

# Trees outside forests: an ignored dimension of forest resource assessment

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Tree growing practices in and around homesteads, and on farmland has long been associated in rural areas of Nepal and hence considered as an integral components of rural livelihoods. There is a growing need to update forest resources of the country along with time series. Most of the countries in the world have carried out their national forest inventories at regular intervals. While carrying out such inventory works, only the forest area has been included in most cases and tree resources outside the forests has either ignored or not in the government priority. Trees outside the forests, for example: trees grown on farmland, in and around homesteads and human settlements, in road and canalside and in other land use categories that has not been included in national forest inventory have diverse functions for the well being of human kind and in maintaining the natural environment. Realizing the greater role of such resources, trees grown outside the forest area should also be assessed.

**Key words:** Forest resources, trees outside forests, assessment

**F**orest and tree resources have a significant role in providing goods and services to mankind and in maintaining the natural environment. Although the South Asian region has a reservoir of great biodiversity, in and outside forests, it has only 2 percent of the world's forests spread over about 3 percent of total land area (FAO 2000). In Nepal, the forest and shrub cover together constitutes about 39.6 percent of the total land area of the country (DFRS 1999). Despite the great significance of forest resources in Nepal, the forest area has decreased at an annual rate of 1.7 percent in the country from 1978/79 to 1994 (DFRS 1999). Poverty, growing population, land clearing for agriculture, grazing pressure and forest fire are some of the key underlying causes for depletion of the forest resources in Nepal. The perceived scarcity of forest resources due to depletion has become main factors for the local people to look at the alternatives. As a result, one of the strategies that people have taken is to start planting trees on their farmland and nearby human settlements.

The world has billions of trees that are not included in the Forest Resource Assessment 2000 definitions of 'forests' and 'other wooded land' of Food and Agriculture Organization (FAO 2000). As defined by FAO (2000), Trees Outside the Forests (TOF) includes tree resources on all land use categories outside the recorded forest area. It includes trees

grown on farmland, unproductive and marginal lands, along canal and roads, and in and around homesteads and nearby human settlements. TOF has become matter of global concern, mainly due to the degradation in forest resources and many ecosystems prevalent at national, regional and global level. Furthermore, such resources have relieved pressure on forest resources and have made contribution to boost agricultural productivity and to maintain the natural environment. TOF have been considered as an integral part of rural livelihoods and hence be included in forest resource assessment.

## Assessment of forest resources

The first national level forest inventory was carried out during 1960s with the support from United States Agency for International Development (USAID). The inventory was carried out separately for the Terai and Hills using the aerial photographs (Shrestha *et al.* 2001). During 1990s, the Department of Forest Research and Survey (DFRS) carried out second national forest inventories with the financial assistance from the Government of Finland. In carrying out this inventory work, three independent sets of information were used: plain areas of the 14 districts were surveyed using satellite image analysis and field measurements, 10 districts were assessed using aerial photos and field measurements, and remaining 51

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hilly districts were analyzed by interpreting a systematic grid of air photo points on the forests and shrub area (DFRS 1999). In between the first and second national forest inventory, the Land Resource Mapping Project (LRMP) in 1978/79 and the Master Plan for the Forestry Sector (MPFS) in 1988/1989 produced information regarding the forest resources of the country. Comparing the results of LRMP in 1978/79 with that of national forest inventory carried out in 1990s, there has been negative change (1.7 percent) in forest coverage from 1978/79 to 1994 of the country (DFRS 1999), which is quite high in comparison to overall data of South Asian region. The South Asian region has a negative rate (0.13 percent) of change in forest coverage (FAO 2000).

### Assessment of trees outside the forests

With the depletion of forest resources, trees outside the forests have been instrumental in fulfilling local people's demand of forest products. In Nepal, people have started growing a large number of trees on their private land in order to fulfill their needs of forest products and to generate surplus income. Trees outside the forests have long been associated with the livelihoods of the rural people especially of the Midhills and Terai region. The ecological and economic functions of the TOF cannot be underestimated, as it provides food, fodder for livestock, fuelwood and timber, and maintains the natural environment. Realizing the growing concern and the importance of TOF, some countries in the world have initiated to assess the TOF resources and some are in the process. Different methodologies have been adopted to assess the TOF resources depending on local situation. India, Morocco, Kenya, Costa Rica, Sudan are some of the countries that have already initiated work in assessing TOF (FAO 2000). Some of the studies have used methods similar to the conventional forest inventory, but many studies rely on existing literature or estimates drawn from other surveys and interviews (Rawat *et al.* 2002).

In Nepal, no initiatives have been taken so far to assess the TOF despite their significant role in sustaining livelihoods. Hence, it is desirable to assess the TOF in order to know and update the actual

amount of forest resources in the country although it is costly and somehow time consuming.

### Methods for assessing TOF

The choice of tools and methods used to describe or assess TOF depends on the scale of analysis, kind of data and degree of exactitude desired (FAO 2000). The methods for assessing TOF are not the specific or new. Generally, in assessing TOF, information can be generated in three phases: land use classification, identification of classes of tree cover and measurement of tree characteristics (Rawat *et al.* 2002). Satellite image and aerial photographs are suitable for identifying land use and tree cover, but such technologies are very difficult to use due to high costs. Field measurements and surveys should be carried out in order to assess the trees characteristics.

Based on the TOF definition, trees available in different land use categories and ownership such as trees on farmland, trees as roadside plantation, trees on homesteads and trees as block plantation etc. should be identified. Appropriate sampling techniques will be followed to carry out the field measurement and surveys. The smallest unit could be a ward in case of villages and *tole* (smallest settlement unit) in urban areas. All trees above 10 cm DBH (Diameter at Breast Height) will be taken for measurement.

### Conclusion

With its diverse role, TOF has gained importance at national, regional and global level. In most of the countries, TOF has played a greater role in fulfilling the demand for forest products of local people and in maintaining the natural environment, especially in maintaining soil fertility and reducing the harmful impacts of urban environment. Recognizing such growing importance of TOF, some countries have already initiated the work on assessment of TOF and many are in the initial stages of doing so. As TOF has a significant role to play in sustaining rural livelihoods, inventory of such resources is of paramount importance and should be carried out during forest resource inventory of the country.

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