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WHY SOCIAL FORESTRY AND AGROFORESTRY IN THE PUNJAB

by

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I. The challenge

i. 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

gas
proven oil or 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 farther and farther 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.

ii. 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

i. 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 characterised 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 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 produce 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 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 ha. 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 focus of efforts to meet fuelwood needs.

Social forestry is a concept, programme and mission 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.