SOCIAL FORESTRY

NEED, PRESENT STATUS AND FUTURE STRATEGY

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I. The challenge

1. Energy crisis

Over the past two decades, most countries have had to come to grips with an "energy crisis" - a crisis based on the changing price of oil, the search for acceptable and practical alternative sources of energy, and the environmental effects of a continuing dependence on fossil fuels. But the vast majority of people in developing countries, particularly the poor, face a different kind of energy crisis altogether: a massive dependence on rapidly dwindling supplies of fuelwood and charcoal.

More than two-thirds of people in developing countries depend mainly on wood for their household energy needs. In rural areas, the forest as a source of fuelwood is fundamental to every-day life. More than 80 percent of the wood harvested in developing countries is burned to cook meals, heat homes and sustain rural industries.

Population growth and the continuing dependence on fuelwood has led supply to fall too far behind demand. Two out of every three developing countries now suffer severe fuelwood shortages. Half the countries with fuelwood shortages have no proven

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oil or gas reserves. Alternative sources of energy are either too costly or not available.

As fuelwood supplies are depleted, families turn to whatever substitutes they can find. These include crop residues and animal dung. Burning these as fuel uses up valuable sources of livestock feed and robs the soil of badly needed organic matter and nutrients, leading in turn to reduced crop yields. In areas where fuelwood is scarce, an estimated 400 million tonnes of dung are burned each year to cook meals. This has reduced food-grain harvests by more than 14 million tonnes - nearly twice the amount of foodgrains annually provided to developing countries.

The fuelwood crisis is more than just an energy issue; it is an ecological issue too. Where regular fuelwood supplies do not keep up with demand, trees are cut down at random, leading to deforestation. The stability of the environment is compromised and the potential for food production is impaired.

The fuelwood crisis is a social issue. Where fuelwood supplies are already short, consumption by the people most dependent on them is driven well below subsistence requirements. As fuelwood supplies become increasingly scarce, people must walk further and fartner to find new supplies. Gathering fuelwood increasingly dominates the daily lives of millions of rural people, most of them women. This affects family life, and shortens the time available for tending crops, preparing food and fulfilling other domestic needs.

The fuelwood crisis is also an economic issue. Lack of purchasing power on the part of rural people discourages private investment to meet rural needs. The rural poor must either find low-cost wood or do without. In urban areas, households must buy fuelwood or charcoal at market prices. Shortages (and the distances over which fuelwood must be transported) have caused prices to rise so sharply in recent years that the wood used for cooking often costs more than the food cooked.

The economic effects of fuelwood scarcity are felt beyond the home. In many developing countries, a number of agriculture-based industries such as fish-smoking, tea and tobacco-curing and beer-brewing, as well as other industries such as brick making and pottery, depend heavily on fuelwood. Shortages of fuelwood directly affect these industries and the level of employment and income generated by them.

The fuelwood crisis is a nutritional issue too. In some countries, malnutrition may be caused as much by the lack of fuelwood as by the lack of food. Where fuelwood is in short supply, families may not be able to boil their water and may be compelled to eat less nutritious, quick-cooking foods - or even uncooked meals. Their health - especially that of the children - may be seriously impaired as a result.

Without radical changes in attitudes and fuelwood policies, more than 2800 million people will be short of

fuelwood by the end of the century. They will be caught in a destructive cycle of deforestation, fuelwood scarcity, poverty and malnutrition.

A. Food emergencies

Forests and trees are intimately linked to agriculture. They play vital role in sustaining crop yields by helping to maintain the soil and water base. They ensure environmental stability by mitigating the effects of climatic irregularities, storms and winds. They reduce soil erosion and moderate stream flows. They restore soil fertility in shifting agriculture. By slowing the wind and increasing soil moisture, they increase farm yields in arid and semi-arid areas. Finally, they provide a significant proportion of livestock feed.

Sustainable agriculture, including crop and livestock production, is the corner-stone of national development in most tropical countries including Pakistan. But the constant struggle for additional cropland has become the largest single cause of forest destruction. Inequitable land tenure, loss of available arable land to large scale, non-agricultural projects, and low agricultural productivity, combined with rising rural populations are accelerating the conversion of more and more forest lands to non-sustainable uses.

Unwise land-use policies that lead to environmental degradation are a primary cause of the food emergencies that occur with tragic regularity in many developing countries.

Upland watersheds should benefit both upland and low-land communities. Skillful land-use that maintains the environmental stability of such areas protects downstream hydropower reservoirs and irrigation systems from silt. In return, the hill populations can benefit from the wealth generated by lowland communities for the provision of roads and other services. As population grows and arable land becomes increasingly scarce, many farmers are forced to clear steep upland areas. The removal of upland forests increases the incidence of lowland flooding and the silting up of rivers and major reservoirs.

Agriculture nearly everywhere has traditionally been concentrated on fertile plains and valley floors. Population growth, inadequate agricultural practices, and poorly defined and inequitable ownership rights and land tenure, and increasing scarcity of arable land have forced farmers to clear steep upland areas.

The removal of upland forests increases lowland flooding and the silting up of rivers and reservoirs. On the lowland plains of Pakistan, India and Bangladesh, for example, the welfare of more than 400 million people depends largely on how 46 million hill-dwellers manage their land.

Deforestation can set off a chain reaction leading to desertification - the reduction of semi-arid land to unproductive desert. The process begins when vegetation is removed, reducing the benefits of rainfall by decreasing the amount of water that percolates into the ground. Run-off increases, erosion accelerates, the water table is lowered, and springs and wells dry up.

Dry lands are particularly susceptible because of the erratic patterns of rainfall and the fragility of their soils. In the developing world as a whole, some 1300 million hectares of land - home to more than 300 million people - are in various stages of desertification.

Pakistan's forest resources are limited. Presently, about five percent of the country's land is under forest cover. It is becoming increasingly difficult to meet the demands of the growing populace for fuelwood, fodder, agricultural implements, and raw materials required for wood-based industries.

More than 60 percent of the land in Pakistan is either already affected or likely to be affected by desertification. The suspended sediment load per km of drainage basin is one of the highest in the region. More than 1.2 million ha of land has already been affected by soil erosion, 4.2 million ha have been rendered unproductive by salinity, and another 2 million ha have become unarable due to water-

logging. In-spite of reclamation efforts, large areas remain plagued by these problems.

Although the official figure for the country's forested land is 5 percent, actual productive forest area comprises less than 2 percent. Consequently, available timber per capita is only 0.013 m^3, as compared with per capita consumption of 0.024 m^3. Imports, which narrow the gap between supply and demand, have swollen to Rs.1.7 billion per annum. Most likely, rising demand and declining supply will follow in the wake of increasing population and per capita income growth on the one hand, and shrinking forests on the other. It has been estimated that the present annual timber requirement of two million m^3 will double by the year 2000, and that firewood consumption will increase from the present 16 million m^3 to 30 million m^3 within the same time span.

Due to the widening gap between wood supply and fuelwood demand, the bulk of our domestic energy requirements are being met by kerosene oil, natural gas, electricity, cow-dung, and agricultural wastes. All of these commodities could be used more profitably for industrial and crop production rather than for fuel consumption. Imports total 13000 m^3 annually, costing more than Rs 95 million. With pulp, paper, and other wood products, the foreign exchange bill has risen to Rs 1.7 billion per year.

No alternative energy source will provide a viable substitute for fuelwood in the near future. In places where a surplus of wood for energy exists or could be created, wood-based energy can contribute to rural and industrial development, as well as to self-reliance in energy at the national level. Similarly food deficit continues in our country and food has to be produced to feed the ever-increasing population.

It is now time to design a strategy not only to overcome the present deficit, but also to meet the increasing demands placed on public and private forests and farmlands.

II. Strategy for action

1. Agroforestry

It is difficult to increase the forested area because suitable publicly owned lands are not available. Forestry competes with agriculture for inadequate quantities of water, and natural conditions for forest growth are constrained by the problems of arid and semi-arid conditions coupled with increased population pressure and uncontrolled grazing.

Present demand for food and agricultural products in developing countries is expected to double by the year 2000. Therefore, there is no doubting the huge benefits of both restoring degraded agricultural land to productive use and ensuring that no more land is put out of production.

The priority is to improve and intensify agricultural production on land suited to agriculture, thereby lessening the need to clear new land and taking the pressure off forest lands. This must go hand in hand with controlling deforestation, regenerating vegetative cover and adapting farming practices to suit local needs and ecological conditions.

It is time that we devote greater attention to economically and ecologically sustainable agricultural production systems where present economic progress and prospects for survival will not be in conflict. Fortunately, agroforestry systems are characterized by this happy blend and help us to exploit in a sustainable manner cubic volumes of soil and air and thereby give farmers the maximum return from the available soil, water, nutrient, and sunlight. Agroforestry (combining forestry with crop or livestock production) and landuse practices that combine agriculture, forestry and pastoralism offer important opportunities for improving productivity while maintaining environmental stability.

Agroforestry is generally taken to be synonymous with either social forestry or farm forestry. Agroforestry is only one set of land management systems; parallel with pure agricultural or pure silvicultural systems according to whether it is appropriate or in-appropriate to local environmental and social conditions and it may or may not be used in social forestry. It is one of the means to achieve the objective of

Social forestry. "Agroforestry is a collective term for system of land management and technologies, where woody perennials are deliberately used on the same land management unit as agriculture crops and/or animals, either in some form of spatial arrangement or temporal sequence. In agroforestry systems there are both ecological and economical interactions between the different components".

A strictly scientific definition of agroforestry should stress two characteristics common to all forms of agroforestry and separating them from other forms of landuse, namely; (i) the deliberate growing of woody perennials on the same unit of land as agricultural crop and/or animals, either in some form of spatial mixture or in sequence; (ii) there must be a significant interaction (positive and/or negative) between the woody and non-woody components of the system, either ecological and/or economical.

Agroforestry is a socially, culturally and ecologically acceptable, integrated form of landuse involving trees that improves or does not degrade the soil and permits increased and sustained production of plant and animal produc including wood. It is a promising approach to reconcile the production of more food, and the prevention of economic degradation. It aims directly at social development in rural areas, applying self-help strategies.

The aim of most agroforestry systems are to optimize the positive interactions in order to obtain a higher total, a more diversified and/or a more sustainable production from the available resources than is possible with other forms of land use under prevailing ecological, technological and socio-economic conditions.

It combines the protection characteristics of forestry with the production attitudes of both forestry and agriculture. It conserves and produces.

Agroforestry appears as an interesting contribution to solve the food crisis as well as the energy crisis. It creates employment, and occupy local under-used labour.

The greatest potential for increasing tree wealth of the country lies in agroforestry which can be practised over 25,44,500 farmlands covering a total area of 1,20,99,000 hectares in Punjab.

ii. Social forestry

The strategy for action to overcome energy crisis involves a two-pronged approach: increasing fuelwood supply, and reducing demand through improved efficiency in wood-fuel use and substitution.

Social forestry, in which the benefits of tree planting and improved management are shared equally within the local

community, must be the focus of efforts to meet fuelwood needs.

The term "Social Forestry" is applied to almost any type of forestry since some social benefits may be obtained from even the most commercialized and industrialized production system. It is generally applied, however, to enterprises conducted on a small scale, in which industrial timber production is usually not the sole objective and in which the benefits to the community are more tangible than mere shadow-price values. Social forestry includes community forestry, farm forestry, strip planting, amenity forestry, and rehabilitation forestry, etc.

"Social forestry is the science and art of growing trees and/or other vegetation on all land-available for the purpose, in and outside traditional forest areas and managing the existing forest with intimate involvement of people and more or less integrated with other operations resulting in balanced and complementary landuse with a view to provide a wide range of goods and services to the individuals as well as to the society".

Social forestry is a concept, programme and mission (management objective) which aims at ensuring/providing ecological, economic and social security to the people particularly to the rural masses, more so to those who live below the poverty line, particularly by involving the beneficiaries

right from the planting stage to the harvesting stage but not only as wage earners. It envisages use of community lands, individual holdings and other public lands, denuded/ degraded lands for producing what the dependent communities need and for environmental purposes. It aims at mixed production systems of wood, fibre, fodder, grasses, fruits and other raw material for self consumption and cottage industry and if surplus for sale. Here Government control is minimal though financial and technical support is assured. The profits that accrue after meeting the local demands are to be shared between Government and the people.

Social forestry refers to all professional forestry activities that aim specifically at the participation of local people in forest management and at the fulfilment of the forest-related needs and aspirations of these people.

iii. Present status of social forestry in the Punjab

Social forestry activities, in one form or another, began in Punjab in 1950 in order to promote tree plantations in the private sector when celebration of tree planting week was started twice a year i.e. in spring and monsoon seasons. Saplings were distributed to land owners, and other Government departments and agencies. It continued year after year until it was realized that to make it more meaningful and instrumental infrastructure was needed for organizing and monitoring this programme. Accordingly, a nucleous organization was created

under a development scheme in 1975-76 called "Promotion of Tree Plantation in the Punjab". Its main object was to organise the hitherto sporadic tree planting campaigns on a scientific basis and also to provide technical guidance to the private land owners. This project continued till 1983-84 when larger, and better conceived scheme called "Farm Forestry Pilot Project" was inducted in six selected districts i.e. Bahawalpur, Bhakkar, Multan, Jhang, Jhelum and Mianwali. Forest nurseries were raised all over the province and seedlings distributed to the farmers. As the aims and objectives of these two schemes were identical, therefore, these were amalgamated into a larger project and redesignated as "Farm/ Promotion of Tree Plantation in the Punjab".

Satisfied with the performance of these two projects and because of an unprecedented response of the people, particularly the farming community, the Punjab Government decided to launch still another scheme titled "Social Forestry in the Punjab" over the period 1985-86 to 1987-88. It aimed at establishing and maintaining woodlots and compact plantations in private farmlands in addition to raising of bed nurseries. It was followed by yet another project "Afforestation of marginal private lands in irrigated tract of the Punjab" for a period of four years. In order to provide polythene plants to the farmers another project "Raising of nursery plants for saline and marginal private farmlands in irrigated tract of the Punjab" was approved with effect from 1986-87 for a period of 3 years.

Social forestry received a great impetus when the Punjab Chief Minister decided to institute a series of prizes at Provincial, Divisional and District levels for the tree growers. It envisages to engender a competitive spirit in various groups of population for undertaking afforestation on their private lands on self-help basis. The prizes to be awarded on the basis of evaluation include Suzuki Car, sponsorship for Haj/Umra, free trips to New York and South Asia besides cash prizes at Divisional and District levels. Other incentives such as subsidized tree cultivation in private lands, essay, poetry and slogan competitions played a key role in invoking love for trees in this province.

An ambitious Social Forestry Project is currently underway in Pakistan, i.e. Forestry Planning and Development Project. It is a joint effort of the Government of Pakistan's Ministry of Food, Agriculture and Cooperatives and the USAID. It is being implemented in four provinces and the over-all aim is to expand tree planting and production of fuelwood, fodder and timber on privately owned farmlands in the country.

It would thus be seen that quite a few development projects relating to social forestry have either been completed or are under implementation. Measures taken by the Punjab Government to popularize social forestry have paid their dividends more than merely increasing area under compact plantations; these have made the people tree minded and established this discipline as a viable, self-sustaining economic

activity. The success in social forestry in Punjab could best be gauged from the fact that of the 10 million cubic meters of fuelwood supply in the province, 90% emanates from private lands. Forest lands, which occupy 3.1% of the total provincial area, would not have met the ever-increasing market demand for wood if the private sector had not accepted the challenge. Millions of trees in all conceivable places were raised either in the form of compact plantations or woodlots, groves or in lines along the farm boundaries which aggregate over more than 20,000 acres in a short span of only a few years.

III. How to mobilize public support

Although considerable awakening has been created among the masses regarding benefits of tree planting, some more measures are recommended for mobilization of still wider public support for tree planting:

- Farmers and local people need to be shown that it is in their interests to plant trees, and to be convinced that they will reap the benefits.

- Changes in landuse practices need the full support and participation of local communities. Incentives, such as short-term daily wages for social conservation and tree and fodder planting, or the provision of seed and fertilizers at subsidized prices, can pay dividends many times over.

- Small farmers can be encouraged to use their land more productively if they can be assured of security of tenure.

- The provision of markets for their produce will encourage them to move beyond subsistence farming to producing surpluses.

- Degraded uplands can be restored and stabilized through integrated watershed management programmes.

- Proper landuse can maintain and improve the productivity of both forests and farmlands; there are technically proven and economically sound methods available for a variety of social and ecological conditions.

- Governments need to base their policies on an understanding of the interdependence of upland and lowland communities. In particular they need to provide more support for upland communities which, because of their remote location, have often been neglected in comparison with their lowland counterparts.

- Local support for and participation in tree planting can be encouraged by the use of fast growing, multipurpose tree species that meet people's basic needs, including those for fuelwood.

- Promoting tree planting around people's homes and cultivated areas by removing legal and other constraints is a key prerequisite. This can be backed up with low cost technologies for seedling distribution and decentralized seedling production.

- Above all, secure access to and more efficient use of wood supplies are essential. Because much of the fuelwood demand is in rural areas, forestry and governments must concentrate their efforts there.

- Low fuelwood prices in rural areas reflect the fact that wood has traditionally been treated as a "freely available" resource; consumers will naturally gather free fuelwood wherever they can, rather than pay for it. This leaves little economic incentive for farmers to grow fuelwood trees. Incentives are, therefore, needed to trigger and sustain interest in reforestation and the private production of trees for fuelwood and charcoal.

Subsidized seedling distribution has worked well in many countries, but more research is needed into the economic justification for subsidies and their potential to encourage rural people to help themselves by growing trees.

- In other instances, changes in wood cutting fees and methods of collection could give rural communities greater control over tree harvesting.

- Agricultural settlement and livestock development policies that lead to land clearance need to be re-assessed, to ensure that adequate fuelwood supplies are maintained to meet local needs.

- More efficient cooking stoves, outreach programmes with charcoal producers and industrial users of fuelwood, and more efficient wood use and charcoal production methods will help ensure efficient use of available resources.

- Where a surplus of wood already exists or could be created, wood can supply energy to improve and increase production in rural and industrial activities, or to replace unreliable or costly supplies of imported fossil fuels.

- Commercial forms of wood-based energy such as charcoal, producer gas, electricity, alcohols and oils are already used in significant quantities. Wood-based energy systems can increase renewable energy supplies to sustain development, particularly in remote areas, and contribute to energy self-reliance

Whatever solutions are chosen, a durable and substantive response to the food and fuelwood crisis will come only through involving rural people, farmers and local communities in a self-help, self-sustained forestry effort. A clear understanding on their part of the benefits of these solutions, and a strong extension effort, will be essential.

REFERENCES

1. David A. Taylor and Lee Nedema(editors) 1987 Trees on small farms, Multipurpose tree species research for the arid and semi-arid tropics. Proceedings of the network workshop of F/FRED Project held in November 16-19,1987 Karachi, Pakistan.

2. FAO/U..DP 1988 The Tropical Forestry Action Plan.

3. Hafee , Mohammad 1986 Agroforestry and its strategies for Pakistan. Dissertation as part of the requirements of Training course. University of Oxford, Oxford, U.K.

4. Masru , Anwar 1989 Social Forestry in the Punjab.

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UNDERPLANTING OF SISAL IN IRRIGATED PLANTATIONS

by

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