approaches and means can be identified and applied for overcoming the above problems and difficulties."

"The Use of Media to Reach Remote Farmers"

"It is believed that print media (leaflets, newspapers, magazines) are superior because the farmers can keep them and refer back to them when the need for the information arises. ...Unfortunately, two major obstacles inhibit the widespread use of this medium when it comes to widely dispersed hill farmers:

- a.) Literacy...
- b.) Inaccessibility... It is difficult to bring extension information to the remote villages. The other form of inaccessibility is economic in nature; many rural dwellers may not be able to afford the price of ordinary newspapers and magazines in which much of the information are found. Thus, unless these come in the form of leaflets produced and distributed free by the extension organization itself, printed materials may not be effective."

"Broadcast media, particularly television, ...The problem with TV should be obvious: in most rural (mountain) households, it is still a "luxury" item beyond farmers' economic reach."

"The less glamorous radio may, in fact, be the more effective of the two in so far as rural audiences are concerned. First, with the discovery of the transistor, miniaturization of the radio became possible, and the power consumption has been correspondingly reduced such that a small radio can run on penlight batteries. Second, current production technology has reduced the price of such radios and batteries to a level where they are now affordable even to small farmers. Third, radio stations are so much cheaper to operate compared to TV stations, so there is a proliferation of such stations at various localities that broadcast in the local languages, thereby making the information more readily receivable by the target audiences."

"Farmers may raise pure tree crops instead of agroforestry crops on a piece of land under three possible conditions:

- a.) They have other lands on which they can cultivate food crops to fill their needs.
- b.) The land is simply not usable for annual crops and can only be planted to trees.
- c.) They have realized that tree cropping is more productive than annual or agroforestry cropping."

"In reality, the most attractive approach to encourage farmers in tree planting on their own farmsites is by using agroforestry. The combination of annuals with perennials will ensure that the farmers will have something to harvest or subsist on while waiting for the longer-term tree crops to mature and become productive. This is one of the most effective ways of overcoming the objections of farmers to planting late-maturing tree crops."

"Forestry extensionists have the tendency to select tree species based on a specific need rather than on a wide range of needs."

"Management Practices to Overcome Negative Attitudes towards Trees

For example, apart from selecting trees with inherently small crowns to reduce shading and (s)uppression of agricultural intercrops, there is also the alternative approach of periodically lopping off the branches to achieve the same purpose. This activity could be viewed negatively as another added burden, but it can likewise be positively seen as one single activity that yields three potential benefits: (a) producing fuelwood from the branches; (b) producing fodder from the leaves of the lopped branches, and (c) "liberating" the undercrops from overshadowing."

"STRATEGIES FOR A MORE EFFECTIVE FOREST EXTENSION PROGRAMME

Nothing is more insulting to a farmer who has been cultivating farms all his life than to be told by a young, inexperienced, city-bred extensionist that his farming methods are wrong, and that he should adopt a new system that the extensionist is promoting. Even assuming that the new technology is scientifically correct, there is no assurance that it is the appropriate technology for a particular farm under given ecological and socio-economic conditions. To prevent all this potential mismatching, it is imperative to involve the farmer in three important extension-related activities: (a) identifying the local needs for tree-based products and services, and the problems associated with these needs; (b) identifying the various potential approaches for solving those problems and satisfying those local needs; and (c) evaluating and selecting the production system that best fills the identified needs under present conditions of the environment and local economy."

"Select Demonstration Farmers to Take the Lead"

"...the choice of the approach (stay with the poorest, or start with the poor to reach the poorest) will all depend on the inclinations of the extensionist himself/herself."

"Extension is never a one-stroke undertaking. Once started, it requires a sustained support service in order that the ultimate goals will finally be achieved. In the case of forestry extension, two principal support are required: (a) credit support to provide the initial funds to start long-term tree cropping. This assistance could come either in the form of a direct government subsidy, or "soft loans" from government financial institutions, or assistance in guaranteeing loans from private banks, etc., (b) Technical support in the form of technical information, technical advice, or direct material assistance in the form of free seeds or seedlings."

"As indicated earlier, farmers will generally refrain from introducing permanent crops if their hold over the land is shaky and they are not assured that they will be able to harvest their crops. Therefore, it is quite obvious that assurance of either long-term or permanent tenure is given to the cultivators will lead to greater tree-based activities and production systems."

"In encouraging farmers to plant more trees as a source of surplus products and cash incomes, it is important to assure the [sic] them that there is a market for their products. Since extensionists have no control over markets, the only way they can help generate demand incentives is by collaborating with the appropriate agencies in order to create markets. These activities will range from encouraging investors to set up wood-based plants where prospective planters are located, through creating clear contact lines between planters and buyers of tree-based products."

DISCIPLINE: Sociology
APPLICATION: Technology transfer
COUNTRY: Asia (General Applicability)
EMPHASIS: Policy Issues

West, P. 1984. Sociological Aspects of Agroforestry. In: Agroforestry in Developing Countries. University of Michigan Center for Research on Economic Development for USAID/PPC/PDPR/RD. pp. 29-71.

"It has now become part of the conventional wisdom that sociological factors are among the key concepts in designing and effectively implementing agroforestry projects in developing nations...The fundamental conclusion from practically all analyses conducted to date is that the traditional top-down, imposed approach to community agroforestry, so common in many early efforts in agroforestry, is simply not working. A more participatory approach in which the cooperation and direct involvement of local people is obtained is essential to project success. And central to gaining this acceptance and involvement is the clear assurance that sufficient and equitable benefits will be received by local people from agroforestry projects... (p. 33)

The use of local opinion leaders to enhance the positive effects of interpersonal contact and social influence is now standard practice in many areas of development extension and communications efforts. The identification of local opinion leaders should be an important aspect of any preproject social assessment. However it is important to identify and utilize opinion leaders from both upper and lower strata groups if diffusion of agroforestry innovations through interpersonal influence is to reach the poorer strata, and thus help to avoid the differential adoption by large farmers... (p. 37)

The most critical aspect of communications strategies, however, is that communications should not be viewed solely in terms of communications to local farmers and villagers, but rather in terms of communications with them...This need for a participatory communications approach, involving especially 'needs assessment', is now a generally well accepted critique of the old 'targeted communications' model... (p. 38)

Specific needs assessments that have included forestry...have frequently found that agroforestry is not as high on local villagers' list of priorities as other basic needs such as water, health, education, roads, etc... (p. 38)

This raises another problem, however, that traditional foresters might legitimately raise: people's felt needs are short-term and perhaps should not be relied on totally in project design for forestry which involves long-term frames. Nevertheless, the fact of a lack of felt need must be understood, and projects involving long-range rehabilitation and supply needs must be designed to motivate people in the face of this, or educate them to perceive a felt need if projects are to be accepted... (p. 39)

... many analysts in the rural development field feel that communications, even two-way participatory communications has been over-emphasized... This critique... suggests that we need to give more attention to social and institutional barriers to the adoption and long-term management of agroforestry projects... These barriers, however, often differ by type of agroforestry project, particularly between individually adopted practices on a farmers' own land, and collective projects such as village woodlots... (p. 39-40)

...agroforestry can be optionally adopted by individual farmers on their own land or collectively, particularly in village woodlots. Some forms of agroforestry involve a mixture of individual and collective adoption... (p. 41)

...On the one hand, optional adoption is usually easier to achieve in the aggregate; on the other hand, it raises critical problems of equity and access by the poorer strata, especially the landless, to the benefits of agroforestry... (p. 41)

The general literature on diffusion of innovations in rural development suggests that collective adoption proceeds more slowly and is more difficult to achieve than optional adoption. Most analysts have found that optional adoption of agroforestry projects on individual farms is easier to achieve than collective adoption in village woodlots, etc. especially where there is a lack of collective action tradition... (p. 41)

...Numerous analysts have documented that large farmers are able to individually adopt agroforestry innovations more than small independent farmers, and tenant farmers due to a greater land availability, greater ability to take risks, and greater power and security in property rights control over project benefits... (p. 42)

... unless fundamental equity is assured community members will not perceive benefits to their self-interest and hence will not sanction collective agroforestry projects or participate in their implementation. The issue of equity also permeates two closely related factors--property rights and community factionalism. These structural factors strongly affect equity in the distribution of project benefits... (p. 42-43)

The general relationship between expected benefits and participation in collective projects has been well documented in the specific case of agroforestry. Villagers are concerned about both monopolization by power elites within the community and expropriation of project benefits by external forestry agencies that sponsor or assist with community forestry projects... (p. 44)

...disparities in land ownership and power may be so great that attempts to achieve equitable community-wide collective adoption may be doomed to failure... One important strategy for countering this may be to work with subgroups within the community rather than with the community as a whole... (p. 45)

The issue of distribution of community forestry project benefits is frequently embedded in the structure of property rights systems. Collective projects on communal land can fail if they do not take account of distributive mechanisms in traditional collective property institutions, especially where adaptive property norms exist for the collective management of common resources... (p. 46)

Another variant of this problem occurs in the agri-silviculture system, the 'Taungya' system in which the government Forest Service becomes the landlord on government forest lands that were frequently nationalized from formerly commons lands that had been used for shifting agriculture. While peasants incorporated into forest villages sometimes receive benefits they might not have otherwise had, their poverty remains stark and their share of the yield remains meager;...while frequently large revenues and profits are generated from the sale of teak and other forest crops... This has created a sense of bitterness and resentment among many of the peasants involved... This is a social impact that must be addressed in its own right, but it is also a barrier to the adoption and expansion of the system which on technical grounds can be highly efficient and successful...(p. 50)

The use of community organizing within an integrated rural development program which includes agroforestry has the additional benefit of sequencing organizing efforts to maximize the effectiveness of basic community organizing principles and strategies. It is important to stress the difficulty of organizing directly for the adoption of collective projects, especially where benefits to the individual may not be immediate as occurs in agroforestry. It is... one of the cardinal principles of community organizing to focus initially on projects of immediate interest that can be easily achieved...these new or strengthened capabilities that have been developed within the community can be utilized in the achievement of more complex, long-range projects... (p. 53)

The development of indigenous leadership is also more important in collective adoption than in optional adoption. In optional adoption the main function of leadership is frequently a more passive role of 'opinion leadership.' In collective adoption, however, leadership must not only mold opinion but must actively engage in community-organizing efforts to seek enough consensus for joint decision by mobilizing labor contributions, and by developing and managing organizational systems for implementation and long-term project management. In sum, collective adoption depends much more on active leadership functions and activities that need to be sustained over the life of the project... (p. 54)

The implications of the central need for community organizing and development of indigenous leadership implies a shift in extension service functions away from a singular focus on information dissemination and toward facilitation of community organizing and indigenous problem solving. This would be especially important for collective adoption projects in agroforestry, but would also help to facilitate the optional adoption of agroforestry practices by individual farm families... (p. 56)

The long time-frame involved in establishing sustained yield agroforestry projects reduces the relative perceived economic advantage of these innovations to peasants on the margins of existence...Studies of long-term innovations suggest that (1) a long-term benefit is more readily accepted if it is linked with short-term benefits, and (2) a long-term benefit is more readily accepted if the adopters are materially aided or subsidized in the interim (Erasmus, 1952)... (p. 56)

...There is an important debate over how much agroforestry programs should rely on such supplementary incentives. On the one hand they may be needed to encourage participation; on the other hand, they may foster dependence and drain project financial resources... (p. 57)

...Yet it may not be so easy to tinker with the forms of incentives to avoid this, and admonishing the poor not to become dependent may strike them as a cruel joke... (p. 57)

It is now widely recognized that without the support and involvement of women, agroforestry efforts have much less chance of success... (p. 59)

...While the importance of involving women in participatory agroforestry is clearly documented, and now well accepted in AID and other donor agency programs...the implementation of programs to actively involve women in many areas is a difficult task, not only due to resistance by traditionally male-dominated forestry agencies, but also because many traditional local communities are not used to giving major community involvement roles to women...Resistance by forestry extension services can best be overcome by hiring women extension agents...This has the additional advantage of making it easier to involve women who may feel more comfortable dealing with women extension agents. (p. 60)

Discipline: Predominantly Sociology
Application: Theory and Concepts
Country: No Specific Region
Emphasis: Summary report of project, most relevant is memo to AID for project design.

Summary Report of Rural Development Participation Project, 1977-1982, Rural Development Committee Center for International Studies, Cornell University, Project funded under Cooperative Agreement (BMA-1/ta-8) between Cornell University and the U.S. Agency for International Development, Bureau of Science and Technology, Office of Multi-Sectoral Development, 118 pp.

Each Rural Development Participation Project (RDPP) review 'Active Summary' lists: country, activity, purpose, program, linkages (with institutions other than Cornell), personnel, outputs of publications, papers and reports, training, seminars and workshops. This excerpt lists projects in Asia by country and activity. If there is specific interest in any of these projects on the part of the reader, it is recommended that they contact Cornell RDPP directly for more extensive information. The report form given in the publication is simply listing what was created by each project on a project by project basis without accompanying text.

"The Rural Development Participation Project (RDPP)...was one of the first of a number of "cooperative agreements" created by USAID's Office of Rural Development and Development Administration (now Office of Multi-Sectoral Development) in the Bureau of Science and Technology to try to bring the knowledge and knowledge-generating resources of an American university to bear on the development activities of USAID and LDC governments."

"Under the cooperative agreement, the major efforts came under the category of Applied Research and Consulting. This, however, was associated with and in many ways dependent upon another category, Knowledge Generation. ...Thus the purpose was not so much the conventional one of technical assistance but rather one more broadly conceived in the American land grant tradition: to capitalize on what should be a university's "comparative advantage" -- the development as well as the extension and application of new knowledge."

"III. APPLIED RESEARCH AND CONSULTING"

"C. ASIA"

"RDPP PROJECT REVIEW: ACTIVITY SUMMARY"

Country: Sri Lanka

Activity: Water Management Project Applied Research and Consulting"

"Country: Indonesia

Activity: Methodology for Monitoring and Evaluating Luwu Resettlement Program"

"Country: Nepal
Activity: Seminar on Experience with Rural Development and Participation, July 23-24, 1978"

"Country: Philippines I
Activity: Decentralization and Provincial Development Administration Applied Research"

"Country: Philippines II
Activity: AID Country Program Decentralization and Participation Consultancy"

"IV.KNOWLEDGE GENERATION"

"Subject: Rural Development Participation
Purpose: Analyze the operative elements of "participation" in rural development efforts; identify experience contributing to a better understanding of participation in rural development; disseminate such knowledge to participatory rural development."

"Subject: Paraprofessionals in Rural Development
Purpose: Ascertain in what ways the use of paraprofessionals, particularly in agriculture and health programs, can contribute to more effective and participatory rural development."

"Subject: Participatory Agricultural Research and Extension
Purpose: Examine [sic] experience with new approaches to agricultural research and extension which involve farmers more actively in the identification of problems, the setting of criteria, the testing of alternative technologies and in the diffusion of information."

"Subject: Role of Local Organization in Rural Development
Purpose: Assess contribution of various kinds of local organization under different circumstances to particular aspects of rural development, to produce knowledge useful to designing RD efforts."

"Subject: Landless and Near-Landless Participation in Rural Development

- Purpose: Assess extent, causes and trends of landlessness and near-landlessness in LDC's, looking at impact of this on participation in decision-making and in benefits, and on organizational participation and effectiveness; present for USAID and other development agencies a policy-oriented analysis of the implications of landlessness and near-landlessness for development strategies and programs."
- "Subject: Women's Participation in Development
- Purpose: Assess factors affecting women's participation in development; get more persons involved in work on women's participation; provide information for the design of rural development projects to contribute more positively to women's status and empowerment."(page 69).
-
- "Subject: Participatory Resource Conservation and Management
- Purpose: Examination of participatory requirements [sic] and approaches to resource conservation and management in LDC's, integrating technical and social analysis; preparatory to applied research and consulting on this subject."
- "Subject: Local Leadership for Rural Development
- Purpose: Comparative examination of positive and negative roles of local leadership, often known as local elites, in design and implementation of rural development programs; assessment of factors making for positive roles under certain conditions so these could be promoted; identification of ways to strengthen local organization for participatory development through more positive leadership roles."
- "Subject: Animation Rurale: Local Organization and Participation
- Purpose: Assess experience in Francophone West Africa and Haiti with alternative approaches to animation rurale; draw conclusions about project and program design for effective participatory rural development."
- "Subject: Methodology for Rural Development Participation
- Purpose: Identify and present methodological approaches and innovations for analyzing and promoting more participatory rural development, including monitoring and evaluation of decentralization and local organization; application of analytical techniques to AID mission needs for identifying and assisting the under-participation rural poor."

"V.KNOWLEDGE DISSEMINATION AND NETWORKING"

"Subject: State-of-the-Art Papers

Purpose: Assess and synthesize existing knowledge and experience on topics of concern to practitioners of rural development.

Program: Conduct reviews of literature, and if feasible and necessary, carry out field studies, to acquire knowledge to be presented in SOAP." (page 77)

"Subject: Special Studies--Publications

Purpose: Present experience and analysis thereof for practitioners and academics working on problems of rural development.

Program: Prepare and publish monographs and papers through the Rural Development Committee publications program; copies distributed to AID missions and staff; RDC distributes copies to persons working on rural development problems upon request, charging if appropriate and possible.

The RDC has a special account for its publications, and the price for publications is set so that some can be given free, particularly to LDC scholars and practitioners. The account fluctuates as new publications' costs are charged against it, and as sales of publications are made. Prices are set to make this a break-even operation, with the stocks of publications in hand serving as capital to cover any deficiencies in the account. In this way, the publications coming from the RDPP can be kept in print as long as there is sufficient demand."

"Subject: Rural Development Participation Review

Purpose: Bring to a wide audience of practitioners and academics interested in problems of rural development and participation some of the best and most current thinking and experience related to these problems.

Program: Publication three times a year of Review (16-32 pages), with: (a) lead articles, (b) project analyses, (c) notes on current activities, (d) reviews of recent publications on participation, (e) listing of recent publications of possible interest to readers."

"VI.THESES"

[completed]

"Shyamala Abeyratne, Rural Sociology, M.S.

SECOND GENERATION SETTLEMENT IN THE GAL OYA PROJECT, SRI LANKA"

"Hammond Murray-Rust, Agricultural Engineering, Ph.D.
IRRIGATION AND WATER MANAGEMENT IN SRI LANKA: AN EVALUATION OF
TECHNICAL AND POLICY FACTORS AFFECTING OPERATION OF THE MAIN CHANNEL
SYSTEM"(page 95)

[still in process]

"Milan Rodrigo, Communications Arts, M.P.S.
PROBLEMS OF COMMUNICATION CONCERNING WATER MANAGEMENT IN GAL OYA,
SRI LANKA AND POSSIBLE MEASURES FOR IMPROVEMENT (fieldwork done
summer 1982)

Nancy St. Julien, Regional Planning, Ph.D.
THE INSTITUTIONAL-ORGANIZER PROGRAM FOR WATER MANAGEMENT IN GAL OYA,
SRI LANKA: AN ASSESSMENT OF THE APPLICATION OF A 'LEARNING PROCESS'
APPROACH TO RURAL DEVELOPMENT (fieldwork [sic] done summer 1982)"

[Theses Assisted under RDPP]

"Susan Randolph, Economics, Ph.D.
Thesis on poverty and income distribution in Malaysia assisted by
opportunity to do fieldwork in Egypt on this subject in support of
project directed by Professor Iliya Harik to construct poverty
profile; also given honorarium to write monograph assessing
alternative measures of "poverty" which provided financial support
during writing of thesis and related to thesis' literature review.

Mark Svendsen, Agricultural Economics, Ph.D.
Thesis on water management in Philippines worked on while serving as
part-time consultant for RDPP with Agrarian Research and Training
Institute in Sri Lanka; wife in Sri Lanka as consultant, and this
gave some financial support during write-up and also in-depth
experience with water management in another Asian context."

[Thesis Related to RDPP involvement of Students]

"Ed Martin, Agricultural Economics, Ph.D.
Thesis on small-scale irrigation development and management in Nepal
(supported by International Agriculture Program, East-West Center
and other sources; research concerning local organization and
participation aspects of subject growing out of RDPP involvement)
(p. 97)

"VII BUDGET"

"VIII.THE RDC AT CORNELL UNIV."

"The Rural Development Committee [RDC] was organized during 1970-71 under the auspices of the Center for International Studies, Cornell University. ...The major RDC activity has been a five-year program of applied research and consulting on "Rural Development Participation" under a cooperative agreement with USAID's Office of Rural Development and Development Administration (DS/RAD).

The RDC has taken on problems and issues in rural development that require inter- or cross-disciplinary work, leaving to departments and individuals those subjects which can be treated within a particular discipline. ...focusing rather on policy, institutional and strategic considerations, with special concern for the poor rural majority."

"One of the principal features (and attractions to participating faculty) is the collegial cooperation among social scientists and natural scientists in RDC activities."

"The main activities of the RDC consists of (a) seminars, (b) teaching, and (c) working groups."

"The Rural Local Government studies done in 1973-74, for example, were half of them written by colleagues at other universities in the U.S., India, Pakistan, Malaysia, Philippines, Israel and Yugoslavia."

"IX.INCREASING PARTICIPATION IN A.I.D. PROJECTS"

"We focus here on what AID might do institutionally to promote and sustain participation, especially by the poor majority."

"Approach"

"1. There is need to be clearer and more concrete about participation in project documentation. ...Exactly what participation is expected, and from whom, should be thought through and stated, and responsibility for supporting this participation should be assigned."

"2. All assumptions about participation need to be checked out with proposed participants/beneficiaries. ...Without wishing to further burden the documentation process, it seems there should be genuine consultation with proposed participants/beneficiaries concerning their participation, and some documentation on the outcome of this consultation.

"3. There is need to learn how to introduce and support participation in specific settings. ...It is best to start out with considerable humility and open-endedness, and to be prepared to experiment and adapt. ...Effective communication and problem-solving capacity cannot be decreed, but must be nurtured."

"4. Realistic participation objectives should be set, with some flexibility in terms of schedule. ...The objectives of participation need to be clear, formulated in accord with to paragraph 2; the means then need to be devised as suits the circumstances. One project we know specified a "target"

of organizing 19,000 farmers within four years, when there was not yet even a framework or cadres for this in place."

"5. Care should be taken that "concrete" activities do not displace the experimentation and support needed for participation. Because more "progress" is shown by construction, which involves getting equipment in place and meeting tangible targets, there is tremendous temptation, even pressure, to short-cut the needed nurturing of participatory institutions and practices, including the reorientation of technical and administrative staff working with rural people as discussed below. ...It is tempting to substitute physical accomplishments for real development of productive capacity in the country. ...Supervisors of project managers need to be supportive of the "software" side of projects, because certain kinds of insistence on "results" will drive out efforts at institutional development." [Taken from footnote: "A project in Botswana before we started working there exemplifies this, the first Range and Livestock Management Project, designed, financed and staffed by AID. ..."]

"6. While there can be no direct "transfer" of models for participation, there can be useful interchange of experience. While the "learning process" approach described above requires in-country evolution of an appropriate framework and reliable cadre, learning from others' experience, particularly similar LDCs, can be very useful. ...We would also stress the value of direct exchange of experience, by bringing in officials or researchers from LDCs and sending key project personnel to visit places with some success in fostering participation."

"7. Work needs to proceed according to the local tempo, with due appreciation of local ways of doing things. This does not mean that project managers should not be "pushing" things along — they should and must. But the "touch" should be appropriately firm or delicate, depending on the people involved, the source of resistance, the cultural norms, etc. ...But our caution, based on observation, is that forcing issues usually results in hollow victories; the schedule may be met, but the supportive behavior is not achieved."

"8. Care must be taken not to create exaggerated expectations. ...The mere presence of outsiders creates expectations, and the temptation of outsiders, in order to elicit cooperation or simply to reciprocate hospitality, is to make implied or explicit promises. ...If expectations are aroused that an AID cornucopia is about to open, this seems to stall participation rather than fuel it. More, and more culturally sensitive, upfront discussions, even negotiations, with local representatives seem necessary to ensure that implementation will proceed with good will and cooperation."

"Data Base"

"1. While a "process" approach involves much learning while doing, some more adequate pre-project applied research is usually needed. ...We appreciate the need to get activities started and to show some results, and the plea for "more research" should not be a substitute for activity. But there is by now enough evidence of unfruitful action predicated on insufficient understanding of the environment that missions should take seriously the motto of "walking on both legs," action and research. If one

starts walking without full knowledge, one must be prepared to change course as more becomes known."

"2. More participatory approaches to data gathering are appropriate. ...This is not to argue for long, drawn-out data gathering, since "quick and dirty" methods are often justifiable. But the latter methods to be useful require even more involvement with local people than do conventional research methods, and not just with a few leaders."

"3. The data to be gathered in consultation with local people include not only socio-economic matters but technical questions as well. It is recognized that local practices, organization, needs, etc. can be better understood by talking with local people. But we would stress their having technical knowledge worth soliciting and heeding, to guard against unrealistic plans and designs. ...There are many things which it does not require a college degree to understand, and which may not be understood by those with degrees." [Taken from footnote: "If farmers had been consulted on terrace construction techniques in Jamaica...they would [not] have approved...to bring in caterpillar tractors...the sites...were often inaccessible to heavy machinery, and getting there would require knocking down...trees that provided a family livelihood and protection for the soil."]

"4. What data gathering is done is [sic] usually produces aggregate or average statistics; implementing a participatory strategy requires spatial information. In our experience, not enough attention has been paid to getting adequate maps. Aggregate numbers do not tell us about concentration or dispersions of population, about travel times, or jurisdictions."

"5. Data to be gathered in project planning include "historical" information on what has been done or tried before. ...For lack of historical perspective, we keep re-inventing faulty wheels."

"Local Organization"

"1. There is a need to assess existing organizational arrangements and potentialities in the project area when designing a participatory strategy. This is the kind of work we have been involved in with the RDPP and we think the experience shows how useful this is. There is a tendency in project design either to try to lay a lot of responsibilities on existing organizations for which they are not suited or at least not prepared to undertake, or to by pass them entirely and to start up new organizations. Our general conclusion so far is that efforts should be made to try to work out arrangements with existing organizations, though sometimes new organizations are necessary. The time and effort involved in setting up the latter is likely to be underestimated in project planning." (p. 114)

"2. Care should be taken about "overloading" participatory organizations and expecting too much from them at the start. Whether working with new or existing organizations, this caution applies. ...we find most successful organizations starting with a limited set of responsibilities, sometimes only a single function, and then evolving broader responsibilities as members' confidence and leaders' competence increases." [Taken from footnote: "We are doing a systematic analysis of many dozens of local organizations..."]

"3. There is a danger of AID efforts being "coopted" in ways that counter its aim of helping the poor majority. ...This cooptation [sic] can be at two levels. The government may try to use the organizations being established or assisted to further its objectives even at the expense of what rural people see as their interests, or local elites may dominate the organizations and exploit resources for their own advantage."

"A.I.D. Organization"

"1. AID procedures and practices often impede participatory approaches to development. AID personnel are often more acutely aware of this than we are, and they are in a better position to suggest changes."

"2. The larger the project, the less likely it is to be participatory. This is not an iron law; with conscientiousness and imagination, participatory provisions can be built into large projects. But the general correlation between size and less participation is clear."

"3. The legislative requirement that projects be "planned" thoroughly in advance, especially as presently interpreted, inhibits participation."

"4. Project design should not be treated as a "pre-project" activity only. ...A project design effort seeks to identify problems and find technical and organizational solutions. However, the most fundamental and critical problems often become apparent only after project implementation begins. ...One of our faculty members has concluded that most projects should be planned to be re-designed after two years, when implementation has made clear what the "real" problems are."

"Special Problems"

"1. Women's participation continues to be a difficult problem to deal with. ...At any rate, we conclude that relevant women's participation needs to be designed into the "core" and not be formulated as one of many project components."

"2. Obstacles to greater participation from the poor majority often lie with the government bureaucracy rather than with the people themselves. ...We are finding that people's participation or non-participation is often a "rational" response to their environment, which is shaped by the technicians and administrators of the government. ...However, prevailing attitudes that pervade the educated class inhibit such exchange. It is not certain how, or how much, reorientation can be accomplished. But we see it as a necessary effort in many if not all projects seeking participation."