

CHAPTER 3

THE ENVIRONMENTAL IMPORTANCE OF SRI LANKA'S FORESTS

3.1 The history of deforestation

Even up to the period in which Sinhalese civilisation reached its height, Sri Lanka possessed extensive areas of natural forest and home gardens. These provided a predominantly farming people with a good climate, clean water and a healthy living. The montane zone was fully covered with such vegetation, and the rivers running down from it, including the mighty Mahaweli, were clear; floods were a rare occurrence. However, the passage of time, the ravages of frequent foreign invasions from south India and the ensuing disease, contributed to the collapse of this civilisation. The centre of government shifted from the ancient cities of Anuradhapura and Polonnaruwa in the north, to Kotte and Kandy in the centre and eventually to Colombo on the west coast. As this happened, so many of the island's managed and carefully protected forests gave way to relatively low-value and under-managed secondary growth.

Further clearing of the island's central montane forests (arguably the nation's "lungs") took place under the British administration in the 19th century to make way for tea and coffee plantations. Sport hunting also decimated game populations at this time. It was not until later that century that more enlightened British foresters and naturalists insisted that their government take immediate steps to conserve forests and improve environmental conditions again.

Forests continued to deteriorate post-Independence, because of population growth, growing consumerism and a "development" ethic that frequently argued for more and more forest clearance to provide land for settlements, large irrigation and hydro-power projects, hotels and sporting grounds to meet the needs of tourists, shrimp farming and other activities.

3.2 The environmental need for planning for a permanent forest estate

Forests provide numerous “services” in addition to the “goods” with which we normally associate them (Box 3.1).

Sri Lanka is densely populated. Because of population increase, the per capita extent of forest, which was about 0.8 ha in 1902 (Seneviratne, 1982), has now dropped to about 0.11 ha. The present population is in the region of 18.1 million and rising rapidly – yet the area of land is finite. Planning for forests and people therefore needs to go hand in hand. With closed forest cover of only about 24% of the area of the country, many people, both within and outside Sri Lanka, are beginning to press for the complete protection of the remaining forests.

Box 3.1 Some of the services provided by forests

- they provide good microclimates for a comfortable living;
- they help conserve topsoils and prevent erosion, siltation, earthslips and landslides;
- they serve as barriers to strong dessicating winds, storms and cyclones;
- they ensure dry-weather flow of water in streams;
- they stabilise the oxygen/carbon dioxide ratio in the atmosphere; and
- they even help trap damaging ultraviolet radiation that reaches the earth through the thinning ozone layer of the upper atmosphere.

Pressure is also mounting to increase the area of closed forest cover to one third (Nanayakkara, 1992), with particular emphasis being placed on reforesting the wetter parts of the country, especially the montane zone where space could still be found to do so.

Partly as a result of increased public awareness of environmental issues, especially forests, an Environmental Management Division (EMD) was established in the Forest Department in 1989. Since then, it has prepared a computerised database – the “Environmental Information Management System”

(EIMS) – to cover all environmental information, species data and values of the natural forests of Sri Lanka. A comprehensive user's manual has also been prepared. All effects of conservation measures are also recorded in this database and updated regularly. This is a valuable storehouse of information that acts as a guide to the practical management of the forested environment. The manual is intended for use by both the Forest Department and the Department of Wild Life Conservation.

3.3 Forests and the agroclimatic zones

Coastal zone forests

Mangrove forest ecosystems covered many sections of the coastline of Sri Lanka in the past, especially the estuaries and mouths of rivers, shores of lagoons and islands. Most of these mangroves were cut by merchants and traders in the past. They continue to be cut by coastal village folk for fuelwood and domestic wood. The Forest Department and the District Administrators also issued permits (on the payment of a fee) for the collection of mangrove bark. In general, though, this level cutting is controlled and there is little damage as the mangroves regenerate well.

A bigger threat to the mangroves today is their wholesale clearance to make room for tourist hotels and numerous export-oriented shrimp farms. This is despite protests from foresters, university academics and environmentalists. There seems to be no political will to stop this calamity, even though there is meant to be a logging ban operational in all natural forests.

The extent of mangroves in 1986 was estimated to be only about 10,000 ha, the largest part of it along the north western coastline (Nanayakkara, 1986a). Backed by UNESCO assistance, a National Mangrove Committee was formed in the 1980s and action is now being followed up to regenerate, protect and manage whatever mangroves are left. However, the conflict with tourism and export-oriented shrimp culture continues, and environmental NGOs are now leading the fight to protect the mangrove ecosystem. Awareness programmes are being launched on the importance of mangrove vegetation in protecting the coastline, in improving coastal fish breeding grounds (which benefit the small-time fishing communities), in improving the supply of fuelwood, domestic

wood and other forest products, and on the important part mangroves play in providing nesting grounds for migrating birds during the northern Eurasian winter.

What is missing, however, seems to be the lack of awareness or willingness among business entrepreneurs who continue to promote mangrove forest destruction with support from foreign financiers who co-finance shrimp export projects. The state-owned Board of Investment, which approves foreign-collaborated projects, should be cautious in regard to shrimp culture projects in or near mangrove areas if the country's coastal environment is not to degrade further.

Dry zone forests

Although the dry zone is not well-stocked with timber, there are extensive forest areas of the low dry evergreen or monsoon type in the Northern, North Central and Eastern Provinces. The importance of the dry zone forests was reflected in the FAO/UNDP National Forest Inventory completed in 1986, which indicated a dry zone/wet zone forest ratio of almost nine to one (FAO, 1987). As would be imagined, the main benefit of the large expanses of these dry zone forests is environmental. For example, the dry zone forests play an important role in ameliorating the harsh climatic conditions that prevail in most parts of the zone, especially the high temperatures during the drought periods and desiccating winds from the east, as well as the occasional cyclone. The Eastern Province experienced devastating cyclones in 1964 and 1978 when large tracts of coconut and teak plantations were destroyed, but there was hardly any damage to the natural forests and the coastal mangroves which served as a buffer.

In a small country like Sri Lanka, these forests not only help to maintain environmental balance over the whole country, they also serve as important habitats for wildlife and enable *in situ* conservation of genetic resources and endangered species. For this reason, their conversion to plantation forests is prohibited. They are havens for wildlife, harbouring, for example, most of the island's remaining elephants. In line with their conservation importance, most of the reserves in the national Protected Areas Network (which covers 14% of the country) are located in the dry zone. In some, wildlife protection is insufficient (especially in "no go" areas), while in others game numbers are

now so high that they threaten natural regeneration of the forest during dry periods (Nanayakkara, 1981; 1982). In Yala National Park in the south-east, for example, a regeneration plan has had to be initiated, involving periodically fencing off areas of the park to promote regeneration.

Lowland wet zone forests

Located in the south-western part of the country, this is a critical agro-ecological-climatic zone where the natural forest cover has been reduced to about 9 per cent. The zone is nevertheless well stocked with home gardens with several canopy layers, and agro-based industrial plantations such as coconut and rubber. To some extent, these complement the environmental benefits provided by the limited extent of natural forests in this zone.

The removal of natural forest cover in this zone has led to regular floods, mainly because silt-laden rivers burst their banks and overflow during the rainy season. Two such rivers are the Kalu Ganga and the Kelani Ganga which both enter the sea in the south-west. In order to ameliorate environmental conditions, therefore, reafforestation of the upper reaches of these two rivers is desirable. All remaining areas of natural forest, except for part of the Sinharaja World Heritage Site, had been exploited for timber in the past and need to be rested for decades to enable them to regain their environmental importance and timber value.

Montane wet zone forests

This area, on the western side of the montane zone, is the most critical area where forests are needed to ameliorate environmental conditions. The natural humid evergreen forests in most of the area have been replaced by eroding tea plantations. As a result, destructive floods, soil erosion, earthslips, rock slides and landslides are quite common, causing much loss of life and property. Small but vital areas of natural forest and forest plantations, located mostly on the peaks in the high-elevation district of Nuwaraeliya, are being protected and managed to maintain an environmental balance in that region. Still, even here, illegal fuelwood cutting by tea estate workers, and some illicit felling of timber, have resulted in eroding footpaths and skid trails, again causing environmental problems.

It should be noted that the favourable climate and scenic beauty in the whole montane zone, particularly in the Nuwaraeliya district, depends in part on the existence of these residual forests. For instance, the montane city of Nuwaraeliya is a popular holiday resort. The district's popularity as a holiday resort, both for local and foreign tourists, is proof of the contribution of the forests in the district to favourable environmental conditions. Beneficial effects of the forests, such as the cooling winds and precipitation, also spread into the surrounding lowlands.

The Forest Department, with bilateral assistance from the USA, has established several catchment forests in the zone. As a result, streams run clear again and the hazards of earthslips and landslides have been reduced. Reafforestation efforts by the Forest Department are continuing, supported by further assistance from agencies like the AsDB, ODA and the World Bank, in order to further improve environmental conditions in the zone.

A major problem in improving environmental conditions through forestry in the zone is the difficulty in regaining control of tea estates that are either uneconomic or that are located on steep slopes. Both types would be suitable for reafforestation, but the intransigence of some of those who wield political influence in the region has often prevented this idea from becoming reality. Although reafforestation and forest conservation measures improve environmental conditions, and hence ultimately the well-being of local people and the nation, many politicians in this region are more likely to be interested in giving land or jobs to people on the tea estates in order to get their votes at an election. Plantations are often unpopular with local people, who may even set fire to them. However, there are now several green-minded political groups that are keen on restoring the forest cover in the montane zone. These groups do not have vested interests in this region, and therefore may stand more chance of success in the long term.

Regarding the Kandyan home gardens in this zone, for which Sri Lanka is famous, it needs to be mentioned that although they do simulate natural forests in structure and species diversity, on closer inspection, because of scraping and working of the soil under the canopy for cultivation of crops, there is a certain amount of top soil erosion during heavy rain, especially in the steeper areas. From an environmental point of view therefore, the natural forests in the montane zone have no better substitute. The thinking of many people now is

that, wherever possible, natural forest cover should be restored to these eroding hills.

In this zone, wet grasslands, known as wet *patanas*, intersperse forests at high elevations. Some are edaphic and others biotic in origin. Thick grass holds the topsoil together, and hence they do not have such an adverse effect on the environment as might be supposed. The only danger occurs during the dry season (around February to April) when fires may occur, destroying the protective grass cover. The classic example of annual fires that cause environmental problems is in the Horton Plains National Park at an attitude of over 2,200 metres. The Park comes under the jurisdiction of the Department of Wild Life Conservation. Joint action is taken by the Forest Department and the Department of Wild Life Conservation to try and keep fire damage to a minimum.

Montane dry zone forests

This zone occupies the eastern side of the central montane region. Natural forests are sparser and rainfall much less. Grasslands known as dry *patanas* exist in between scattered forests. The need to establish forests quickly over this area has been accepted after the positive results obtained by the Forest Department's efforts at reafforesting the wind-swept slopes of critical areas, for example at Erabedda, Bandarawela and Badulla. Even in this region, the indigenous natural forest had been cleared and tea plantations established during colonial times, resulting in earthslips and landslides during occasional spells of heavy rain.

A famous example of the influence of forests on the environment in this zone is at Palugama, an area whose name means "the desolate land". In the 1940s, because of the foresight of the then political leaders, eucalypt shelterbelts were established scientifically on a barren windswept grassland by the Forest Department. This has since resulted in the development of a green and now bustling agricultural township, Keppetipola, named after a famous freedom-fighter of the early 19th Century (Tisseveerasinghe, 1987).

Arid zone forests

Two areas in the north-west (Mannar District) and south-east (Hambantota District) constitute this arid to semi-arid zone. It is a very dry, sandy region with scattered sparse scrubby vegetation with *Prosopis* and cactus. The Forest Department has started planting species like *Eucalyptus camaldulensis*, *Casuarina equisetifolia*, and *Prosopis* to stem the spread of sand dunes in bare areas and thereby improve environmental conditions. The environmental effect of this planting is now considerable.

3.4 Summary

Sri Lanka's forests are extremely varied, and each forest type is worthy of conservation in its own right. In addition, the nation's forests play an important role in producing favourable environmental conditions for the population – as becomes all too clear when forests are cleared from land that cannot sustain any other uses. The deforestation trend has been continuing for many hundreds of years, and has accelerated recently; the size of the forest estate has probably reached an all-time low. The time has come for forest clearance to stop unless there is a pressing need, and for degraded areas to be returned to forest where at all possible. However, after the logging ban and the decline in State forest clearance, there are signs of a decline in the deforestation trend, but in no way should any increases in new growth that result be construed as an increase in timber stocking.