

FEATURES

Forestry in Sri Lanka 634-0 (548-7)

L. C. A. de S. Wijesinghe

The extent of natural forests is estimated to have come down today to 25 per cent of the country's land area, i.e. 4 million acres from a total forest cover of 44 per cent in 1961. In this brief historical review L. C. A. de S. Wijesinghe, a former Senior Assistant Conservator of Forests and the Deputy Secretary General of the National Science Council draws attention to the major areas of concern in the forestry and timber situation. He emphasises the urgent need for a rigid policy of forest conservation in the areas still under forests and those not required for agricultural plantation; while, greater attention would have to be paid to the management of forest plantations.

DEVELOPMENTS UPTO 1969

The adoption of systematic forestry practices in Sri Lanka could be said to have started with the establishment of the Forest Department in 1887. However, in the first 50 years or so of the existence of the Department, forestry practices consisted merely of regulating exploitation and protecting the forests from illicit fellings. The question of timber production gave no cause for concern at that time as the island was considered to be adequately endowed with natural forests for providing a continual supply of timber for the domestic and export markets.

This was the position till about the mid 1930s when it began to be realized that the natural forests of the country could not be considered an inexhaustible source of timber, and that, unless sound forestry development programmes were initiated, the country would, in the years to come, experience a serious shortage of timber. Consequently, the forestation programme (raising of man-made forests) which upto that time was treated merely as scientific curiosity and not as a purposeful effort at forestry development, was activated and expanded. However, the extents planted each year were still far too small to make any significant impact on the timber supply situation of the future.

FORESTRY RESEARCH BRANCH: A major landmark of the 1930s was the establishment of the research branch in the Forest Department and the commencement of systematic research on the silviculture and utilization of indigenous species.

Although there was a progressive increase in the tempo of forestation during this period, it was only much later that it was realized that the forestation programme had to be greatly expanded if a crisis in timber supply in the years to come was to be averted. Following the achievement of independence in 1948, the commencement and rapid expansion of a large number of agricultural development projects resulted in extensive tracts of forest land being open-

ed up. The demands for timber also began to rise sharply, and heavy exploitation (which had already started during the war) continued unabated. With these developments, it became evident that the dry zone natural forests on which we depend for the bulk of our timber requirements were a fast dwindling resource. At about this time, the wet zone natural forests which, despite their limited area, were soon to produce as much as half the timber requirements of the country, were being increasingly exploited for supplying large quantities of light hardwoods. A good part of this timber went to supply the the newly established plywood mill at Gintota. This mill was put up by the Department of Industries in 1946 for the express purpose of producing plywood tea chests.

The wood of *Dipterocarpus zeylanicus* (hora), a dominant tree of the wet zone natural forest, was found to have a greatly enhanced degree of durability after treatment with creosote, and, very soon, the major part of the annual requirements of sleepers was made from this species.

In the 1950s, forestation activities in the dry zone (mainly reforestation with teak) and in the montane zone (mainly afforestation of the patana grasslands with *Eucalyptus* species) were progressively expanded.

FORESTRY DEVELOPMENT PLAN: In 1958, for the first time, a comprehensive national forest development plan was drawn up. The main long-term objective of the plan was to make Sri Lanka self-sufficient in timber, mainly through forestation. Unfortunately, however, the forestry development plan found no place in the ten-year National Development Plan that was prepared in 1959. The absence of any mention of forestry in the national plan probably indicated that forestry development at that time was not considered to be of high priority.

A socio-economic problem of a serious nature that manifested itself in the mid fifties and grew unchecked thereafter was the illicit

clearing of forests. Under cover of the food drive, valuable forests were destroyed and converted into *chenas*. Besides, this, natural forests suffered degradation through illicit felling.

FOREST INVENTORY: An island-wide forest inventory was carried out in the period 1956 to 1961. This inventory which was based on an aerial photographic survey, indicated that Sri Lanka had a forest area of 7.165 million acres which is 44 per cent of the country's land area. It is interesting to note that in the dry zone where most of the forest area was situated, 94 per cent of the forest area was described as being low-yielding or unproductive. Besides the forests, there were about two and a half million acres of degraded chena lands in the island.

No national forest inventory has been carried out after 1961, and estimates that have been made since then of the area of natural forest are nothing more than informed guesses.

PLYWOOD: In 1964, the Ceylon Plywood Corporation (that took over the control of the Gintota plywood mill from the Department of Industries in 1956), made elaborate plans for increasing production at the mill by over 100 per cent. The mill was at that time producing only 18 per cent of the island's requirements of tea chests, the balance being imported from Sweden, Russia and Japan. Stepping up the local production of chests was considered an important step in the programme of import substitution. The expanded programme was estimated to require an additional 1.2 million cubic feet of peeler logs from the natural forests of the wet zone.

In 1966, plans were made to put up a second plywood factory which was to take the form of a wood-working complex producing not only tea chests but also chipboard and furniture. The wood-working complex, once it became fully operational, was estimated to require four million cubic feet of timber. The total supply of timber by the Forest Department at that time, including the log supplies to the Gintota mill, was about four million cubic feet, and the prospect of supplying the new mill which would have required the Forest Department to double its output of timber, not unnaturally, daunted the Department officials. They therefore objected to the setting up of the mill on the grounds that the logistics of supplying the proposed mill were beyond the capacity of the Department. The more important question of whether the wet zone forests would, as a renewable resource, produce the timber on a sustained basis does not appear to have received the attention it deserved. The decision to set up

the mill (to be located near Avissawella) was taken in 1967.

STATE TIMBER CORPORATION

The formation of the State Timber Corporation in 1968 was an event of major importance in the forestry sector. Since the second world war the Forest Department was saddled with the responsibility for the entire production and sale of timber from the state forests. With the formation of the Corporation, which took over from the Forest Department all commercial activities connected with the production and sale of timber, the Department was left to perform its legitimate functions of forest management and related work.

RESEARCH

An unfortunate trend of the nineteen sixties was the sad neglect of silvicultural research. A comprehensive five-year silvi-cultural research programme was drawn up in 1960, but much of this remained a plan on paper only. At this time, and in fact for the major part of the two decades that followed, whenever staff was needed for various forestry activities, the research staff was withdrawn and diverted to what were considered more important functions. When the State Timber Corporation was formed in 1968 the relief afforded to the Forest Department did not result in additional support for research as, at about this time, the forestation programme was being expanded and more staff was required for this work.

However, the picture was not one of unrelieved gloom, for, during this period, some isolated pieces of research work of very good quality were being carried out mainly because of the personal interest of some officers. Two of these are worth mentioning as they have left their mark on forestry in Sri Lanka. One was the discovery that *Pinus caribaea* (out of a number of fast growing tropical species that were tested) was found to be ideally suited for reforesting the denuded and impoverished sites resulting from shifting cultivation in the wet zone. This finding gave rise to a flourishing reforestation programme that raised the area of *Pinus* plantations from a little over 2,000 acres — confined mainly to the montane zone — in 1970 to over 30,000 acres by 1979.

The other research finding was a method of treating rubber wood with boron to preserve it from attack by wood destroying insects. Rubber wood which was once used as fuel-wood or as concrete shuttering planks could after treatment, be used for furniture manufacture. The treated wood has also been exported to the United Kingdom. (Also, see page 22-23).

THE DECADE: 1970—1980

THE NATURAL FORESTS

Several estimates of the area of natural forests in Sri Lanka have

been made based on the forest inventory published in 1961. The Forest Department report to the Commonwealth Forestry Conference of 1968 gives the total area of forests as 6.27 million acres which is 12.5 per cent less than the inventory figure. The Forest Department Development Plan published in 1970 estimates the forest area at 6.1 million acres. The clearing of forests, both for development activities as well as illicitly, continued unabated in the 1970s, and at present (1981) the total extent of natural forests is estimated at 25 per cent of the land area or four million acres.

Despite this adverse trend, the decade of the seventies was marked by an awakening and the steady growth of a public awareness of the importance of forests in stabilising the human environment. Non-governmental organizations like the Wild Life and Nature Protection Society came out strongly against the clearing of forests, especially those of the wet zone where environmental hazards from forest clearing are expected to be more serious than elsewhere.

In 1970, the government in an attempt to assess the situation appointed an inter-departmental committee to report on the continued alienation of forests in the wet zone. Two years later, a committee headed by a Cabinet Minister was appointed to inquire into the exploitation of the Sinharaja forest reserve for supplying timber to the wood-working complex at Avissawella.

The inter-departmental committee in its report pointed out that the area of natural forests in the wet zone was at a precariously low level of 9 per cent of the land area of the zone, and that alienation of forests in this region should stop. The Sinharaja

committee recommended that the intensity of exploitation at Sinharaja should be reduced, and that even the curtailed programme of exploitation should be confined to only a part of the forest. These recommendations lent support to the Forest Department in its effort to preserve the wet zone forests in the face of growing pressure to release parts of forests for various development schemes.

In the latter part of the 1970s the Government made an important policy decision, namely, to import timber to supply the Avissawella mill rather than continue the exploitation of the Sinharaja forest. The authorities concerned also adopted various measures, including the strengthening of the legal provisions, to combat illicit clearing and encroachment of forests.

In 1979, it was decided to carry out an island-wide inventory of the forest estate. This decision is most welcome, and it is hoped that, with the use of modern methods of remote sensing, the results of the survey would be available in the early part of the present decade.

MAN-MADE FORESTS

In contrast to the dismal picture of rapidly diminishing natural forests, the decade of the seventies was one of unprecedented activity in the sphere of forestation or the raising of man-made forests. For the first time in 1971 the main features of the Forestry Development Plan (of 1970) were embodied in the National Five-Year Plan. Briefly stated, these consisted of the raising of 14,000 acres of forest plantations and the carrying out of enrichment planting in 2,000 acres of degraded natural forests each year. In 1972 the overall departmental targets were achieved for

Table 1. Net area¹ (in acres) of the main plantation species² added each year

Year	Teak	Eucalyptus	Light ³ hardwood	Bamboo ⁴	Pinus	Mahogany Jak	Total
Area in							
1969	73,899	18,300	1,681	766	2,371	11,910	108,927
1970	9,533	710	432	472	900	—	12,047
1971	6,598	153	176	354	1,519	—	8,800
1972	9,716	496	271	20	1,519	—	12,022
1973	10,902	1,078	439	480	2,234	—	15,133
1974	10,431	998	524	400	2,164	—	14,517
1975	11,669	1,071	454	310	3,448	—	16,952
1976	12,868	1,705	218	—	4,026	—	18,817
1977	9,319	2,729	410	—	3,922	—	16,380
1978	6,451	3,657	172	-46	5,655	—	15,889
1979	5,623	6,469	175	—	5,696	—	17,963
Total	167,009	37,366	4,952	2,756	33,454	11,910	257,447

1. The area where planting had failed, where clear-felling of mature plantations was done, or where plantations were destroyed by fire were deducted from the area planted each year to arrive at the net area; the area estimated at approximately 25,000 acres (that damaged by the 1978 cyclone) has not been deducted.
2. A number of miscellaneous species covering a few thousand acres, and areas where mahogany has been underplanted in the natural forest have not been included.
3. After 1969, mainly *Albizia falcataria* (*A. moluccana*)
4. The bamboo is *Dendrocalamus strictus*: the planting of the species was abandoned after 1976.

the first time. In 1974 the annual target was raised by a further 1,500 acres to speed up the afforestation of derelict tea and rubber lands and other degraded sites in the hill country. The extent planted each year progressively increased during the decade as indicated in table 1. It is seen that in 1979, the total area of the major plantation species stood at over 257,000 acres which is nearly two and half times what it was at the beginning of the decade. Besides this area there were about 6,000 acres of miscellaneous species and some thousands of acres of degraded natural forests underplanted with mahogany.

TEAK

Teak occupied a dominant place in the forestation programme during the decade. The species is planted in the dry zone. The drop in the area planted with teak in the latter part of the decade (See table) was due to a reduction in the programme in certain areas where young teak plantations began to be destroyed by herds of elephants. In the vulnerable areas reforestation was carried out with *Eucalyptus* in preference to teak. Teak raised on good quality sites is grown to a rotation of about 60 years, but thinnings should be carried out at intervals of 6 to 10 years throughout the rotation period. In the 1970 Forestry Development Plan it was estimated that a plantation estate made up of 10,000 acres added each year would eventually produce a sustained yield of 21 million cubic ft. per year. In the early years of the plan, yields of around 100,000 cubic feet were expected annually from the small areas of mature plantations that could be felled and from other plantations coming under thinnings. However, the cyclone of 1978 provided a bonanza for the State Timber Corporation which harvested over half a million cubic feet in 1979 from cyclone-devastated teak plantations. The thinning of young Teak plantations did not proceed at the desired rate during the decade. In this connection the main problem which the State Timber Corporation, that has to carry out this operation, faces is that the low value of the thinnings from young plantations makes the operation unprofitable. But what is often overlooked is that the profits in future years will depend very much on how well the young plantations are tended, and thinning is the most important of the tending operations.

AGRI-SILVICULTURE

Dry zone planting which accounted for $\frac{1}{4}$ of the national forestation programme was, throughout the decade, carried out as an agri-silvicultural operation. On this scheme, land is leased out to applicants for a three-year term. In the first year the lessee fells the natural vegetation, supplying any timber that may be available, to the State Timber Corporation, and selling to the public other utilisable material (e.g. firewood). He then burns the debris and, with the rains, plants the teak or other forest species, while at the same time intercropping agricultural crops of his choice. The lessee

appropriates the agricultural produce. He tends the forest plants for the duration of the lease for which service he is paid a financial reward by the Department. He is allowed to continue raising agricultural crops for the full three-year period. As leases are generally given annually in the same locality a lessee could generally have an allotment every year.

PINUS *Pinus* was grown on a very restricted scale and that too at very high elevations in the montane zone. The species planted was mainly *Pinus patula*. Experiments carried out in the different bioclimatic zones of the island with a number of species of tropical pines had demonstrated the suitability of *Pinus caribaea* for reforestation of degraded sites in the wet zone even at sea level. It is also suitable for afforesting upland grasslands up to an elevation of 3,500 ft. The 31,000 acres of *Pinus* raised in the last decade are mostly of this species.

Pinus is a coniferous softwood. It could be used for producing long-fibred pulp which is now being imported by the paper industry. Pine wood is also suitable for making furniture. Tapping of the pine trees could produce resin from which turpentine could be distilled. These are some of the potential uses for pine.

ALIBIZIA

Albizia falcataria is the main light hardwood species that was planted during the ten-year period. It was included in the programme in order to provide wood for the match industry whose main problem is the scarcity of suitable types of timber. Planting of this species was done in the wet zone.

FUELWOOD

A serious shortcoming of the 1970 Forestry Development Plan was the omission of a programme on a national scale for increasing fuelwood supplies. It is also regrettable that in the course of the decade, even when the fuel crisis pointed to the urgency of developing fuelwood resources, there was an unaccountable delay in formulating a fuelwood planting programme. A plan was finally drawn up in 1978-1979 and its implementation will take place in the eighties.

In Sri Lanka as much as 60 per cent of the fuel that is consumed comes from fuelwood and agricultural residues (coconut husks, etc.) Oil accounts for 28 per cent and electricity for the balance 12 per cent of the energy consumed.

The per capita consumption of fuelwood is estimated at about 10 cubic ft. per year. The supplies of fuelwood made by the State Timber Corporation from state forests accounts for only a small fraction of the national consumption. The major part of it comes from unrecorded collections from state forests, felling of trees in private estates and gardens, rubber wood from estates being replanted, and agricultural waste products. The relatively small part played by the State Timber Corporation in supplying the national require-

ments of fuelwood was probably why a fuelwood programme was not included in the 1970 plan.

In the course of the seventies there were several factors that made it imperative that the question of the production and utilization of wood as a fuel be examined and purposeful action taken to develop this source of energy to its maximum potential. These factors were:

- (a) In rural areas fuelwood for domestic and industrial use, which was freely available in the past, began to grow scarce because widespread deforestation resulted in the material having to be transported over progressively longer distances;
- (b) For the same reason the cost of supply of fuelwood from state forests to many urban areas rose sharply;
- (c) Although there were shortages in the centres of consumption, there were large amounts of waste wood in areas being opened up for agricultural development;
- (d) With alternative uses being found for rubber wood the amount of this material available for use as fuelwood was decreasing;
- (e) The serious impact of the fuel crisis in view of the fact that Sri Lanka imports all its requirements of fossil fuels.

These factors indicated that the highest priority should have been given to the raising of fuelwood plantations, the converting of waste wood into charcoal which could be transported economically, the designing of efficient charcoal and wood cookers for domestic use, and so on. Some state institutions commenced work on these lines towards the latter part of the decade but at nothing like the pace that the situation warranted.

THE DECADE AHEAD

Although the area of forest has already dropped to 25 per cent of the land area, deforestation will have to continue in the dry zone in the decade ahead as the Mahaveli Project and the other development schemes are progressively implemented. This makes it all the more important that a rigid policy of forest conservation be implemented in the areas now under forest and not required for agricultural development.

In the wet and montane zones no alienation of forests should be permitted at all. With only about 8 per cent of the area now under forest in these two climatic zones, the remaining forests should be conserved permanently as 'protection forests' for stabilising the environment — conserving the soil and regulating stream flow. The recent crisis in power supply caused by a delay in the monsoonal rains has impressed on us the importance of retaining a forest cover in catchments so as to ensure a regular dry weather flow of water and to reduce our dependence on peak flows during monsoon periods.

National needs would require that controlled felling be permitted to go on in some of the natural wet zone forests, but this should be done strictly according to the silvicultural rules laid down by the Forest Department. In the dry zone too, in the areas that are meant to remain under forest permanently, regulated fellings could continue, but, as in the wet zone, the felling rules should be rigidly adhered to.

A unique feature of the flora of Sri Lanka is that over $\frac{1}{4}$ of the species of flowering plants are endemic (i.e. found nowhere else in the world). To preserve the endemic species from extinction the Forest Department has demarcated certain natural forests in the major bioclimatic zones of the island and declared them to be absolutely protected. These areas should be preserved even if they fall within proposed development schemes.

Illicit fellings and encroachments over the past few decades have caused widespread destruction of our natural forests. If we are to preserve what is left of these forests it is of the utmost importance that illicit fellings should be stamped out with the full rigour of the law. The Forest Ordinance has recently been amended to increase the penalties for offences, and it is expected that this action indicates the willingness and the determination of the authorities concerned to stamp out illicit clearing and encroachment of forests.

With regard to the forestation programme, the Forest Department annual targets could be considered high by any standard. In relation to the size of the country, it is the highest in tropical Asia. However, in view of the fact that we would have to depend on our plantations for the bulk of our requirements of timber in the future, it would be necessary to re-examine and increase if necessary our plantation targets every few years. Fuelwood supplies is another matter of the utmost importance. The plans that have been drawn up to raise fuelwood plantations should be implemented with the greatest sense of urgency.

In the past the management of forest plantations has not received the attention it deserved. This area of activity needs to be strengthened. Thinning of plantations is an all-important silvicultural operation, and yet, because of the small financial returns from thinnings particularly in the case of young plantations, there has been a tendency to neglect this operation. In the case of natural forests under-planted with mahogany, maintenance work is urgently required if any benefit is to be derived from the planting operation.

Research work in all aspects of forestry has been inadequate during the past decade. Four officers, one each in silviculture, entomology, timber utilization and timber technology, represented the total cadre of

(Continued on page 26)