THE ROLE OF SOCIAL FORESTRY IN THE VILLAGE ECONOMY

By Ravi Ladduwahetty

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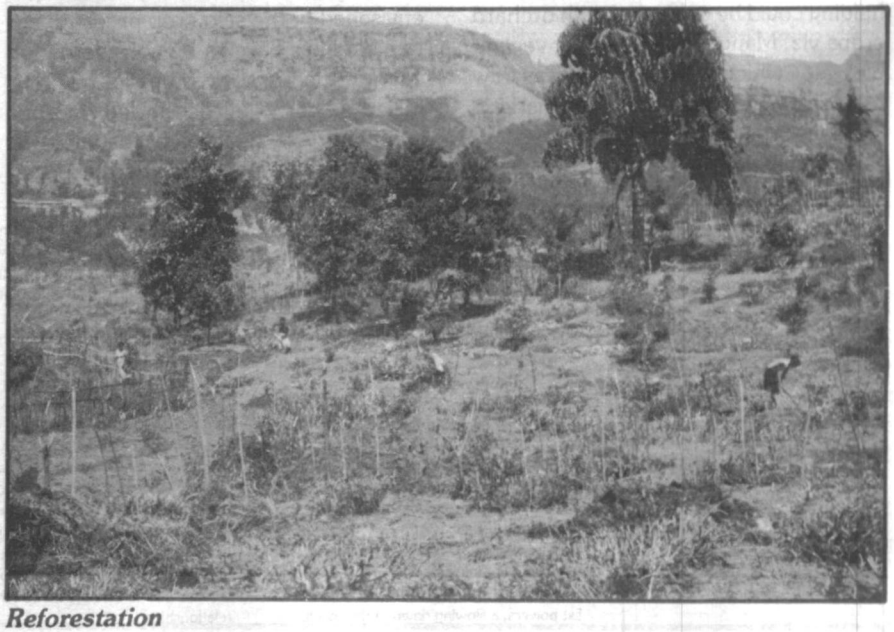
Sri Lanka was once a land blessed with rich tropical forests. These naturally abundant ecosystems provided the nation's inhabitants with their daily needs. Climate, the principal determinant of forest distribution, has not precluded presence of forest in any part of the country.

Scanning through the economy of Sri Lanka for the past four decades, one could deduce that the country's verdant forest resources have been an unstinted source of sustenance for the rural population of the country. In the past, a forest was a standard feature in every village. However, with the gradual expansion of rural population, these forests have been cleared for food production. This has resulted in a reduction in the supply of fuelwood, timber, grass, fruits and seeds.

The people living below the poverty line include landless labour, poor artisans, and small cultivators whose holdings range from 0.2 — 0.5 hectares. A critical appraisal of the country's development plans — particularly those geared for the upliftment of the rural population — would indicate that the beneficiaries of development programmes have been a category of people, who are already self-sufficient. The poor, by and large, has been neglected over the years.

The gradual destruction of small patches of forests which were widespread in the country around three decades ago contributed to the economic difficulties of the landless people. These patches of forests had varying economic significances. A wide array of utility plants such as Beedi-leaf (Diospyros Melanoxylon) along with the bark of the Nuxwornica Seed have been utilized for oil extraction, small wood for fuel, small timber for making toys and furniture, bamboo for basket making and leaves for fodder. To add to the woes, cattle have lost a significant source of nutrition resulting in further poverty among rural folk due to declining milk yields. Thus a large segment of population which was dependant on the village forests have been deprived of their livelyhood and these people who have migrated to larger towns in search of greener pastures.

The destructions of forest has affected the small cultivator as well. The destruction of forests has upset the topographical conditions resulting in soil erosion. During heavy monsoonal rains, excess water carrying fertile top soil, gushes through the fields, and if the rich nutrients are not ploughed back, they are flown into the adjoining rivers. Therefore, due to rapidly declining soil conditions, productivity levels of farmers too decrease. Only large-scale cultivators engage in certain agricultural practices such as application of fertilisers together with village practices. The small farmers who constitute the bulk of population have thus become poorer due to decreasing yields from small holdings.



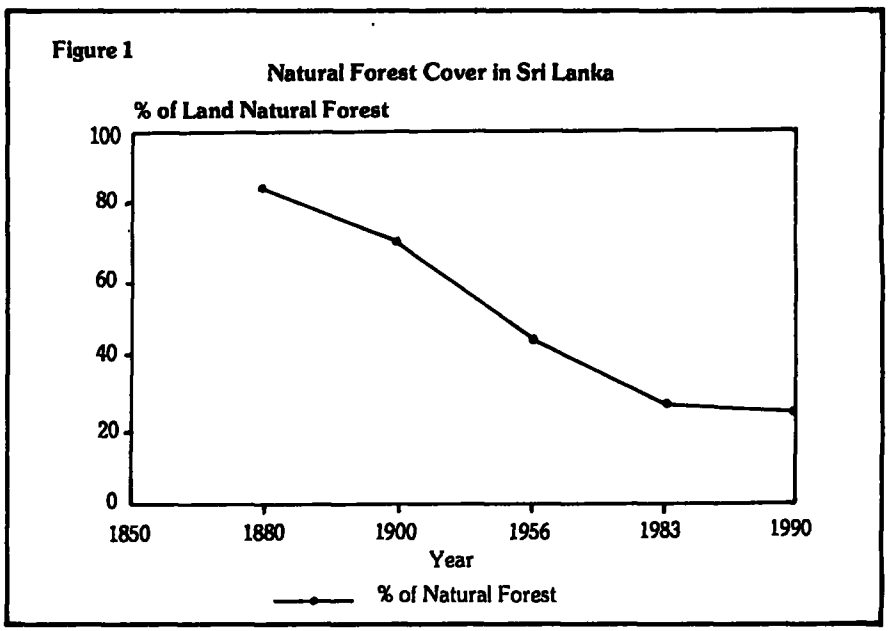
Reforestation

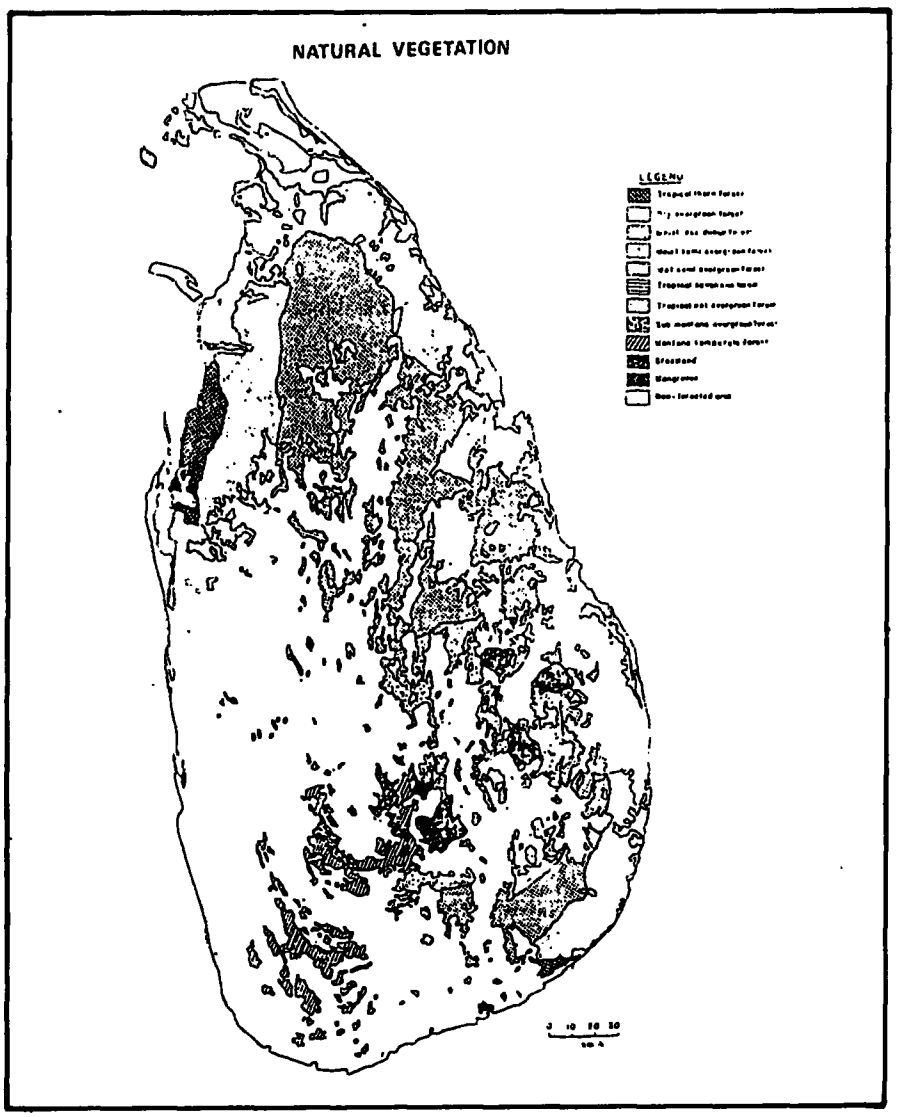
The Classification of Forests in Sri Lanka

The natural vegetation of Sri Lanka encompasses a square area of 2.375 million hectares or 39% of the country. This includes natural plant communities — both high forest and open forest. Eleven major plant communities have been identified, mainly in relation to the three broad climatic zones of the country viz. The Dry Zone, the Wet Zone and the intermediate zone. They are:

1. Tropical Thorn Forests (Thorn Scrub)
2. Dry Evergreen Forests (Monsoon Forest)
3. Moist Deciduous Forests
4. Moist Semi Evergreen Forests
5. Wet Semi Evergreen Forests
6. Tropical Savannah Forests

Figure 1





7. Tropical Wet Evergreen Forests (Rain Forests)
8. Sub Montane Evergreen Forests (Rain Forests)
9. Montane Evergreen Forests (Cloud Forests)
10. Mangroves/Mangrove Ecosystems/ Tidal Forests
11. Grasslands.

1. Tropical Thorn Forest

The Tropical Thorn Forest is found in the oldest areas in the North Western and South Eastern sectors of the country. The rainfall which is derived from the North East Monsoon is under 1250 mm per annum. Consequently, the area experiences a prolonged moisture deficit period of 4–7 months from March to September. The forest is a low open thorny scrub with isolated patches of trees. The common species are Carissa Spirarium (Heen Karamba), Zizyphus (Eraminiya), Acacia Leucophloea and Acacia Planiformis (Maha Andara) and Dichrostachys Cinera (Andara). The isolated patches of trees comprise mainly of Salvador Persica (Maliththan) and Manilkara Hexandra (Palu).

2. Dry Evergreen Forests

Dry Evergreen Forests occur mainly in the Dry Zone where the mean annual rainfall varies from 1250 mm to 1900 mm received from October to January with a pronounced Dry period from June to September. This type of forests are in the

Dry Zone areas such as Hambantota, Puttalam, Vellankulam and Nachchikadu and consist mainly of Palu.

3. Moist Deciduous Forests

Moist Deciduous Forests are wide spread mainly in the Dry Zone. The characteristic feature of this forest type is the presence of emergent dominants which rises to three metres above. The general canopy is 20–25 metres in height. Most of the emergent species are deciduous such as Chloroxylon Sweetnia (Burutha), Vortex Pinnata (Milla), Sapium Insigna (Thel Kaduru), Grewia Polygama (Bora Deminiya), Berrya Cordiflora (Halmilla) and Adina Cordiflora (Kotel). Common evergreen species are Palu, Alseodaphne Semicarpitowa (Weerawana) and Diospyros Ebenum (Kaluwara). The pillar species is abundant, giving the forest its evergreen character. The moist deciduous forest is thus essentially of a mixed composition and it is also a secondary forest having developed during the last 400–500 years.

4. Moist Semi-Evergreen Forests

Moist Semi Evergreen forest is characteristic of the Intermediate Zone where the annual rainfall ranges between 1900 mm to 2500 mm. The rainfall peak is between October and January followed by a pronounced Dry Season. This forest is best developed in the Moneragala District and the dominant species, are Artero Carpus Nobilis (Wal Del), Vitex Pinnata (Mills), Filicium Dicipiens (Pihinbiya), Pterospermum Canescens (Welang), Chloroxylon Sweetnia (Burutha) and Chukrasia Tabularis (Hulang Hik).

5. Wet Semi-Evergreen Forests

Wet Semi Evergreen Forest is a characteristic feature of the Dry Zone. However, it is found best developed in the Kurunegala District. This forest type resembles the Moist Semi Evergreen type of forest and comprise the same dominant species except the absence of species typical of the Dry Evergreen forests.

6. Tropical Savannah Forests

The Tropical Savannah Forest type is found mainly on the eastern slopes of the central hills between 300 metres to 900 metres altitude belonging to both the

Destruction of our forests

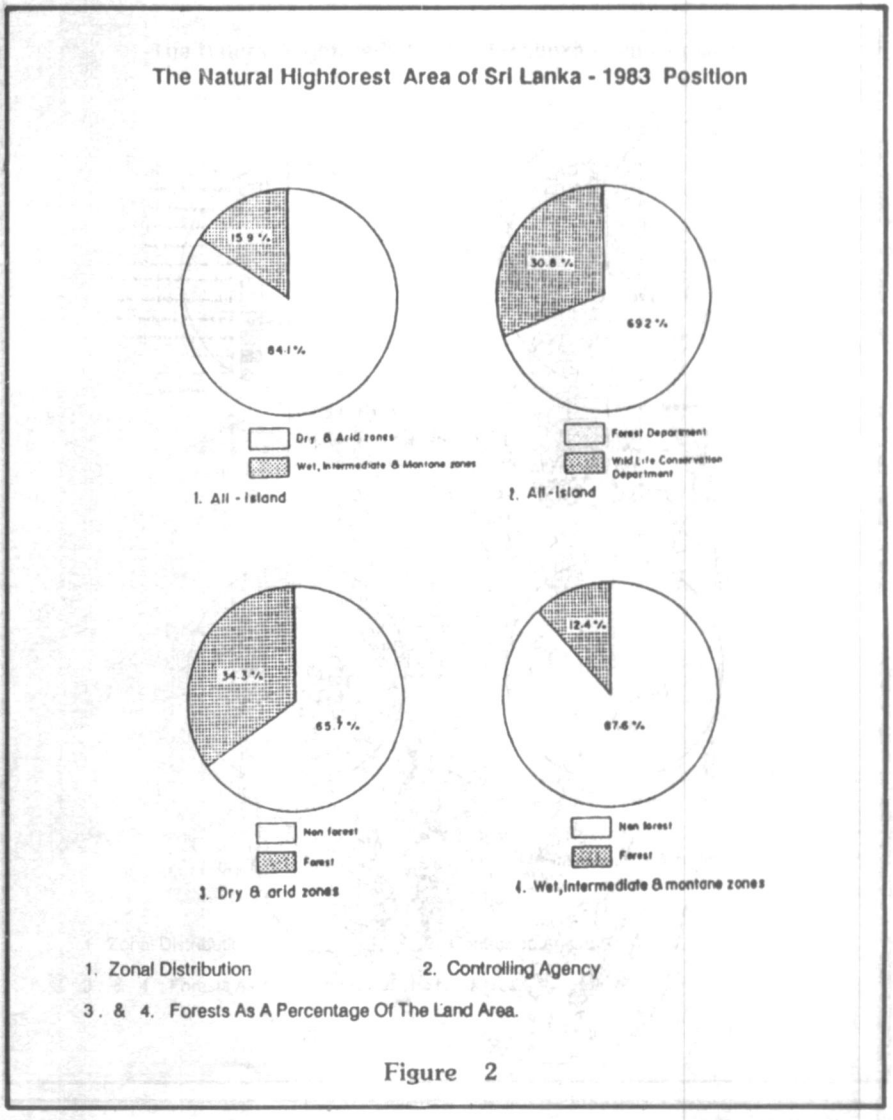


Figure 2

Intermediate and Dry Zones around Badulla and Bibile. The Savannah conditions are maintained by repeated burning during drought periods. This is an open plant community of scattered trees amidst a sea of grass. The tree species are Terminalia Chebula (Aralu) Terminalia Belerica (Bulu), Eblica Officinalis (Nelli) and Careyea Arborea (Kahata). The two principal types of grasses are Imperata Cylindrika (Illuk) and Cymbopogan Confortiflorus (Mena).

7. Tropical Wet Evergreen Forests

The Tropical Wet Evergreen Forests represents the vegetarian climax of the Wet Zone in the South West Sector of the country-characterised by 2500 mm.—5000 mm. of rainfall with no moisture deficit period. The forest is best developed in the lowlands below 900 metres, and exhibits a macuriant growth. The canopy is dense with evergreen trees with scattered emergants rising from 25 to 45 metres climbers and spiphytes are prevalent in this region. Four plant communities have been predominantly identified. viz. Dibterocarpus Zaflanicus (Hora), Mesua-Doona (Na-Dun), Camphosperma (Arridda) and Vites (Mills), Wormia (Diyapara) and Chaetocapus (Hedawaka).

8. Sub Montane Evergreen Forests

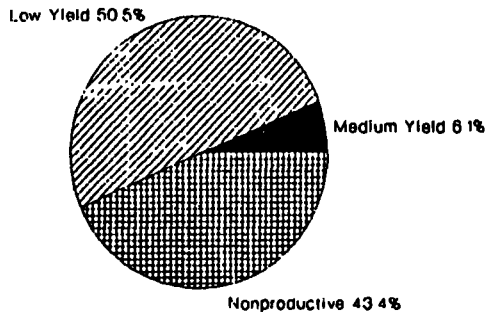
Sub Montane Evergreen Forests occur in the hills between 900–1350 metres in the Wet Zone. The vegetation is essentially transitional, being intermediate in the structure and Psysiognomy between the Wet Evergreen and Montane Evergreen Forest types.

This forest type occurs predominantly in the Adam's Peak range around Hatton, Kotagala and Dambakelle and the Upper Slopes of the Sinharaja. In addition to the species of trees found in the adjacent communities — the Wet Evergreen, the Semi Evergreen and the Montane temperature, the characteristic trees found in this region are Celtis Cinnasmmea (Gurenda), Carralia Calcina (Ubberiya), Callophyhm Calaba (Keena) and Diospyros Sylvatica (Sudu Kadumberiya).

9. Montane Evergreen Forests

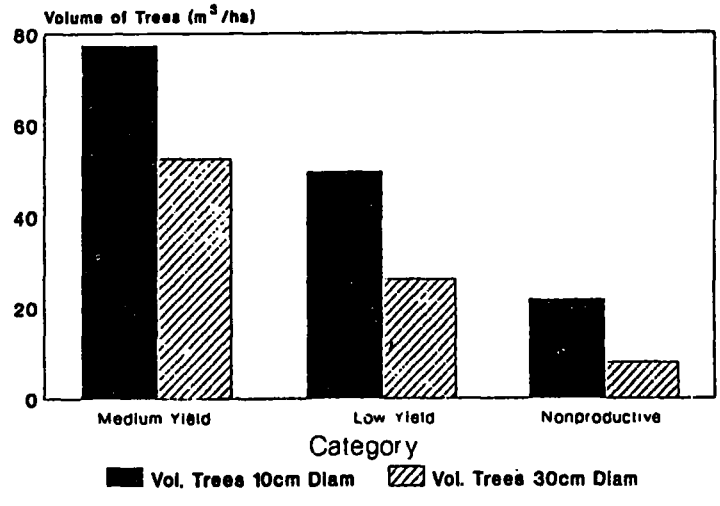
Montane Evergreen Forest is characteristic of the highland hills above 1500 metres in the Wet Zone. The forest is low reaching around 13 metres in the better sites. The trees are in poor form with dense spread with flat crowns. In exposed situations the canopy is low and the trees have a gnarled appearance. Stunted forests or Elfin Woodlands are found in the highest reaches. The principal species found in this region are syzygium Rerotutum (Wal Jambu), Rhododhendron Arboreum (Maharatmal), and Taeniostachyum Attentum (Bamboo).

Figure 3a



Total Dry Zone Natural Forests = 2,607,926 ha.

Figure 3b



10. Grasslands

Grasslands comprise of four main types. They are Damana, Villu, Dry and Wet Patanas and Talawa. Damana is a Savannah type vegetation found in the low land dry zone but differs from tropical Savannah. Villu is a grassland often associated with Wetland conditions around abandoned irrigation tanks, river banks, waterholes and flood plains. Patanas have been classified as Wet and Drylands depending on location — the former found at an elevation above 1400

metres with no moisture deficit periods. Talawa is found in the low country wet zone intermixed with trees which occur in clumps.

Status of Forests and Forestry in Sri Lanka

The National Forest Inventory which was completed in 1985 contains the most recent available data on the forest resources of the country. The total forest cover extent is 1.75 million hectares or 27 percent of the total land area.

Type	*Area (Mega hectares)*	*Percentage of Land Area*
Total Areas under Forest Vegetation	2.45	37.5
Natural High Forests Including Mangroves	1.75	27.0
Forest Plantations	0.075	1.0
Scrub Forests & Scrublands	0.625	9.5

Source: National Forest Inventory of Sri Lanka (1986)

Year	*Extent of Forests Million Hectares*	*Population Density Persons/Km²*	*Forest per Capita*
1902	4.6	53	1.3
1956	3.2	122	0.4
1991	1.75	267	0.1
2000	1.12	305	0.05

It is worth recounting the fate of forests in Sri Lanka in this century, because certain patterns have emerged with the escalating struggle between man and nature. With the rapid deforestation and the fast increasing population rates, it is estimated that the present rate of declining would be 1 million hactares (or 0.05 ha./capita) which is the lowest for Asia and the Far East.

Where have the Natural Forests Dissappeared?

A large proportion of the existing forests in the island are large secondary growth forests which came into being with the disappearance of a large proportion of virgin forest areas.

At the commencement of British Rule, the whole island was well covered with dense forests, and the present large towns were insignificant hamlets. The chena cultivator however continued to make large inroads into the forest, turning high forests into enormous areas of shrubs and bushy growth.

The commencement of the coffee industry subsequently led to the large quantities of timber being regularly cut, both for internal consumption and for export. These fellings were done under the permit license system. The permit holder was at liberty to select his own trees, and with such a wide expanse to select from, coupled with limited supervision, felling was carried out extensively.

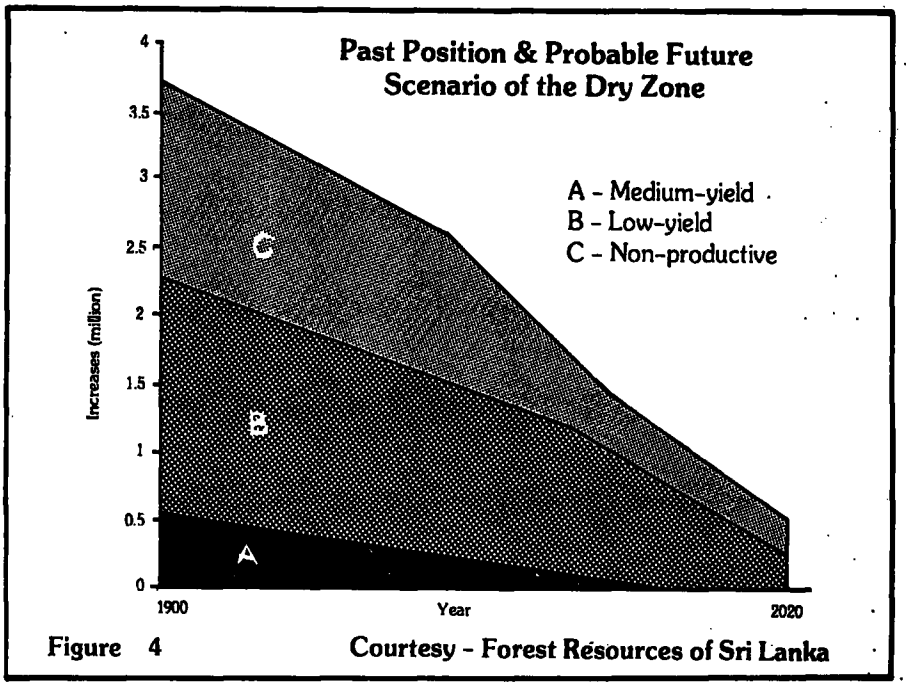


Figure 4 Courtesy - Forest Resources of Sri Lanka

By 1879, this timber cutting and supply scheme by contractors was further expanded and contractors was given a large share of timber and a share of the proceeds. This aggravated the situation. Since independence, the pressure on forests for settlement increased and consistent organised tree felling threatened the continued existance of the remaining forests. The demand for forest products increased as a result of the development process specially due to land alienation programmes. More and more land was needed to meet the agricultural expansion demanded by population growth and changing patterns of life.

The reserve forests diminished particularly as they happened to be situated near urban or rural habitations. Presently, the pressure for grazing and firewood have shifted to other forest areas. In many cases, such encroachments have been regularised in the past.

The loss of forest land is not necessarily harmful. However, the damage starts when the removal of trees deprives people of the much needed products for immediate consumption. Therefore, a strategy has to be developed to handle the problem successfully.

The New Planning Approach

Traditionally, most national forestry programmes have concerned themselves almost exclusively with the areas officially designated as forests. The activities of the Forest Department have been confined to satisfy the two cardinal principals of forestry — namely Forest Conservation and Production. The need to deviate from traditional/classical forestry arose because of the twin problems of increasing population and dwindling forest resources. This, when translated into human needs, means scarcity of wood, food shelter fodder and other basics. The need to deviate from classical forestry is further justified by the Forestry Master Plan which reveals that 50% of the timber need and 80% of the fuelwood needs is met by non forest wood resources primarily recognised as homestead gardens, mixed tree and other perennial crop areas.

The concept of social forestry for community development includes any situation which intimately involves inhabitants of the area with forestry activity. This exercise encompasses a wide spectrum of areas such as processing

food products for the household, small scale industry for forest dwelling communities and growing trees at farm level.

In the Dry Zone, trees in the form of wind breaks and shelter belts reduce the adverse effects of dry and desiccating winds which in turn affect agricultural crops. If suitable trees are planted, there is not much risk of shelter to birds which damage plant crops. In effect, wind breaks and shelter belts will improve crop yields by conserving and increasing the availability of soil moisture.

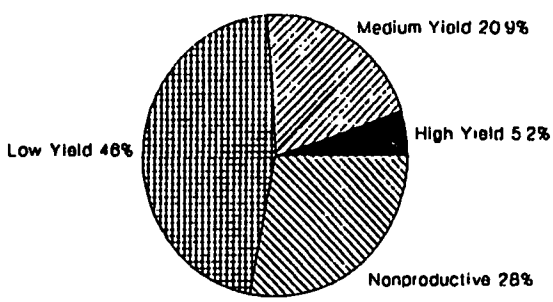
It is imperative to understand that the survival of forestry is totally dependant on the goals which are set for national development, and longterm ecological welfare as well as that of communities which live by. In order to attain this objective and to improve the economic conditions of villagers who live below the poverty line, a possible solution has to be derived by creating wealth in villages itself for launching a chain of cottage industries. Hence a wide array of economically beneficial plants could be grown which could provide a solid base for small industry. Wealth in the form of establishing a small bloom of forests of usual tree species on otherwise unproductive land is possible. Leaves, fodder, fruits, seeds, gum and resin could be raw material for a number of self employment projects. Small scale rural enterprises as a whole are a major source of livelyhood in developing countries next to agriculture in terms of current rural employment.

The preparation of a scheme to ensure rapid economic development of a large segment of poor people without any capital needs a different approach. The number of landless peasants and poor villagers could be ascertained for each village from the recent census data. Schemes could be then prepared for the utilization of this manpower from the bottom upwards.

The preliminary operational procedure to make this venture a success would be to set up a village forest committee for each participating village. The forestry extension officer would be the secretary to the committee. Among the functions of the committee would be selection of proposed areas, species to be planted and negotiate agreements with the Forest Department. The participation of the villagers in these projects should be ensured.

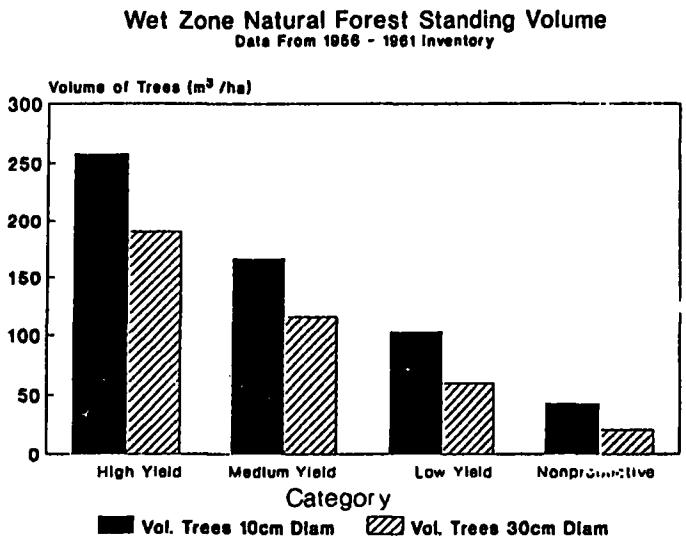
Varying degrees of local participation could be envisaged with this approach, and it is considered that there would be maximum feedback from this method once the villagers are convinced that planting campaign is for their own betterment. It is also stressed that this exercise would not attain optimum levels unless the unstinted cooperation from the villager is received in full. Given the availability of raw materials, the rural cottage industries would be a roaring success. Some of the many species which could be used as raw materials for cottage industries would be Pandanus for mats, Agara for fibre, Bamboos and rattans for furniture, Kitul for Honey and Jaggery,

Figure 5a



Total Wet Zone Natural Forests = 227,850 ha.

Figure 5b



Helamba for Umbrella handles, Pannaka, Palu, Weerawana, Hulan, Hik, Satin etc. for Parquet Flooring, Telkekuna and Punus for Oleo resin, Venivelgeta for medicine, Dummala from Thinniya trees for incense, fruits such as Divul (Wood-apple), Masang, Lovi and Madang for jams and the Acacia bark provides dyes and tannin.

Social forestry with other land management techniques such as agro forestry and social conservation measures result in the ground farming system which is the sum of the social, physical biological factors operating in the land unit in question. Agro forestry could be utilised for all types of land and to almost all social types of forestry.

Employment and other Potential Benefits

The implementation of a social forestry scheme such as the above, would generate further incomes and employment potentials, mainly for the masses living below the poverty line. Some of the allied projects which could be possible due to availability of raw materials are:

1. Bee Keeping

Bee Keeping by rural folk provide a ready source of income. However, in order to develop bee keeping, flowering trees such as Acacia, Eucalyptus and Callinadra have to be grown in home-steads and wastelands which provide flowers for the bees. Bee boxes could be installed at nominal cost in homes, sale of honey could provide valuable income in a poverty alleviation programme.

2. Pinus Resin Collection

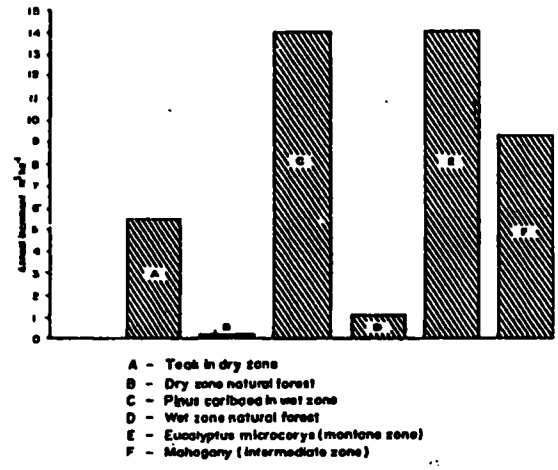
Income could be generated by rural folk living around Pinus Plantations by tapping the resin which is a primary raw material for the distillation of turpentine and the manufacture of rosin. The tapping of Pinus Plantations have commenced in the Uva Province Marginal lands.

3. Under Planting Canes Spices Bamboo and Rattan

There is nearly 72,854 acres of Pinus plantations in Sri Lanka. These marginal lands could be utilised for under planting minor export crops such as Cinnamon, Cardamom, Coffee, Bamboo and Rattan which are available for cottage industries.

Figure 6

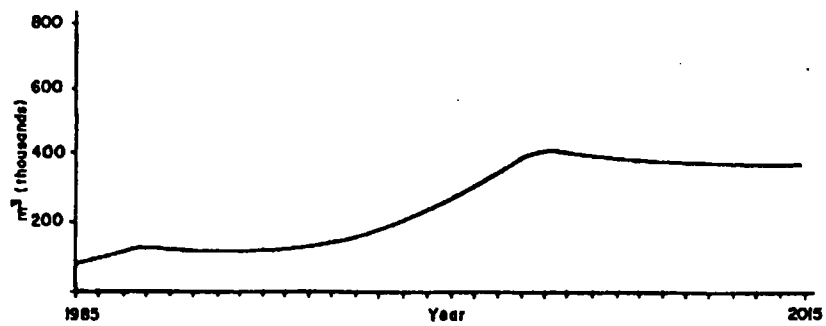
Mean Annual Increment of some Forest Plantation Species & of Natural Forest



Courtesy - Forest Resources of Sri Lanka

Figure 7

Expected Yields of Industrial Wood from Existing Forest Plantations



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4. Oil Extraction from Margosa and Mee

Trees of Mee and Margosa would start producing seeds in the 10th or 15th year of cultivation. Oil extraction could be done from this seed.

5. Mulberry for Silk under Sizoo and Albizzia

If planted within a space of two metres under sizoo and Albizzia, mulberry trees could yield leaves which produce silk cocoons from the third year of planting. This operation needs semi skilled personnel and organised support from the department.

6. Dairy Industry through Agro Forestry and Plant Fodder

Cattle rearing does not requires much space if fodder could be made available. Landless persons could be trained for cattle rearing if fodder is made available to them through social forestry programmes. Moringa, Leuceena, Sesbania Ailanthus are considered suitable species for this operation.

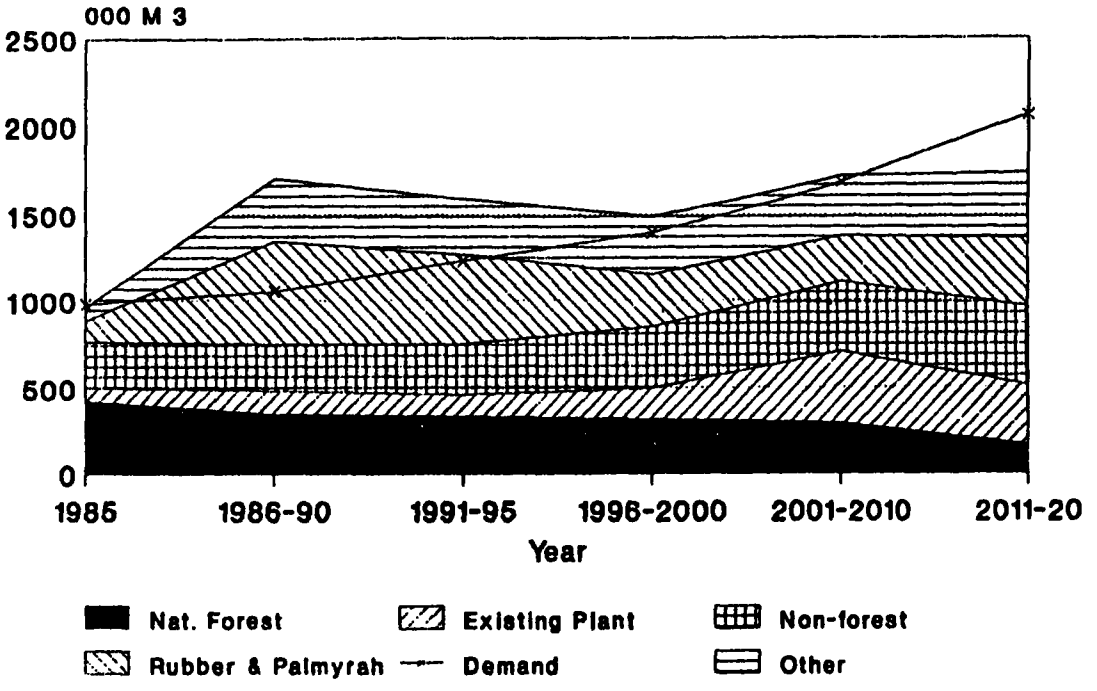

Figure 8

Forest Plantations

Reforestation in Sri Lanka has a long history. The then Government of Ceylon perceived that the destruction of natural forests could frustrate production of timber a century ago. This prompted the forest officer of the region to raise forest plantations, though on a limited scale. Teak (Tectona Grandis) was first cultivated in the Dry Zone on an experimental basis. Another exotic species — Sweetnia Macrophylla — the broad leaved mahogany was planted in the lowlands of the Kurunegala district at the turn of the last century. From then onwards, plantation trials were conducted in the Montane Zone to meet fuelwood demands for the households, the tea industry and the railways.

Timber and Fuelwood Demand & Supply Industrial Woods: Past & Future Trends

Industrial woods are used in Sri Lanka primarily for the construction industry, packaging, railway sleepers, telegraph concrete poles, furniture and safety matches. Newsprint and pulp are largely imported. Although nearly all the forests are state owned, only a fraction of the demand is supplied from within the country. The 1956–1961 forest inventory revealed that the consumption of industrial wood was 855,000 cubic metres while the corresponding figure for 1985 was 980,000. Natural forests provided only 44% of this requirement. Hence, the need for social forestry programmes to increase locally grown industrial woods.

However, certain government policies could have negative impact on the demand for industrial woods. Recently, the government decided to utilize concrete in preference to wood for railway sleepers. Similarly wood is to be totally replaced by concrete for electricity and telegraphic poles. Another survey has revealed that the National Engineering Research and Development Centre has demonstrated that low cost houses could be erected without the use of timber.

Fuelwood-Past and Future Trends

Biomass fuel is the primary source of heat for a majority of household cooking in Sri Lanka.

The proportion of biomass fuel coming from high forests is likely to increase with the presence of large scale degraded forests. Large scale shortages have occured in the Dry Zone due to transport costs, making fuel wood prices prohibitive. However, as recommended in the Forestry Master Plan, raising farmers' woodlots would help solve the problem.

Besides the direct benefits to the villagers from social forestry, there are large scale indirect benefits too. The reduction of atmospheric pollution, decrease of floods, the productivity increases of agricultural lands, and the creation of a habitat for birds and wild life are some of the ancilliary advantages which would accrue, in addition to increasing of underground water resources. These measures would be instrumental in stemming the tide of rising poverty, through planting economically beneficial trees. One important scheme would be to grow trees of economic importance in wastelands which are lying idle at present.