



Why is it so difficult to grow fuelwood?

Raymond Noronha

RAYMOND NORONHA is a sociologist on the staff of the World Bank.

Foresters have to be willing to understand people and to put that understanding into the design and management of their projects. Whether woodlots are accepted or rejected by villagers depends upon realities that are social, cultural, economic and locally political.

[CUTTING FUELWOOD IN NORTH AFRICA *more pressure on every kind of forest for energy production*](#)

For a large part of the world's population wood is the main source of energy for cooking, heating and all kinds of local manufacturing. But the forests that produce this wood are under increasingly heavy pressure. ¹ This gives impetus to the necessity of looking to village woodlots as one of the most important means of dealing with the wood-energy crisis.

Two basic assumptions should be made: first, that the techniques of establishing woodlots are well known; second, that trees serve a variety of human needs and are one of the cheapest sources of energy. If there is no dispute about these assumptions, why is it that village woodlots are not springing up all over the countryside in the developing countries where they are so badly needed? The reasons are not technological, but social and political.

Examples of both successful and unsuccessful woodlot programmes are few, and relatively recent: China, the Republic of Korea, India (Gujarat), Tanzania and Niger. However, all of these have been subjected to intensive scrutiny. ²

China. Over a period of 30 years, from 1949 to 1978, the forest area of China increased by 72 million hectares, representing 12.7 percent of the land area. The main cause of this increase was the mass mobilization of rural communities. National targets were set and then translated into specific goals for districts, brigades and communes. The revolutionary spirit pervading the programme, as in all other Chinese programmes, called for rebuilding and renewal. The organization for this purpose already existed; the division of tasks was prescribed uniformly throughout the nation and implemented by a hierarchy of officials and cadres.

Republic of Korea. The Korean example, which has been more highly touted than the Chinese as a model for other developing countries, seems more dramatic. Until 1973, all efforts at controlling forest degradation had failed, and seedlings planted by foresters were cut within six months of planting. Since the villagers traditionally regarded forest land as a free source of fuelwood, the result was a loss of forests around communities and the increasing use of leaves, grass, rice straw, maize stover and other agricultural residues for fuel.

[PREPARING BREAD IN A NEPALESE VILLAGE *a large part of the world's population*](#)

cooks with wood

The Republic of Korea embarked on a four-fold programme in 1973 which involved the strengthening of the Forest Department, the passing of the new Forest Law, and the launching of an extension and public information campaign. This gave encouragement to the planting of trees, to conservation measures and to enforcement of the new law. The prohibition of leaf-raking and removal of grass litter within forest areas was enforced and a national reforestation scheme was started to create fuelwood plantations in every village.

The spirit behind this programme was the *Samaeul Udong* (New Community) movement launched in 1971, which elaborated on the USAID-financed community development programme of the 1950s. Its goal was to achieve a "greater degree of self-help and decentralized decision-making." One of the objectives of the programme was "spiritual enlightenment," or the modernization of thinking and social patterns to motivate rural people to improve their living conditions. Two parallel interlinked organizational frameworks provided the basis for policy formulation and implementation. On the one hand, regular governmental agencies, under the supervision of the Ministry of Home Affairs, provided funding where necessary, technical advice and development plans in accordance with village priorities. On the other hand, each village had a committee with an elected leader (not the government-appointed village chief) linked to county and district committees.

A similar organization was created for forestry. At the village level, the new Village Forest Association was connected to district and county unions, and to a national federation. Government assistance passed through foresters stationed at the union and county levels.

The Korean organization, which has baffled some observers, combines voluntary decision-making by village associations with a national programme and federation imposed from above. The programme succeeded beyond expectations. By the time World Bank assistance was sought for its expansion in 1976, nearly 40000 ha of trees were being planted each year.

India (Gujarat). The story in Gujarat is slightly different. By 1969 it was realized that the reserved State forest areas were dwindling through constant incursions by the rural population for their fuel, fodder, and building-pole needs. Further, the rural population was increasingly compelled to use agricultural residues and dung for fuel, thereby affecting agricultural returns. The two principles used by the Forest Department in trying to reverse this trend were, first, to provide a demonstration effect - to show people that trees could be grown with profit and for comparatively quick returns - and, second, to conduct an extensive public information campaign. In implementing the former, the Government was induced to hand over responsibility for road and canal sides to the Forest Department, which planted trees there. The publicity campaign included: free distribution of seedlings and extension advice to individuals who were interested in tree planting; films, posters, and tree-planting contests; planting of trees in school grounds, industrial estates and government compounds; and annual tree-planting ceremonies. Within a few years, the State government completely backed the efforts of the Department, and the municipal corporation of the largest city in the State (Ahmedabad) will now grant a completion certificate for a new building only if the builder has planted at least five trees in the open spaces around the building. There is now so much individual tree planting, especially on large farms, that the 50 million seedlings distributed this year were insufficient to meet the demand. The target for next year is 100 million seedlings.

While the programme of planting on government lands and encouraging individual tree-planting could be described as a runaway success, the village woodlot programme is lagging. Starting in 1974, the Forest Department decided to get village panchayats, or locally elected bodies, involved in reforestation on village commons. The approach differs significantly from that of the Republic of Korea. The Department requests the village to set aside a portion of its lands for reforestation and undertakes all the work of establishment, maintenance and

protection. These are now called "supervised" village plantations. At harvest the village receives half of the net sale proceeds.

In addition, there are self-help village plantations where the Forest Department provides only free seedlings and technical assistance. To date there are only 2 500 supervised, and about 70 self-help village plantations, representing about 14 percent of the villages in the State. Although Forest Department officials do plan to increase their efforts to convince more panchayats to undertake community woodlot plantations, it would appear that their efforts will not be as successful as in the promotion of individual forestry.

Tanzania. Village woodlots in Tanzania have also not been entirely a success. The programme, however, is relatively recent having begun only in 1975. The organization and process of decision-making closely parallel those of the Republic of Korea. The basic unit, in an *ujamaa* village, is the village assembly which elects a council and a leader who is also the party secretary. In addition to working their own plots, villagers have to provide communal labour. Programme formulation originates at the village level and then proceeds to the ward, division, district and region. At the village level, the village adviser, who is also the manager, is a government-appointed official. This framework allows for planning and decision-making directly at the village level. Although there is an interlinking of government and elected personnel at every level up to the regional, together with provision for participation by the people, the village woodlot programme has yet to achieve anything like the success of the Korean and Chinese programmes.

Niger. Even less of a success was the effort to establish 500 ha of village woodlots in Niger under a World Bank project. "As fast as the trees were planted," said one observer, "the village people either pulled them out or allowed uncontrolled grazing to take place".³ Of another village woodlot programme in Niger, this one funded by CIDA, it was said that "effective local participation in reforestation has been throttled by an exclusive reliance... on a community woodlot system ill-suited in the socio-political context to serve as a vehicle for reforestation efforts..."⁴ In Upper Volta, too, village woodlot programmes were not successful.⁵

Social factors

What are the reasons for the successes and failures of the programmes described above? Are there any principles to be extracted from them that can be usefully applied to future village woodlot projects, or is each case, as is sometimes suggested, unique, with no possibility of relating the experiences of one project to another?⁶

The success of the Chinese experiment can be attributed to the prevalence of a widespread philosophy and a firm organizational framework. There was, in effect, a continuing political revolution based on a particular social philosophy with symbols of unity exemplified in a highly visible leader. There was also a highly disciplined organizational framework backed up by the threat of legal punishment that reached down to the humblest village. This example, of course, cannot be easily imitated, but it points to the need both for a consistent organization and for the presence of authority which, though not necessarily blatant or overt, lies behind every decision.

The Korean success has been attributed to its "Confucian tradition, with its emphasis on obedience to hierarchical authority and on social cohesion,"^{7,8} but such an assessment falls somewhat short of the truth. Judgements of national character, to begin with, are notoriously simplistic and time-bound. Moreover, they appear to ignore the very "democratic" process of villager participation which characterizes the programme.

Other factors are more important. First, the Korean village is homogeneous; it is not

segmented by caste or tribal affiliations. Though disparities in wealth exist, they are not great. There is, therefore, a relative equality among all villagers. Second, as in the Chinese programme, there is government commitment to the establishment of village plantations. This commitment takes the form of budgetary assistance, technical expertise, public education and law enforcement. It is not difficult, in these circumstances, to "convince" the landowner to part with his forest land for a return of 10 percent of the proceeds from growing trees. It is also not difficult to persuade the villager to perform his share of community duties when failure to do so would incur penalties enforceable by his village peers. Third, the "*Samaeul Udong*" movement, which worked in other spheres of village activity, was successfully integrated into the reforestation movement. Fourth, the organizational format reaches down to the village and provides a forum for expression, even though needs and projects are finally determined at the country level.

Gujarat presents an interesting contrast in that while individual planting has expanded, village woodlots lag. Why is this so? Based on my recent visits there and to Uttar Pradesh, I can try to offer some reasons. First, the Indian village, unlike the Korean, is heterogeneous. There is a mosaic of castes which associate only on well-recognized traditional occasions such as temple festivals. On a few other occasions, such as weddings, some castes do act in common, but only within a traditionally defined role.⁹ There is no tradition of communal action for such projects as growing trees.

Since there are, however, some villages that have undertaken self-help forestry projects, I attempted to determine why. The official view pointed to the lack of finances. It is true that most village panchayats lack money to carry out any but the most simple works, and even those must rely on government grants, but my survey led me to different conclusions. Some villages with hardly any funds had started community woodlots, while much richer ones had not, preferring to rely entirely on government-sponsored and established woodlots. Repeated questioning brought me to the conclusion that the existence of powerful factions preventing common action was the most important reason for the failure to initiate woodlots.

AFRICANS LOADING A PORTABLE CHARCOAL KILN *current fuelwood programmes only meet a fraction of minimum requirements*

In one village where community woodlots did take hold, dynamic leadership was responsible. A trusted panchayat chairman started by planting trees on his own land and then convinced the villagers that they, too, should have their own woodlot. Some of his responses to my questions were enlightening. Why did he decide on a self-help scheme rather than one in which the Forest Department would do everything for him? "Because", he said, "I refuse to pay the Department 50 percent of the profits for work on our land which is, in any event, an overpayment." Where did he get funds, since his panchayat was poor? "People trust me. When I need money I approach rich villagers who give me anything I ask for."

A second key factor for village woodlots is the availability of land. There must be enough agricultural land for the local community. The village commons should be large enough, so that villagers do not feel that reserving land for forestry will affect their other needs, particularly grazing. Also, the area set aside should be large enough for the harvest to meet the needs of all villagers. The percentage of villages capable of satisfying all of these conditions is small.

Third, governmental support for the programme is essential. In Gujarat, while there is complete support for the forestry programme, support does not appear to be as wholehearted for the village community woodlot programme. One of the reasons for such ambivalence relates to conflicting government policies that are peculiarly Indian. Governments tend to loon upon village commons, which are often degraded lands, as the only ones available for

distribution to the landless and members of the lowest, or "scheduled", castes. Government policies therefore add an element of insecurity: a panchayat can never be certain that land allocated today for forestry will not reduce the future availability of land for other purposes since parcels of land can be given away at any time.

Planning bodies in developing countries are not staffed by foresters, they are flooded with economists, administrators, the occasional sociologist or anthropologist, and agriculturists. In these disciplines forestry plays only a minor role.

A fourth point is that Gujarat, like the Republic of Korea, has made the transition from individual initiators to a flexible organization that retains the spirit of the initiator with the addition of an extension network which reaches down to the village. Sociologically, it might be said to have made the transition from charismatic leadership to bureaucracy.

Fifth, labour for plantation) and maintenance continues to be a problem, since there is little available locally and most has to be supplied by migrant tribes. Local workers are usually tied to contractors or bound by social and economic ties to landowners who are reluctant to free them during agricultural seasons (when many of the forestry operations are carried out).

Sixth, there is a problem of distribution which will soon have to be faced. It is unlikely that special preference will be given to the poorest sections of the village population. More likely, all villagers will share equally in the harvest if the village panchayat decides to distribute the fuelwood. Even more likely, however, is that the harvest will be sold and the proceeds applied to other priority needs determined by the panchayat. In this sense, village woodlots may fail to achieve their goal of alleviating the villagers' fuelwood needs and reducing their present dependence upon agricultural residues and dung as fuel.

In Tanzania, although the organizational pattern bears a close resemblance to the Korean one, the problems in establishing village woodlots are similar to those of Gujarat. Tanzania is a nation with tribal affiliations that hinder common action for a non-traditional activity like forestry. There is as one observer remarked, "no understanding of the value of maintaining forested areas." Further, tribal attitudes toward trees vary. The Sukuma, for example, are hostile to forests because of the belief that trees harbour birds which destroy crops; the Haya and the Chagga hold diametrically opposed views. Another concern is pressure on the land for farming and grazing.¹⁰

The complex land-tenure system in Tanzania prevents allocation of land for forestry. The abolition of freehold land in 1963 and the vesting of land in the State mean that the farmer sees his holding as temporary: he is not convinced that he will reap the benefits of tree crops eight to ten years after planting. At the same time, villagers are unwilling to set aside lands which, despite nationalization, are still believed to belong to certain groups and which are therefore utilized and inherited according to traditional systems of tenure. For instance, under the "Kihamba" tenure still practiced in the Kilimanjaro region, there is continued fragmentation of land holdings through inheritance, leaving holdings too small to allow any land to be set aside for forestry.¹¹

Another problem is that the villagers are willing to use only hardwoods for fuel. They will not take wood from industrial plantations because they believe it burns too quickly. Nor will they accept charcoal from softwood, despite the fact that its effective calorific value per unit weight is the same as that of hardwood, the cost of production identical, and the price only half that of hardwood charcoal.

The official view of foresters is that they preserve forests, extract timber, have contact with poachers and hunters, and are fighting a losing battle to maintain their domain. Their status will have to be enhanced if there are to be changes for the better.

In these circumstances it is not surprising that village woodlot programmes have started slowly in Tanzania. Further, the Forestry Department lacks the staff and the training necessary to provide technical assistance and extension services for a successful afforestation programme.

According to John Spears, who is responsible for forestry at the World Bank, the reason why the World Bank project in Niger failed to achieve its target of establishing 500 ha of village woodlots was because villagers "had not been involved in formulating the project and because they perceived the village woodlot area as a traditional ground."¹² But numerous other factors were involved. Collective action was lacking. Self-help projects were generally imposed by government officials without local participation. Community schemes required interdependence and not everyone could be counted on to do his share of the work. The returns from community woodlots were too small to encourage participation. There was a great deal of emigration during the agricultural off-season, placing a burden on a few to maintain and protect village plantations. Few villagers believed that wood would be distributed free at harvest; they felt that the Government or some rich villagers would get all the benefits. Since all the inputs were provided free of cost by the Government, the villagers did not identify with the project; moreover, the free provision of inputs reinforced their belief that it was a government project in which they would not share in the benefits.

Effective village forestry

Government commitment. If afforestation programmes are to succeed there must first be a commitment on the part of the government. This commitment must be expressed in three ways: giving priority to afforestation, budgetary support, and the provision of staff. Where any of these three is lacking, afforestation programmes falter.

There are major historical and socio-political constraints to making this commitment. Historically, the major emphasis of governments has been on feeding their populations and, where possible, developing a surplus for export. In pursuit of this goal, they have consistently supported the settlement of people in forested areas. There has been little attempt at conservation of timber resources, largely because these were considered more than adequate until the last two decades. In planning, food and cash crops other than timber species have priority, along with industrialization. In the conflict between agriculture (in the narrower sense) and forestry, the former has always prevailed.

Planning bodies that influence economic development in developing countries are not staffed with foresters; they are flooded with economists, administrators, the occasional sociologist or anthropologist, and agriculturists. In these disciplines forestry plays a minor role because fuelwood, for instance, and its use by the majority of the rural population do not enter into national accounting systems since so little of it is bought. The urban population, with which planners come into contact on a more regular basis, uses charcoal, wood (which "mysteriously" appears from the countryside), kerosene, gas and electricity.

In the city the problems are more remote: it builds with cement, brick, tin and wood. Although wood comes in from the rural areas, its rising price is easily merged into the generally rising costs of "inflation". Thus rural problems of firewood are pushed into the background and, to those who make national decisions and live in the cities, the rural dweller's life is viewed with nostalgia and gains importance only at election times.

Related to this is the official view of the role of a forestry department in countries where this does, in fact, exist. The forestry department has had to preserve the country's forest resources and to extract commercial species of timber. The forester's main qualification was his knowledge of tree species. His contacts with people were meant to be limited to a few poachers and some more affluent hunters. With increasing population and the hunger for land,

he has fought a losing battle to maintain his domain. If there is to be change, therefore, forestry departments must have enhanced status. Training should include courses in practical sociology and extension techniques in an effort to eliminate the idea that forestry is concerned only with the preservation and reforestation of reserved forest areas.

To many governments of developing countries the cry for investment in fuelwood resources is a step backward in the pursuit of progress. For generations now, developing countries have been told that bigger is better, that electric central heating is more progressive than fuelwood stoves, that diesels are better than coal-fired railway engines, and that cars are better than horse-drawn carriages. To be asked now to emphasize wood is tantamount to being asked to give up the cherished ideals of progress, to be condemned to be backward forever. There is a divide that separates the habits of the developing world and the developed world's preaching the need for conservation while yet pursuing its path of greater industrialization. Introducing new ideals and methods of achieving progress would indeed require a long time, which, it seems, only continued natural catastrophes (floods, for example, as a result of erosion) could induce in a shorter period.

Transition. The spread of new ideas and methods is usually the result of an individual, or a few individuals, trying out new ways of dealing with familiar problems. It is understandable that the richer farmer with more land should be among the first to join such programmes. Who else can afford the risks? Furthermore, he is often an opinion leader in his milieu. But for a programme to spread and attain national dimensions, a growing organization is needed, one which retains the spirit of the initiators and yet reaches down to the lowest village levels.

This process of transition is one of the most difficult - for rules can kill. It is a transition that has been felicitously described as a learning process in three stages: learning to be effective; learning to be efficient; and maturity through learning to expand. ¹³

The characteristics of such an organization are fairly well settled: "it should have the ability to formulate policy, the power to implement, flexibility, sufficient trained personnel, consistency of implementation, the ability to communicate and motivate, obtain timely feedback on its actions, encourage participation by its beneficiaries, and learn from its mistakes." ¹⁴

Involving people. Villagers have to understand a government's programme before they can be expected to involve themselves in it. What, then, does involving the people mean? There are four basic principles: an acceptance of the validity of local views; the incorporation into organizational design of local participation in programme formulation and decision-making; explanation of the programme as a method of solving, or alleviating, the problems of the community; and obtaining community consent to the programme.

In effect, the villagers must be convinced that they, and not the village "big men" or the government officials, will harvest the benefits of a community forest. Most analysts (and I must confess to a sense of guilt myself in this regard) seem to incorporate a touch of participatory democracy where there is mutual discussion, incorporation of all views, and a majority vote that decides the outcome. Human relations in a village are not so simple. There are ties and factions, big men and small dependents. Unless participation in decision-making is a tradition, waiting for each individual's views to be considered may require too much time. Further, although villagers know their trees and understand their uses, to expect all of them, for example, to understand a newly introduced fast-growing fuelwood species and its impact on their lives is to demand an ability to forecast that not even a developed nation has.

Understanding. To involve the people means that they must be understood: their perceptions, their priorities, their socio-cultural framework, their economic needs. To the environmentalist outsider, forest depredation may mean the loss of valuable forest resources; to the villager concerned with his daily necessities and with little ability to control his future, it

may mean new agricultural land, a residence, and fuelwood to cook his meals. He may regard lower returns from the land, increased erosion and floods as the result not of his own doings, but as a consequence of natural forces beyond his control. To reach the villager, then, it is necessary to understand his "worldview".

In my experience, village forests rank low in the list of local priorities, Water for irrigation and drinking, roads, improved varieties of seeds, a supply of fertilizers and public health are more important. Thus, to expect villagers to set aside land and to offer labour for forestry may be expecting too much unless there are other incentives.

There is also the time horizon in forestry projects to be considered. Trees, unlike wheat, rice or maize, take years to mature. Even a fast-growing species needs about five years before the first cutting. Returns, therefore, are delayed. To ask a farmer, or a village, to set aside land which will yield fruit only in years to come is a difficult task. In the interim, the population will grow and food crops or grazing grounds will be necessary. Calculations of the rates of return on forestry programmes show that they are never less than 12 percent.¹⁵ But to a villager, a rate of return is only important when he can see the trees and they are actually available for use.

Women. The role of women in forestry *is* just beginning to be appreciated and analysed, There are too few women involved in the design of forestry programmes who could contact local women. In Islamic countries, or among Islamic segments of a population, it is essential that women be used for information and extension work of this kind. But local socio-cultural attitudes often do not permit open involvement of women in development programmes, Time will resolve both these problems, but right now there should be an acceptance of the principle that as a matter of course women should be involved in forestry programmes, both as designers and as implementers. They should not be thought of simply as gatherers of fuelwood.

Design. For village woodlots to succeed, the choice of an organization and in-depth knowledge of the village by itself will not suffice. To involve the villager, one must offer him a programme that he understands and which caters to his needs. There must be a method in the incentives offered to encourage participation. Does the proffered species-mix provide him with trees that he knows and uses? If he decides that the trees intended to be grown as fuelwood are not suitable, they will be rejected. In Upper Volta, according to one report, the people claimed that *Eucalyptus* used as fuelwood affected the taste of the food and it was therefore rejected.¹⁶

YOUNG FUELWOOD SUPPLIERS TN THE PHILIPPINES *one of the high priorities of village life*

Incentives for village woodlot programmes could include: a package of improved agricultural practices combined with forestry; the development of agro-forestry (particularly where shifting cultivation is the rule); or, as in Gujarat, a monetary incentive (equivalent to subsistence levels) for farmers to give up their lands for forestry rather than continue to use them for marginal agriculture. Employment is also an important incentive, but since it benefits mainly the poorest segments, it is difficult to convince a village population as a whole of its importance.

Other incentives could include waiving of cost recovery, the provision of infrastructure (roads), welfare measures (health, schools), or the improvement of livestock. There is, however, no one complete package that can be universally applied to encourage participation in a village woodlot programme; each package must vary according to the special needs and priorities of a village.

Implementation. Few existing programmes address the problems of implementation of a village woodlot programme such as maintenance or the question of distribution of the harvest. These are contractual obligations which must be settled at the outset.

Most analysts remark that maintenance of woodlots is one of the intractable problems. It is here that the difference between the self-help villages of the Republic of Korea and the supervised villages of Gujarat is most evident. In the former, it is the villagers who maintain their woodlot, but in the latter labour is generally hired by the Forest Department. Except in a few cases, this labour comes from outside the village. Only when the villagers are responsible for its maintenance will they believe that it really is their woodlot.

A similarly difficult problem is that of distribution of the harvest, a problem again solved only in the Republic of Korea. In Gujarat, the few plantations that reached maturity created a debate over whether the harvest should be shared locally or sold for a profit.

In short, village priorities are not necessarily the same as those of outsiders, who might want to give preference to the poor or vice versa.

Conservation. Many reforestation programmes only deal with the supply side of the fuelwood equation. Few attempt to alter the demand aspects. Probably this is because current fuelwood programmes only meet a fraction of existing minimum requirements. Nevertheless, unless there is a changed philosophy toward fuelwood use, supply will never catch up with demand. Some programmes have attempted to introduce conservation methods through, for example, the construction of improved stoves. The only programme that appears to have been successful is the introduction of the "Lorena" stove in Guatemala. In Africa, the same stove had limited success. Solar technology is too costly for the poor who need it most, and it does not take into account climatic and socio-cultural conditions. The use of gobar gas meets with the same cultural and economic constraints.

Agencies dealing with international development in many parts of the world are planning to increase their support of renewable energy resources, and village woodlots are fundamental.

¹⁷ However, the problems that affect the acceptance or rejection of woodlots transcend the technological and are essentially socio-cultural, economic and locally political. What it all boils down to is the willingness to understand people and to put that understanding into the design and the running of programmes, wherever they may be.

References and notes

1. Council on Environmental Quality and the Department of State. 1980. *The Global 2000 Report to the President. Entering the Twenty-first Century*. US Government Printing Office, Washington, DC. July, Vol. 1, p. 26.
2. See, for example, Erik Eckholm. 1979. *Planting for the future: forestry for human needs*. Worldwatch Paper 26. Worldwatch Institute; FAO. 1978. *Forestry for local community development*. FAO Forestry Department, Rome; FAO. 1978. Summary report, *FAO/Nepal study tour on multiple-use mountain forestry*, to the Peoples' Republic of China. 26 November - 11 December. FAO, Rome. (Mimeograph) n.d.; E.M. Mnzava. 1980. *Village afforestation, the lessons of experience in Tanzania*. Report TF-INT(SWE). FAO. Rome; John S. Spears. 1978. *The changing emphasis in World Bank forestry lending*. Paper prepared for the World Forestry Congress, Djakarta, October 1978.
3. John S. Spears, *op. cit.*
4. J.T. Thomson. 1980. *Bois de villages (Niger)/Report of an investigation concerning sociocultural and political-economic aspects of the first phase of the project*. CIDA, Centre File

3-P-72-0095.

5. CILSS Ecology and Forestry Tea. 1979. *Koudougou Agriculture Development Project. Appraisal report for the Forestry Sub-programme*. CILSS, Ouagadougou, Upper Volta.
6. United Nations. 1980. *Report of the technical panel on Biomass Energy on its first session*. Report A/CONF. 100/PC/5, p. 6. UN General Assembly.

7. Erik Eckholm, *op. cit.*, p. 46.

8. World Bank. 1976. *Appraisal of a rural infrastructure project*. Republic of Korea. Report 958-KO. World Bank, Washington, DC.

9. Factions exist as well in self-help villages. In one village, the villagers insisted on three improved crematoria which were being offered as an incentive to participate in the village woodlot programme since each faction refused to allow members of the other factions to be cremated in "their" crematorium. The fact that their demand was "uneconomic" did not worry them at all.

10. Mnzava, *op. cit.*

11. *Ibid.*

12. Spears, *op. cit.*

13. David C. Korten. 1980. *Community organization and rural development. A learning process approach*. The Ford Foundation and The Asian Institute of Management, Makati, the Philippines.

14. Raymond Noronha. 1980. *Sociological aspects of forestry project design*. World Bank, July 1980.

15. John S. Spears. 1980. *Overcoming constraints to increased investment in forestry*. Paper prepared for the XIth Commonwealth Forestry Conference, Trinidad, July 1980.

16. Marilyn W. Hoskins. 1979. *Women in forestry for local community development. A programming guide* (draft). Office of Women in Development, AID. It would be unwise to generalize from Hoskins' statement since in Gujarat there was neither an objection to using Eucalyptus as fuelwood nor any belief that it affected food taste.

17. The recent World Bank report, *Energy in the developing countries* (Report No. 3076, World Bank, July 1980), recommends a nearly three-fold increase in lending for renewable energy programmes between FYs 1981 and 1985, totalling nearly \$1.2 thousand million.

