LAND-USE AND FUELWOOD DEMAND

2.0 INTRODUCTION

The land available at given time is fixed, though the land area available for any particular use can vary according to time and need. In both the short run and long run, the supply of land is fixed. The area of land used for farming or land for providing fuel (fuelwood and other biomass fuels) is always at the cost of the other, because the supply of land ultimately fixed.

The most basic use of land is for living (industrial purposes, houses, forests, roads, and water bodies like lakes, rivers, etc.), then for production of food, that is agriculture, and then to provide energy for various end-uses. Whether it is fuelwood, which is used mainly by the rural population, or petroleum, gas, coal, etc., all come out of either below or above land. As the supply of land ultimately is fixed (in the long run it is fixed, though in the short-run even land can be taken as variable), the use of land for a particular use precludes its use for any other activity. This chapter covers issues like the land use and the size of population. These are closely interlinked in the sense that, if the population is large, there is a larger demand for food and fuel (to cook the food), hence more demand for land. Alternative uses of land, that is, basically, for food or for fuel and land degradation is also covered in the chapter.
2.1 LAND-USE AND POPULATION

The main problems of land use arise because of increasing population. The Asian countries in particular covers a major percentage of total world population, whereas the land covered is relatively small, leading to the problems, of what is termed by FAO as land shortages [1993]. Thus, the land available for agriculture is a major constraint and will be increasingly so, till either population is controlled, or higher yields are achieved.

Increasing population is a major problem as far as optimal land-use is concerned, because with more mouths to feed, the primary concern is of increasing food supply. The first problem which the rural areas have to face (and make an almost an impossible choice) is of the choice of food versus fuel. This is because almost 90% of the rural energy sources come from forests. With increasing pressure on land, the need for fuel supply takes a second place, as the food problem assumes more importance. Thus, in its most simple form, the land-use issue for fuelwood relates to the use of land for two equally important uses – food and fuel.

Rapid depletion of forests and loss of forest area will also create serious problems of soil erosion, floods, siltation and desertification. This means that there is a need for extensive plantations for meeting the energy and food requirements, consistent with soil protection. It is in view of this clash of
interest for land-use that great stress is being laid on the exploitation and development of alternative sources of energy to meet the energy requirements of the rural sector. A major consequence, as seen by Vimal and Bhat [1989], of the shortages of fuelwood has been the large-scale burning of agricultural wastes and animal dung, which otherwise would have been used for restoring soil fertility and increasing agricultural production.

In this sense, land availability not only determines the supply, but also the demand of fuelwood by the rural communities [Munslow; 1988]. This is so because as the fuelwood supplies start going down and it becomes dearer, the people search for, and settle for alternatives to fuelwood, which are more often than not, at the cost of soil fertility as seen earlier.

2.2 ALTERNATE USES OF LAND

In an agricultural ecosystem (like India's and some African countries), there are several demands upon the available land, like housing and other parts of human settlement. But the bulk of the land is devoted to crop and pastures.

The traditional land-utilization practice is to have woodlots only on non-arable lands. As this does not lead to any conflict between food and fodder on the one hand and fuel on the other hand. But the situation has reached such a stage now that to feed the ever increasing population, more and more land is being
brought under cultivation. The competing demand for land for food and forest is not just for food versus fuel, but on the other areas as well. For example, wood not only provides fuel to the rural people, it also is a major source of construction material, industrial use, etc.

FAO [1987] in one of its study concludes that the land-use information should be such that it shows as to actually who uses the land and a distinction should be made between the owner of the land and the user of the land. For example, in case of fuelwood prices, the prices rarely reflect the land cost, as the fuelwood, if marketed in the rural areas is 'collected' from nearby forests and the only cost is labour cost, not land cost.

There are some ways in which the conflict between woodlots and land for agriculture can be managed as was seen in a project by FAO and SIDA [1983] -

a. fuelwood requirement can be eliminated by the adoption of alternatives to fuelwood, or the demand can be reduced by improving the efficiency with which fuelwood is used. This leads to the adoption and widespread usage of improved cook stoves,

b. area set for grazing land or pastures can be reduced through the cultivation of high productivity fodder species,

c. pasture land and fallow land can be put to multiple use by combining the growth of fodder species and fuelwood trees
together,
d. land yield can be increased so that more land need not be taken up to feed additional mouths. Here the role of Green Revolution is noteworthy.

2.3 **LAND DEGRADATION AND LAND-USE**

An interesting aspect comes to light in the land-use pattern. If land is cleared for cultivation, it will lead to soil erosion ultimately, thus, deteriorating the cleared land. Natural manure like crop and animal residues cannot be applied to the land, as reduced fuelwood supply (due to cutting of forests to cultivate the land), make them the next best alternative source of energy in the rural areas. Thus, soil fertility gets reduced fast and then results in deterioration of the quality of crop land. The result is that to increase food production, more land is cleared, with the same result. Thus, the land gets caught in a vicious cycle of degradation and clearance, which will ultimately lead to ecological disaster.

In terms of geographical distribution, Rajasthan has the highest area of wastelands (18 mil. ha.), followed by Madhya Pradesh (13 mil. ha.) and Maharashtra (12 mil. ha.). In India, the total non-forest area comes to about 93.69 mil. ha., of which nearly 12.93 mil. ha. is wind eroded, because of land degradation. The clearing of land for subsistence farming is often inevitable in the poorer developing countries. It is more so for countries with
large and rapidly increasing populations. This is also the reason for large scale unorganized and unauthorized encroachment and land occupation of the state lands on the fringes of villages and bordering forest lands [Tuan, 1989].

The conflict between food and fuel on the one hand and problem of environment can be solved to a great extent by the introduction of a practice (a large programme of activities are involved in this) called Social Forestry or Community Forestry. This is one way in which the forests can benefit the rural poor, as it offers increasing food production potential along with, not only adequate fuel, but a whole range of other benefits. Though classical forestry viewed the forest and field as separate items, under social forestry they are profitably integrated.

The main aim of community forestry is to bring together the agriculture, forestry and also livestock activity. The goal is to achieve an integrated scheme in which cultivators (need not necessarily be land-owners) work with a tree or crop or livestock system, which is both *environmentally* sound and more profitable than existing practices. This also solves the land-use problem, as instead of food and fuel becoming conflicting interests, they become complementary to one another.