Chapter IV
The Main Driving Forces Affecting Forest Cover in Key Watersheds

Introduction

From the previous chapters it can be noted that there are positive and negative trends with respect to forestry in these watersheds. While there is a general trend of loss of forest cover and forest degradation, there are also signs of hope where innovative forest policies and / or other interventions are slowing down or even reversing the negative trend. The main driving forces affecting the forest cover are the following.

i) National Policies

Many national policies have an impact on forest cover in large watersheds. Those related to land use and land ownership on steep lands are particularly relevant. Specific forest policies, while usually designed for protection and/ or sustainable management, have not always been successful. More recently, there have been indications that policies that enable local communities to manage the forests in their neighbourhood can be effective in halting further deforestation and forest degradation.

ii) Population Growth and Poverty

Population growth leads first of all to agricultural expansion into forest areas and secondly to an increased demand for fuelwood, timber, fodder, and other forest products by the predominantly subsistence economies in the six watersheds. Both factors result in intense pressure on forest resources and, as a consequence, in deterioration of forest quality and even to a reduction in forest area.

iii) Economic Development and Industrialisation

Economic development may relieve some of the pressure on the forestry sector if it leads the population to a certain independence from forest products. This applies, in particular, to the use of fuelwood, as increased income is followed by steps in the energy ladder towards non-biomass

based fuels. Industrialisation and economic development may, however, also lead to increasing demands for timber and increased logging pressures on mountain forests.

iv) Infrastructure and Hydropower Production

The development of hydropower schemes may lead to the increasing protection of forests and/ or afforestation in the upstream watersheds, since a healthy environment in the watershed that discharges into the reservoirs is crucial for the survival of the respective installations. Hydropower production may help to replace fuelwood use in agro-processing and other rural industries. However, there have also been instances in which hydropower development has led to deforestation because of wrongly planned and/or implemented resettlement programmes for people inhabiting the planned reservoir area, or otherwise.

v) Climate Change

In the long term, climate change (e.g., rising temperature or change in rainfall patterns) could be a driving force affecting the forests in the six watersheds. Chalise (1994) reported the climate changes in the Himalayas over time. Gilbert et al. (1991) stressed that the major major threat to the world's forests is human activity rather than climate change.

Among tropical, temperate, and boreal forests, tropical forests are likely to be more affected by changes in land use than by climate changes. They will be affected more by soil water availability than by changes in temperature. Temperate forests are mostly located in developed countries, and the impacts of climate changes are mitigated through integrated fire, pest, and disease management. Boreal forests are more strongly affected by temperature changes. Tree lines are likely to advance slowly into regions currently occupied by tundra (IPCC 1996). In a similar way, some changes may be expected along the altitudinal gradient.

vi) Highland - Lowland Interactions

Highlands and lowlands have multiple and diverse ecological and environmental linkages. The nature of the highlands plays a crucial role due to the constraints imposed by inaccessibility, fragility, marginality, and diversity. The relationship between the highlands and the lowlands can be emphasised in the context of mountains being the source of primary products for lowland economies and societies; and the uncompensated transfer of resources such as timber, biodiversity, and water, have yielded little benefit to highland communities but rather create negative effects locally. Mountain forests need to be conserved for the benefit of the large investment in lowland hydropower installations or for the regular flow of water and prevention of floods downstream. In return, not much consideration is given to upland communities. The resources and commodity flows to the highlands are too small and selective and, for the highlanders, the commodities produced are constrained by poor mobility, perishability, and low bargaining capabilities resulting in fewer benefits.