Wood Raw Materials for Pulp and Paper in Andaman and Nicobar Islands

BACHAN SINGH
S. K. SHARMA

This paper records thoughts, guidelines and problems regarding the use of wood available in Andaman and Nicobar Islands for pulp and paper production.

Introduction

Primary pulp and paper making raw materials are mostly derived from the temperate coniferous softwoods and bamboos. Manufacture of paper and pulp from the tropical hard woods is still under trial all over the world and foolproof technique is still to be perfected for the manufacture of paper and pulp from the tropical hardwoods. In recent years extensive research work has been done in Australia and Japan on the use of tropical hardwood for pulp and paper manufacture and encouraging results have been obtained.

In this paper the availability of wood raw materials for manufacture of pulp and paper in Andaman & Nicobar Islands has been discussed and the problems connected with its utilisation, handling and transport to the consuming centres have been highlighted.

WOOD POTENTIAL

The geographical area of Andaman and Nicobar Islands is 8293 Sq. Kms. of which 7,468 Sq. Kms. is forest area. But the effective timber yielding forest area is approximately 6031 Sq. Kms. A conversion period of 75 years has been adopted and accordingly the annual cut is approximately 8040 Hectares in which it is estimated that an annual yield of 3.65 lac m^3 of round timber of commercial species only will be obtained. But due to the limitations of infrastructure, transport and marketing only 98,000 m^3 of commercial timber is extracted annually. The plans are already afoot to increase the annual cut to full. It is expected that these targets will be achieved by the end of Fifth Five Year Plan period.

The timber resources of these Islands find utilisation in production of Plywood, Match boxes, Splints of sawn timber for general construction works, sleepers etc. Out of 29 hard wood and soft wood species currently exploited in Andaman and Nicobar Islands, only the following five species have so far been tested for their suitability for pulp and paper manufacture by the cellulose and paper pulp branch of Forest Research Institute, Dehra Dun:

1. Kadam (Anthocephalus candamba)
2. Papita (Pterocymbium tinctorium)
3. Latkok (Sterculia alata)
4. Nabbe (Lannea grandis)
5. Bombeza (Albizzia stipulata)

Out of the above species all except Latkok were found suitable. The cellulose and paper pulp branch of Forest Research Institute, Dehra Dun has been requested to test the suitability of the remaining 24 soft woods and hardwood species currently extracted for manufacture of pulp and paper individually and in mixtures.

The minimum girth limit for ply and saw logs has been fixed as 122 cm. and for match logs as 91 cm. Therefore the logs of commercial species currently exploited conforming to above specifications are utilised by ply, match and Sawmill industry and cannot and should not be made available to pulp and paper industry. But a considerable portion of the bole and lops and tops of those tree species are left behind in the forest.

With a view to find utilisation for the non-commercial species also the cellulose and paper pulp branch of Forest Research Institute, Dehra Dun has been requested to test their suitability for the manufacture of pulp and paper individually and in mixture.

A random sample survey carried out recently in the felled coupes indicates that after removing all the exploitable timber about 175 m^3 of timber per hectare consisting of left over boles, lops and tops of Commercial trees currently exploited and non-commercial trees is left behind in the

Bachan Singh I.F.S. Chief Conservator of Forests, Andaman & Nicobar Islands.
S.K. Sharma, Deputy Conservator of Forests, Andaman Forests Department.

forest. Accordingly it is estimated that 14.05 lac. m^3 of wood waste will be available in the area of annual cut, of which it has been assumed that 10 lakh m^3 of wood waste yielding 2.86 lac BDU of wood chips can be processed provided necessary processing units are installed at suitable sites. The difficulties in extraction and high capitalised expenditure involved in extraction of timber in these Islands cannot be suitably remunerated unless utilisation of these left out portions of commercial trees and non-commercial trees is achieved.

Requirements of fresh water for the manufacture of pulp and paper cannot yet be met with in these Islands. It is a paradox in the Islands that fresh water supply is rather scarce and peculiarly localised inspite of the heavy rainfall spread through most part of the year. Many of the streams dry up during the period March-May and the wells have hardly any water in them. It is largely due to the immaturity of the soil that its capacity for holding water is limited and, therefore inspite of the precipitations, there is shortage of water in most of the places. Therefore it is not possible to instal pulping units in these islands for the time-being for manufacture of pulp and paper due to lack of copious supply of fresh water.

PRODUCTION OF WOOD CHIPS

Chipping is an effective way of producing fibrous wood particles for the pulping process. The most important consideration in the production of wood chips is the place for chipping. Various methods for chipping like field chipping, chipping at the loading point and chipping at the mill site have been evolved in Scandinavian countries and Canada. One of the most important reasons as to why field chipping is more desirable than chipping at the mill is the opportunity to increase the wood fibre yield from each hectare of forest. So far no attempt has been made for the production of wood chips in these Islands. The economics of various modes of chipping and problems connected with them will have to be studied in detail before a successful chipping system can be evolved for these Islands.

To extract the quantity of potential annual yield of wood chips the Management has to be intensified considerably. Keeping this in view, the work is proposed to be spread out in seven territorial divisions as against the existing three divisions and a scheme to that effect entitled "Intensification of Management" has been taken up with the Government of India. The expected availability of wood chips under each divisions is indicated below:

Name of Division	Wood Waste utilisable Lac/m^3	Wood Chips BDU
1. Diglipur Division	2.00	57,140
2. Mayabunder Division	1.25	35,714
3. Middle Andaman Division	1.00	28,570
4. Baratang Division	1.25	35,714
5. South Andaman Division	1.25	35,714
6. Little Andaman Division	1.00	28,570
7. Nicobar Division	2.25	64,285

HANDLING AND TRANSPORT OF WOOD CHIPS

In these Islands, the multiple handlings involved in bizarre system of transport over forest areas on tramlines, in mendering creeks, on roads and in open sea cold for specialised system of handling and transport of chips. The Pipeline and other system of transport of ships evolved in Scandinavian countries and Canada and their economies have to be studied in greater detail to find their suitability in the conditions prevailing in these Islands.

Andaman and Nicobar Islands, being endowed with deep spacious and well sheltered harbours, some of which are among the finest in the world, are put in an advantageous position for maritime trade. Hence considering the various aspects of the wood chip consuming industries the only way to utilise the wood is to establish wood chipping units at shops nearest to ports and arrange direct export to consuming centres. The area of the hinterland for each of the maritime ports, the maximum lead involved and the annual yield of wood chips in lakh/BDU expected to be exported from each of the ports are furnished on the next page.

The export of wood chips from the above harbours to the consuming centres will required loaders provided with specialised syphoning devices for speedy loading of wood chips.

Name of the Port	Area of Hinterland Sq. Km.	Maximum lead Km.	Annual yield of wood chips Lakh/BDU
1. Port Cornwallis	1480	64	0.57
2. Mayabunder	1405	58	0.50
3. Elphenstone Harbour	1322	30	0.50
4. Port Meadows	994	40	0.36
5. Hut Bay	734	34	0.29
6. Campbell Bay	1049	52	0.64

It is learnt that Japan is utilising the ships for this purpose which are loaded by a pneumatic system at the rate of 300 tons per hour.

UTILISATION OF WOOD CHIPS

Chips from tropical hardwoods can be used for the manufacture of pulp and paper as is being done in Japan, Phillipines and in some other countries. As already explained it is not possible to utilise the wood chips in these Islands for manufacture of pulp and paper till such time arrangements for copious supply of fresh water so essentially required for pulp and paper industry are made. Therefore, the only way to utilise the wood chips for manufacture of pulp and paper is to ship them to consuming centres. The market for wood chips from these Islands may be available in Japan and South Korea. But it will be in national interest if the wood chips from these islands can be utilised for manufacture of pulp and paper on the mainland. Due to high freight and long lead it is also not feasible as yet to utilise the wood chips from these Islands in the mainland plants as they are away from the ports. Therefore, the only way to utilise the wood chips from these Islands is to set up a large scale Mill, perhaps of 600-700 tonns/day capacity on the eastern coast Vishakapatnam or Haldia port where necessary infrastructure for setting up s uch a mill is available.

Before the wood chips from these Islands can be utilised for manufacture of pulp and paper, the cellulose and paper pulp branch of Forest Research Institute, Dehra Dun shall have to carry out research work for testing the suitability of different tree species found in these Islands for manufacture of pulp and paper individually and in mixtures. The colour of the wood chips derived from the different tree species found in these Islands varies from creamy white, light grey to yellowish with few species giving pinkish brown colour. The various tree species will have to be grouped on the basis of density, fibre length and colour so that they can be utilised in groups for manufacture of pulp and paper. While shipping the chips, care has to be taken to ship them separately in groups for convenience of handling. It is felt that the Forest Research Institute can undertake research on all these problems conveniently if a Laboratory is opened for this purpose in these Islands itself.

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