Distr.
GENERAL

PPR 68/04 (M)

Original: ENGLISH

INTERNATIONAL TROPICAL TIMBER ORGANIZATION

PRE-PROJECT REPORT

REVIEW OF THE INDIAN TIMBER MARKET

[PPD 49/02 (M)]

PREPARED FOR ITTO

BY

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MAY 2004

PREFACE

India is a producer member country of ITTO, which is emerging as a significant consumer of timber imported from ITTO member countries. In recognition of the growing importance of the country as a consumer and producer, the Pre-Project 49/02 (M) "Review of the Indian Timber Market" was approved at the 30th ITTC session in 2002 aimed at gaining an insight into the current supply and demand status and opportunities for ITTO exporters. The Review was essentially designed for conducting an appraisal of the timber market trends, constraints and opportunities. As the study was initiated, it was found necessary and useful to also provide an overview of the likely future scenario in order to point out the potential opportunities for international timber trade. As such, a study of future prospects has also been undertaken, even though it was not foreseen for the Review.

The Pre-Project was executed by ITTO drawing upon the expertise of the Roman Forum in collaborative partnership with the Indian Institute of Forest Management, which participated proactively in the Review process through its Faculty of Marketing. The process involved a multidisciplinary team of national experts and advisors, regional and local consultants, and an international team leader. In addition, wide-ranging contacts were made for data gathering, and consultations held on various thematic issues with pertinent institutions and knowledgeable persons, particularly for peer reviewing the draft report.

The Review process was formally launched in early 2003 and the first draft report was made available for the comments of the ITTO Secretariat in August 2003, which had also been providing pertinent inputs and comments form time to time, such as on research methodology and the approach adopted through the course of the review. With these inputs and those from the peer reviewers, the draft report was revised fairly substantially and made available at the 35th ITTC session in November 2003. A presentation was made to its Committee on Economic Information and Market Intelligence about the key outcomes of the Review, which were also disseminated through a News Release and media reports. This report incorporates the Committee's comments and further in-country study and observations of the ITTO Secretariat. The report is, as such, a product of continued consultations and a comprehensive review, which was completed as per schedule and within the approved budget.

This Review report presents a picture of the current trends and future prospects of the timber market in India and the various constraints and opportunities for the same. It conveys some key messages and provides a background for an appropriate follow-up, especially for the development of much needed market intelligence and for strengthening the statistical system for the benefit of the forest sector, timber market, and its national and international partners.

REVIEW TEAM

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ACKNOWLEDGEMENT

The Government of India, Ministry of Environment and Forests merits much appreciation for its overall collaboration at all levels in the conduct of the Review. Notably, such collaboration was formalized *ab-initio* with an agreement between the Roman Forum and the Ministry for drawing upon the expertise of the Indian Institute of Forest Management (IIFM). The agreement was exchanged between the President of the Roman Forum and the current Director-General of Forests of the Government of India, Mr. N. K. Joshi. Grateful thanks are due for his support for the study and his understanding about its potential contribution towards advancing the mission of the Ministry and for promoting partnerships and alliances with various stakeholders of the forest sector. Appreciation is due to Dr. A. Kishore, Secretary to the Government of India, Ministry of Statistics and Plan Implementation, for sharing some insights about the state of statistics in various sectors and about the scope for follow-up in the best interests of the country's sustainable social and economic development.

A number of experts, facilitators and knowledgeable persons were contacted or consulted in the Review process, as listed below. Most of them made significant contributions -either by sharing their experience and data or facilitating the Review process or by participating in brainstorming sessions and peer-reviewing part or whole of the draft report.

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While recognizing the contribution of the ITTC and its Committee on Economic Intelligence and Market Information, as well as all those noted above, the ITTO Secretariat and the Review Team hold themselves entirely responsible for having accepted and audited various views and inputs from diverse sources and for the approach adopted for undertaking the Review and its outcome.

EXECUTIVE SUMMARY

India is a major producer and consumer of tropical timber. In order to fill the growing gap between domestic demand and supply, it has been importing increasing quantities of timber and timber products in recent years. This study has been undertaken to gauge the overall trends and prospects of the country's timber markets, with special reference to the tropical timber trade.

This report covers three broad topics:

(i) timber trends and prospects, including import, export, production and consumption data, distribution channels, and import tariffs and related trade practices;

(ii) end-use and consumption patterns in major urban consumption centres, including indicators of demand for tropical and other timber products; and

(iii) the current status of forest-sector statistical systems, market intelligence and economic information regarding timber trade, production and consumption.

Despite discrepancies between the diverse sources of data available to the study, the following analysis can be made.

The total forest cover of over 67 million hectares represents about 20% of the land area of the country against a target of 33% enshrined in the national forest policy; more than one-third of this is open forest. Efforts are under way to raise plantations and to restore degraded forests, which comprise about half of the forest area. The impact, if any, of these efforts on the net availability of timber to meet the increasing demand has been limited to date. Among the constraining factors are the small budget for reforestation and afforestation, growing emphasis on the environmental and social services provided by forests at the expense of timber production, and competitive demand for land from the country's burgeoning population of over a billion; India has one of the lowest per capita forest areas of the ITTO producer member countries.

Around 95% of the forest is classified as tropical, with relatively low productivity, partly due to degradation over large areas. With an estimated growing stock of 2.7 billion m^3, the predominant product is fuelwood, in which the country is maintaining self-sufficiency. The forest-derived fuelwood is augmented by supplies from trees outside the forest (ToF), which cover nearly 2% of the land area and are playing an increasing role in the provision of fast-grown raw material for the panel, pulp and paper industries. The overall annual production of industrial roundwood from forests and ToF is estimated at around 50 million m^3, which does not meet the national need; hence timber imports, mostly of tropical hardwoods, currently exceed 2 million m^3 a year. Sawnwood production and consumption are in balance at about 30 million m^3, with relatively low imports, partly due to higher tariffs and almost no value-added secondary wood processed product exports, for which there could be a significant scope. The following table summarises recent import trends in the country.

Timber import trends ('000 m^3)

Year	Logs	Sawnwood	Plywood	Veneer
1991–92	853.36	9.14	3.61	0.80
1996–97	868.80	9.65	23.63	5.11
1997–98	1,362.27	6.57	24.53	10.19
2001–02	2,605.21	73.76	44.81	4.00

Based on historic trends established from customs data recorded according to international Harmonised System (HS) codes, this study predicts production, consumption and trade volumes for the next several years (to 2010). Such predictions are, of course, subject to uncertainty, since the past doesn't necessarily provide an accurate guide to the future. Nevertheless, in the view of the consultants these predictions are likely to reflect average trends in the next few years; the table below shows estimates for the financial year 2005–06.

Estimated production, consumption and trade, 2005-06

	Volume (Million m^3)				Value (Million US$)	
	Production	**Consumption**	**Imports**	**Exports**	**Imports**	**Exports**
Logs	52.041	56.69	4.689	.0040	937.8	0.80
Sawnwood	32.961	33.18	0.221	.0020	55.0	0.70
Plywood	2.340	2.38	0.068	.0280	7.5	6.22
Veneer	0.499	0.50	0.003	.0019	1.8	5.20

In view of the vast discrepancies in secondary data regarding domestic production, the consumption estimates shown above have been computed on the basis of data collected in surveys and appraisals conducted for this study, less the trend of officially recorded annual imports, while also taking note of limited export volumes. Most (more than 90%) of timber imports are tropical hardwoods. The import trend thus far is upwards and apparently booming for all major items except veneer sheets. Nevertheless, this trend will not necessarily continue: the Indian timber sector is dangerously complacent in the face of threats to the timber market in the country posed by substitutes and its disorganized nature. The latter includes a lack of market intelligence and economic information about the competitiveness of tropical timber, and limited attention to tariff and non-tariff barriers in the face of existing and emerging large-scale importers of quality tropical hardwoods, especially in Asia itself. A comprehensive review of Indian consumption patterns undertaken by this study (see below) demonstrates that tropical hardwoods are favoured by a majority of consumers in a range of end-uses. However, convoluted procedures and high transaction costs on the one hand, and a paucity of requisite data and market diversification on the other, could cause the loss of potentially high demand prospects for tropical hardwoods.

The study included an intensive national survey of timber consumption in the last six years in 15 urban centres and of imports through various ports. Using these and other primary and secondary data, the study projects the likely demand in the forthcoming ten years for various types of timber and the potential sources of supply. A preliminary draft report, particularly focussing on the demand data, was shared with pertinent institutions,

associations and experts. On the basis of their critical comments and feedback, severally and jointly at brainstorming sessions on the subject, data have been agglomerated into twelve major urban centres, including one for the four satellite towns of the National Capital Region. In addition, a rapid rural appraisal of consumption has been conducted in six diverse districts to validate the estimates of current consumption and the future needs of the vast rural population, which is largely dependent on domestic production from forests and ToF. The table below highlights some consumption prospects, around 85% of which comprises tropical hardwoods.

Timber consumption prospects (million m^3)

	2002-03	2005-06	2007-08	2012-13
Log Consumption				
Urban India	12.58	14.17	15.44	17.64
Rural India	37.74	42.52	46.31	52.92
India	50.32	56.69	61.74	70.56
Sawnwood consumption				
Urban India	7.92	8.29	8.63	9.45
Rural India	23.76	24.88	25.89	28.34
India	31.68	33.18	34.52	37.79
Total veneers & plywood				
Urban India	2.60	2.88	3.09	4.89
Total builders' joinery				
Urban India	3.35	3.44	3.55	3.88
Construction end-use				
Urban India	3.85	4.07	4.34	4.80
Rural India	11.56	12.22	13.02	14.40
India	15.41	16.30	17.36	19.20

Overall, the review draws the following conclusions:

(i) India can no longer satisfy its demand for industrial roundwood from domestic resources.

(ii) Imports of industrial wood volumes have grown threefold during the last ten years, comprising mainly non-coniferous logs from ITTO tropical timber producers. Exports from these countries to India have grown at 20% annually over the recent five-year period, reaching a volume of well over 2 million m^3. However, this is still a small share (under 5%) of the national consumption of coniferous and non-coniferous logs.

(iii) Timber imports amount to only about US$550 million a year at current exchange rates, which is a small fraction of the overall annual imports into India valued at over US$50 billion. In principle, there is space and scope for increased tropical

timber and other imports, given the latest national GDP growth rate (projected to be around 7% in 2004), unprecedented foreign exchange reserves of over US$100 billion, and a pro-active policy of trade liberalisation. These factors are in addition to the dynamic demand for timber products due to rapid urbanization and intensive construction activity in the country, and to the potential for re-export of processed wood products, among other factors.

(iv) The bulk of imports into India are in an unprocessed form, mainly as logs. Relatively small but sizeable quantities of sawnwood are also imported, while veneers and plywood are almost negligible and limited to some specific categories. This trend is likely to continue in the foreseeable future, unless there are policy changes and a mutually beneficial understanding between exporters of value-added wood products and the Indian importers. Consultations with the concerned stakeholders indicated their preference for the current trend, which is also reflected in the prevailing tariff structure. That could change.

(v) The review has revealed that the Indian timber market is dispersed and disorganized and the various distribution channels, entities and customers do not have access to any noteworthy national or regional standard-setting organization/s for ensuring specifications, quality control, innovations and complementarities in production, processing, trading and retailing. This is unlike most other major goods and services in the country.

(vi) In view of the disorganized national timber market, the lack of market intelligence and the brisk promotion of substitutes, there are threats and challenges to the timber industry and to the inherent competitiveness of tropical hardwoods in the country. There is therefore a risk that the tropical timber trade will miss the opportunity to expand in India, and could become stagnant or even get reversed.

(vii) The review process has helped to raise awareness about the urgent national need to improve timber trade and forest sector statistical data as a basic element of an enabling environment for investment in the forest sector and appropriate market development. The need for timeliness, transparency and reliability in data on the timber sector for meeting the requirements of international partners, including data for the Joint Forest Sector Questionnaire, is also being recognized. No inputs have been received from India for the Questionnaire for several years, but an intensive effort has now been launched to collect and compile the requisite data under the aegis of the Ministry of Environment and Forests in cooperation with forest agencies in States and Union Territories. Even the most recent response is inadequate and inconsistent, for reasons largely beyond the means and methodology of the current system.

This report contains several recommendations for follow-up action in order to take advantage of the outcomes of the study and to strengthen the forest sector. Such action involves the development of mutually beneficial partnerships and alliances - nationally and internationally - for modernizing the timber market and for maximizing the forest sector's contribution to sustainable social and economic development in the country. The following specific recommendations are singled out for priority consideration by:

Government of India & ITTO

Organize an in-country, informal, multi-stakeholder workshop to disseminate the highlights of the review and to receive feedback for potential future strategies for the forest sector and for addressing the current constraints and opportunities for appropriate timber trade and markets for wood and wood products.

ITTO

Undertake a follow-up project aimed at strengthening the economic information, market intelligence and statistical system for the forest sector.

Government of India

Develop and deliver a system for timely, transparent, coherent and reliable statistical data collection and compilation regarding timber consumption, production, processing, marketing and trade, and consider taking measures for the further loosening of tariff and non-tariff barriers.

Trade and commerce

Institute a national timber trade association or equivalent organisation, independently or in association with other trade, commerce and industry federations and institutions, with initial assistance from the Government and/or ITTO, and establish an appropriate timber trade and market information and promotion mechanism, including a periodic timber bulletin.

SOME INTERNATIONAL INSIGHTS

This note is a non-obligatory addendum to the Executive Summary about some of the key messages derived during the Review regarding India's potential place in international timber trade and related issues.

India is re-emerging as a player on issues of international trade and as an advocate of the developing country concerns alongside Brazil, China, Colombia, Malaysia, Nigeria and South Africa, among others. This was noted at the WTO meeting at Cancun in September 2003, even more seriously than at Doha in 2002. At the same time, India is taking strides and making commitments for advancing global accords for economic reforms, trade liberalization, and the implementation of Rio Agenda 21, as also pronounced by the Prime Minister in his foreword to Empowering People for Sustainable Development (MoEF, 2002). That itself is leading to a vigorous awakening for conserving and preserving India's forests for national and international environmental services and local community benefits. Indeed, an innovative approach to the forest sector is being contemplated, as is evident from establishing a National Forest Commission in 2003 composed of highly eminent persons.

Among the key factors impacting the current trends and future prospects with a bearing on international trade are the national policy and institutions, demography, economic and social development, and technological and environmental changes, apart from the strategic location of India for international trade in timber and other products. As part of the policy for economic reforms underway, the private sector is poised to have an increasingly important role and this could be a driving force for enhanced international timber trade. That could also contribute to the efficiency of the forest sector and help leverage investment resources for its sustainable development. The greater liquidity provided by such investment should reduce vulnerability to volatility that the sector suffers from, and smoothen out any demand shocks. Joint ventures, partnerships and alliances that are being forged in other sectors of the economy could pave the way for the forest sector to become a big market player which it should be -locally, regionally and globally.

Demographic development is not merely the crossing of the billion mark and becoming the most populous country in the world in not too distant future. It is the massive shifts to new townships and existing urban centres, calling for extensive household and commercial construction countrywide. Largely increased wood volumes will be required, despite low per capita consumption. Most of the additional demand would have to be met from imports, because of already overstretched domestic supplies. With increasing incomes in a country that has entered the take-off stage and poised to grow at around 7 per cent per annum, if not more, there is likely to arise still more demand for wood and wood products from the burgeoning rural populace, including some shift from fuelwood to charcoal, thereby accelerating the pressure on natural forest and the ToF resource. Uneven income distribution accentuates the phenomenon, with higher income groups increasingly seeking other processed wood products, such as quality furniture, for which too tropical timbers are preferred.

All this and the demand abroad for Indian processed wood products offers scope for value-added re-exports, drawing upon the tropical hardwood resources from Asia and elsewhere. Trade liberalization should push India to compete with countries worldwide and the

economic viability of forest sector trade and industry will depend on changing comparative advantage, making use of technological innovations, communication technology and market skills so abundantly available in the country.

Timber is a bulky commodity. With its physical location between dynamic markets in the rapidly developing east and oil-rich middle east and Europe in the west, and being within easy reach of busy sea routes for international commerce, the potential of India to benefit from access to entire global economy is unsurpassable. If this is coupled with timber eco-labelling and certification, there should be little difficulty in reaching India's finished products on to the lucrative Home Depot and others in the USA too, which is already importing over 40 percent of their wood products from China. Bamboo and rattan furniture and wooden handicrafts could also then find a significant market niche in the developed countries, among other items.

It is not only as a potential exporter, but even more importantly as a needy importer of tropical timber that India could count on its strategic location. While, for example, there are illegal logging restrictions on exports from Indonesia, India could easily diversify its tropical timber imports from other locations, including Africa just across the Indian ocean, and thereby contribute to Afro-Asian solidarity that India has been championing. Outsourcing from far and near should be part of the globalization process, taking advantage of diverse timber types, comparative prices and balance of overall trade. No wonder therefore that timber has started rolling in from Africa and Latin America, but both India's need and their supply situation call for much more international trade across the oceans.

India must open up and diversify. Restrictive policies could be seen by India's own timber consumers as a penalty and therefore would have to be a political choice for catering to their willingness-to-pay for tropical hardwoods as revealed by the Review. That would also contribute to harmony between humanity and the environment, for India's forest sector shall stand to gain, *inter-alia,* through the reduction of unabated pressure on its already degraded forests, impacting on the nation's precious water and biodiversity resources and on the sustainable livelihoods of forest communities.

Globalization and trade liberalization are almost certain, populist protests notwithstanding. How can India remain unaffected, since WTO agreements are legally binding. Although some timber tariffs are already low, there is further need to reduce "custom duties" (IIFM, 2003) and non-tariff barriers. That should make imports even more competitive compared to India's domestic products. Timber sales could go up by 25 per cent if the inroads made by plastic and steel are thus thwarted.

A visionary approach is warranted to avail of these opportunities. Otherwise, they would be of little avail if the forest sector seemingly stays on as an introvert business-as-usual complacent corner boutique in the expanding national economy and increasing international trade, with market openings, both for imports and exports. Some sector stalwarts might even choose to be so, unwittingly or otherwise, as could be conjectured from the continuing lack of coherent and consistent sector statistics, economic information and market intelligence. Redeemably, the pressures of liberalization, economic resurgence and the policy of a player in the international arena are unlikely to allow that luxury much longer. The wise ones are already aware.

CONTENTS

Chapter I

INTRODUCTION

This pre-project Review is aimed at obtaining an insight into the current supply and demand situation and the opportunities in India for international timber trade with special reference to tropical timber. Among the thrust areas of the Review are (i) a study and synthesis of the currently available statistical data, and (ii) a comprehensive consumption survey in the main market and its analysis.

Roman Forum worked in collaboration with the Indian Institute of Forest Management (IIFM) of the Ministry of Environment and Forests and put together a team of experts to undertake the review. The Team through its leader continually interacted with the ITTO Secretariat on various issues, including the overall approach to the study and the methodology for surveys and sampling, which was designed by the Faculty of Marketing Management of IIFM. The draft report was commented upon by the Secretariat and the revised report was accordingly put together, involving the economists of the Review team at the National Council of Applied Economic Research (NCAER) with due assistance of the IIFM Project Manager, inputs of the national consultants and advisors, and the oversight of the Team Leader. This was done after several brainstorming sessions, a technical workshop and peer reviews of the draft chapters prepared by the various team members. The Team benefited from multi-stakeholder participation during the review process. The contribution of various experts, industry and trade organizations, NGOs, national institutions and others contacted and/or consulted was useful in obtaining diverse viewpoints for synthesizing a holistic report. Nevertheless, it is essentially based on the study by the team members of the secondary information on the production, trade and consumption of timber from pertinent agencies, the results of other relevant studies, and surveys for the main urban consumption centres of the country.

The brainstorming session held in May 2003 analyzed the presentations that were made at the national Forest Science Centre (Van Vigyan Kendra) by the national, regional and local consultant team members on the methodology and outcome of urban consumption surveys and it charted a way forward regarding the Review process, especially as the team was confronting the paucity of reliable and update secondary data. Another session at New Delhi in August 2003 was devoted to sharing the salient features of the draft chapters of report of the pre-project Review and for interacting, jointly and severally, with various stakeholders. The draft report was circulated among a group of knowledgeable persons and experts for their comments and peer review, and was finalized during September 2003. The draft report was made available at the ITTO Council session at Yokohama in November 2003 and a summary presented at its Committee on Economic Information and Market Intelligence. Taking note of the Committee's comments and further in-country and other responses and reviews, the report was finalized in early 2004.

This Review report has seven chapters addressing the various Terms of Reference (TOR) of the pre-project Review which are recorded in the Annex 1.1. In brief, these and related issues

are dealt with as under: TOR items 1, 6 and 7 in chapter II, TOR items 8 and 9 in Chapter III, TOR items 4 and 5 in Chapters III and IV respectively, and TOR items 2 and 3 in Chapter VI.

After this introductory note is the second chapter, which highlights the trends and prospects for timber consumption as a whole and also with special reference to various tropical timber products and their potential. This is based on both the secondary data collected, compiled and collated with the primary data generated by the various surveys and appraisals undertaken as part of the Review. The best estimates in the chapter are based on the data succinctly presented primarily on the basis of consumption survey for urban centres - explained in detail in subsequent two chapters, and correlating it with secondary data, which are extremely variegated, with wide-ranging disparities and mostly not updated. In addition, quick sample surveys were undertaken of timber consumption in 6 rural districts in the country to validate the data for consumption of timber in rural housing and households, for it was noted that rural timber consumption is manifold that of urban consumption, apart from fuelwood. In spite of the fast urbanization, India will continue to have majority of its population living in rural areas and thereby absorbing most of the domestic production, more so with an improving standard of living, albeit still very low. This has an indirect impact, if not so direct, on the gap between national timber supply and demand, and therefore on the potential for tropical timber and other imports. The synthesis in the chapter provides an overview of the situation now and in the near future for the consumption of various timber types and products in the country, such as summarily recorded in Table 2.12. All the senior team members joined forces in preparing and finalizing this chapter, given the overarching nature of the chapter, the need to reconcile the diverse data, and to deal with issues of distribution channels and competitiveness, analysis for which was spearheaded by the team member and national forestry advisor from the Delhi headquarters of the Ministry of Environment and Forests in close collaboration with the NCAER Economist consultant members of the Team.

The third chapter complements the information presented in the second chapter on timber trade, which was collected and compiled mainly from the customs records, study of statistics from other secondary sources and an analysis of the current composition, volume and value of the trade, essentially imports. The evolution and current status of tariff structure was studied and an analysis is recorded in this chapter, also with regard to non-tariff barriers. In this process, the concerned team members contacted the various port authorities directly -apart from the Customs officials- to obtain disaggregated trade data. Such data on imports through various ports was noted to be of relevance as it impacts consumption in neighbouring urban and industrial centres and vice versa. Apart from the principal author of the chapter -the erstwhile Director of the Indian Plywood Industries Research and Training Institute, accessing disperse data, direct contacts were established by regional and local Team members with port authorities as also with the Customs record officials, such as at Chennai, Kandla, Kolkata and JNPT Mumbai. This was required for obtaining cross-cutting regional and national data which are presented in the chapter, including some of the case studies that were conducted for the purpose, as also for studying distribution channels for the data presented in the second chapter, which included a national hub for timber trade and processing at Yamuna Nagar/Jagadhari.

The fourth and fifth chapters concern the comprehensive urban consumption surveys designed and coordinated by the IIFM Market Management Faculty and conducted in the country as part of the Review -overall and end-use category-wise, respectively. These surveys were originally foreseen for ten main urban consumption centres of Mumbai, Kolkata, Delhi, Chennai, Bangalore, Hyderabad, Ahmadabad, Pune, Surat and Kanpur – noted here in descending order of their population, ranging from over 16 million in Mumbai down to nearly 3 million each in Surat and Kanpur. The survey was extended to another five centres in order to cover the range of evolving urban consumption and to improve the quality of data for the Review. A brisk construction and consumption activity in the centres of Ghaziabad and Noida in Uttar Pradesh state, and Faridabad, Gurgaon and Yamuna Nagar in the Haryana state was observed, with the latter also linked to the variegated processing plants in Jagadhari. Surveys in 15 urban consumption centers were thus undertaken, but it was considered appropriate to incorporate the outcomes of Faridabad, Ghaziabad, Gurgaon and Noida into one aggregate urban centre for purposes of the Review: "Delhi Satellite Towns", as they fall into the National Capital region. The data collected independently, for example for the fast growing township of Gurgaon, and that under the Satellite Towns survey have thus been collated. As such, the urban consumption survey is synthesized into and presented for 12 centres, even though the survey was undertaken in 15 centres, the summary data for each of which is presented in the Annexes. These two chapters thus present a synthesis of the vast amount of data that was collected and compiled, involving a number of surveyors recruited and overseen by the regional and local consultants and team members based at Mumbai, Delhi, Chandigarh, Chennai, Bangalore and Ahmedabad.

The sixth chapter, initially compiled by the NCAER economists with inputs from and revisions by other team members and their own research and analysis, deals with the problem of paucity of reliable economic information and market intelligence for want of a well functioning statistical system for the sector. This was the biggest challenge for the Review Team, which had to wade through recycled information, both national and international. Till the last moment of finalizing the report, the Review Team awaited the data that was being collected for the unresponded Joint Forest Questionnaire, but gave up in order to delay no more, since that data was still under preparation, and what was received subsequently at ITTO was not noteworthy. The Review process made it even more apparent that the Indian timber market and industry is highly disperse and disorganized, the data are often inaccessible, shrouded and conflicting, and several definitions are overlapping -calling for stringency in the collection of primary data and careful cross-checking and its dissemination. In recognition of this situation, the chapter proposes priority attention to undertake measures to enhance the transparency of the timber market intelligence and economic information through the strengthening and modernizing of the statistical data system for the sector.

Last, but not the least, is the seventh chapter drafted by the NCAER members of the Team on the basis of the entire Review and their expertise on trade, industry and infrastructure, duly revised by the Team Leader with inputs from national advisors and experts of the Team. It provides a short synopsis of the core outcomes of the foregoing chapters and related studies. It highlights the main messages, conclusions and recommendations on issues of trade, consumption and production with special reference to tropical timber trends,

prospects, opportunities and constraints. It incorporates this in terms of a SWOT analysis, reflecting the strengths of the economy and growing demand for internationally traded tropical timber, the weaknesses of data, statistical system and non-tariff barriers, opportunities provided by growing urbanization and liberalization, and the threats that the sector faces if it remains disorganized and if market intelligence and economic information are not organized urgently. The Review recommendations are directed to addressing some of these threats and to convert this challenge into an opportunity for benefiting the national economy, the forest sector and its stakeholders.

Chapter II

TIMBER TRENDS AND PROSPECTS

2.1 INDIAN TIMBER MARKET

2.1.1 Introduction

India accounts for 16.1 per cent of world's population and 2.47 per cent of worlds' geographical area, but has only 1 per cent of world's forests. A huge human population, coupled with more than 500 million of livestock, exerts immense pressure on its natural resources, including the forests. Improving standards of living have furthered the demand for timber and timber products. The natural forests can not meet the increasing demand for timber and is being fulfilled partly by timber obtained from the Tree Outside Forests (TOF) and imported timber.

This chapter presents a snapshot of the timber market in India in terms of trends in production, consumption, imports and exports of main timber products. The timber products covered in this chapter are industrial roundwood, sawnwood, veneer and plywood. The data used for this purpose are largely those collected from various secondary sources. The secondary data are not available for builders' joinery and it could not thus have been explicitly included in this chapter, given the fact that this item is mainly customs made and traded insignificantly. However, it is also dealt with generally, and more specifically elsewhere, on the basis of end-use consumption survey undertaken for the Review.

The analysis includes the timber trade scenario with focus on the overall objective of the Review regarding tropical timber imports, drawing upon the secondary data for the same - as authentic as possible. However, data in required form are not readily available, and there is thus a degree of overlap in the data and its analyses that the chapter covers on production, consumption, imports and exports of timber products. This is often directed towards assessing the situation with special reference to tropical hardwoods.

2.1.2. Production and Consumption of Timber

Despite industrial and technological advances in the development of new generation materials and products, wood continues to be an indispensable material for several economically important end uses. A sustainable supply of wood can be maintained with much less effort than that is required for producing the wood substitutes, such as steel and plastics that are non-renewable and high energy consuming. This is particularly important in view of the chronic deficiency of power in the country and huge outgoes on fossil fuel imports. Undoubtedly, in total life cycle analysis, wood is the most environment friendly of all its modern alternates and the best substitute of itself. Growing more trees and producing and procuring increased volume of wood is probably the most rational option in view of its highly favourable impact on environmental stability and socio-economic security, e.g., *vis-à-vis* energy usage and conservation, as depicted in the following table.

Table 2.1: Energy for Production

Material	Energy for Production per unit of stress in normal use ($MJ/m^2/N/mm^2$)
Steel	1,500
Timber	80
Concrete	240

Source: Compiled by Bansal A. K.[1]

India is one of the major users of wood in the Asia-Pacific region. The country had, till recently, the privilege of having fairly abundant quantity of wood from several tropical hardwood species including teak and rosewood. Utilisation of these species for different end-uses was, by and large, based on practical experience rather than scientifically developed product development and application technologies. Moreover, these species with excellent desirable inherent characteristics are generally a "ready-to-use" natural raw material that requires little processing effort.

The production trend of timber products is presented in Table 2.2. including the Compounded Annual Growth Rate (CAGR) during 1991-2000. The CAGR has been used to capture the production trend for a substantially longer period of time ignoring year-to-year fluctuations. The table clearly suggests that except for roundwood (both coniferous and non-coniferous) and plywood, all other categories of wood products have been marked with negative growth rate as presented by CAGR over 1991-2000. In the case of tropical non-coniferous industrial roundwood, it is noted that there was an increasing trend from 1991 to 1997, and afterwards the production has been declining significantly. The veneer production remained constant at 15 thousand Cu.m since 1996.

Table 2.2: Production of Timber Products ('000 Cu.m)

Item	1991	1995	1996	1997	1998	1999	2000	CAGR (1991 to 2000)
Roundwood C	10,055	10,636	11,485	11,542	11,454	11,516	11,540	1.54
Roundwood NC	256,732	275,615	303,062	304,901	305,709	306,770	307,958	2.04
Industrial Roundwood C	2,769	2,776	2,777	2,779	2,636	2,637	2,599	-0.70
Industrial Roundwood NC tropical	21,732	22,115	22,194	22,285	21,312	20,401	19,589	-1.15
Sawnwood C	2,500	2,500	1,200	1,200	1,200	1,200	1,100	-8.72
Sawnwood NC	14,960	14,960	7,200	7,200	7,200	7,200	6,800	-8.39
Veneer	24	7	15	15	15	15	15	-5.09
Plywood	250	217	312	323	331	325	314	2.56

Source: FAO Yearbook. Forest Products, various issues and updates. There are obvious data discrepancies as depicted by the static trend over years of several products or the unrealistic ratio of conifer industrial roundwood and sawnwood production in 1991 and 1995. This is an example of the unreliability of secondary data sources and the need for disparate data validation and primary surveys to provide realistic timber trends and prospects.

[1] Based on the Report of Sub-Committee on Detailed Studies of Comparative Advantages of Wood, Reconstituted Timber vis-à-vis Plastics, Aluminum and Steel, of the Reconstituted Development Panel Committee Constituted by the Planning Commission of India 1992.

With this background of production trend, it is worth reviewing the consumption trend of the timber products, which is presented in Tables 2.3 and 2.4. As in case of most of the products, data are not available prior to 1996. Therefore, consumption trends have been analysed since1996 onwards. The consumption of coniferous industrial roundwood, which is about 10 per cent of the total industrial roundwood consumption, has recorded marginal increase over the years, except in the year 2000. On the other hand, non-coniferous industrial roundwood which constitutes about 90 per cent of the total consumption, shows a continuous decline since 1997. Sawnwood, both coniferous and non-coniferous recorded marginal changes from 1996 to 1999, but a substantial dip was noted in the year 2000. Veneer and plywood, at a comparatively lower level of consumption than other products, did not record significant change during this period (c.f., Figures 2.1 to 2.3).

Table 2.3: Trends in Consumption of Timber products ('000 Cu.m)

Item	1996	1997	1998	1999	2000
Industrial Roundwood C	2,777	2,821	2,987	3,026	2,879
Industrial Roundwood NC tropical	23,070	23,278	22,722	22,111	21,399
Sawnwood C	1,213	1,206	1,203	1,205	1,101
Sawnwood NC	7,177	7,186	7,199	7,194	6,803
Veneer	16	17	19	18	20
Plywood	312	323	331	325	314

Source: FAO Yearbook. Forest Products, various issues and updates. It is noteworthy that the industrial roundwood figures here are higher than those in Table 2.2, indicating the lack of consistency in secondary data, even though largely based on the same sources and published by the same organization. Hence the need for making best estimates based on primary surveys and in-depth assessment of variegated secondary data as has been attempted in this Review.

Table 2.4: Consumption Share between Coniferous and Non-Coniferous (per cent)

Item	1996	1997	1998	1999	2000
Industrial Roundwood C	10.74	10.81	11.62	12.04	11.86
Industrial Roundwood NC- tropical	89.26	89.19	88.38	87.96	88.14
Saw wood C	14.46	14.37	14.32	14.35	13.93
Sawn wood NC	85.54	85.63	85.68	85.65	86.07

Figure 2.1: Consumption Trend of Industrial Roundwood

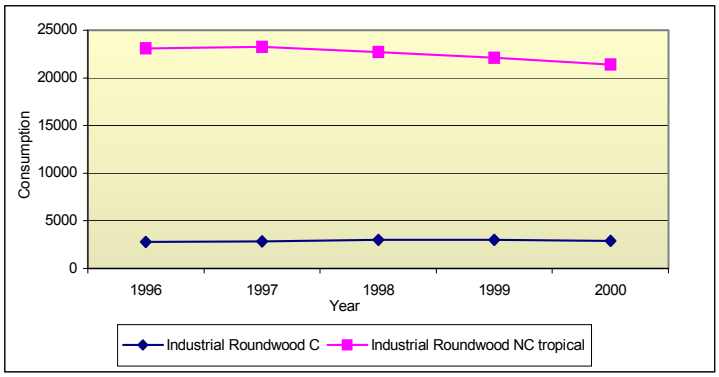


Figure 2.2: Consumption Trend of Sawnwood

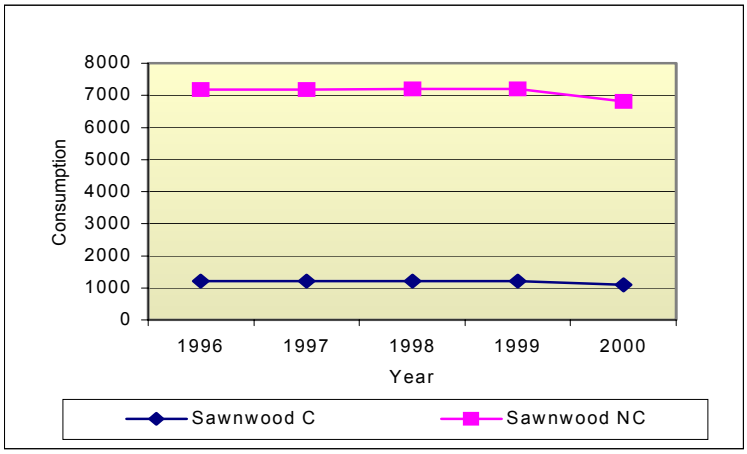
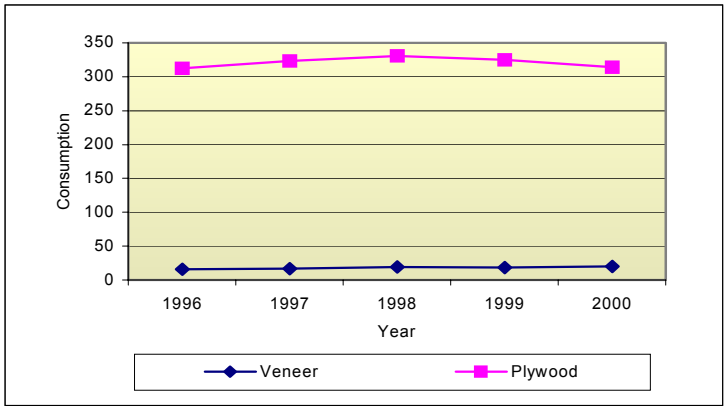


Figure 2.3: Consumption Trend of Veneer and Plywood



2.1.3 Impact of Income and Price on Consumption

An attempt has been made to explore the relationship between income and consumption of the major timber products. Gross National Product (GNP) of the country at 1993-94 constant price has been considered as the income variable for this analysis. The coniferous and non-coniferous categories have been clubbed for the industrial roundwood and sawnwood as consumption variable. Scatter diagrams to depict the said relationship have been presented in Figures 2.4 to 2.7. It is observed from the scatter diagrams that industrial roundwood consumption *per se* does not show any positive trend with the change in income. The sawnwood and veneer consumption suggests slightly positive relationship with the changes in income to a large extent. This implies that with rising level in income, the consumption of sawnwood and veneer would increase. The plywood scatter diagram indicates maximum preference at the middle income level.

Figure 2.4: Scatter between Income and Industrial Roundwood

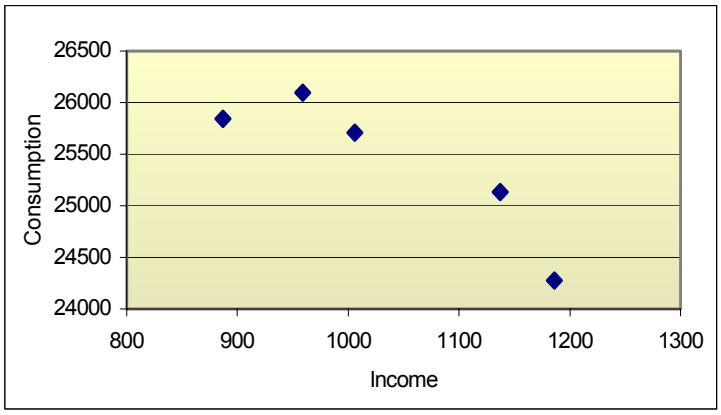


Figure 2.5: Scatter between Income and Sawnwood Consumption

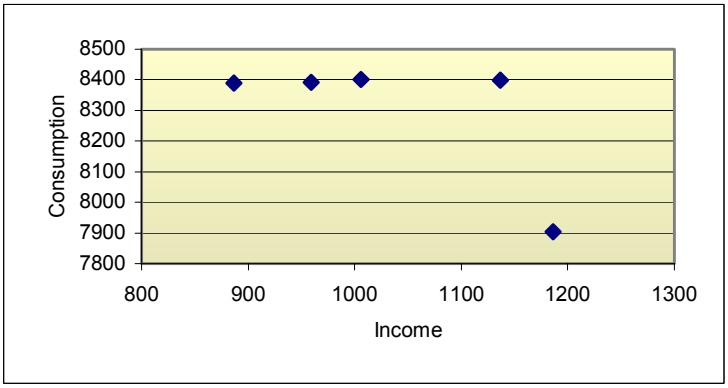


Figure 2.6: Scatter between Income and Veneer Consumption

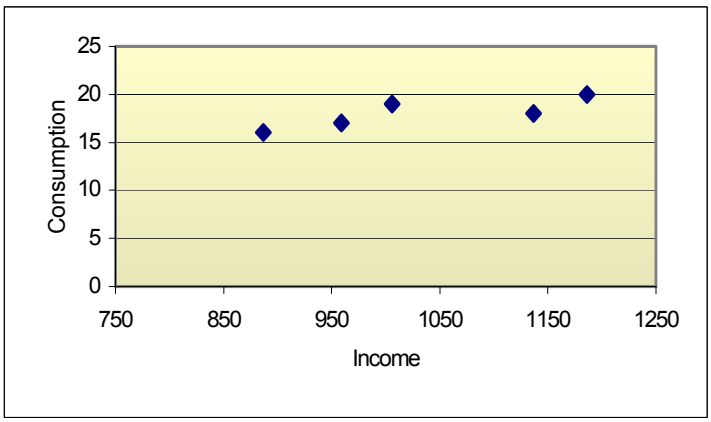
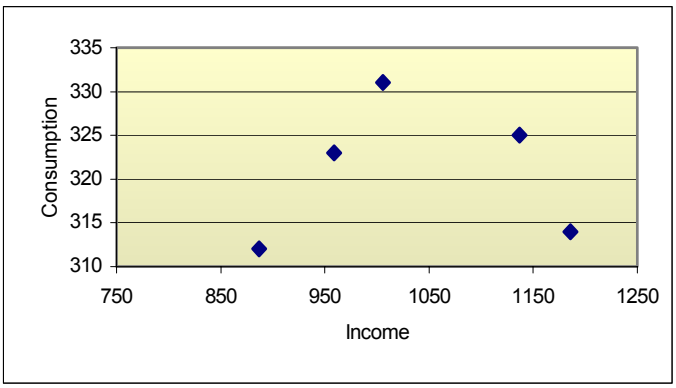


Figure 2.7: Scatter between Income and Plywood Consumption



Understanding the market mechanism remains incomplete unless the price movement of the products is studied. For an analysis of the price behaviour, the available Wholesale Price Index (WPI) of timber and timber products from 1994-95 to 2000-01 has been considered. The WPI is not available for each and every timber product considered in this study. However, price movement for the three categories available in WPI statistics is able to depict the price trend to a considerable extent. The WPI for wood and wood products, plywood commercial planks and timber planks is presented in Table 2.5. The table reveals that the price for plywood commercial plank had been experiencing a steep increase till 1998-99. The growth in WPI for this product was almost 300 per cent over the price of 1993-94. Timber planks recorded the lowest growth over the said time period compared to two other products mentioned here. The price movement of the wood products as indicated by the WPI is presented in Figure 2.8.

Table 2.5: Wholesale Price Index (WPI) for Wood products (1993-94=100)

Commodity	Weight	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01
Wood & Wood Products	0.173	110.9	118.9	122.1	153.0	198.9	193.9	180.0
Ply wood commercial planks	0.057	105.6	116.8	125.3	189.2	290.4	261.3	257.1
Timber Planks	0.116	113.5	119.9	120.6	135.3	154.0	160.7	142.1

Figure 2.8: Price Movement of the Wood Products

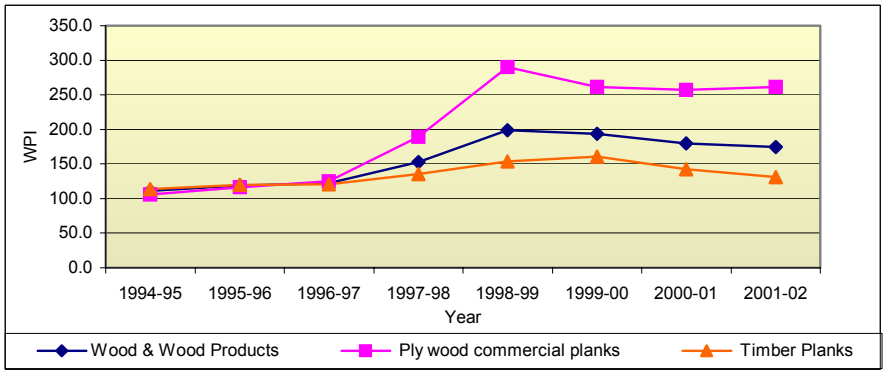


Figure 2.9: Price and consumption behaviour of Industrial Roundwood

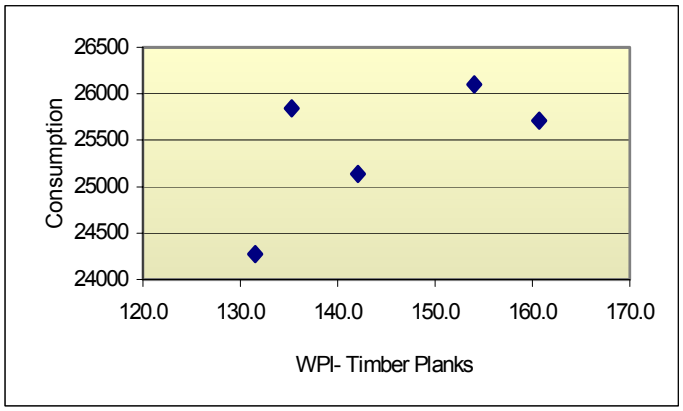
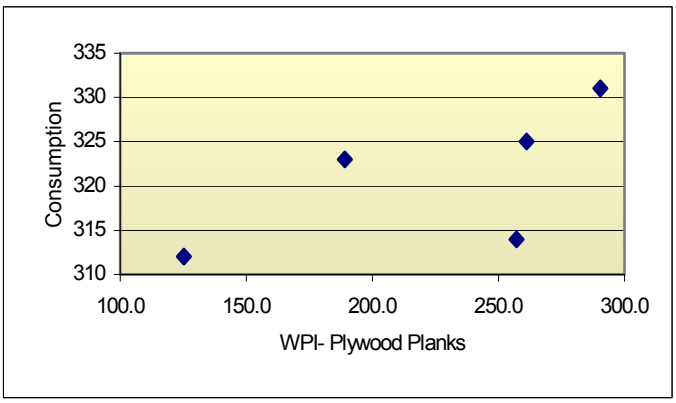


Figure 2.10: Price and Consumption Behaviour of Plywood



The relationships between price and consumption of industrial roundwood and plywood have been presented in Figures 2.9 and 2.10. Both the figures apparently suggest that increase in price did not affect the consumption of the products adversely.

The available literature[2] on demand for timber and timber products reveals that generally a positive income elasticity and negative price elasticity exist in timber markets all over the world. This suggests that consumption of timber and timber products increases with increase with income (Gross Domestic Product) and decreases with increase in price and vice-versa. Of course, it is important to note that the price elasticity for most of the wood products is low in both the developed as well as developing countries.

The consumption trends of the wood products in India do not seem to conform to the trend observed globally. As a cross check, the consumption data collected from FAO statistics and ITTO Annual Review and Assessment of the World Timber Situation, 2002 (c.f., Table 2.6) has been compared. The consumption data in the ITTO source is given for the period 1998 to 2002. Though the absolute figures differ in these two data bases, a similar consumption trend is observed. Therefore, the prime question is why does the consumption behaviour

[2] Global Forest products Consumption, production, Trade and Prices: Global Forest Products Model Projections to 2010, Working Paper No: GFPOS/WP/01, University of Wisconsin, European Commission and FAO, 1998 and Asia pacific forestry sector outlook study, Working paper No: APFSOS/WP/02, FAO, 1997.

defy the trend observed globally? The answer lies primarily with the process of building of the timber consumption database and its reliability. A lot of inconsistencies in the data were observed during the course of this study. The problems and reliability of the data available from secondary sources have been discussed in detail in a later chapter of the report. The primary survey of the end-users, which is presented in chapters 4 and 5 of this report, also confirms the data non-reliability. A large variation in the consumption data in various reports can probably be explained by the fact that the consumption data is more a derived data than an actual data. Consumption is computed using the reported production data (Consumption = Production + Imports – Exports), excluding the production from TOF already referred to earlier. A sizable number of trees grown out side the legally constituted forest areas, such as boundaries of agricultural fields, rivers, roads, canal banks and block plantations over non-forest lands are generally ignored while reporting production statistics. A substantial proportion of the increasing demand for timber is met by TOF which is neither reported nor recorded in the country, apart from being supplemented by the imported timber.

The data in the latest international publications -FAO's Overview of Forest Products Statistics in South and Southeast Asia, 2002, and the ITTO Annual Review and Assessment of the World Timber Situation 2002, were further reviewed. It was apparent that both these publications had attempted to update the data regarding India's timber production, consumption and trade in a fairly comprehensive manner, but both of them suffered from the inherent drawback of lack of access to data from the country, wherefrom they have not received any response to the Joint Forest Questionnaire over several recent years. As such, these and similar attempts are largely guesstimates and are obvious in some cases from the simple and safe repetition of figures over years, such as in the FAO's Forest Products Statistics Yearbook. Therefore, their reliability apart, it should be made clear at the outset that update secondary data are either not available or else are not reliable, other than the import-export data recorded by the Customs authorities. In the latter case too, however, the data are problematic due to often incoherent and incomplete details of timber species due to which bulk of wood and wood products traded are clubbed under the "other" category. Nonetheless, it is useful to present a synopsis of the situation as is presented in the following table from the ITTO's latest assessment in order to give a consolidated preview, noting however from the trend analysis and projections undertaken for this Review that reliance on these data -deemed to be the most critically presented among all consolidated secondary sources so far, could lead to underestimates of the potential demand and consumption of timber as well as production and processing in the country.

The other major reason of this sort of deviation from the normal market behaviour is the price data itself. It is a known fact that the price of timber and its products vary significantly depending on their quality. Some examples of the variation in price according to the quality of the timber is presented in the annex. Although species-specific price-consumption relationship might have given a better and more realistic scenario from the perspective of market economics, the requisite species-specific consumption and price data are not available from any of the sources, and hence the reported price data can be considered as merely indicative.

Table 2.6: Production, Consumption, Import and Export of Timber & Products (000' Cu.m)

Species	Production					Imports					Exports					Domestic Consumption				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Logs																				
All	18,350	17,350	16,550	16,500	16,500	1,900	2,093	2,138	2,486	2,486	3	2	1	37	35	20,247	19,441	18,638	18,949	18,951
Coniferous	2,538	2,538	2,500	2,500	2,500	290	280	188	386	386	0	0	0	5	5	2,828	2,818	2,688	2,881	2,881
NC	15,812	14,812	14,000	14,000	14,000	1,610	1,813	1,950	2,100	2,100	3	2	1	32	30	17,419	16,623	15,949	16,068	16,070
Sawnwood																				
All	8,400	8,400	7,900	7,900	7,900	9	5	17	29	29	2	1	6	10	10	8,407	8,404	7,911	7,919	7,919
Coniferous	1,200	1,200	1,100	1,100	1,100	2	2	8	14	14	1	0	1	0	0	1,201	1,202	1,107	1,114	1,114
NC	7,200	7,200	6,800	6,800	6,800	7	2	9	15	15	1	0	6	10	10	7,206	7,202	6,803	6,805	6,805
Veneer																				
All	15	15	15	15	15	12	3	1	1	1	3	3	1	0	0	24	15	16	16	16
Coniferous	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	1	0	0	0	0
NC	15	15	15	15	15	11	2	1	1	1	2	2	1	0	0	24	15	16	16	16
Plywood																				
All	310	310	310	310	310	31	18	6	5	5	104	55	2	3	3	237	272	314	312	312
Coniferous	10	10	10	10	10	17	11	0	1	1	17	14	0	1	1	10	7	10	11	10
NC	300	300	300	300	300	14	7	6	4	4	88	42	2	2	2	226	265	304	301	302

Source: Extracted from ITTO, 2003, *Annual Review and Assessment of the World Timber Situation, 2002*

2.1.4 Prospects of Consumption and Production of Timber and Timber Products

The prospects for the timber industry in India are presented in the following analysis. So far, apart from the estimates of industrial wood raw material requirement made by the National Commission on Agriculture in 1976[3], several projections have been made in recent years, viz., Report of Inter-Ministerial Group on wood Substitution (1986)[4], A Study of Raw Material for Wood Based Panel Industry in India by IPIRTI/FAO (1987)[5], Development Panel for Wood Panels Industries (1989)[6], Forest Survey of India (1996)[7], Wood Based Industries in India – a study sponsored by the Ministry of Environment & Forests (1999)[8], National Forestry Action Programme (NFAP) 2000, which is a comprehensive strategy and action plan of 20 years[9]. However, an attempt at the harmonization of various projections has been made in a working paper brought out by FAO, which indicates the estimated demand for industrial round wood in India (other than fuel and pulp wood) as 49.41, 53.17 and 57.93 million cubic metres (Cu.m) by the year 2000, 2005 and 2010 respectively (Table 2.7).

[3] National Commission on Agriculture, Government of India, 1976. (Vol. ix – Forestry)

[4] Report of the Inter-Ministerial Group on Wood Substitution, Ministry of Environment and Forests, Government of India, April 1986, 28p

[5] A study of Raw Material for Wood Based Panel Industry in India, IPIRTI, Bangalore and FAO, Rome, February 1987, 59p

[6] Report of the Raw Material Sub-Committee, Development Panel for Wood Based Industries, 1989, 59p

[7] Fuelwood, Timber and Fodder from Forests of India, Forest Survey of India, 1996, 36p

[8] Study on Forest Industry – report in nine volumes prepared by Chemprojects Design & Engineering Pvt. Ltd., New Delhi, Sponsored by the Ministry of Environment and Forests, Government of India, March 1999

[9] National Forestry Action Programme – India, Ministry of Environment and Forests, Government of India, 2001,(two volumes).

Table 2.7: Industrial Wood Requirement (million Cu.m)

Sector	Year 2000	Year 2005	Year 2010
Sawn wood (housing, furniture, implements, sports goods, packaging.)	47.00	50.00	54.00
Pulp (paper, newsprint)	23.60	28.50	35.00
Plywood	1.45	1.69	1.92
Particleboard	0.34	0.49	0.65
Fibreboard	0.22	0.32	0.41
MDF	0.40	0.67	0.95
Total	**73.01**	**81.67**	**92.93**

Source: Asia Pacific Forestry Sector Outlook Study, Working Paper No.10, FAO by Dr. P.M. Ganapathy, 1997

The Global Forest Products study (1998)[10] projected the consumption of industrial round wood in India at 42 Mn Cu.m., 46 Mn Cu.m. and 49.9 Mn Cu.m. for the years 2000, 2005, and 2010 respectively (Table 2.8). This study also projected the corresponding production of industrial round wood at 41 Mn Cu.m., 44 Mn Cu.m., and 47 Mn Cu.m, indicating thereby a growing gap between production and consumption.

Table 2.8: Global Forest Products Model Projections to 2010 ('000 Cu.m)

	Actual		Projections		
	1980	1994	2000	2005	2010
Consumption of Roundwood	212,075	281,551	333,294	368,061	406,150
Consumption of Industrial Roundwood	19,669	25,066	42,234	46,076	49,955
Consumption of other Industrial Roundwood	3,925	5,234	6,224	7,194	8,212
Consumption of Sawnwood	10,991	17,458	19,198	20,693	22,207
Consumption of Wood-based Panels	239	410	485	550	624
Consumption of Veneer Sheets and Plywood	194	335	398	453	515
Consumption of particle Board	27	33	35	37	39
Consumption of Fibreboard	18	42	51	60	70
Production of Roundwood	212,070	281,307	332,225	366,035	403,149
Production of Industrial Roundwood	30,922	24,792	41,137	44,033	46,936
Production of Other Industrial Roundwood	3,925	5,234	6,224	7,149	8,212
Production of Sawnwood	10,976	17,460	19,206	20,697	22,208
Production of Wood-based Panels	252	42	521	566	641
Production of Veneer Sheets and Plywood	204	364	431	467	521
Production of Particle Board	28	32	35	37	39
Production of Fiberboard	20	46	55	62	71

Source: Compiled from Global Forest Products Consumption, Production, Trade and Prices: Global Forest Products Model Projections to 2010, FAO, 1998

Housing and furniture manufacturing are the two major sources of demand for timber. The NFAP, using the FSI study[11] 1996 data, projected the annual requirement of timber for house

[10] Global forest products consumption, production, trade and prices: global forest products model projections to 2010, FAO, 1998 Rome

[11] Fuelwood, Timber, and Fodder from Forests of India, Forest Survey of India, 1996

hold sector at 49.4 and 54.6 million Cu.m in the years 2001 and 2006 and in the same years total timber requirement for all uses has been assessed as 73 and 81.8 million Cu.m respectively (Table 2.9).

Table 2.9: Projections for Timber Consumption (million Cu.m)

Category of Use	2001	2006
a) Housing and allied Domestic uses	39.0	43.0
(i) Rural	31.0	34.0
(ii) Urban	8.0	9.0
b) Furniture	10.4	11.6
(i) Rural	6.3	7.0
(ii) Urban	4.1	4.6
Total (Housing – Construction & Furniture)	49.4	54.6
c) Agriculture Implements	11.0	12.0
d) Other Industrial timber	12.6	15.2
Total for all uses	**73.0**	**81.8**

Source: Extracted from "Fuelwood, Timber, and Fodder from Forests of India, Forest Survey of India, 1996" p.19-20

Table 2.10: Timber Production (Projections) (million Cu.m)

Production source	1996	2001	2006
Forest	23	26	29
Plantations	10	11	13
Farm Forestry	31	36	40
Total	**64**	**73**	**82**

Source: Extracted from "Fuelwood, Timber, and Fodder from Forests of India, Forest Survey of India, 1996" p.20

The document also projects estimated supply of timber from forests, plantations and farm forestry at 26 million Cu.m, 11 million Cu.m and 36 million Cu.m in the year 2001 (Table 2.10).

However, as per the NFAP, the potential supply from the forests is projected to be only about 12 million Cu.m per annum. That is far lower than the above noted consumption of timber logs, thereby leaving a still larger gap between demand and the supply, to be fulfilled by imports and other means.

Using the data from the FSI study 1996, the average per thousand capita annual consumption of timber logs, for construction end-use and for furniture & furniture components end-use has been worked out as summarized in Table 2.11. This average is further used along with the urban consumption average as obtained from the 12 consumption centers, to project the total logs consumption and use of timber for construction end-use and for furniture & furniture components end-use for the whole population.

Table 2.11: Average annual timber consumption per 1,000 persons (Cu.m)

Category of Use	2001	2006
Housing and allied Domestic uses (all logs)		
Rural	39.5	39.3
Urban	-	-
Construction		
Rural	17.2	17.2
Urban	29.9	30.0
Furniture		
Rural	8.1	8.1
Urban	15.4	15.4

Source: Computed from "Fuelwood, Timber, and Fodder from Forests of India, Forest Survey of India, 1996" p. 16-17

It is generally understood by all the stakeholders, who were consulted during the review process, that the consumption of timber (industrial roundwood) and timber products is increasing with increasing population and urbanization, improving standards of living and rising personal disposable incomes. At the same time, there is the recognition of an increasing scarcity of domestic supply and motivation for substitution by non-timber products, especially in some joinery items, given that the production of timber for the market from the largely publicly owned forests has declined over the years. It has stagnated on account of the earlier overexploitation and currently heightened population pressure, local needs, and newly instituted prudent and popular policies and practices for conservation-oriented management, which are being increasingly implemented since the recent few years. The recent reports and the data for timber production in India showing declining trends may therefore seem to be logically correct, *prima-facie*, calling for increased imports for meeting national consumption requirements.

This scenario is evident from the urban consumption sample survey undertaken for this Review for twelve major urban consumption centers in the country, which was designed so that its results can be and were extrapolated for the whole urban population and for the decade to come. The results of this analysis were synthesized and are summarized in the self-explanatory Table 2.12 given below. As regards rural consumption, the first generic estimate was made on the crude assumption that the rural timber consumption was three times that of the total urban consumption. This would be a conservative ratio in comparison with rural-urban timber consumption data of FSI survey of 1996, which placed the rural consumption (housing construction and allied uses) at 31 million cum for the year 2000; that would have been almost fourfold the volume projected for urban consumption at 8 million Cu.m. While the following table shows higher overall consumption trend and prospects, outstripping population growth rate and therefore indicative of increasing per capita consumption, it will remain very low compared with the world average, offering considerable scope for imports and enhanced domestic production. That is notwithstanding the slower growth and even a seemingly declining trend in per capita consumption in rural areas, though the rapid rural appraisal undertaken for this Review does not necessarily confirm that trend and calls a wider coverage and the need for robust validation of data.

Table 2.12: Synopsis of Timber Consumption in Urban and Rural areas in India (Cu.m)

	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
Population of 12 Urban Consumption centres	69,793,156	73,670,553	77,547,951	81,425,349	86,078,226	93,833,021
Urban Population in India	256,819,459	271,087,206	285,354,954	299,622,702	316,743,999	345,279,494
Log Consumption of 12 Urban Consumption Centres	2,976,295	3,250,307	3,418,849	3,851,548	4,194,778	4,793,545
Per 1000 persons Log Consumption of 12 urban Consumption Centres	42.6	44.1	44.1	47.3	48.7	51.1
Total Log Consumption in Urban India	10,951,940	11,960,228	12,580,416	14,172,629	15,435,620	17,638,916
Total Log Consumption in Rural India	32,855,821	35,880,685	37,741,249	42,517,886	46,306,859	52,916,749
Total Log Consumption in India	43,807,761	47,840,914	50,321,665	56,690,514	61,742,479	70,555,665
Sawnwood Consumption of 12 Urban Consumption centres	1,983,503	2,121,285	2,152,429	2,254,232	2,345,421	2,567,263
Per 1000 persons Sawnwood Consumption of 12 urban Consumption Centres	28.4	28.8	27.8	27.7	27.2	27.4
Total Sawnwood Consumption in Urban India	7,298,741	7,805,741	7,920,342	8,294,949	8,630,499	9,446,816
Total Sawnwood Consumption in Rural India	21,896,223	23,417,222	23,761,025	24,884,846	25,891,497	28,340,448
Total Sawnwood Consumption in India	29,194,964	31,222,962	31,681,367	33,179,794	34,521,995	37,787,264
Veneer & Plywood Consumption of 12 Urban Consumption Centres	491,757	586,255	705,585	783,165	840,743	1,329,405
Per 1000 persons Veneer & Ply Consumption of 12 Urban Consumption Centres	7.0	8.0	9.1	9.6	9.8	14.2
Total Veneer & Plywood Consumption in Urban India	1,809,529	2,157,256	2,596,357	2,881,830	3,093,701	4,891,842
Builder's Joinery Consumption of 12 Urban Consumption Centres	832,814	877,686	911,318	934,602	965,483	1,055,308
Per 1000 persons BJ Consumption of 12 urban Consumption Centres	11.9	11.9	11.8	11.5	11.2	11.2
Total BJ Consumption in Urban India	3,064,525	3,229,641	3,353,398	3,439,076	3,552,710	3,883,241
END-USES						
Timber consumption in Construction in 12 Urban Consumption Centres	985,810	1,020,257	1,048,661	1,106,309	1,176,971	1,304,533
Per 1000 persons Timber consumption for Cons in 12 urban Consumption Centres	14.1	13.8	13.5	13.6	13.7	13.9
Total Timber consumption for Construction in Urban India	3,621,154	3,741,003	3,852,292	4,074,869	4,339,393	4,799,385
Total Timber consumption for Construction in Rural India	10,863,463	11,223,010	11,556,876	12,224,606	13,018,178	14,398,155
Total Timber consumption for Construction in India	14,484,617	14,964,014	15,409,168	16,299,475	17,357,571	19,197,540

Source: Computed using the 2003 Primary Survey data compiled from urban consumption centres and rapid rural appraisal, and latest census data (2001) and other updates

The timber consumption recorded in the above table reflects some of the core primary data behind the analyses in this Review. These data were collected and compiled for each of the 12 major urban consumption centres, including four satellite towns clubbed as part of one center for the fast expanding National Capital Region (NCR). The data compiled for each timber product type were aggregated to obtain the combined consumption of various timber types and product for all the 12 urban consumption centers. The population of each of the 12 consumption centres was noted (essentially from census 2001) and the disaggregated data for different income level sample districts was extrapolated accordingly. The average timber

consumption for the 12 consumption centres was thus computed from the overall population and the combined timber quantity in a given year. This average was accordingly multiplied for the total national urban population to obtain the combined total urban consumption of timber. Here we have made the assumption that the 12 consumption centers selected are representative of the various urban population categories of the country. Computations are made by agglomerating the timber consumption in any particular year in relation to the overall national urban population, data for which is available from the recent Census and updates. Calculations have been made assuming compound population growth rates ranging from 1.5 to 1.7 per cent per annum, mainly the former for future projections. This also assumes that the main market for imported industrial wood and wood products is the Indian urban sector, especially housing and commercial construction, for which wide-ranging and unprecedented incentives have recently been instituted and are being made available, including increasingly competitive mortgages and banking loans.

Nevertheless, a similar but less intensive attempt has likewise been made as part of this Review to estimate the likely timber consumption for the rural population, using average per capita annual consumption data obtained from the FSI study 1996. In addition a rapid rural appraisal was undertaken in six states in different regions of India, providing an indication of the likely demand and consumption by rural households, as explained below.

2.1.4.1 Rural Household Consumption

There is a decreasing trend in the per capita utilization of timber in the rural areas as observed by the survey, but the overall volumes involved are many times that of the urban areas. The percentage-wise population ratio in rural areas is decreasing (though according to the 2001 census there is a slight percentage increase through 1991 of rural population from 71.6% to 72.1%), but in absolute terms the population continues to increase steadily, albeit, slowly as compared with previous decadal growth of population. This fact together with the improvements in income, increasing agricultural productivity, economic diversification and repatriation of earnings of emigrant village workers from elsewhere -in-country and abroad, has given rise to improving the housing standards in rural areas. Yet, the perception among the villagers is that there is growing scarcity of timber and hence the trends reflect poor distribution channels and substitution by non-timber products -including cement, mud and bricks, even if their preference would have been for timber.

Table 2.13: Consumption trend and prospects of timber in the rural districts
(Cu.m per 1000 persons)

	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
Andhra Pradesh	144	142	139	136	135	133
Jammu & Kashmir	148	147	144	142	141	139
Maharashtra	142	140	139	136	133	131
Meghalaya	149	148	147	145	142	138
Orissa	142	139	138	135	133	131
Rajasthan	138	137	137	134	130	125
Average per 1000 persons consumption	144	142	141	138	136	133
Average per capita consumption	0.144	0.142	0.141	0.138	0.136	0.133

Source: Primary Survey, 2003

Table 2.14 Rural Houses according to type of construction (per cent)

Type of construction	1981	1991	1993-94
Pucca (solid)	22.3	30.59	29.20
Semi-pucca (semi-solid)	36.93	35.65	38.10
Kutcha (temporary)	40.55	33.76	32.7
Total	**100.00**	**100.00**	**100.00**

Source: National Human Development Report, 2001 & periodic updates for projections

From Table 2.13, it is obvious that the per capita consumption of timber for construction in the mountainous states of Jammu & Kashmir and Meghalaya is the highest, while the least per capita consumption in is in the State of Rajasthan, reflecting the relative low availability of trees and forests in the vicinity of the rural households. That is because most of the rural people obtain timber from forests owned by the government or community and from plantations and TOF. In most cases, based on the perception of the people in the villages surveyed, the usage of timber per household for construction purposes would diminish as they foresee that the resources available would become limited. However, there is an outlook for upgrading of houses, both in practice and in perception, say from kutcha (temporary) to semi-pucca (semi-solid) and to pucca (solid) and also in the increasing number of housing units due to breakdown of joint families and improving economic conditions. So in net, the demand for overall volume of wood and other construction materials are likely to grow and be greater.

The potential timber trend in the rural areas for construction purpose is further substantiated by the background data in the National Human Development Report, 2001 (Table 2.14). From the table, it can be seen that the percentage of kutcha (temporary, e.g., mud and similar shelter) houses are on the decline, and on the other hand, the semi-pucca (semi-solid) houses and pucca (solid) houses are steadily increasing over the period. This can be explained on the basis that the standard of living in the rural areas have improved quite considerably, and is moving in that direction. A major portion of the raw materials for construction of semi-solid and solid houses comprises of timber, especially in semi-pucca houses. Tropical hardwood timber species are generally preferred in most of the areas, except where they are not available, such as in the Himalayan states, where Cedrus (deodar) is the most preferred construction timber followed by other coniferous species, such as spruce and pine. However, with the increasing pressure on the forests and other sources, it is most likely that the supply will fall further short and would have to be met by poplars, eucalyptus and other short duration farm forestry and plantations wood causing a further pressure on domestic supplies in the direction of increased imports (Annex 2.1).

On the other hand, the total industrial roundwood consumption in the urban areas is showing an increasing trend with the annual timber consumption growth rate being higher than the population growth rate. As such, the per capita timber (industrial roundwood) consumption is estimated to be increasing from 0.0426 Cu.m per annum in 1997-98 to 0.044 Cu.m in 2002-03 with a potential of 0.051 Cu.m per annum in 2012-13.

Nevertheless, the demand for timber currently consumed in rural India is primarily met from local production (forests, plantations and TOF) and only a small fraction is traded timber and does not usually follow the established trade route. However, due to depleting

timber resources, especially from the national forests, there is a future market potential, particularly for relatively cheaper timber products and even for imports.

Such a trend was noted during the Review, particularly in some Southern states of India (and may be in other parts of the country, but needs to be further studied) for imported wood, which is entering the rural market. However, the imported wood is highly price sensitive, and the rural populace is not informed at all or not so well aware about the availability of imported timbers, and much less about the various types and their durability and quality. A detailed study should shed more light on these aspects of the potential market, especially for generating and disseminating accessible market intelligence.

2.1.5 India's Timber Trade

2.1.5.1 Timber Import

As a major policy initiative, the Government of India permitted wood import by classifying wood under Open general License (OGL) in 1996 with a view to ease out the wood shortage, as also to reduce pressure on natural forests. However, the tariff structure[12] is biased in favour of imports of logs and a conscious attempt has been made to keep out the import of processed wood and products to protect the domestic wood processing industry.

The main source of information on wood imports is the data maintained by the Directorate General of Commercial Intelligence and Statistics (DGCIS), under the Ministry of Commerce, Government of India. The primary source of these data is the daily trade reports and custom clearance records of import and export of forest products collated by the Department of Customs and Central Excise. The DGCIS data are based on "authentic" official records of the Government department and are therefore supposedly most reliable.

Another source of information of timber trade is the Directorate of Statistics[13], Indian Council of Forestry Research and Education (ICFRE). However, the Directorate does not collect primary data on production and trade of forest products from State Forest Departments of the respective states[14], Federation of Indian Plywood and Panel Industries (FIPPI) and DGCIS. In addition, the data on production and trade are also received from the Planning Commission and Ministry of Environment & Forests (MOEF), the Forest Survey of India and the Central Statistical Organisation (CSO). Information on different aspects of national forestry is summarised and published in 'Forestry Statistics India' in the form of tables. Till date, editions have covered 1988-94, 1995, 1996 and 2000.

Information on actual imports of wood and wood products (HS code - Chapter 44) extracted from the DGCIS data and the Export-Import Data Bank of the Ministry of Commerce, value of imports of wood and wood products covered in major sub-heads are given from Annex

[12] Detailed discussion on Tariff is available in Chapter III.

[13] Established in January 1995, under the World Bank funded Forestry Research, Extension and Education Project (FREEP). The role of this directorate, now called the Division of Statistics, is to collect, collate, process, publish and circulate covering all aspects of forestry at the national level.

[14] In most states channels of statistical information flow are not well organized and hence information flow is too slow.

1.2 to 1.8. A careful study of the above mentioned import data reveals that there is a problem about the quality of the data related to trade in timber products. This is evident from the fact that bulk quantities and value of wood imports are grouped under "Others", such as those in HS code 44039929 (Annex 1.5**)**. This accounts for more than 50 per cent of the total imports. Figures 2.11 to 2.13 represent the import of major species/categories and "others" during the years 91-92, 96-97 and 2001-02, respectively. This data gap[15] makes species wise or even broad type wise[16] analysis of imports almost impossible. Such an analysis, if possible, will be very relevant to project possible ultimate uses of imported wood necessary for national planning and evolving strategies for regulating imports. However, considering that the imports in the code 4403 4909 is listed under Other Tropical Hardwood, and that the imports under the Code 44039929 classified as 'others' are mainly from tropical countries, it may be inferred that the tropical hardwood forms the bulk of wood imports in India.

Figure 2.11 – Species/Category Wise Break Up Imported Wood Logs – 1991-92

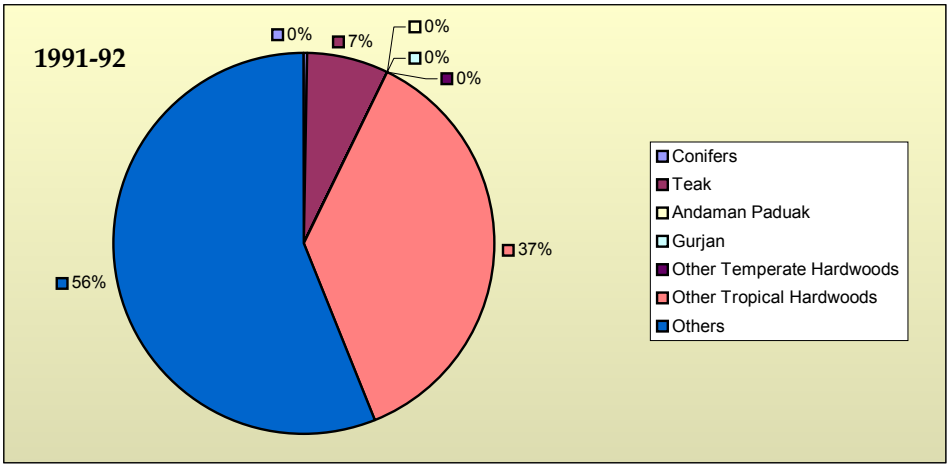
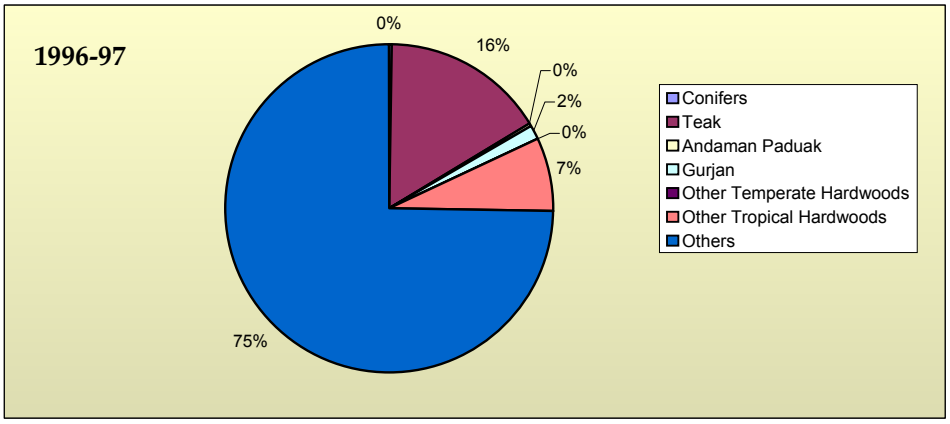


Figure 2.12: Species/Category Wise Break Up Imported Wood Logs – 1996-97



[15] In the course of the Review process, direct contacts and telephone enquiries from importers and traders indicated that the import invoices invariably mention the trade names of the species but in the course of data compilation the figures are clubbed to gather.

[16] Softwood (conifers) & Hardwoods (broad leaf timber trees); or tropical hard wood & temperate hardwood.

Figure 2.13: Species/Category Wise Break Up Imported Wood Logs – 2001-02

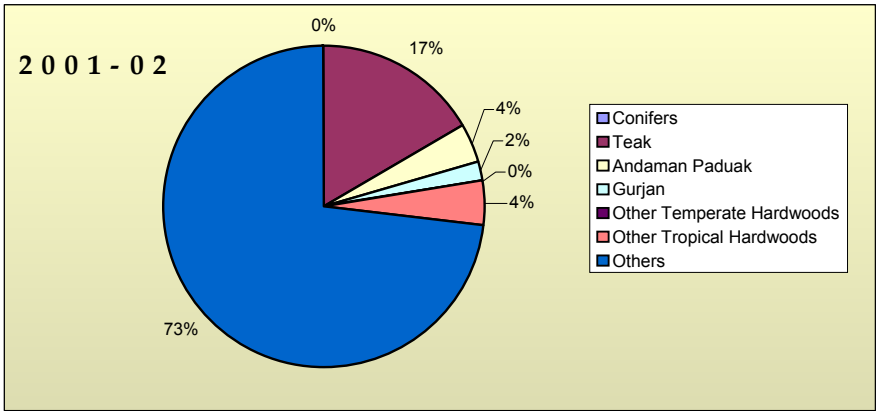


Table 2.15 lists the imports of major wood products included in HS code 44 viz. logs, sawn wood, plywood, veneers sheets, particle/fibre boards during 1991092 to 2001-02 in million US Dollars. Figures 2.4 and 2.15 represent the change in the composition of the wood/wood products imported during 1991-92 and 2001-02. It is clear that logs continue to form the bulk of total imports. Moreover, there was a sudden increase (60% in value and 65% in quantity) in wood imports during the year 97-98 that coincides with the year in which wood was put under open general license with no custom duty. Although 5% custom duty was re-imposed after two year, the log imports continued to increase at an average annual growth rate of about 21% (Table 2.8). The growth rate during previous five years (1996-97 to 2001-02) is 3% higher than the average annual growth rate during earlier five-year period i.e. 1991-92 t0 1995-96. In contrast to this, the growth rate in respect of processed timber products has declined considerably in spite of the downward revision of the tariff.

Table 2.15: Import of Logs and other major wood products (million US $)

Year	Logs	Sawnwood	Plywood	Veneer sheets	PB/FB	Total wood & wood Products *	Logs share of Total (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1991-92	127.96	3.45	1.61	0.09	0.10	133.41	95.92
1992-93	171.82	6.91	2.80	0.53	0.23	182.74	94.02
1993-94	134.46	4.06	3.48	0.26	0.83	143.50	93.70
1994-95	204.12	7.12	7.12	1.71	3.02	224.02	91.12
1995-96	219.31	5.72	6.78	6.07	4.11	242.65	90.38
1996-97	246.68	7.94	4.17	6.43	4.29	270.35	91.25
1997-98	386.64	5.23	7.14	10.29	12.16	422.91	91.42
1998-99	339.43	7.66	8.90	12.43	12.27	382.58	88.72
1999-00	429.15	3.88	5.59	3.94	15.05	460.24	93.25
2000-01	457.94	7.17	4.07	2.43	16.62	491.06	93.25
2001-02	509.78	13.01	4.91	2.46	18.41	551.62	92.41

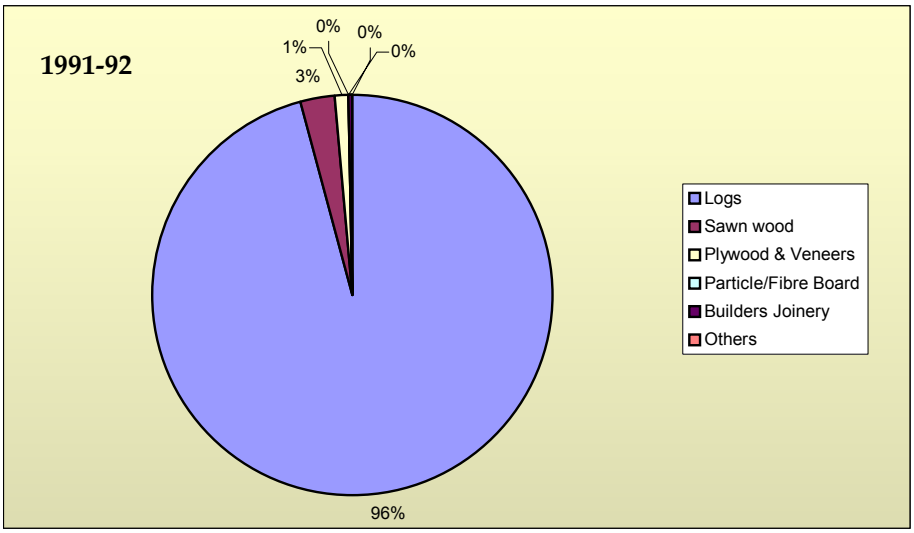
* Figures in the column will not be equal to the total of figures in column 2 to 6 since the total includes some other items not included in the column 2-6.

Table 2.16: Quantities of Import to India ('000 Cu.m)

Year	Logs	Sawnwood	Plywood	Veneer sheets
1991-92	853.36	9.14	3.61	0.80
1992-93	808.66	19.33	4.40	1.46
1993-94	478.40	6.60	4.90	0.28
1994-95	667.21	9.80	9.56	1.14
1995-96	733.53	7.23	9.01	3.73
1996-97	868.80	9.65	23.63	5.11
1997-98	1,362.27	6.57	24.53	10.19
1998-99	1,614.71	60.96	24.04	12.64
1999-00	1,941.94	8.25	21.80	3.51
2000-01	2,097.85	153.30[17]	138.10[18]	2.29
2001-02	2,605.21	73.76	44.81	4.00

Source: Extracted from the Publications of the Director General of Commercial Intelligence & Statistics, Kolkata and from personal visits to the Directorate. For the year 1996-97 onwards quantities imported have been extracted from the export Import data bank on the web site of the Ministry of Commerce, Government of India. For the earlier years and data in respect of sawn wood, plywood, veneers sheets, particle board and Fiber boards are extracted from the reports of the DGCIS, Kolkata and perusal of their records.

Figure 2.14: Imports of Logs, Sawn wood, Reconstituted Panels, Builders Joinery and Others – 1991-92



[17] The high figure is apparently due to import from Thailand of 104,400 Cu. m. at Rs.908,515
[18] The high figure is apparently due to import from Indonesia of 76,294 Cu. m. at Rs. 12,265,359

Figure 2.15: Imports of Logs, Sawn wood, Reconstituted Panels, Builders Joinery and Others – 2001-02

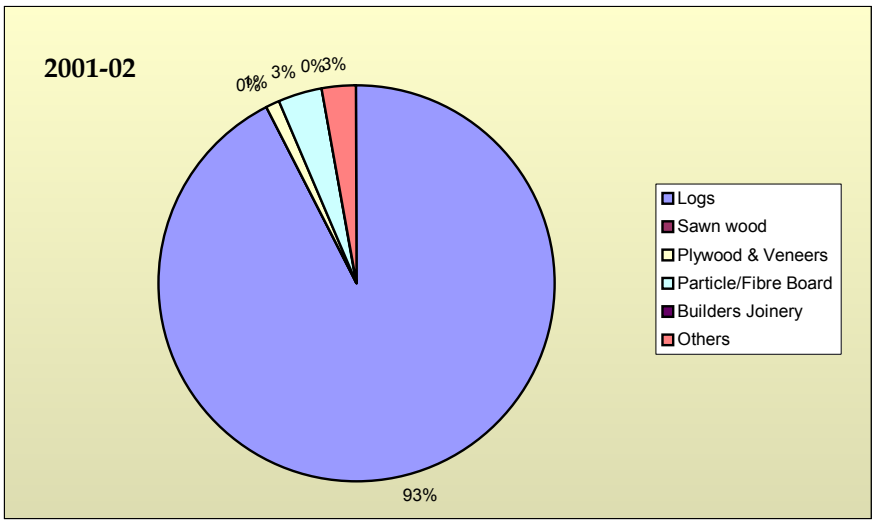


Figure 2.16: Value of log imports 1991-92 to 2001-02

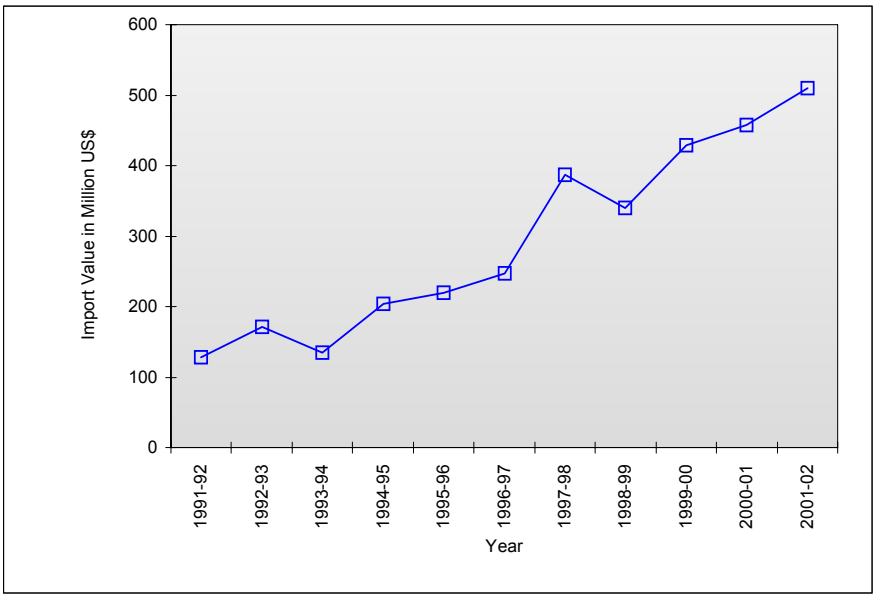
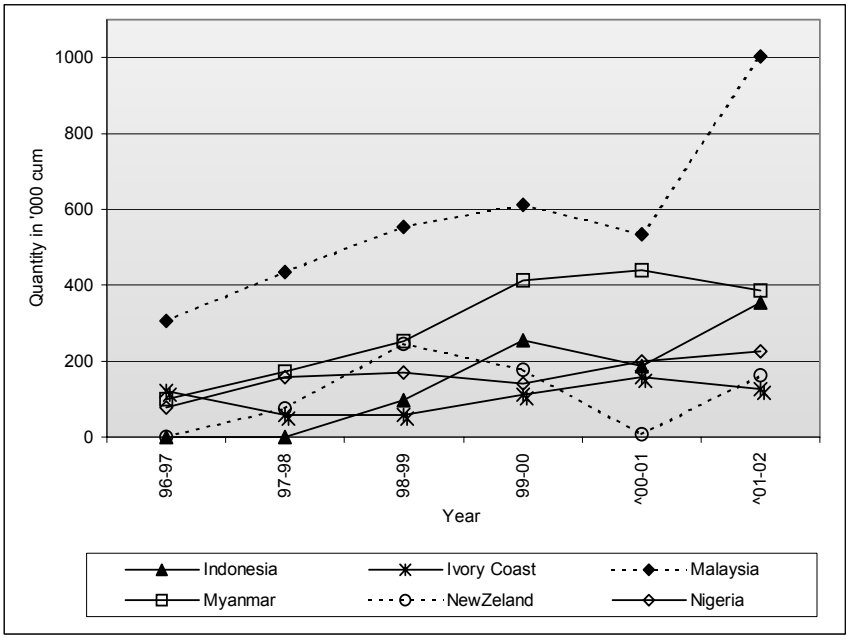


Table 2.17: Growth rate of wood item imports

Year / Item	1996-97	2001-02	Annual Growth Rate 1996-2002	Annual Growth Rate 1992-96
	Million US $		Percent	Percent
Logs	246.68	509.78	21.33	18
Sawnwood	7.94	13.01	12.78	26
Plywood & Veneers	10.60	7.37	-6.10	104
Particle/Fiber Boards	4.29	18.41	65.90	817
Builders Joinery	0.34	0.39	3.03	660

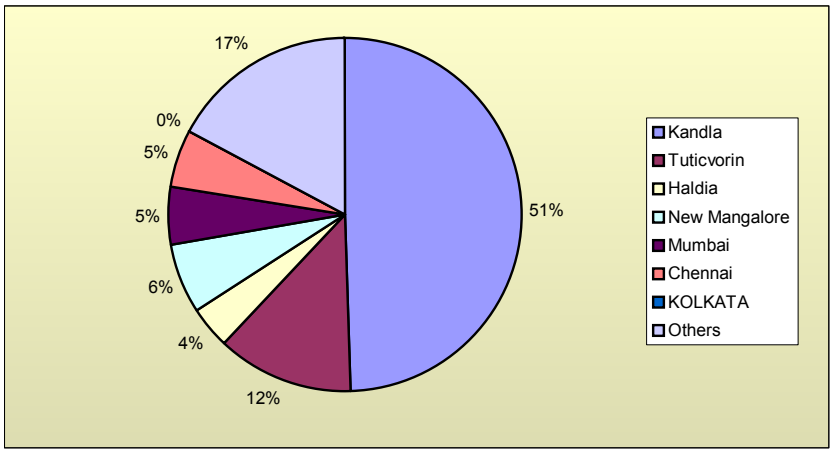
Although logs were imported from about 100 countries, six countries, namely Malaysia, Myanmar, Indonesia, Ivory Coast, Nigeria and New Zealand account for bulk of the imports; about 85% of the total imports during the year 2001-02 were from these countries. Figure 2.17 shows the dynamics of wood logs imported from these six countries. These countries, except for New Zealand, have generally shown positive growth trend over the years.

Figure 2.17: Export Trend of Logs to India (major Exporting Countries)



The analysis of the import route of wood logs into the country for last five years revealed that there are seven ports that account for bulk of the imports (Figure 2.18), but Kandla port, in the western coast of the country situated in the State of Gujarat, alone handles about 50% of the total quantity of wood and wood products imported to the country.

Figure 2.18: Portwise Import of Logs (quantity)



2.1.5.2 Timber Export

Timber products comprise a very small, almost negligible proportion, of total exports from the country. The value of export of the timber products from India since 1996-97 is presented in Table 2.18. The table reveals that furniture and woodworks are the major export items amongst various timber products. The export of plywood in value terms has declined sharply since 1996-97. A significant decline was also observed in case of veneer sheets. The important fact to note is that the export of furniture has been showing a continuous and significant increase over time.

Table 2.18: Export of Timber Products (million US$)

Item	1996-97	1997-98	1998-99	1999-00	2000-01	2000-02
Veneers sheets	6.68	5.95	4.42	4.25	3.53	4.46
Plywood	19.78	13.10	5.40	7.27	7.44	5.16
Builders joinery	0.62	0.63	0.70	0.50	0.96	1.37
Wood in rough	1.68	0.60	0.60	0.35	1.39	0.78
Particle Board	2.88	2.06	2.10	3.07	2.06	3.03
Fibre-board	2.00	1.77	1.99	1.74	3.10	2.30
Packaging	3.18	2.16	1.86	3.19	4.37	2.99
Table/Kitchen Ware	1.04	1.26	0.91	0.91	1.48	1.00
Statues and other ornaments of wood	0.11	0.57	0.40	0.34	2.02	3.70
Wood work of rosewood	6.40	6.38	6.05	13.49	16.54	10.76
Wood work of sandal	1.93	1.97	2.23	2.24	1.87	0.52
Wood work of shisham	7.31	11.92	11.76	11.39	8.66	8.66
Wood work of walnut	0.41	1.69	1.03	2.60	2.80	0.79
Lacquered wooden ware	1.64	0.39	0.81	1.31	0.48	0.23
Total Wood work	17.69	22.35	21.88	31.03	30.35	20.96
Furniture	4.69	5.91	8.66	14.27	25.50	37.14
Total Timber Products	**64.16**	**60.23**	**53.07**	**71.14**	**88.79**	**89.79**

2.1.6 Prospects of Timber Trade in India

The future prospect of timber trade in India is presented in Table 2.19. The projection reveals that the import of industrial roundwood is poised to increase 100 per cent between 2000 and 2005 and about 50 per cent during the period 2005 to 2010, interim fluctuations notwithstanding. In case of other products such as sawnwood, veneer sheets and plywood, the import has been suggested to decrease over time. This is primarily due to the prevailing policy to discourage import of semi-finished and value added products into the country. Other aspects of prospects of timber import to India are discussed in detail in the next section of this chapter.

The projections on the export front suggest that it would decline substantially in case of most of the timber products during the period 2000 to 2005. Export of industrial roundwood would decline from 3800 Cu.m in 2000 to 2048 Cu.m in 2005. Thereafter, it would remain constant till 2010. The export quantity of veneer sheets and plywood was at a level of 36,000 Cu.m in 2000, which would decrease about 45 per cent till 2005 and drop down to 7,000 Cu.m in 2010. Wood based panels would follow a similar trend.

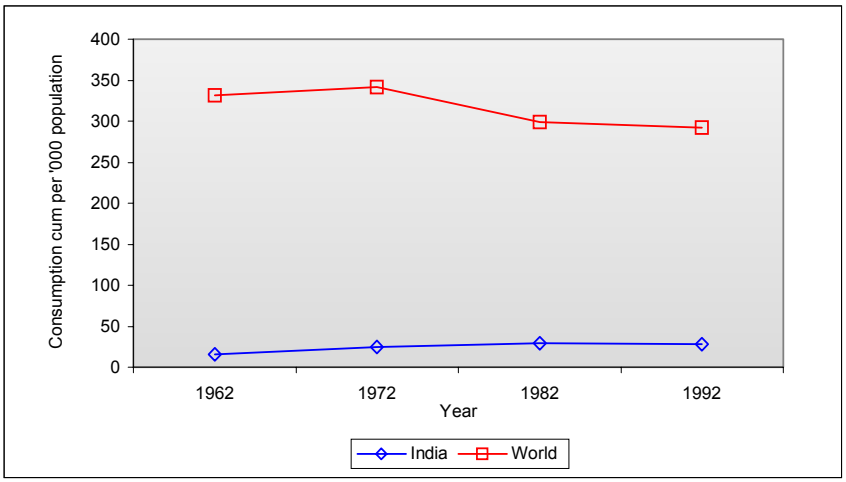
Table 2.19: Projection of Import of Timber and Timber products ('000 Cu.m)

	Actual		Projection		
	1980	1994	2000	2005	2010
Import of Roundwood	41	285	1,108	2,048	3,021
Import of Industrial Roundwood	15	285	1,108	2,048	3,021
Import of Sawnwood	17	6	2	1	0
Import of Wood-based Panels	0	11	4	2	1
Import of Veneer Sheets and Plywood	0	10	4	2	1
Import of particle board	0	1	0	0	0
Export of Roundwood	36	41	38	21	21
Export of Industrial Roundwood	30	11	10	5	5
Export of Sawnwood	6	0	0	0	0
Export of Wood-based Panels	12	45	40	18	8
Export of Veneer Sheets and Plywood	10	39	36	16	7
Export of particle board	1	0	0		0

Source: Compiled from Global Forest Products Consumption, Production, Trade and Prices: Global Forest Products Model Projections to 2010, FAO, 1998

The analysis indicates that despite diminishing supplies of timber of known species from the natural forests and efforts to substitute wood with other materials including metals and plastics, the consumption of wood is showing an increasing trend. With increasing urbanization, rising standards of living and changing lifestyles, the demand for timber is likely to increase at a faster rate, given the fact that present industrial round wood consumption in India at 28 cum per 1000 persons is much below the world average of 290 cum per 1000 persons (Figure 2.19) (APFSOS Working Paper # 12 by Zhang Dali et al., 1997).

Figure 2.19: Consumption of Industrial Round Wood



Industries prefer imported materials over locally available timber obtained mainly from rapid grown plantation species such as of poplar, eucalypts and rubber wood, due mainly to the fact that the locally available wood have certain inherent characteristics such as low dimensional stability and natural durability. On the other hand, imported timber of well known species such as gurjan, keruing, teak, meranti, and sal, and some pines are generally known to have superior qualities with respect to dimensional stability and durability and are also price competitive for specific end-use categories.

The bulk of timber and timber product import is in the form of logs (industrial roundwood) -mainly of tropical hardwoods, comprising about 90% of total import of wood and wood products, excluding paper and pulp. The government is facilitating this by lower tariff rates and wood has been put in Open General License (OGL) since 1996. Imported wood is generally used for housing construction, builder's joinery and furniture through conversion to sawnwood, plywood and block wood. People living in and around forests meet the entire requirement of fuelwood from domestic supply, mainly from nearby forests and trees outside forests.

India being a tropical country, bulk of the domestic production of timber is from tropical hardwood species. Over the centuries, consumers have therefore developed a liking for tropical hardwoods. Accordingly, the consumption as well as the imports of tropical softwood and temperate hardwoods is much less than the tropical hardwoods. There is an increasing trend for import of tropical hardwoods and the current annual growth rate of 21% is likely to further increase in view of increasing demand and static domestic supply.

India could consider to study the strategies and policies being followed by China of large-scale imports of timber logs and sawnwood from tropical hardwood producing countries. The imported sawnwood may be converted into value-added-timber products (such as veneer, plywood, furniture) and re-exported after value-addition. India could consider emulating this model to become a lucrative hub for exporting value added timber products manufactured from plantation grown domestic and various imported timbers.

2.2 MARKET-POTENTIAL AND COMPETITIVENESS

2.2.1 Introduction

India is one of ITTO's major timber producers as well as a significant consumer of tropical timber. In 2000, India was ITTO's second largest producer of tropical sawnwood (6.8 million Cu.m) and fourth largest producer of tropical industrial roundwood (14 million Cu.m of logs). However, due to a growing wood shortage and increased timber demand in the country, domestic production was totally absorbed by the local market. In fact, India was ITTO's third largest importer of tropical logs (1.8 million Cu.m) in 2000. Tropical timber (mostly from Malaysia and Myanmar) holds 87 per cent share of the Indian log market, while softwood (mainly radiata pine from New Zealand for packaging and relatively cheap construction applications) has a dominant share of India's other primary timber product markets. The statistics internationally available often are distant estimates, as India's timber trade data have not been readily available to international stakeholders, e.g., ITTO's figures are derived from trade flows reported to UN COMTRADE by India's trading partners and from estimates of domestic consumption, without a coherent reporting system.

As mentioned earlier, there is a wide deficit between availability (domestic supply) and requirement (demand) of timber in India and this deficit is likely to increase in the future, especially for tropical hardwoods. There are several reasons for this existing and envisaged deficit, which are briefly explained below.

Though India is the world's seventh largest country, it hosts only 1.8 per cent of the world's forests. The issue of physical restriction in the supply of tropical woods has been given due priority in the Tenth Five-Year National Development Plan. The Government of India has formulated a National Forestry Action Plan (NFAP) to increase the forest/tree cover to 33 per cent of the geographical area of the country and also for sustainable development of forests (NFAP, 1999). The national Planning Commission has set the target of 25 per cent to be achieved by 2007 and the goal of 33 per cent to be achieved by 2012 (the end of Eleventh Plan). Investment requirements for next twenty years to bring 33% land under forest cover, including afforestation of both forest and non-forest lands, are to the tune of Rs. 53,000 millions, far removed from current budgetary allocations for the purpose. It has been proposed to improve forest productivity over 31 m. ha and plantations are to be raised over 29 m.ha at the rate of 3 m.ha per year. The ambitious targets outlined in NFAP and Tenth Plan appear to be unrealistic in the absence of internal allocation of funds for the purpose, lack of an enabling environment for investment and limited external assistance.

The pressure on the domestic supply of timber is accentuated by the massive Indian population, which is growing at an annual rate of 1.5%. Around one quarter of the population of one billion lives in or around forest areas, exerting severe pressure on the limited resource. As a reflection of this, India's forest area per capita variously estimated at 0.06 to 0.1 ha is significantly low in comparison with the averages of the world (0.6 ha), Asia (0.2 ha), Africa (0.8 ha), and South America (2.6 ha). Some effort on forest plantation establishment has no doubt been made, especially through the Joint Forest Management (JFM) Programme in the last decade, but its impact has been limited.

The policies of both the Central and State Governments are also imposing restrictions on the domestic supply of timber. One such example is the absence of policy commitment of State Governments regarding lifting of land ceiling for plantation purposes. This acts as a limiting factor for increasing the supply of wood to meet the growing demands of various end use sectors. Actual ground level survey with the help of GIS technology by FSI to identify large tracts of wastelands is yet to commence and the policy shift to involve private industry in degraded forest areas is yet to take place. Another example is the populist decision like ban on green felling in several States. This decision has adversely affected the supply of wood to meet the local needs. The Supreme Court of India has categorically stated that the forests should not be worked without approved management plans. In the absence of management plans for a major part of the forests in the country, the supply from natural forests with sustainable harvest is unlikely to increase in the immediate future.

FSI had carried out a demand-supply exercise in respect of timber, fuelwood and fodder from the forests of India (Rai and Chakrabarti, 1996) based on the results of field studies conducted by that organization during the last several years. The findings are summarized below:

Table 2.20: Demand and Supply of Wood (million Cu.m)

	1996	2001*	2006*
Wood requirement (for housing, furniture, agricultural implements, industrial uses)	64	73	82
Output from natural forests	12	12	12
Output from plantations, social forestry schemes and other wood lots	41	47	53
Deficit	11	14	17

Source: FSI, 1996; *Estimated.

The above table gives an account of total wood demand and supply. The FSI has projected that supplies from natural forests and old plantations shall not increase from the current level of about 12 million cubic meters. It is likely that even this availability may decline in view of increasing restrictions on felling from forests. The deficit is estimated to increase, reaching a record 17 million cubic meters by 2006. This could even be bigger, if non-wood substitutes were not encouraged.

The discussions on domestic supply constraints is substantiated by the fact that the availability of domestic timber raw materials is declining over time, making India increasingly dependent on timber imports to meet the needs of its construction, furniture and paper industries. In the last five years, India almost doubled the imports of logs of all types from 1.1 million Cu.m in 1997 to 2.5 million Cu.m in 2001. Although import tariffs for timber products other than logs are comparatively high, demand even for tropical sawnwood is also increasing, albeit less rapidly.

2.2.2 Potential for Tropical Timber Products

The macro view of the wood demand, supply and deficit gives an overall idea of the Indian timber market potential for the foreign exporters. However, it is pertinent to also look at these aspects across dis-aggregated timber products, such as roundwood, sawnwood, veneer and plywood, and across the end users of each category.

2.2.2.1 Roundwood

The major end use sectors, which use roundwood, are (a) sawnwood (b) plywood, (c) veneer, (d) particleboard (e) Medium Density Fibreboard (MDF), and (f) builder's joinery.

The estimated consumption of roundwood (thousand Cu.m) in India is expected to be 406,150 by 2010. Out of this, the share of Industrial roundwood is 49,955 thousand Cu.m by 2010 and the rest of it is for fuelwood. India is expected to produce 46,936 thousand Cu.m. of Industrial roundwood by 2010 and is expected to import the balance 3,019 thousand Cu.m. In the absence of data pertaining to the projected imports of tropical industrial roundwood, this figure acts as a surrogate, given that the major import of industrial roundwood is of tropical type. Export of Industrial roundwood is expected to be negligible at 2000 Cu.m by 2010 (FAO, 1998).

The projections made for the import of Industrial roundwood in the paper prepared for the 1999 Global Forest Products Outlook Study is presented in the Table 2.21 below:

Table 2.21: Actual and Projected Import of Industrial Roundwood ('000 Cu.m)

Country	1980	1994	2000	2005	2015
India	Actual	Actual	Projection	Projection	Projection
	15	285	1,108	2,048	3,019

Source: Global Forest Products Outlook Study, FAO, 1999

From the above table it can be seen that there is likely to be a quantum jump in the imports of industrial roundwood. The policy initiatives taken by the Government of India such as reduction in import duty and bringing wood into Open General License (OGL) are stimulating the imports to the country. The fact that the import of roundwood is equivalent to the import of Industrial roundwood illustrates that firewood requirement within the country is met internally, mainly from fringe forests, farm forestry sector and trees outside the forests.

Various issues of FAO Yearbook Forest Products give the import figures of industrial roundwood, both tropical and others. The figures are presented in Table 2.22 below.

Table 2.22: Import of Industrial Roundwood - Tropical (NC) and Others (NC) ('000 Cu.m)

Item	1991	1996	1997	1998	1999	2000	CAGR#
Industrial roundwood tropical (NC)	730	868	1,000	1,400	1,700	1,800	10.55
Industrial roundwood others (NC)	13	25	10	10	10	10	-2.87

Source: FAO Yearbook Forest Products, various issues; # Compounded Annual Growth Rate

The above table depicts the dominance of tropical industrial roundwood over other industrial roundwood in Indian imports, i.e., of non-coniferous industrial roundwood. The import of tropical industrial roundwood has achieved a double-digit growth rate (10% per annum) over the last 10 years vis-à-vis a negative growth rate in case of other industrial roundwood.

Regarding the demand for tropical industrial roundwood in India, consumption statistics published in the secondary sources, such FAO, are not exhaustive since consumption figure is derived from production, export and import data as mentioned earlier in section 1 of this chapter. The primary survey conducted in 12 urban consumption centres of India under the purview of this pre-project provides statistics of present and future consumption pattern of tropical industrial roundwood. This data can be considered to be dependable, since it is generated from actual field survey. It is estimated from the survey that out of the total industrial roundwood consumption of 3.4 million Cu.m in the 12 urban centres in 2002-03, the share of tropical hardwood is around 80 per cent. It is also estimated that out of the total tropical hardwood consumption, 57 per cent is supplied from domestic sources while the remaining 43 per cent is imported. This trend is likely to continue in the near future, if not accelerated. As such, there exists a substantially large potential market in India for domestic traders and foreign exporters of tropical hardwoods.

2.2.2.2 Sawnwood

The end use sectors identified to be using sawn wood are housing, construction, packaging, furniture, automobile, handicraft, catamaran and other miscellaneous industries.

The production, imports, exports and consumption of sawnwood are presented in Table 2.23 below.

Table 2.23: Sawnwood Production, Imports, Exports and Consumption ('000 Cu.m)

	Production			Imports			Exports			Consumption		
Years	1962	1992	2010	1962	1992	2010	1962	1992	2010	1962	1992	2010
Quantity	2,014	17,460	20,934	23	5	22	1	7	0	2036	17,458	20,956

Source: FAO, 1997, WPNo.APFSOS/WP/12

From the above table it may be seen that the sawnwood imports and exports are likely to be negligible. Although, India will have sizeable increases in its sawnwood consumption, it is envisaged, as of now, that India will be self sufficient in supplying its hardwood lumber market. The self sufficiency would be achieved through import of roundwood logs (with import tariff of only 5% vis-à-vis 35% in case of sawnwood) which would be further converted into sawnwood. The scenario could change, if sawnwood levies are also reduced.

The share of different sectors using sawnwood is presented in Table 2.24 below.

Table 2.24: Sawnwood End-Use Categories

Year	Housing	Packaging	Furniture	Automobile	Handicraft	Catamaran	Others	Total
1998	52	17	9	1	2	0	20	100
1999	53	16	9	1	2	0	20	100
2000	54	16	9	1	2	0	19	100
2005	54	15	9	1	2	0	19	100
2010	51	15	11	1	1	0	22	100
2015	50	14	11	1	1	0	21	100
2020	46	14	12	1	2	0	24	100

Source: Study on Forest Industries, 1999

From the above table it can be seen that the major end use sectors of Sawnwood is housing, followed by packaging and furniture.

There is hardly any secondary information regarding the consumption of tropical hardwood for sawnwood. So no inference can be drawn regarding the potential of Indian tropical sawnwood market. However, the findings of the survey undertaken in the 12 urban consumption centres shed some light in this respect. It is estimated that out of the total timber consumption for sawnwood, about 84 per cent is tropical hardwood, while the remaining volumes include tropical softwood and temperate hardwood. The survey reveals that there would be an increasing trend for use of sawnwood in future, particularly the tropical hardwood type. That itself might give a motivation for increased sawnwood imports, depending upon exporter strategies and price competitiveness.

2.2.2.3 Panel wood

Plywood, veneer, particleboard and MDF are the panel industries identified using wood. The most important users of panel wood are construction, furniture and packaging. The projected demand for plywood and veneer is given in Table 2.25 below.

Table 2.25: Projected Demand for Panel Wood (million Cu.m)

Year	Plywood	Veneer	Particle Board	MDF	Total
1998	10.1	0.25	0.13	0.13	10.61
1999	10.5	0.26	0.13	0.14	11.3
2000	11.0	0.27	0.14	0.14	11.55
2005	14.0	0.34	0.18	0.17	14.69
2010	17.96	0.43	0.22	0.21	18.82
2015	22.90	0.54	0.28	0.24	23.96
2020	29.20	0.70	0.35	0.28	30.53

Source: Study on Forest Industries, 1999

In order to meet the increasing requirements, production of wood based panels in the country is expected to increase to over 30 million Cu.m by 2020, and plywood would account for more than 90 per cent of wood based panels. However, this demand would be met mostly from domestic sources and import being negligible, unless there is policy change for liberalization, since import of plywood currently attracts a high import tariff.

The survey results have indicated that the plywood and veneer consumption in India is very limited, and local species are mainly used in the manufacture of plywood and veneer on account of price competitiveness.

2.2.2.4 Builder's Joinery

No secondary source provides statistics for builder's joinery. In the absence of any such secondary data, the results of the survey regarding builder's joinery are noteworthy. The survey results show that the share of tropical hardwood species in builder's joinery is around 92.5 per cent and the remaining share is mainly temperate hardwood. The use of tropical softwood is negligible in builder's joinery.

2.2.3 Tropical Timber Products and its Competitiveness

Competitiveness of tropical timber versus others needs to be analysed with respect to price, marginal cost, consumer preference and choice, and market structure. This section complements some of the inferences made earlier and draws upon the insights from the consumption survey findings.

Majority of the survey respondents showed greater preference for tropical hardwood products vis-à-vis temperate hardwoods. The attributes of tropical hardwood for which the consumer preference is higher are:

ATTRIBUTES	
A. Technical	**C. Supply/Market Structure**
• Appearance • Colour consistency • Natural durability • Machinability & multifunctional • Gluing/fix times • Dimensional stability	• Regular supplies and supply mix • Reliable supplies • Short and site delivery • Market choices, & may be improved • Locational advantage • Informal transactions and schedules
B. Specifications/quality	**D. Cost/price**
• Right sizes, and still more scope • Dimensional accuracy • Moisture content • Quality/grade consistency • Low waste & low energy input • Availability of value-added products	• Price competitiveness • Price stability • Willingness to discount • Freight costs, though not always efficient • Currency of transaction • Easy mortgages & credit terms

The positive current economic cycle and incentives have a favourable bearing on the competitiveness of tropical timber. The demand for tropical timber has accentuated through consumer confidence and strong housing demand supported by low interest rates and unprecedented availability of loans and mortgage facilities. Another important factor, which is driving the competitiveness of tropical timber, is its low total cost due to other factors like machining, maintenance, durability and damage.

Some factors that influence the choice of tropical timber products among the middle income group were identified in the survey. These factors and their extent of influence are summarised in the table below.

Table 2.26: Factors Influencing the Choice for Tropical Timber Products (Percentage Distribution of Respondents)

Factors / Extent of influence ⇒ ⇓	Highly	Somewhat	Not much	N/A	ALL
Price	70	22	3	5	100
Availability	79	13	5	3	100
Alternatives and substitutes	28	58	4	10	100

The above table shows that price and availability are the two most important factors that influence the choice of tropical timber products. Alternates and substitutes are relatively less important, though the situation could change in view of the readily available and cheaper competing products.

Indian consumers have always attached high value to tropical hardwoods, such as Teak. The demand for teak is likely to increase -particularly in cities like Bangalore, Chennai, Hyderabad, Calcutta, Ahmedabad and Mumbai compared to North Indian cities, such as

Kanpur and Delhi, as can be seen from the results of the consumption survey undertaken. The survey conducted in Mumbai indicates that the Myanmar teak is the costliest one and is preferred only by the higher income groups. The middle and lower income groups preferred Nigerian teak because of its price competitiveness. The rate for Indian teak in Hyderabad is Rs.750/cft as against Rs.800/cft and Rs.1175/cft for African and Myanmar teak respectively. The survey reveals that across all income categories, there is a greater willingness to pay for higher priced tropical timber products than cheaper substitutes.

Tropical and temperate softwoods were identified to be the preferred types mainly in the field of panel products. Temperate hardwoods were hardly seen as the serious competitor, though some preference has been noticed for their use in furniture and flooring in northern parts of the country.

The survey has revealed that tropical timbers imported by private domestic traders are likely to be price competitive vis-à-vis domestically produced tropical timber due to the higher transaction costs of the public sector undertakings (PSUs) which sell these domestic timber through their depots. Most of these PSUs are not in a good standing and they are not in a position to compete with the timber traders who import timber. High administrative costs, lack of appropriate management, over employment, political interference, and social unrest are some of the reasons for the unsatisfactory performance of these undertakings.

Advances in polymer resins have allowed development of stronger and more versatile reconstituted wood products, which are replacing raw timber across almost the whole range of uses. Reconstituted materials are used in building (using moisture resistant medium density fibreboards), furniture making, packaging and home build applications. Composite materials, incorporating plastics, insulation and decorative surfaces are also becoming more common. In the exterior joinery sector, metals were seen as the main competing material, whereas plastics were seen as serious competitors in interior joinery and furniture production. Among other substitutes are aluminum for windows and door frames, marble, cement and tiles for floors, steel, plastic and glass for furniture, concrete for railway sleepers which has almost taken over tropical timber, and of course, bricks and mud for construction

As far as price competitiveness between tropical timber and non-wood substitutes is concerned, it is very difficult to draw a one-to-one correspondence between the two because the price differential across the different varieties of tropical timber is very wide. However, there is evidence from the survey that on an average it would cost only 50 per cent of the money spent on wood to go for steel substitute. Similarly, plastic substitutes cost only 40 per cent of timber. With regard to the overall market penetration, the survey findings indicate that timber sales may increase by 25 per cent if plastic and steel items are removed from the market. In the furniture sector itself, the consumption of timber would increase by 40 per cent in such a situation.

The adverse climate change due to increase in atmospheric pollutants in some urban centres has helped shift the focus back to renewable resources, such as wood. There was a time, when the use of wood was discouraged in the construction and materials like steel, aluminum and other products were encouraged. However, in the post Rio scenario, the United Nations conventions, such as on Climate Change (UNFCCC) and the Kyoto Protocol

are promoting the reduction of green house gas emissions and encouraging afforestation and reforestation activities. It is now being increasingly felt that materials such as aluminum and plastic, which carry environmental costs of their own, should be replaced by timber. This is also contributing to the shift from steel to wood once again. Though there is no policy proclamation in this regard so far, the debate has started with India signing Kyoto Protocol in 2002, and the government is likely to encourage renewable sources of energy to show its commitment to the implementation of the Protocol.

To sum up, the findings of the survey of 12 consumption centers are summarised in the table below to give a synoptic view of the tropical timber product market in India.

Table 2.27: Summary Results of the Survey of 12 Consumption Centres

Type	Per '000 capita consumption (Cu.m)		Share of tropical timber (%)*	Domestic supply vs. imports (%)*	End use sectors
	2002-03	2012-13			
Industrial Roundwood	44.1	51.1	80	43	Saw mills, construction, other processed products
Sawnwood	27.8	27.4	84	Limited imports and largely local species	Plywood, veneer, construction, furniture and furniture components, builder's joinery
Plywood and veneer	9.1	14.2	Mainly softwood	Negligible imports	Furniture and furniture components
Builder's Joinery	11.8	11.2	92.5	60 – 70	Construction

Source: Consumption Survey
Note: * The trend is likely to continue

The above table reveals that there is substantial market for tropical timber. This trend is likely to continue in the future. Domestic tropical timber availability will most likely remain suppressed, because of the limits to production potential augmented by the much needed moves of the Government of India towards conservation and preservation of forest areas. All told, the domestic supply of tropical timber shall remain restricted and there should be an increasing trend in the import of tropical timber, which indicates high potential for ITTO exporters.

SECTION 2.3: DISTRIBUTION CHANNELS

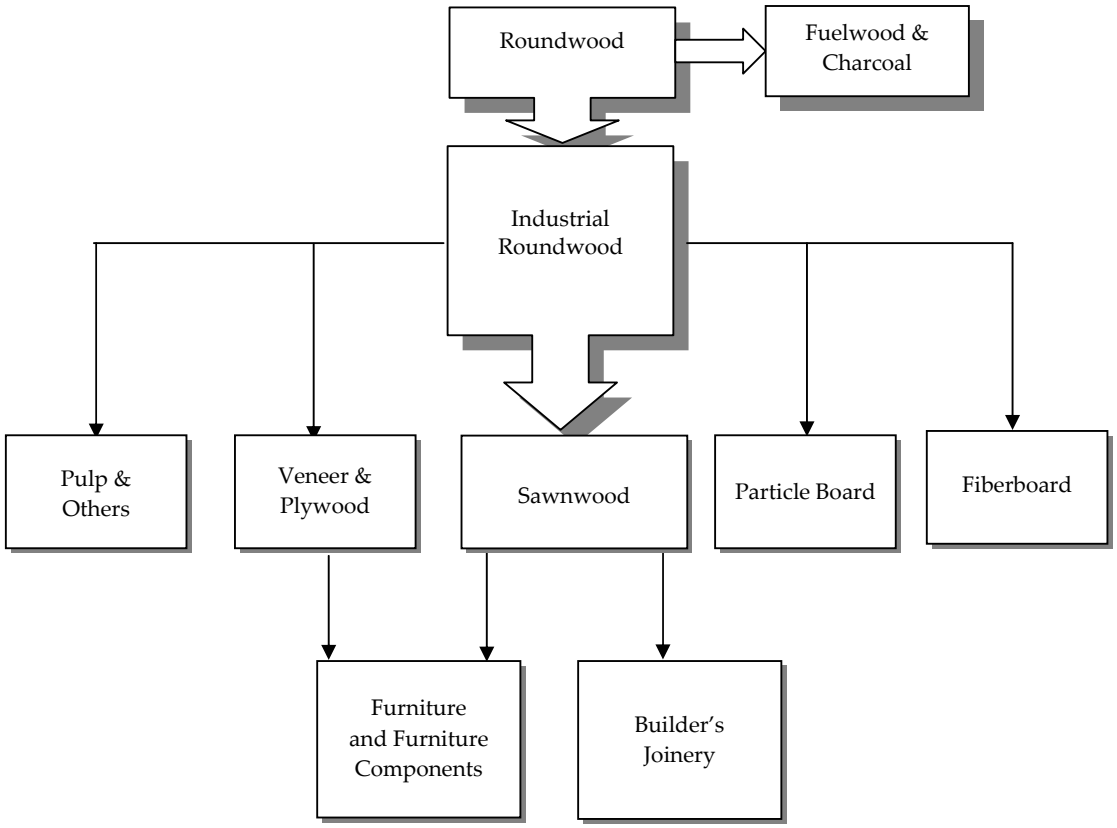
The structure of the distribution systems available in a country is affected by the level of economic development, the disposable income of consumers and the quality of the infrastructure. It is also linked to social and environmental factors such as culture, physical environment and legal and political system. Market mangers who develop distribution strategy must decide how to cost effectively and efficiently transport the goods from production and processing centres or from importing ports to the constructors and consumers. Suffice it to summarize that this does not apply to the timber distribution system

as it should in a country of India's size, largely because of the disorganized and disperse timber market and the lack of basic market intelligence. These issues need to be addressed, for example, through appropriate public-private partnerships, among other things.

An understanding of the structure of the available distribution channels is extremely important in the development of a strategy. Distribution strategy is one part of the marketing mix, and it needs to be consistent with other aspects of the marketing strategy: product policies, pricing strategy and communication strategy. It is in this context that the distribution channels of various timber products were studied and analysed.

Before analysing the distribution channel of various timber products in India, it is pertinent to discuss the material flows by which roundwood gets converted into various end use products like veneer, plywood, sawnwood, pulp and other products. The following figure depicts the most common material flow observed in the country.

Figure 2.20 Wood /Timber Material Flows

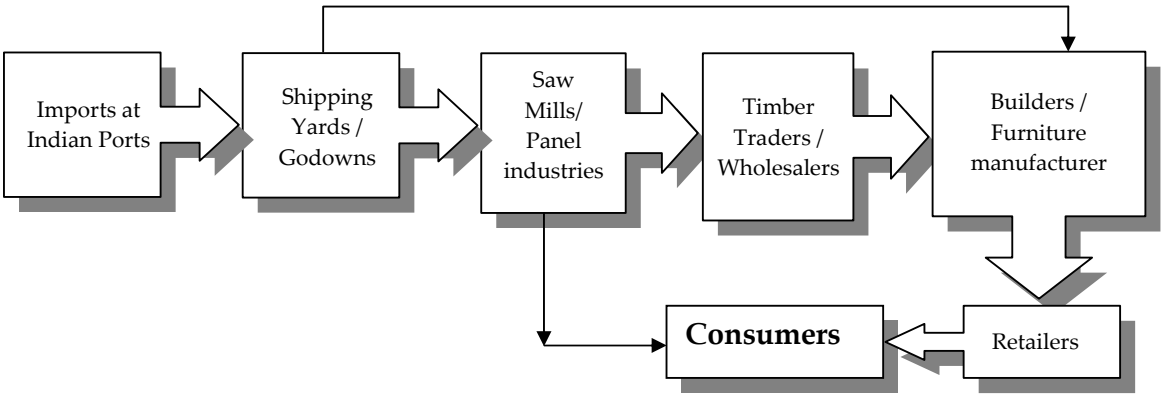


The above chart reveals that a part of roundwood is used as fuelwood and charcoal – in fact a very large part and often locally. The other part is industrial roundwood, which does get transported over some distances, but often passes through small shipments for conversion by small and medium sawmilling industry. That is because the major users of industrial roundwood include sawnwood, besides veneer, plywood, pulp, particleboard and fiberboard, many of whom draw on ToF. Furniture and furniture component sector uses

sawnwood and veneer and plywood. Sawnwood has a demand in the builder's joinery and construction sector as well and is generally transported by trucks to construction sites, often adding significantly to the cost of rawmaterial, for want of processing facilities, such as for joinery.

There are two basic structures of distribution channel for tropical hardwood (which has a lion's share in Indian domestic production and imports) and other types of timber in India. One relates to the imported timber logs and the other for domestic timber. The distribution channel of imported logs is shown schematically in the following figure.

Figure 2.21 Channels of Distribution of Imported Timber Logs



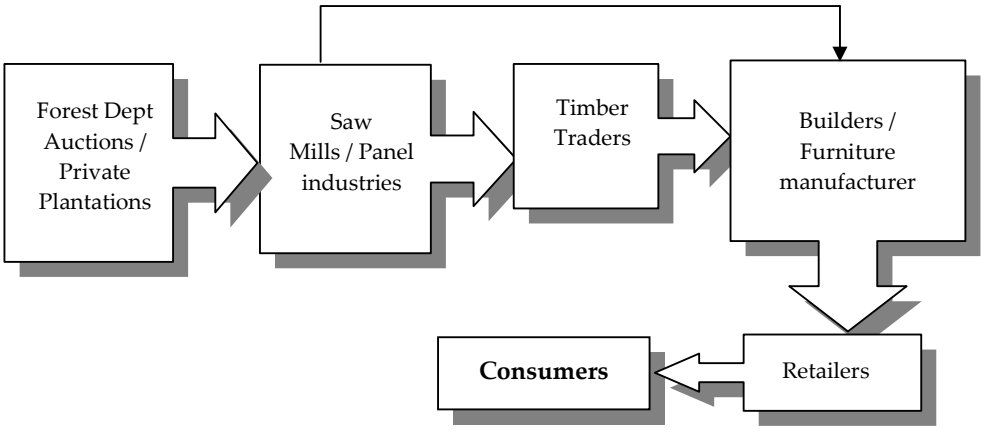
The imported timber logs are transported from the port city to the consumption city either in the form of logs or in the form of sawnwood, depending upon distances, the end-use and the links between the specialized trader and the constructor, which could be one and the same in several instances. From the importers, nevertheless, the logs are usually purchased by the timber traders who normally own the sawmills and sell the sawnwood to different users for house construction (builders' joinery, door frames and window frames), furniture manufacturers and retailers. The timber logs are also traded to the plywood, veneer, particle board and fibreboard manufacturers. Very often the importers themselves saw the timber. The cost generally increases by 10-12% from importer to consumer. The importers encourage consumers to buy directly from them, so that the consumers can have a choice and credit facilities, on the one hand, and the importer can obtain a bigger profit margin, on the other hand. This creates a simple "win-win" environment. This phenomenon is marked in Chennai, but not at all the import ports. Regarding plywood, the general trend is that the importers import logs and make plywood of their own trade mark and do not sell logs to others who make plywood or veneer.

The distribution channel of imported logs sometimes gets distorted because of logistics and procedural problems faced by the importers. In ports, the importers are required to invest much time and effort to get their papers cleared fast enough. The delay in processing of papers increase the handling costs and the importers are also charged rent for godowns, if they are unable to lift their timber immediately. Container availability and warehousing facilities are yet to be developed at most of the ports and hubs. Some of the importers in Chennai have indicated that they would prefer to import the timber from distant Tuticorin

and then transport it by road to Chennai even though they can import the timber directly through the Chennai port for local consumption. They favour the Tuticorin distribution channel in view of higher handling charges at Chennai and also due to the ease in processing of papers at the Tuticorin port.

The Kandla Port and Yamuna Nagar hub offer two other case studies presented in Annex 1.9 and 1.10. These offer an interesting understanding of the distribution density, channel length and logistics of the distribution channel of imported logs and locally procured wood supplies through to manufacturers and retailers. Distribution channel of domestic timbers is relatively short where timber may go directly to the consumers or across an abbreviated supply chain through wholesalers and saw millers as shown in the figure below.

Figure 2.22 Channels of Distribution of Domestic Timber



Distribution channels reflect the value addition as one goes along the channel from the producer and importer through to the consumer. Value addition takes place when the logs are converted initially to sawn wood, which gets converted to furniture, builder's joinery, door frames, window frames and other products. It would be useful if a survey is conducted to know the value addition that is taking place at each step in the distribution channel. The new marketing strategies such as direct home delivery, supermarket sales, as started by IKEA, either of finished products or assembly parts thereof have also resulted in the shortening of the supply chain. But this is still in at a very small scale in the case of timber products. The main lesson learnt is that facilitation of distribution from supplier and importer through to consumer enhances the choice in favour of timber that reaches the retailer and consumer in a less convoluted manner and therefore with lower cost and quickly enough. So far limited attention has been paid to these aspects and there is considerable scope for shortening the supply chain and improving the distribution system. This is particularly relevant to imported timber, for which traders have yet to coordinate countrywide and to organize the marketing channels and concomitant economic information.

Chapter III

TRADE AND TARIFFS

3.0 INTRODUCTION

India is one of the major users of wood in the Asia-Pacific region and till recently had the privilege of having fairly abundant quantity of timber produced domestically from several tropical hardwood species, including valuable teak and rosewood. The situation has changes and, as highlighted in the last Chapter, there is a growing gap between demand and supply of timber. That is largely on account of the increasing requirement for construction and other timber products due to an expanding population, rising standards of living, and diminishing or, at best, a stagnant supply of prime quality timber from natural forests. This gap has resulted in increasing use of plantation timbers and trees outside forests for various applications, but with limitations, such as of suitability for several end use categories.

In response to the emerging situation, and as a major policy initiative, the Government of India has permitted import of wood under the Open General License since 1996 with a view to ease out the wood shortage as also to reduce pressure on natural forests. This decision came in the wake of an historical judgment of the Apex Court of India arguing the need for conservation of forests for much needed environmental services and local community benefits.

This chapter complements the trade data presented in the last chapter with a focus on various tariff and non-tariff measures that have a bearing on international trade in wood and wood products in the country.

3.1 TRADE POLICY MECHANISM

India's international trading regulations, reflected in the Export Import (EXIM) Policy, are formulated and implemented by the Ministry of Commerce and Industry in consultation with several other ministries including Agriculture, Environment and Forests, Finance, and the Reserve Bank of India. The Ministry of Finance is responsible for fixing import duties and other border and internal taxes. The Reserve Bank of India manages the exchange rate policy and also regulates interest rates, for instance, for pre- and post-shipment export credit.

The Directorate General of Foreign Trade is responsible for the execution of the Export Import Policy. The Directorate General of Commercial Intelligence and Statistics (DGCIS) is the agency responsible for the collection, compilation and dissemination of trade statistics. The Commerce Department is also advised by the Trade and the Export Promotion Board (EPB), which facilitates continuous dialogue between the Government and industry regarding major trade developments. The EPB coordinates the work of all ministries in

charge of promoting exports and facilitating trade[1]. The Department of Commerce also has regular consultations with trade and industry groups, such as the Confederation of Indian Industries (CII), the Federation of Indian Chambers of Commerce (FICCI), and the Associated Chambers of Commerce (ASSOCHAM). Created in 1998, the Prime Minister's Council on Trade and Industry also serves as a forum for the Government to discuss trade and economic reforms with the business community.

The customs tariff continues to be the main instrument of trade policy of India. An autonomous Tariff Commission under the Department of Industrial Policy and Promotion advises the Government regarding tariffs and all tariff-related issues, taking into account the interest of various sectors including producers, traders and consumers as well as India's international commitments. The Commission also looks into the matters relating to tariff rationalization. The Planning Commission also sets up task forces to conduct independent reviews of various policies including trade and trade-related policies; the review reports are often published, though belatedly in many cases.

3.2 INTERNATIONAL & REGIONAL TRADE REGULATIONS

India has always been a votary of a well-regulated, rule-based multilateral trading system. India was a member of General Agreement on Tariffs and Trade (GATT) since its inception and is one of the founding members of the World Trade Organization (WTO). General Agreement on Trade and Tariffs, established at Geneva in 1948, was one of the several international organizations set up as a result of the Bretton Woods Conference, 1944, to restore economic activity disrupted due to the second world war. An objective of GATT was to pursue the goal of free trade with a view to encourage economic growth of member countries. It is said to have helped in creating a strong and prosperous international trading system by bringing down tariff levels and encouraging multilateral negotiation of trade issues. The 8th round of GATT negotiations, known as Uruguay Round, launched in Punta del Este, Uruguay in September 1986 and concluded in 1994, went well beyond the area of international trade and encompassed issues like Intellectual Property Rights, agriculture, investment, and service sectors. At the conclusion of the round, 134 member states agreed to the creation of the World Trade Organization (WTO) for the implementation and common servicing of all the previous GATT accords. WTO is a permanent multilateral organization created by GATT treaty which was ratified by the member governments in Marrakesh in 1994.

The Uruguay Round has a number of important implications for trade in wood and wood products: Reduction in overall tariff rates and escalation[2] and the establishment of bound

[1] The Board's terms of reference include advising the Government on policies aimed at promoting exports; reviewing the export performance of various sectors; identifying export constraints; examining the institutional framework related to exports; reviewing export incentives and suggesting areas where incentives are most needed.

[2] The extent to which tariff levels rise with the level of value-added processing of a forest product has continued in most developed countries, with specific processed products such as sawn wood/sleepers, veneer sheets, plywood, particle/fibre board, builders' joinery and furniture generally receiving relatively higher rates than unprocessed or partly processed products such as logs and wood in rough.

rates[3] through Market Access Schedules by each member country.

Although the implications of non-tariff barriers increasingly faced by forest products is less clear, the Agreement on the Application of Sanitary and Phytosanitary (SPS) Measures and the Agreement on Technical Barriers to Trade (TBT), provide the basis for tackling certain non-tariff measures that have been used as trade barriers against forest and wood products[4].

Other provisions that may also help to reduce barriers to the timber and wood products' trade include limitations and clarifications on the use of anti-dumping and countervailing duties, customs valuation and licensing procedures, and market access restrictions.

In recent years there has been a number of additional policies and regulations that have the potential of becoming "new" barriers to the forest products trade, many of which remained unaffected by the Uruguay Round results. These include:

Export restrictions by developing countries on raw/unprocessed forest products including wood (logs) to encourage domestic processing of timber for export[5]. A recent ITTO study (2002) reveals that Indonesia -one of the countries from which India imports wood logs, imposed heavy export tax on logs in 1980 to curb log exports with a view to encourage domestic further processing. Later, however, it lifted the export ban during the economic downturn, resulting in major flow of wood to several countries. There is an increasing trend towards the export of further processed wood from several trading partners of India, indicating their emphasis on value-addition and employment generation in wood processing industries.

Environmental and trade restrictions on production and exports in developed countries that affect international trade patterns. Developed countries are also beginning to employ a variety of environmental regulations in their forest industries – both alone and in conjunction with export restrictions – that may have significant trade implications.

Quantitative restrictions on imports of "unsustainably produced" timber products and use of "eco-labelling and "green certification"[6]. Many developed countries are also under pressure to adopt quantitative restrictions to limit the import of "unsustainably" produced forest

[3] The Market Access Schedules are not simply the announcement of tariff rates, but represent commitments not to increase tariffs above the listed rates; these rates are thus bound.

[4] The SPS agreement could reduce the use of inspection, quarantine and treatment of imported forest products as prohibitive measures beyond what is necessary to protect domestic human, animal and plant populations from pests or diseases. The TBT agreement could limit the use of technical regulations on forest products as non-tariff restrictions rather than for legitimate purposes of protecting human health and safety, preventing environmental degradation and ensuring adequate product quality and design standards.

[5] India is discouraging import of processed wood products while facilitating imports of wood logs through esclatory import tariff regime and in fact provides full import duty concession if imported logs are re-exported after processing.

[6] "Eco-labelling" and certification initiatives applied to the forest products trade has increased rapidly in recent years. Generally, the aim of these initiatives is to distinguish "sustainably" produced forest products or to ensure that forest product imports conform to domestic environmental standards and regulations. Provided that such regulations and schemes are non-discriminatory, transparent and justified, are agreed mutually between trading partners or through multi-lateral negotiations, comply with GATT rules and conform with internationally recognized guidelines, then their potential use as trade barriers will be drastically reduced.

products or to impose countervailing duties on imported products that benefit from an environmental export subsidy, i.e., unsustainable forest management that leads to lower harvesting costs and thus lower export product prices. This may not have any direct effect on wood imports to India unless India decides to impose such conditions on import of wood and wood products. That is less likely in the immediate future, given the declining production from natural forests and the large domestic demand.

India considers that the multilateral trading system had been designed to deal with issues involving trade alone. Thus, attempts aimed at including environmental issues in future negotiations went beyond the competence of the multilateral trading system, while labour-related issues belonged to the International Labour Organisation. India rejected any attempts to introduce these in the WTO and did not consider a multilateral framework on investment to be necessary. At the Doha Ministerial Conference, India opposed any linkage between trade and labour standards and considered that the existing WTO rules were adequate to deal with all legitimate environmental concerns[7]. Cancun was no different.

India continues to be a member of the South Asian Association for Regional Cooperation (SAARC). South Asian Preferential Trade Arrangement (SAPTA) that signed in April 1993 and came into force in December 1995 provides a framework for the exchange of tariff concessions, with a view to promoting trade and economic cooperation between SAARC members. Its final objective is the creation of the South Asian Free-Trade Area (SAFTA). India provides further tariff reductions ranging from 50% to 60% for LDCs (Least Developed Countries) in respect of all wood products and 10% in some wood products for member countries under SAPTA agreement[8]. India lifted all quantitative restrictions maintained for balance-of-payments reasons for SAPTA members on 1 August 1998.

India continues to be a party to the Bangkok Agreement signed in 1975. The agreement provides for the liberalization of both tariff and non-tariff barriers. At present it is limited to tariff concessions. India provides concessional entry on 188 tariff lines (at the HS six-digit level); the duty rates are generally 5 per cent points below the standard rate. India thus provides concessional entry to ten additional products imported from Bangladesh, which include timber, jute and bamboo pulp. India is also seeking closer relations with the ASEAN[9]. The Prime Minister has personally pleaded that at the Bali and Bangkok meetings in 2003, and the ASEAN member States and India have agreed on the need to enhance, expand and consolidate their economic relations by promoting trade and investment,

[7] WTO document WT/MIN(01)/ST/10, 10 November 2001.

[8] Consolidated National Schedule of Concessions Grated by India under First, Second and Third rounds of trade negotiations under SAPTA agreement (on the SAARC Web-site).

[9] The ASEAN was established on 8 August 1967 in Bangkok and its member countries are: Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam. One of its aims is to accelerate economic growth in the region through joint endeavors. The First ASEAN-India Summit held in Cambodia in November 2002 acknowledged that economic progress would enhance regional peace and stability, and the leaders shared the view that continued economic cooperation would promote the prosperity of the Asia-Pacific region. They welcomed the adoption of an India-ASEAN Regional Trade and Investment Area as a long-term objective at the First ASEAN-India Economic Ministers' consultations at Brunei Darussalam in September 2002. An ASEAN-India Task Force on Economic Linkages has been constituted to prepare a draft a Framework Agreement to enhance ASEAN-India Economic Cooperation for the next meeting of ASEAN-India Economic Ministers in October 2003.

facilitating market access, improving the flow of technology and enhancing access to trade and investment-related information. Whereas these international treaties may not have much effect on international timber trade, India's closer involvement with the Association of Southeast Asian Nations (ASEAN) is bound to have an appreciable impact on India's international tropical timber trade since three ASEAN member countries –Indonesia, Malaysia and Myanmar, are among the main exporters of industrial wood to India.

3.3 Tariff and Non-tariff Measures

Tariff -the duty on imports imposed by the importing country, has a major impact on imports. The most common non-tariff measures having a direct impact on imports include quantitative restrictions, quality controls or technical barriers to trade such as standards, certification, rules of origin, and procedures for imports.

3.3.1 Tariffs

The Indian customs tariff is the main instrument of trade policy and for regulating imports. Since the early 1990s, India has moved gradually away from a strategy of industrialization through import-substitution and public sector production to a more open, market-oriented trade and investment regime. Nevertheless, policies continue to shield some domestic producers from foreign competition.

Additional Duty

In terms of Section 3 of the Customs Tariff Act, 1975 (51 of 1975), any article which is imported into India is leviable to a duty equal to the excise duty for the time being leviable on the like article if produced or manufactured in India or, if the like article is not so produced or manufactured, which would be leviable on the class or description of articles to which the imported articles belong.

A Special Additional Duty of 4% was introduced on most imports in the 1998/99 Budget to tax imports "similarly" to state sales taxes (section (4)(i) below). As the SAD is an across-the-board 4% tariff on most goods, it may not be equivalent to local sales taxes imposed on similar domestically produced goods, some of which may face higher or lower rates of sales tax.

However, there is ample scope for misclassification of items due to the fact that concordance between the classification of products in the central excise and the customs tariff schedules is not complete These discrepancies may be because the excise duty is a duty on "manufacture" and not on "trade" or "sale" as is the case with import duty.

The total customs duty payable when there is import to India involves several types of duties levied on imports and there are prescribed methods of computation of duties as summarized below:

Obtain the Tariff Classification of goods.

Compute the

i. Basic duty
ii. Additional Duty of customs (equal to excise duty calculated on Value plus Basic duty)
iii. Special Additional Duty (Calculated on Value plus Basic duty plus Addl. duty)

1) Determine if there are additional duties under different statues such as countervailing duty, antidumping duty, or safeguard duty[10].
2) Concessions and Exemptions.

India's tariff is based on the Harmonized Commodity Description and Coding System (HS Code 96)[11]. According to this, Chapter 44 deals with Wood & Articles of Wood and Charcoal.

3.3.2 Bound tariffs and Applied MFN Tariff

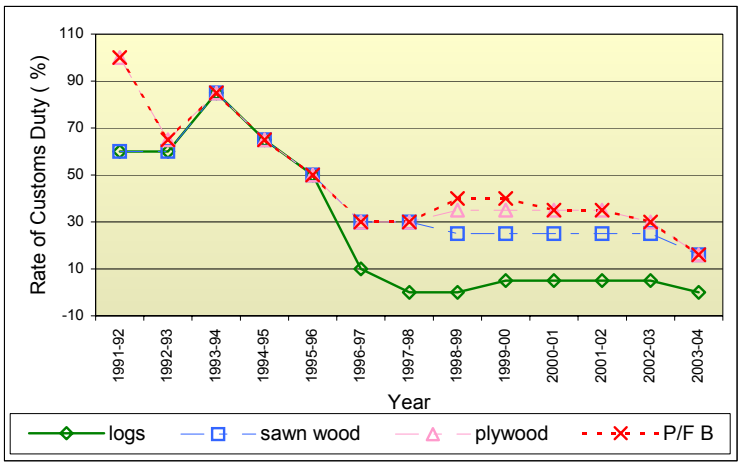
Bound tariffs represent commitments not to increase tariffs above the listed rates – the rates are "bound'. Thus the bound rates serve as ceiling. India's bound and current applied most-favoured-nation (MFN) tariffs[12] are given in Annex 3.1 & 3.2. Although there are continuous efforts to rationalize tariff structure, it remains complex to some extent. A number of exemptions applied to products, industries and end-users add to its complexity and resulting in lack of transparency.[13] While the standard rate is available only at the HS six-digit level, a large number of tariff exemptions are notified at the HS six-digit, eight-digit levels; some are targeted at specific industries or end-users.

In India, tariffs are considered an important tool for ensuring efficient resource allocation and economic development. Thus, concessions are granted to certain end-users based on social, economic, industrial and environmental considerations. However, these are notified, and related to specific chapters, headings or sub-headings, and "certification procedures" prevent misuse. More over there are concessions or exemptions on import duty under a number of export-promotion schemes.

The tariff is also characterized by high dispersion[14] and escalation[15], with tariffs rising from 5% for unprocessed wood to 25% and 35% for semi-processed and processed wood products. This is meant to provide protection to the domestic industry. Annex 3.3 gives the applied tariff rates for various wood and wood products included in HS code 44 from 1991-92 to 2002-03. A quick analysis of the MFN tariff will reveal that the average rates have declined over the years and tariff dispersion has lowered down to 10.23 during 2002-03 from 13.15 during 1991-92. Figure shows that higher basic import duty for processed wood products viz. sawn wood, veneers, plywood, particle and fibre board compared with raw materials, i.e., wood in rough logs is continuing since 1996.

[10] At present no wood /wood product attracts any of these duties in India.
[11] HS Code is the Harmonized System of Nomenclature established by the World Customs Organization.
[12] Based on the HS Code 96.
[13] The exemptions may be granted to products but also to certain end-users, for example small-scale firms and firms operating in export-processing zones.
[14] Measured by the standard deviation of tariffs.
[15] Inherent in higher tariff rates with the level of value-added processing of timber such as sawn wood, veneer sheets, and wood based panel products.

Figure 3.1: Indian Tariffs for Logs and Wood Products



Additional and Special additional duties and the method of their computation (Table 3.1) increases the total custom duty but also enhance the difference between processed and unprocessed and semi-processed products.

Table 3.1: Calculation of Custom Duty

	Value	Basic %	Value+ Basic	Addl Duty %+	Value + basic+Addl Duty	SAD %	Value + basic+Addl +SAD	Effective Customs Duty %
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Logs	100	5	105	0	105	4	109.2	9.2
Sawnwood	100	25	125	0	125	4	130	30.0
Plywood	100	25	125	16	145	4	150.8	50.8
Particle /Fibre-board	100	30	130	16	150.8	4	156.8	56.8

Additional Duty is calculated on value+basic duty (given in Column 4)
SAD is calculated on Value+basic duty+addl. duty (given in Column 6)

There has been no objective assessment of the actual impact of such higher rate in terms of protection to the domestic industry. Table 3.2 lists year wise import value of wood in log and other important wood products, i.e., plywood, veneer sheets, particle and fibre boards for the period 1991-92 to 2001-02. The table reveals that wood in log form continues to account for the bulk of imports, though sawnwood imports have also been registering a sizeable increase. With increasing emphasis on processed exports from the traditional ITTO exporters to India, it is not far fetched to consider the possibility of still greater sawnwood imports in the foreseeable future, partly because of price competitiveness and partly because of the likely further liberalization of trade, especially as a result of the recent understanding and agreements with the ASEAN.

Table 3.2 : Import Value of Wood and Major Wood Products (million US$)

Year	Round Wood	Sawn wood	Plywood	Veneer Sheet	Particle/ Fibre Board	Total wood/ wood Products HS Code 44	logs as% of total wood
1991-92	127.96	3.45	1.61	0.09	0.10	133.41	95.92
1992-93	171.82	6.91	2.80	0.53	0.23	182.74	94.02
1993-94	134.46	4.06	3.48	0.26	0.83	143.50	93.70
1994-95	204.12	7.12	7.12	1.71	3.02	224.02	91.12
1995-96	219.31	5.72	6.78	6.07	4.11	242.65	90.38
1996-97	246.68	7.94	4.17	6.43	4.29	270.35	91.25
1997-98	386.64	5.23	7.14	10.29	12.16	422.91	91.42
1998-99	339.43	7.66	8.90	12.43	12.27	382.58	88.72
1999-00	429.15	3.88	5.59	3.94	15.05	460.24	93.25
2000-01	457.94	7.17	4.07	2.43	16.62	491.06	93.25
2001-02	509.78	13.01	4.91	2.46	18.41	551.62	92.41

Sources: DGCIS, Kolkata and EXIM Data Bank

Variation in quantities of wood in log form & plywood respectively vis-à-vis tariff rate for these years are given in Figures 3. 2 and 3.3. It is seen that that whereas reduction in tariff had resulted in almost proportionate increase in imports of wood logs but no such inference can be drawn in respect of plywood. Increase in import of wood logs from 1996-97 onwards is partly due to gradually stricter restrictions on scientific management of natural forests based on the sound principles of sustained yield which has culminated in drastic reduction of tree felling in such forests causing acute shortage of prime quality hard wood required by the major wood processing industries.

On the one hand, this has led to increased use of rapid growth plantation timbers characterized by low girth, low natural durability -which can be greatly enhanced with appropriate chemical treatment, and low dimensional stability. On the other hand, this has resulted in increasing import of prime tropical hard wood species. With the growth of plywood/block board industry based on plantation timber for core using face veneers from imported timber, the import of wood logs has been steadily increasing in spite of the fact that import duty has remained constant. This trend is likely to continue, year-to-year variations notwithstanding.

The present tariff is lower than the bound rate of duty as agreed by India consequent to the Uruguay Round of negotiations under the WTO. Hence, although in the recent years there has been gradual reduction in the applied tariff in respect of all wood and wood based products, this imparts a degree of uncertainty due to the scope to raise applied MFN rates.

Figure 3.2: Log Import Quantity v/s Import Duty

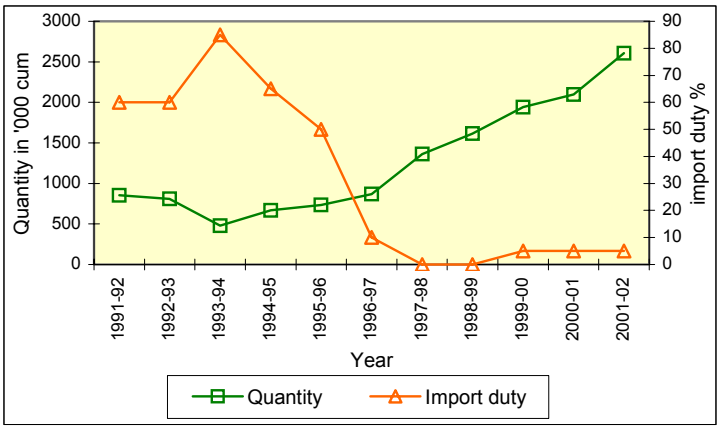
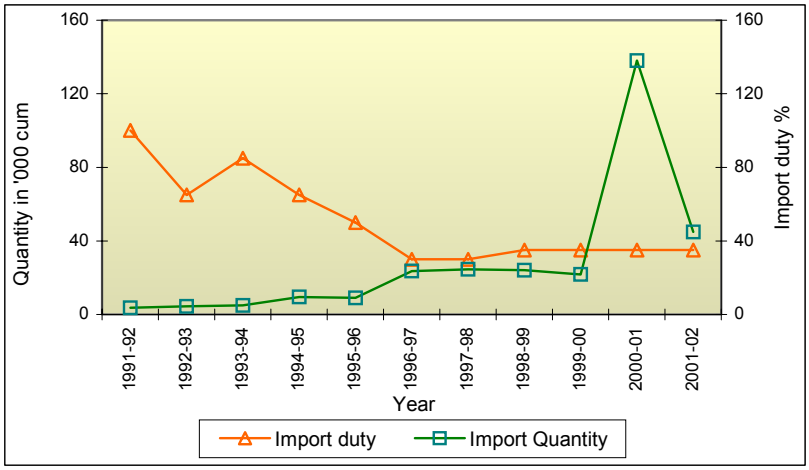


Figure 3.3 - Plywood Import Quantity v/s Import Duty



3.3.3 Tariff quotas and rules of origin and preferences

India has been gradually removing quota restrictions[16] since early 1990s and presently has tariff quotas on imports of milk powder, maize, crude sunflower seed and safflower oil, refined rape, colza, and mustard oil; these are allocated by the Directorate General of Foreign Trade. There is no tariff quota for wood and wood products. India does not presently apply rules of origin for imports from MFN sources.

Preferential rates of tariff are applied under bilateral and regional trade agreements. Since India does not have much import from the member countries of such trade agreements, except Myanmar, these are not of much relevance to wood and wood products sector. Even

[16] Quota restrictions came into effect for balance of payments reasons under specific enabling provisions of GATT.

in the case of bilateral agreement with Myanmar[17] the provision for standard duty of 5 per cent for several products including wood in the rough [18] is not significant now because the MFN tariff for wood in rough is the same since 1999-2000.

3.3.4 Non-Tariff Barriers

Although tariff continues to be the main regulator of import to India, certain non-tariff measures are gaining importance that may become more significant in future. These include Customs procedures - valuation, clearance and financial procedures; Standards, Quality controls and Certification; Phyto-sanitation, and wood substitution. Some of these are becoming important for negotiations under WTO, as have been briefly discussed earlier in the paragraph on "International and Regional Trade Regulations".

3.3.4.1 Customs procedures

Registration and documentation

Most importers and exporters are required to obtain an Importer Exporter (IEC) number from the Director General of Foreign Trade (DGFT). For imports, three documents are normally required: the invoice, packing list, and bill of lading or airway bill. Phytosanitary certificate is required for certain goods -including wood, and is to be issued by the country of origin. Since 1996-97, the import of wood has been allowed under Open General License, i.e., no import permit is required. Nevertheless, additional documents are required if the goods are being imported (or exported) under one of the preferential trading agreements, if they are restricted, or under one of the export incentive schemes.

Pre-shipment inspection

India does not require pre-shipment inspection for imports and does not have a procedure for clearance of imported goods on the basis of pre shipment inspection. However, several importers do include a pre-shipment clause in their agreements for import of wood and other products, particularly in first few dealings with the foreign suppliers.

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[17] Notification No. 9/95-Cus., dated 6-3-1995 -Exemption to specified goods when imported into India from Union of Myanmar: In exercise of the powers conferred by sub-section (1) of section 25 of the Customs Act, 1962 (52 of 1962), the Central Government, being satisfied that it is necessary in the public interest so to do, hereby exempts each of the goods specified in column (2) of the Table annexed hereto when imported into India from the Union of Myanmar from so much of that portion of the duty of customs leviable thereon which is specified in the First Schedule to the Customs Tariff Act, 1975 (51 of 1975), as is in excess of 5 per cent *ad valorem*; Provided that the importer produces evidence to the satisfaction of the Assistant Commissioner of Customs or Deputy Commissioner of Customs that such goods have, in fact, been produced in the Union of Myanmar and are imported into India through the land route from a notified land customs station. Table entry at Sl. No. 16 includes in column 2 : Wood in the rough, whether or not stripped of bark, timber, wood roughly squared, wood sawn or chipped lengthwise, sliced of a thickness exceeding 25 millimetres.

[18] The other products included in the agreement are rice, pulses and beans, chick peas, mustard and rapeseed, ground nut, fresh vegetables and fruit, garlic and onions, reed brooms, sesame seeds, betel nuts, turmeric, dried ginger, coriander, fried chillies, poppy seeds.

Customs valuation and clearance

Under the Customs Valuation (Determination of price of imported goods) Rules, 1998, the value of imported goods is based on their transaction value, which is defined as "the price actually paid, or payable for the goods when sold for export to India, adjusted for the value of certain costs and services including commissions and brokerage charges, container and packing costs". If the transaction value of the imported good cannot be determined, the value of the import may be based on the cost of identical goods sold for export to India, the transaction value of similar goods, deductive value, and on the residual method. The delays are also due to the complexity of the tariff and exemptions, which may vary according to product, user, or specific export-promotion programme.

To speed up customs clearance procedures, the electronic data interchange (EDI) system has been introduced at almost all major ports and air cargo complexes. Under the EDI, the importer is not required to submit any documentation to customs in advance. These documents, however, must be submitted to customs at the time of examination of the goods. Several additional steps have been taken to reduce clearance time varying from 2 to 7 days. The measures relevant to wood imports include: revising examination procedures whereby only a small percentage of cargo would be examined for the purposes of valuation, there is a separate examination for plant quarantine purposes; and filing customs declarations electronically. The handling facilities are not modernized or mechanised to the same level in all ports, and are reported to be still far below the international standards. At some ports the clearance agents are permitted to use their equipment for unloading and transport to bounded ware houses[19], as is the case of Vishakhapatnam. However, the total handling cost charged by the C&F agents which includes the port charges, unloading and local transport, varies from port to port, from US$ 5 to 10 per Cu. m., ostensibly due to varying labour rates.

Financial procedures

With the improving balance of payment situation and overall liberalization in the banking sector, the various hurdles in imports have been greatly reduced and the banking procedures have been simplified, though the perceptions of past convoluted procedures may prevail and need to be addressed. Since wood and wood products are permitted for import under Open General License, any importer can open a Letter of Credit in favour of the supplier from the exporting country and the bank commission is less than 1% (libor 0.35%+ 0.5%) per annum.

Some exporting firms have agents located in Singapore, a free port, to facilitate transactions with Indian purchasers, even though routing through Singapore involves an additional expenditure of about 3 per cent. Traders contacted have given to understand that this involves an additional cost of about US$ 6 to 8 per Cu.m and they consider it well worth. The importers prefer this route due to two reasons: (i) assurance of the Singapore firms to take care of any problem that may come up in the whole process, and (ii) the Singapore

[19] The bounded ware houses are under the control of the customs authorities and the materials are allowed to be moved out after clearance by customs.

firms arrange LoC (Letter of Credit) required for facilitating the loading of the logs and other products from the country of origin, and its pre-shipment inspection at the loading point. The Indian importers are required to open an LoC a day or two before the arrival of ship at the port of import, i.e., the concerned port in India, and thus the period of LoC (more than a month in most cases) is either obviated or considerably reduced. If the agent in Singapore is not included in the chain, the LoC of the Indian Importer has to be in place at the time of pre- shipment inspection in the country of origin. Another advantage of the Singapore hub appears to be the intimate knowledge and competition amongst the agents there dealing in logs of required species, leading to making the additional cost worthwhile and reflecting the lack of such facilities in India.

3.3.4.2. Standards and Quality Control

Standards

The Bureau of Indian Standards, the national standards body of India, had been designated as the WTO-TBT Enquiry Point, while the Ministry of Commerce is responsible for implementing and administering the WTO Agreement on Technical Barriers to Trade. India accepted the Code of Good Practice on 19 December 1995.

Development of Indian standards

The Bureau of Indian Standards (BIS) has its main office in New Delhi, with five regional and 19 branch offices around the country. To support its testing and certification activities, the BIS has a network of recognized laboratories across India, which provide conformity testing and calibration services

Proposals for establishing new standards or for revising existing standards may be submitted in writing to the BIS by Ministries and agencies of the central and state governments, professional associations including consumer organizations, industrial units, industry associations and professional bodies, and members of the BIS and of its technical committees.

Formulation of the new or revised standards is done by technical committee comprising of scientists, technical experts, industries, representatives of research institutes, industry associations and consumers. The Civil Engineering Division (CED) is responsible for formulation of all standards related to wood and wood products including imported woods. Wood is covered by the technical committee CED 9 and Wood Products committee CED 20, which is headed by the Director Indian Plywood Industries Research and Training Institute.

Indian standards are formulated by the Bureau of Indian Standards (BIS), which was established as a statutory body under the Bureau of Standards Act, 1986, and became operational on 1 April 1987. From its formation until 1 April 2001, the BIS had developed large number of standards, including those on wood and wood products. These are generally voluntary standards, as is the case of all wood and wood product standards. In order to ensure their continued relevance, Indian standards are reviewed as and when considered necessary, but at least once every five years. As a matter of policy, the BIS endeavors to align Indian standards as far as possible with international standards. The BIS, which was a founder member of the International Standards Organization (ISO), continues to participate in technical and policy-making committees of the ISO, and the International Electro-technical Commission (IEC).

Certification

Indian and foreign manufacturers who meet a BIS standard may carry the BIS Certification Mark. The BIS Certification mark in respect of wood products is voluntary. The BIS has a scheme under which the imported products may be certified for conformity to Indian Standards. Samples from consignments are required to be tested at BIS recognized laboratories for conformity to the relevant standards. Voluntary certificates are also issued for environmentally friendly products (Ecomark), environmental management systems, quality systems, and hazard analysis and critical control points (HACCP). As of now no wood product, either domestic or imported, carries or is required to carry any ecomark.

Sanitary and Phytosanitary Measures

Under the Export and Import Policy, all imports of primary agricultural products are subject to a Bio-Security and Sanitary and Phytosanitary import permit issued by the Department of Agriculture and Cooperation under the Plants, Fruit and Seeds (Regulation of Import into India) Order, 1989. The permits are issued on the basis of import risk analysis based on scientific principles, including, inter-alia, the types of pests associated with the particular product being imported and their potential impact on India's international trade.

Although environmental issues have so far been related to agriculture and there has been much debate on it, there are important questions about the effect of globalization on tropical forests, particularly in relation to the Convention on Biodiversity and implementation of Intellectual Property Rights with respect to traditional knowledge related to timber propagation and non-wood forest products, including medicinal plants. As the volume of forest product trade increases, so do the chances of invasion of alien species of insects, pests and micro-organisms which can cause large scale infestations and destruction in forest ecosystems where natural immunity does not exist. To reduce the risk of these infestations, boarder controls that call for appropriate treatment of unprocessed wood products with appropriate and permitted chemicals may be imposed. Accordingly, all unprocessed wood imported into India is required to be covered by certificate issued by the concerned authority from the exporting or country of origin to be produced before the quarantine authority under the Ministry of Agriculture, Government of India, at the port of entry. The concerned authority representing Plant Quarantine wing of the Ministry of Agriculture is required to inspect the material to decide if fumigation is necessary. The inspection cost is around US $ 1.5 per Cu.m, and if fumigation is recommended by the inspectors it adds not only to the cost, but also considerably to the clearance time.

Wood Substitution

Wood substitution is another important phenomenon that may have serious impact on the international timber trade. It is in effect a non- tariff barrier and a cause for concern about ensuring the competitiveness of timber vis-à-vis non-timber substitutes, which have been promoted by policies aimed at forest conservation, the high energy and environmental costs of the substitutes notwithstanding, as pointed out elsewhere. Yet, wood remains as the most favoured and apt material for several uses, including housing and construction, joinery and furniture, given the versatility of wood obtainable from natural forests for various

applications. However, the availability of timber from preferred species -whose traditional knowledge and uses have evolved over the centuries, has been declining in the recent years due to conservation oriented forest management practices, spurred by the realization of the environmental role of forests, but without evaluating the impact of non-wood substitutes on the economy or the environment per se.

Guided by the recommendations of the Inter-ministerial Group constituted by the Government of India, the National Forest Policy of India (GOI,1988) is aimed at promoting the development and use of wood substitutes to meet the gap between demand and supply of wood. The NFAP- India 2001 (GOI, 2001) accordingly identifies five main action areas, including the Reduction in Total Demand. Envisaged in the context of sustainable forestry are the reduction in current level of forest uses and overall consumption of forest based goods and services through improved processing technology (waste reduction, increased life for products - seasoning, chemical treatments), standardization of sizes and designs, and substitution of solid wood with reconstituted wood and wood alternates from other renewable fibre materials like bamboo, coir, and agro-residues, to achieve the intended purpose of environmental conservation.

Inter Ministerial Group of the Government of India on Wood Substitution (GOI, 1986)

The Inter-Ministerial Group on Wood Substitution constituted by the Government of India in its report (GOI, 1986) recommended among other things:

A complete ban on use of wood for furniture and building construction in Government bodies/organizations/institutions, use of pre-stressed cement concrete sleepers in railways, substitution of wooden transmission poles with metallic or reinforced cement concrete poles; timber substitution in building construction with bricks, cement concrete, metals, wood wool boards, standardization, for example, of the size of doors windows,

Intensive research on more efficient utilization of wood, including utilization of lesser known and lesser used species, utilization of rubber wood for plywood and panel industries from tapped trees, development of resins for particle board from wood and agro residues,

Raising captive plantations of industrial wood by the industries, encouraging villagers to plant trees for fuel wood, cottage industries, sports goods, and bamboo which can replace timber for several purposes.

While emphasizing the need for development of alternate and innovative construction materials and technologies, the National Housing and Habitat Policy 1999, also underlines among other things, the need for reducing the use of scarce natural resources and replace them with renewable resources to reduce strain on natural environment, harnessing the results of research to strengthen biomass based housing by suitable chemical impregnation and treatment techniques to increase the life and quality of the shelter, and the promotion of wood substitutes.

Substitution of wood by other materials, such as metals and plastics does more harm to the environment that is sought to be protected by such substitution as they are made from unsustainable resource, are high energy consuming and not bio-degradable. They, in

practice, have serious adverse environmental implications in the total life cycle (LCA). Recent LCA assessments of wood and its so-called substitutes like steel and concrete in housing construction have brought out the ecological advantages of wood as building material and its benefits to the environment, including thermal utilization at the end of the product life cycle (Scharai-Rad and Welling, 2002; Kozak and Gaston 2002). The wooden windows were found to be the most favourable product, distantly followed by PVC and aluminum, with lowest environmental burden for all impact categories. However, no study has been undertaken in the country either for estimating the extent of substitution of wood by such non-renewable materials or for its environmental impact assessment.

It is considered more suitable that wood substitutes are developed from wood itself and related renewable materials as they ameliorate earth's environment during its growth process through carbon sequestration and this carbon remains locked through the entire service life of wood products. The most logical option is to import wood and wood products supplemented by growing more trees and use wood derived from them. Since trees can be grown on a continuing basis, wood can be derived from them with a sustainable supply maintained with less effort than producing its substitutes from non-renewable materials. However, since most rapid growth plantation timbers are characterized by small girth at maturity, and low dimensional stability and natural durability, their proper use requires use of appropriate processing technologies, viz., improved sawing, seasoning and preservative treatment, finger jointing and glu-lamination, and conversion to layered and particle composites (Bansal 2003).

In addition, there are several other renewable fibre materials, including bamboo, that can be used for manufacturing wood alternates providing environmentally responsible solution to bridge some gap between demand and supply of wood (Bansal and Zoolagud 2002). In India IPIRTI has been active in the development of such wood alternates and other innovative products from bamboo that are suitable in housing, constructions and furniture. An affordable bamboo based building system using bamboo in round/split/composite form along with tropical timbers and other building materials has also been evolved (Bansal et al. 2001; Pawan Kumar et al. 2003). With rich bamboo resources in the region and in the country,[20] second only to China, India holds good potential for industrial utilization of bamboo for manufacturing bamboo based composites to meet some of the national and global demand for eco-friendly alternates to wood substitutes.

As a major policy initiative, the Government of India has recently launched a National Mission on Bamboo Application with a view to harnessing the full potential of bamboo resources in the country. BIS is undertaking the revision of the National Building Code 1983 and has decided to include a separate chapter on bamboo based housing and its structural uses and composites. There is an urgent need for creating awareness among architects, builders and end users by providing clear technical information on wood and wood products and similar tropical forest materials, such as bamboo, designing technically sound wood products and product systems with longer service life, mandatory wood product standards, and wood friendly building codes.

[20] Extending over an area of about 10 million hectares natural forests, India is home to almost 45 % of world's bamboo forests.

It is therefore logical, at this juncture, that the current scenario is studied in a holistic manner in order to evolve a national policy for wood substitution or better still the substitution of non-renewable raw materials and heavy energy consuming products by wood. That may involve various factors with regard to the nature and characteristics of currently available wood–substitutes and the extent of actual substitution, and the substitution effect both in the short term and the long term, with reference to the intended purpose of protection of environment. Considering that the results have recently come from the R&D labs and only a few field trials have been done, it is rather early to assess their impact on timber use in the country, less so on international trade, although they seem to have potential in the long term. Such a study should have at its disposal economic information about timber utilization and about the availability of timber from different sources, including imports, and their comparative advantage.

Exports

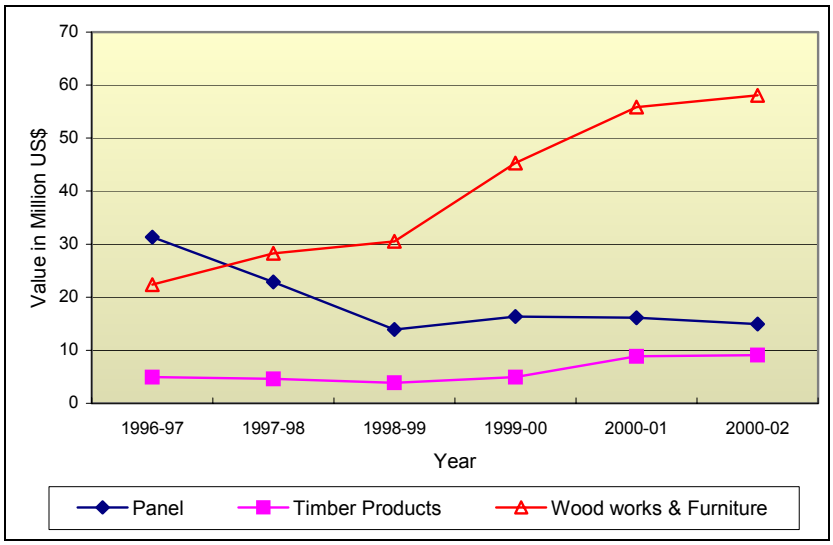
India does not have any export duties and encourages exports for which it also grants several concessions to the exporters. These concessions are in the nature of exemptions on income tax, and refund of imports duty if exported goods are processed from imported raw materials. Since timber products comprise a very small, almost a negligible, proportion of total exports, there are no serious efforts for their promotion. However, India holds a great potential for enhancing the exports not only of designer furniture and wood-work of rose wood, shisham, walnut and sandal but also in respect of plywood, panels and other materials, drawing upon the scope to use quality imported tropical timbers.

India has imposed complete ban on export of logs but not on exports of wood based panel products and secondary processed wood products (SPWP) comprising of wooden furniture, builders' joinery, table and kitchenware and inlaid wood works. Export values of these products since 1996-97 is given in Table 3.3 which reveals the increasing trend in respect of SPWP, notwithstanding the present low volumes in absolute terms. The decreasing trend in respect of panel products appear to coincide with the changing structure of the plywood industry in the country with the closure of practically all large and medium scale industries and opening up of large number of plywood manufacturing units in the small scale sector based primarily upon plantation grown timber, including poplar in the north India and rubber wood in the southern India. However, considering that there is a vast resource of plantation grown trees and agro residues and industry is seemingly in a comparatively advantageous position due to availability of sizable pool of skilled and semi-skilled workers, this trend could be reversed with Government support through an enabling policy environment for utilization of plantation timber and imported tropical timber, modernization of plants, research and development, and export promotion. Evolving a revival plan for a sizeable idle infrastructure in the form of closed plywood factories in the northeastern states, particularly in the state of Assam, comprising of relocation of some of the plants and machinery to other suitable places and/or their reopening appears to be an option worth exploring drawing upon wood from diverse sources along with other lignocellulosic raw material, such as bamboo, which is abundantly available in the NorthEast.

Table 3.3: Export of Timber Products (million US$)

Item	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02
Veneers sheets	6.68	5.95	4.42	4.25	3.53	4.46
Plywood	19.78	13.10	5.40	7.27	7.44	5.16
Builders joinery	0.62	0.63	0.70	0.50	0.96	1.37
Wood In rough	1.68	0.60	0.60	0.35	1.39	0.78
Particle Board	2.88	2.06	2.10	3.07	2.06	3.03
Fibre-board	2.00	1.77	1.99	1.74	3.10	2.30
Packaging	3.18	2.16	1.86	3.19	4.37	2.99
Table/Kitchen Ware	1.04	1.26	0.91	0.91	1.48	1.00
Statues and other ornaments of wood	0.11	0.57	0.40	0.34	2.02	3.70
Wood work of rose wood	6.40	6.38	6.05	13.49	16.54	10.76
Wood work of sandal	1.93	1.97	2.23	2.24	1.87	0.52
Wood work of shisham	7.31	11.92	11.76	11.39	8.66	8.66
Wood work of walnut	0.41	1.69	1.03	2.60	2.80	0.79
Lacquered wooden ware	1.64	0.39	0.81	1.31	0.48	0.23
Total Wood work	17.69	22.35	21.88	31.03	30.35	20.96
Wooden Furniture	4.69	5.91	8.66	14.27	25.50	37.14
Total Timber Products	64.16	60.23	53.07	71.14	88.79	89.79

Figure 3.4 Export of Timber Products



3.4 Concluding Remarks

From the comments of various stakeholders consulted and contacted and from the feedback at brainstorming sessions, it is evident that India has a huge appetite for timber and timber products. Their consumption is likely to grow at greater rate due to population growth, rising living standards and environmental awareness, among other reasons. Timber

continues to be the most preferred material and the preferences are not likely to change in favour of alternate materials, except for temporary switch over to fashion products by the elite groups. Consequently, demand of the industry for imported tropical timber is bound to increase further, given the current favorable environment for the same. There are nevertheless risks and temporal gyrations, and volatility in volumes imported are bound to take place now and then. As such, there is need for strategic studies and interventions, e.g.,:

- Study the nature of wood substitution in key consumption areas, e.g., housing and furniture, and its impact on the environment, which has been a major driver for such substitution in the national policy
- Prepare a strategic plan for boosting timber trade and wood processing, including the plywood and panel industry, to enhance export quality material, using plantation grown domestic timber in combination with larger quantities of imported tropical hard woods
- Study the impact of escalatory tariff on wood trade and industry and suggest a package for strengthening its competitiveness in the international market for secondary wood processed exports, while promoting an easier access for the import of tropical roundwood as well as sawnwood, which are among the preferred items of domestic consumption and value-added re-exports
- Study wood wastage in conversion and carpentry and evaluate the potential of mandatory standards and standardization of consumer products, viz., door and window frame and shutters, in order to minimize substitution by energy intensive substitutes, such as aluminum and steel, which pose a threat to the timber market
- Provide easy access to timber market intelligence in a transparent and timely manner, the lack of which is a major barrier for tropical timber trade and marketing in and across the country. Such statistics and economic information are also required to minimize and mitigate the volatility of the timber trade that it could otherwise suffer from and act as a non-tariff barrier
- Make an in-depth evaluation of the prevailing perceptions about other non-tariff barriers, particularly about financial transactions, shipping and smooth customs clearance, and recommend monitoring measures for ensuring cost-effective trading environment
- Draw upon the evolving national policies and procedures for increased trade and market liberalization for promoting intra- and interregional international timber trade

Chapter IV

URBAN CONSUMPTION SURVEY

4.0 INTRODUCTION

This chapter is devoted to assessing the consumption patterns of timber in the 12 major urban consumption centres of the country for main types of timbers utilised for various purposes, viz., sawn wood, veneer and plywood, and builders' joinery. Research-cum-survey was undertaken to evaluate the recent consumption trends for all these components, and also to estimate the projected consumption pattern of timber and timber products through 2012-13.

The analysis is further classified into timber types, i.e., species of various timber types that are mostly utilised. The three main timber types studied and analysed are tropical hardwoods, tropical softwoods and temperate hardwoods, with consideration for temperate softwoods whenever weighty. This chapter also discusses the consumption of imported timber vis-à-vis domestically produced timber, giving due emphasis to tropical timber. The survey revealed that imported tropical hardwood species are among the main imported species that are particularly favoured by the urban populace of India. As such, the chapter also reflects the nature and scale of imported tropical timber from the major suppliers.

4.1 METHODOLOGY

Both exploratory and survey methods of research were used to identify the consumption trends for tropical hardwood relative to other timbers and the end-use distribution (e.g., construction & builders' joinery/woodwork, furniture & furniture components, flooring, and boards) for each tropical timber product. The data were collected from secondary as well as primary sources including Government, Industry and institutional sources.

The primary data collection was done using the snowball sampling technique. This sampling[1] was used to select individual respondents in each sampling unit/category, such as the timber traders/builders/forest officials/households/furniture shopkeepers in each of the 12 Consumption Centres. This was done because the list of the timber traders/builders/forest officials in each city was not readily available with researchers and also no information with respect to the number and size of timber traders/builders in a particular city was available at the beginning of the study. In-depth interviews and observation methods were used for collecting the primary data as per Annex 4.1. A questionnaire schedule used for this purpose is enclosed as shown in Annex 4.2. and 5.1. However, as the study progressed, the researchers-cum-surveyors in various areas were able to collect and record the list of industries, traders, builders and others (some of which are recorded in Annex 4.3).

1 A sampling technique used when the overall population and consumer categories are difficult to identify or reach *ab-initio*. Research asks a subject if they could put them in touch with others in a similar situation and follow-up the process increasingly as the survey proceeds. Glossary has a description of the technique with which the researchers-cum-surveyors were familiarized at a brainstorming session at Bhopal at the outset.

4.2 CONSUMPTION CENTRES

In total 15 consumption centres were studied and surveyed, but four centres -namely Gurgaon, Ghaziabad, Noida & Faridabad, were clubbed together as Delhi Satellite Towns for eventual analyses and reporting purposes. The following urban consumption centres were thus studied to assess the consumption trends, particularly for tropical timber :

1	Mumbai	2	Pune
3	Surat	4	Ahmedabad
5	Chennai	6	Bangalore
7	Hyderabad	8	Kolkata
9	Kanpur	10	Delhi
11	Delhi Satellite Towns (Gurgaon, Ghaziabad, Noida, Faridabad)	12	Yamuna Nagar

4.3 ANALYSIS

The primary data collected through the questionnaire were tabulated to obtain the aggregate consumption figures of different types of timber products for each of the 12 urban consumption centres. A fairly detailed summary of the data for each consumption centre has been recorded in Annexes 4.4.1 to 4.4.12, with due mention of the relevant reference in the section dealing with the research results, which have revealed the predominance of tropical timber usage.

While researching the data for consumption of different types of timber, the consumption of tropical softwood data has also been verified from the study commissioned through the Indian Institute of Forest Management, taking due note of the case study and survey undertaken by it specifically for tropical softwood imports at Kandla port. Another distribution channel case study commissioned for Yamuna Nagar deals largely with domestic species, including ToF, and the other case study of Mumbai – the largest urban centre for the country, almost exclusively with tropical hardwood imports. Their outcomes are recorded in Annexes 2.9 to 2.11. Yet another case study was conducted for Chennai, also focusing on tropical hardwood imports and confirming the pattern for Mumbai, though on a smaller scale, but expanding. The data for that study and the detailed records for all the urban consumption surveys have been archived for a period of one year in agreement with various researchers-cum-surveyors and their local and regional consultants, in case the basic data were to be required for any further computation or validation.

Adding the data of each consumption centre for each type of timber products and their end-uses has generated an overall aggregate data of the 12 urban consumption centres. The Gurgaon urban consumption centre was excluded for the purpose of the aggregation since the same has been included in the 'Delhi Satellite Towns', taken together as one consumption centre. The detailed summary of the data for the aggregate consumption of all 12 consumption centres has been portrayed in Annex 4.5 with any analytical discussion in a later section.

The results of the analysis in the following pages starts with the aggregate consumption of each type of timber product in all the 12 urban consumption centres followed by the each urban consumption centre as listed in the methodology section. In addition, a questionnaire was distributed among a representative sample of selected manufacturing units for sawn wood, furniture and other items for obtaining an overview of the scenario of the timber based factories (Annex 4.6).

4.4 CONSUMPTION SURVEY RESULTS

4.4.1 Aggregate Consumption in the 12 Urban Consumption Centres

The aggregate of the all the 12 urban consumption centres where the study has been carried out is available in Annex 4.5, as stated above. A brief summary of the same is shown in the following Table 4.1. It is evident from the table that the timber consumption in urban India has been growing at 7 per cent per annum, more than the average per capita GDP growth rate of 4.5 percent during the last five years.

Table 4.1: Total Timber Consumption of major Urban Consumption Centres (000 Cu.m)

	1997-98	1999-2000	2002-03	2005-06*	2007-08*	2012-13*
Timber Products						
Total Industrial Roundwood (Logs)	2976.3	3250.3	3418.8	3851.5	4194.8	4793.5
Tropical hardwood Logs	2322.9	2546.1	2699.1	2888.0	3181.6	3781.1
Sawnwood	1983.5	2121.3	2152.4	2254.2	2345.4	2567.3
Veneer & Plywood	491.8	586.3	705.6	783.2	840.7	1329.4
Builder's Joinery	832.8	877.7	911.3	934.6	965.5	1055.3

* Projections

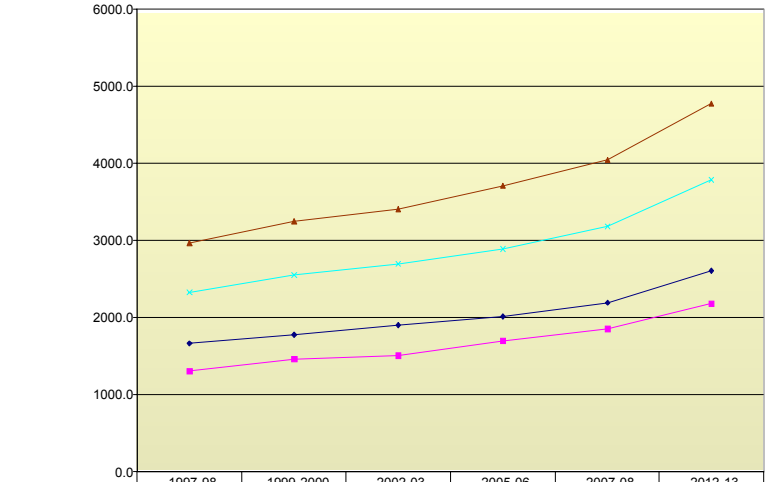
Source: Computed from the primary survey data collected from 12 urban consumption centres for the pre-project Review

Out of the total roundwood logs consumption of 3.4 Mn Cu.m. in the 12 urban consumption centres in 2002-03, tropical hardwoods constitute about 80% (Figure 4.1). Their domestic production is about 57% (1.55 Mn Cu.m). It is inferred that the remaining tropical timber is imported, i.e., 43% (1.16 Mn Cu.m) of the total industrial roundwood consumed in the urban centres. This proportion of imported tropical timber is expected to be maintained in the next 5-10 years (Figure 4.2). With the increasing consumption of tropical timber, the absolute quantity of imported tropical timber would increase proportionately. It is estimated that the total timber consumption in these 12 major consumption centres would increase to 4.8 Mn Cu.m. by the year 2012-13, of which tropical timber could be 3.78 Mn Cu.m with imported tropical timber being at least 1.64 Mn Cu.m.

Logs were reported to arrive from about 100 countries, but six countries, namely Malaysia, Myanmar, Indonesia, Ivory Coast, Nigeria and New Zealand account for bulk of the imported timber consumption. Among the major timber species imported and used in the urban centres so far are Teak from Myanmar and Africa, and Malaysian Sal, Andaman Paduak and Gurjan, among others. The increasing use of imported tropical timber in the urban consumption centres can be attributed primarily to its price competitiveness and the limited availability of domestically produced timber in the face an ever increasing demand. The ban on clear felling by the Apex (Supreme) Court has accentuated the deficit of

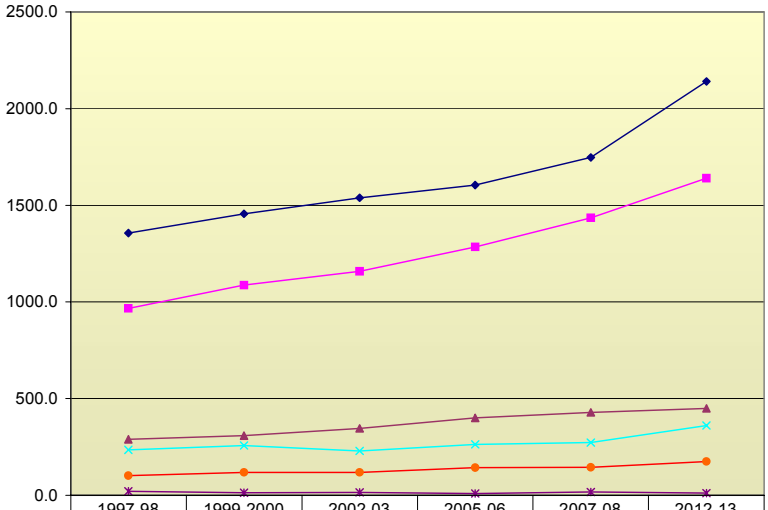
domestically produced timber and thus more dependence on the imports to sustain the demand of the urban consumption centres.

Figure 4.1: Industrial Roundwood Consumption in 12 Urban Centres ('000 Cu.m)



	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
Logs	1665.6	1779.7	1899.7	2014.5	2194.1	2601.6
Logs	1304.2	1463.6	1509.1	1691.5	1852.9	2176.9
Logs	2969.8	3243.3	3408.8	3706.0	4047.0	4778.5
Tropical	2322.9	2545.1	2699.1	2888.0	3181.6	3781.1

Figure 4.2: Tropical Hardwood Logs, Tropical Softwood and Temperate Hardwood Consumption -Imports and Domestic in 12 Consumption Centres ('000 Cu.m)

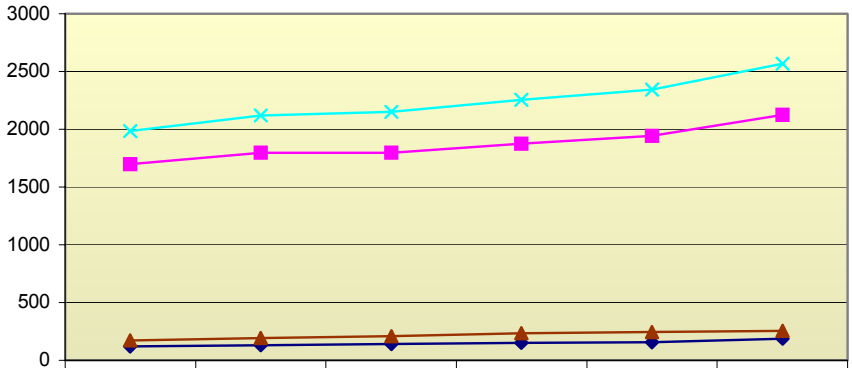


	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
Tr. HW - Dom	1356.2	1456.9	1539.7	1604.0	1746.7	2140.8
Tr. HW - Imports	966.7	1088.2	1159.4	1284.0	1434.9	1640.3
Tr.SW - Dom	289.5	309.4	345.3	400.5	429.6	449.4
Tr. SW - Imports	235.6	257.3	230.4	263.9	272.9	361.7
Temp. HW - Dom	19.9	13.5	14.8	9.9	17.8	11.4
Temp. HW - Imports	101.9	118.1	119.3	143.6	145.1	174.9

4.4.1.1 Sawnwood Consumption in 12 Urban Consumption Centres

Most of the timber imports in India are in the form of logs, as the import duty on roundwood is only 5% as against 35% on sawnwood. However the respondents in private informed that with imported logs, some sawnwood and plywood are also imported but these are not reported in the documents because of high tariff rates on the same. Therefore the data for import of timber products, except for logs, are missing or underestimated in the official documents as the same are not recorded in the shipping documents but the trading community use other set of documents for the actual timber products imported. Of the total sawnwood consumption of 21.5 Mn Cu.m. in 2002-03, about 84 per cent are tropical hardwoods, while the remaining include tropical softwood and temperate hardwood. Overall, there is an increasing trend for use of sawnwood in all the 12 consumption centres (Figure 4.3).

Figure 4.3: Total Consumption of Sawnwood Timber in 12 Centres ('000 Cu.m)

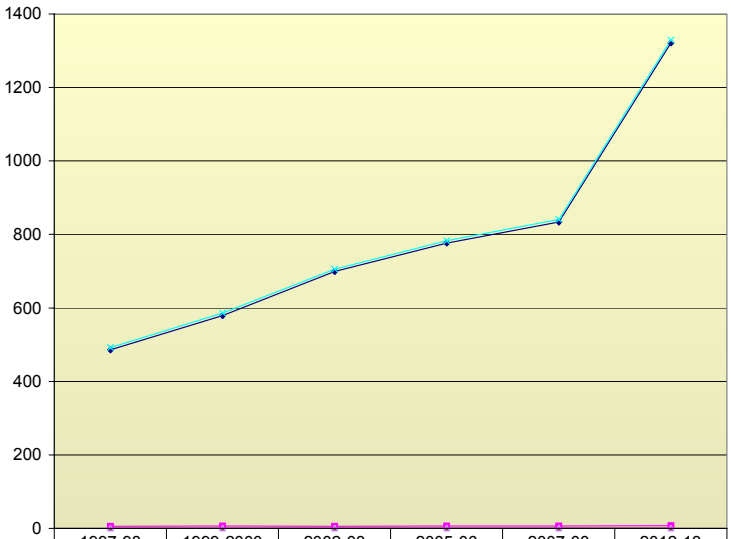


	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
Tropical SW	118.03	132.20	142.32	148.77	157.68	187.98
Tropical HW	1695.80	1796.42	1799.35	1872.83	1940.85	2123.50
Temperate HW	169.67	192.67	210.76	232.63	246.89	255.79
Total Sawnwood	1983.50	2121.29	2152.43	2254.23	2345.42	2567.26

4.4.1.2 Plywood (including Veneer) Consumption in 12 Urban Consumption Centres

The plywood consumption in India is rather low in general as in all the consumption centres surveyed. It is reported in the survey that total timber consumption in veneer and plywood in the 12 urban consumption centres in the year 2002-03 was only 0.7 Mn Cu.m. However, this is expected to go up to in the next few years in view of an increasing trend for plywood consumption. There is little separate data available for veneer in almost all consumption centres and the quantity of veneer is included in the plywood consumption. This is almost true for the whole country. Therefore, the figures reported here for plywood consumption include that of veneer as well unless mentioned otherwise. The import of plywood is negligible in the country largely on account of high tariffs on plywood. Yet, with the growing consumer preference for plywood, its imports should go up in the coming years. Meanwhile, mainly the local species are used for veneer and plywood manufacture on account of local ToF supplies and their price competitiveness.

Figure 4.4: Total consumption of Veneer and Plywood in 12 Centres ('000 Cu.m)

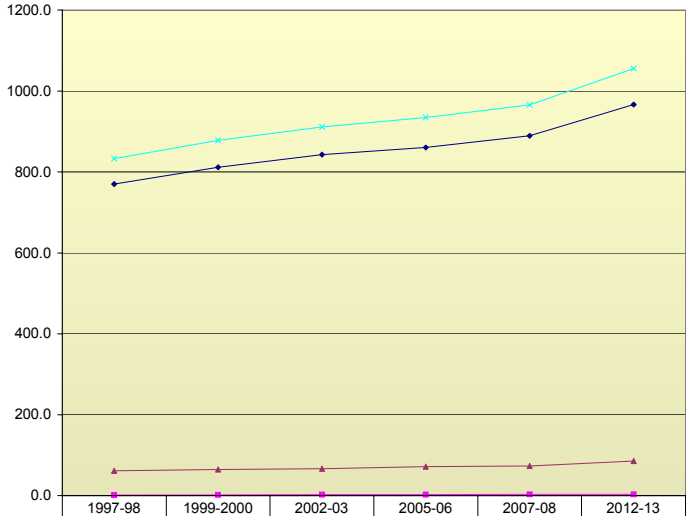


	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
Tropical HW	485.7	579.3	699.0	776.3	833.6	1321.4
Tropical SW	5.4	6.2	5.9	6.2	6.4	7.2
Temperate HW	0.6	0.7	0.7	0.7	0.7	0.8
Total Veneer & Plywood	491.8	586.3	705.6	783.2	840.7	1329.4

4.4.1.3 Builder's Joinery Consumption in 12 Urban Consumption Centres

Primarily topical hardwood is used in builders' joinery. Out of the total quantity of 0.07 Mn Cu.m. in 2002-03 used in builder's joinery in the 12 urban centers, almost 92.5% are tropical hardwood species (Figure 4.5).

Figure 4.5: Total Builders' Joinery in 12 Consumption Centres ('000 Cu.m)



	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
Tropical HW	769.8	811.4	842.5	860.5	889.1	966.6
Tropical SW	1.5	1.7	2.4	2.7	3.1	3.4
Temperate HW	61.5	64.6	66.4	71.4	73.4	85.3
Total Builder's Joinery	832.8	877.7	911.3	934.6	965.5	1055.3

4.5 CONSUMPTION TRENDS AND PROSPECTS IN EACH OF THE 12 CONSUMPTION CENTRES

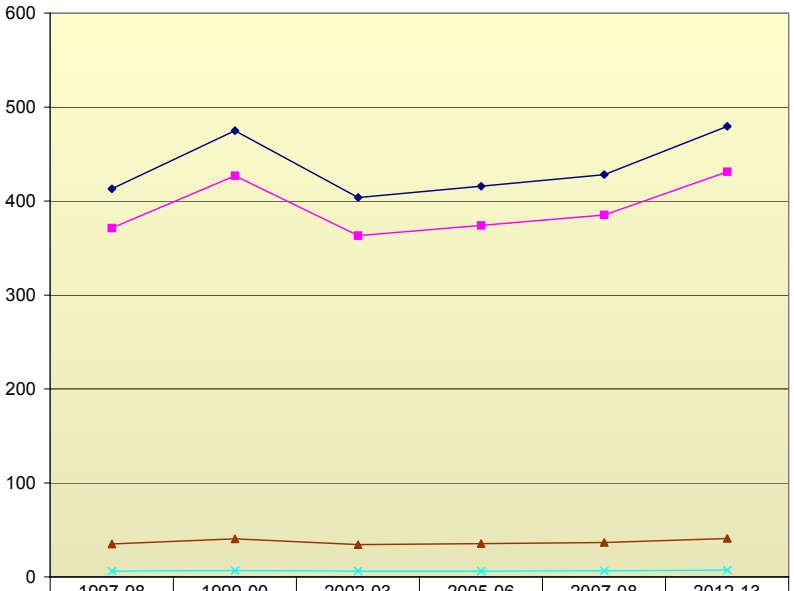
4.5.1 Timber Consumption Trends and Prospects in MUMBAI

4.5.1.1 Total timber logs consumption: Domestic Production and Imports

The total timber (industrial roundwood) consumption in Mumbai has been reported at 0.42 Mn Cu.m. in 2002-03. It is expected to increase to 0.48 Mn Cu.m. by 2012-13 (Figure 4.6). This growth in timber consumption is relatively very less in comparison with other consumption centres. The reasons for the same are reported as a fast changing consumer preference for alternate wood substitute materials such as iron, aluminium and plastics, though the continuance of this change in taste may not be sustainable, because it is partly due of lack of readily available supplies of high quality hardwoods. This may be a key message for the forest sector planners and stakeholders who would wish to promote timber consumption instead high energy consuming and ecologically inefficient substitutes, especially in the face of the availability of high quality tropical timbers in the world market with various varieties at highly competitive prices from diverse sources.

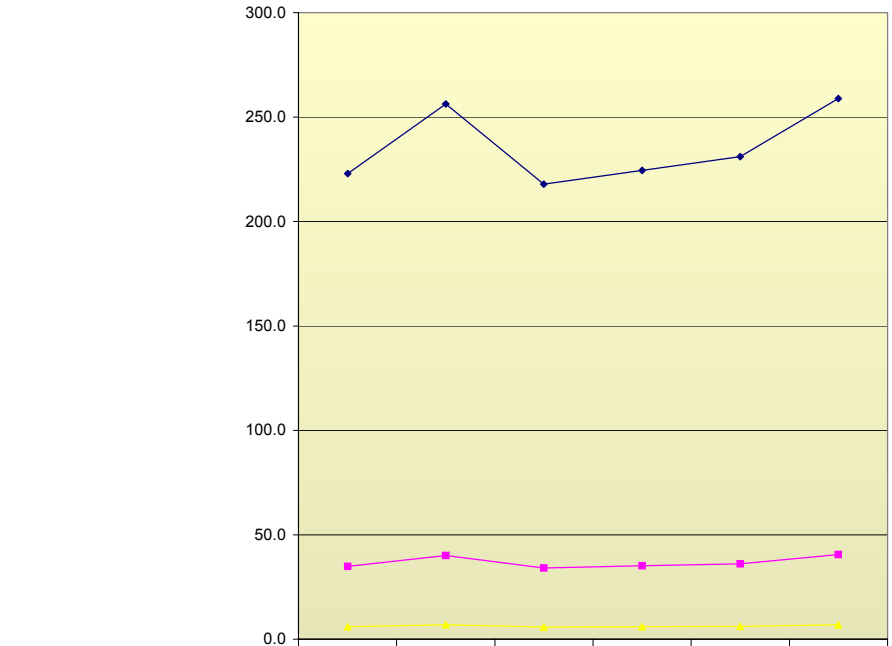
Tropical hardwoods constitute almost 95% of the total industrial roundwood consumption (0.40 Mn Cu.m), followed by tropical softwood (4%) and temperate hardwood (less than 1%). The imports of tropical hardwoods (0.22 Mn Cu.m.) are much more than the domestic tropical hardwoods (0.15 Mn Cu.m) consumed in Mumbai (Figure 4.7 & Figure 4.8).

Figure 4.6: Total Timber Logs/Roundwood Consumption in Mumbai (000' Cu.m)



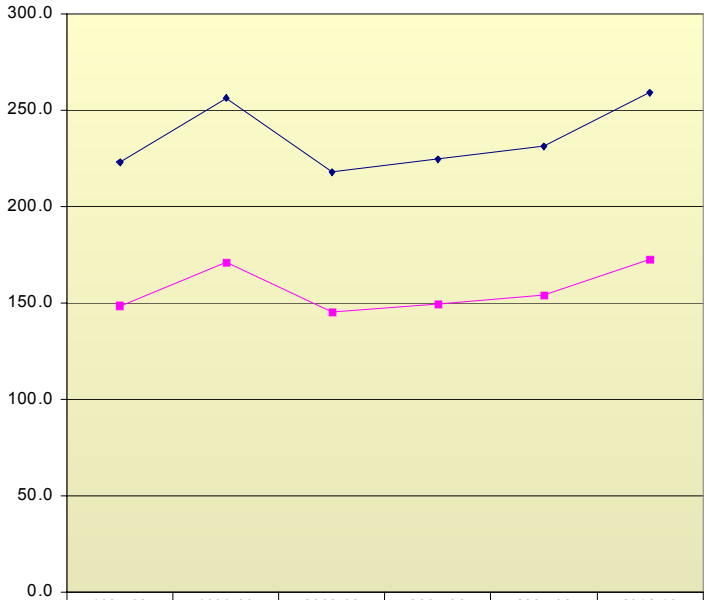
	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total Timber/Roundwood	412.9	474.8	403.6	415.7	428.2	479.6
Tropical Hardwood Logs	371.4	427.1	363.0	373.9	385.1	431.3
Tropical Softwood Logs	35.3	40.6	34.5	35.6	36.6	41.0
Temperate Hardwood Logs	6.2	7.1	6.1	6.2	6.4	7.2

Figure 4.7: Consumption trend of Imported Roundwood in Mumbai (000' Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Tropical Hardwood Logs Imports	222.8	256.3	217.8	224.3	231.1	258.8
Tropical Sodtwood Logs Imports	34.9	40.1	34.1	35.1	36.2	40.5
Temperate Hardwood Logs Imports	6.0	6.9	5.8	6.0	6.2	6.9

Figure 4.8: Tropical Round Hardwood Imports v/s Domestic Production ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Tropical Hardwood Imports	222.8	256.3	217.8	224.3	231.1	258.8
Tropical Hardwood Domestic Production	148.6	170.8	145.2	149.6	154.1	172.5

The preference for imported tropical timber are primarily due to their price competitiveness and the limited availability of domestically produced timber, while witnessing an increasing

demand. The ban on clear felling has further accentuated the scarcity of supply of timber. This provides logic for further spurt in demand for imports of tropical timber in coming years, especially in high income growth and large urban centres, such as Mumbai.

Among the major imported species used here include Nigerian teak followed by Myanmar teak and Malaysian timbers. The Myanmar teak is the costliest, which is preferred by the small upper income class, though their numbers are on the increase. Other popular imported timbers are from Malaysia, including "sal" and softwood, mainly pine from New Zealand.

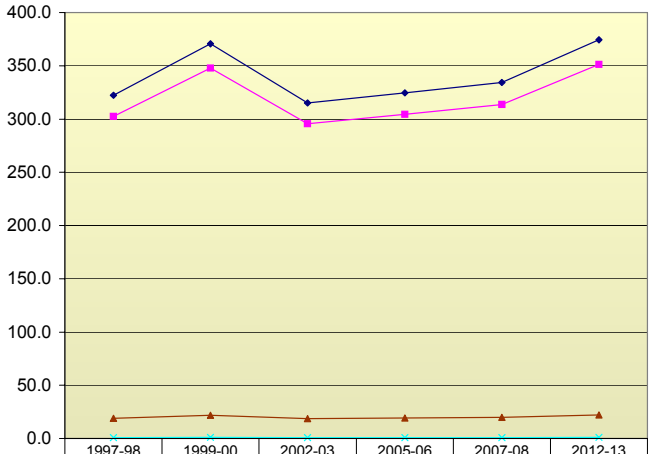
4.5.1.2 Sawnwood Consumption in Mumbai

Most of the timber imports are in the form of roundwood logs as the import duty on roundwood is only 5% against 35% on sawnwood. However the respondents in private informed that with imported logs, some quantity of sawnwood and plywood is also imported but these are not reported in the documents because of high tariff rates on the same. Therefore the data for import of timber products except logs are missing in the official documents as the same are not recorded in the shipping documents but the trading community use other set of documents for the actual timber products imported.

The roundwood imported at Mumbai goes to Nagpur where it is sawn and redistributed to various consumption centres in the state of Maharastra. Nagpur has about 1000 sawmills, while Mumbai has only about 250 sawmills.

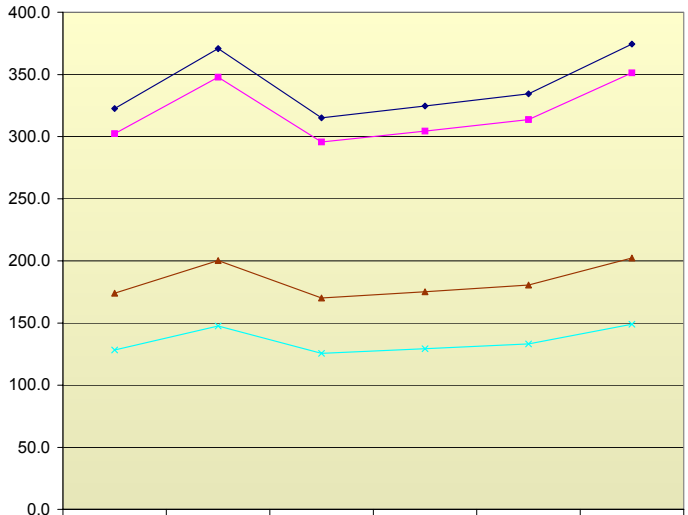
Almost 65% of the total roundwood is converted into sawnwood (0.31 Mn Cu.m in 2002-03), while the remaining is used for other purposes such as the manufacture of flush doors. Again the Sawnwood mainly comprise of the tropical hardwood (0.295 Mn Cu.m), of which more than 60% is the imported tropical hardwood (Figure 4.9 & Figure 4.10).

Figure 4.9: Sawnwood Consumption In Mumbai ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total Sawnwood	322.4	370.8	315.1	324.6	334.3	374.5
Sawnwood Tropical Hardwood	302.4	347.8	295.6	304.5	313.6	351.3
Sawnwood tropical Softwood	19.0	21.9	18.6	19.2	19.7	22.1
Sawnwood Temperate Hardwood	0.9	1.1	0.9	0.9	1.0	1.1

Figure 4.10: Sawnwood Tropical Hardwood Consumption: Imports v/s Domestic (000 Cu.m)

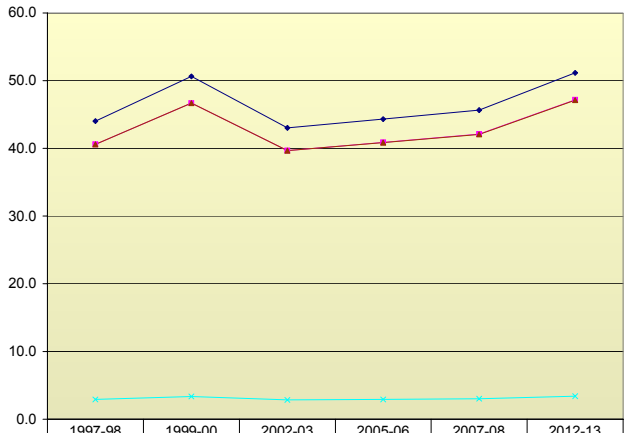


	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total Sawnwood Consumption	322.4	370.8	315.1	324.6	334.3	374.5
Sawnmwood Tropical Hardwood	302.4	347.8	295.6	304.5	313.6	351.3
Sawnwood Tropical Imports	174.1	200.2	170.2	175.3	180.5	202.2
Sawnwood tropical Domestic prod.	128.3	147.6	125.5	129.2	133.1	149.1

4.5.1.3 Plywood (including Veneer) Consumption in Mumbai

The plywood consumption in all the urban centres is limited, Mumbai in particular. However, there is an increasing consumption trend throughout the country though not that much in Mumbai. Separate data are not available for veneer in almost all the consumption centres and is included as part of plywood consumption. Therefore, the figures reported here for plywood consumption include that of veneer, unless stated otherwise. The import of plywood is negligible in Mumbai mainly on account of high tariffs on plywood imports, but there is a growing consumer preference and its imports are expected go up.

Figure 4.11: Plywood Consumption in Mumbai ('000 Cu.m)



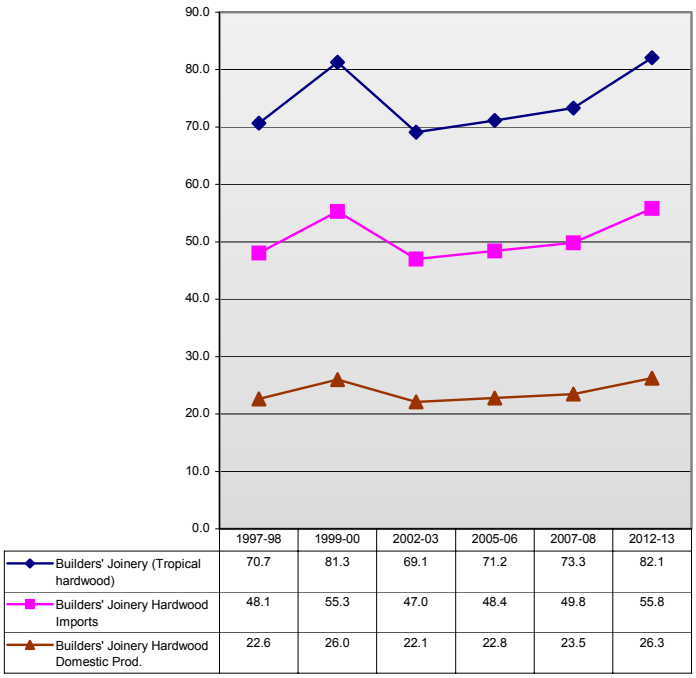
	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Plywood Total Consumption	44.0	50.6	43.0	44.3	45.7	51.1
Plywood Tropical Hardwood	40.6	46.7	39.7	40.9	42.1	47.1
Plywood Tropical Hardwood Domestic	40.6	46.7	39.7	40.9	42.1	47.1
Plywood Tropical Softwood Domestic	2.9	3.4	2.8	2.9	3.0	3.4

As is evident from Figure 4.11, only 0.04 Mn Cu.m plywood is reported to be consumed in Mumbai, which is less than 10% of the total log consumption during year 2002-03. Both tropical hardwood as well as tropical softwood is used for plywood making, but almost 93% are tropical hardwoods. Almost the entire plywood is made from the domestic hardwood species and not from the imported species. The major domestic hardwood species used in plywood making is sal (*Shorea robusta)*.

4.5.1.4 Builder's Joinery Consumption in Mumbai

Only tropical hardwood is used in builders' joinery in Mumbai. Out of the total quantity (0.07 Mn Cu.m in 2002-03) used in builder's joinery in Mumbai, almost 70% are imported timbers, while the rest are domestically produced species (Figure 4.12). Among the major domestic species are teak and sal.

Figure 4.12: Builders' Joinery Consumption in Mumbai ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Builders' Joinery (Tropical hardwood)	70.7	81.3	69.1	71.2	73.3	82.1
Builders' Joinery Hardwood Imports	48.1	55.3	47.0	48.4	49.8	55.8
Builders' Joinery Hardwood Domestic Prod.	22.6	26.0	22.1	22.8	23.5	26.3

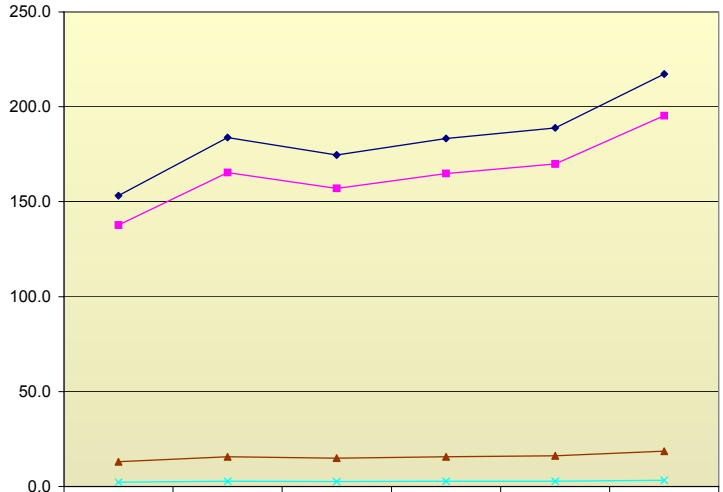
4.5.2 Consumption Trends and Prospects in PUNE

4.5.2.1 Total timber logs consumption: Domestic Production and Imports

The total timber (Industrial roundwood) consumption in Pune has been reported at 0.17 Mn Cu.m in 2002-03 and is expected to increase to 0.22 Mn Cu.m by 2012-13 (Figure 4.13). Though this growth in timber consumption is very less in comparison with the other consumption centres. The reasons for the same are reported as the changing consumer preferences for alternative materials such as iron, aluminium etc. Tropical hardwoods constitute almost 90% of the total industrial roundwood consumption (0.17 Mn Cu.m)

followed by tropical softwood - 9% (0.016 Mn Cu.m) and temperate hardwoods – 1%(0.025 Mn Cu.m) consumed in Pune.

Figure 4.13: Total Timber Logs/Roundwood Consumption in Pune ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total Timber Logs	153.2	183.8	174.6	183.4	188.9	217.2
Tropical Hardwood Logs	137.8	165.3	157.1	164.9	169.9	195.3
Tropical Softwood Logs	13.1	15.7	14.9	15.7	16.2	18.6
Temperate Hardwood Logs	2.3	2.8	2.6	2.8	2.8	3.3

The imports of Tropical hardwoods (0.09 Mn Cu.m) are much more than the domestic tropical hardwoods (0.06 Mn Cu.m) consumed in Pune (Figure 4.14). The tropical softwood is also imported to the tune of 0.015 Mn Cu.m in 2002-03 and the trend is increasing one. Tropical softwood is primarily used in the packaging industry in Pune. The reasons for preference for imported tropical timber are primarily the price competitiveness and the less availability of domestically produced timber in India against the increasing demand. The ban on clear felling by the Supreme Court has further accentuated the problem of low supply of timber and thus more dependence on the imports. This provides logic for further spurt in the imports of tropical timber in the country in coming years.

Among the major imported species include Nigerian teak followed by Burma Teak and Malaysian teak. The Myanmar Teak is the costliest one and hence is preferred by only the small class rich of people. Other wood imported timber from Malaysia includes Sal wood. The softwood is mainly Radiant Pine, which is imported from New Zealand.

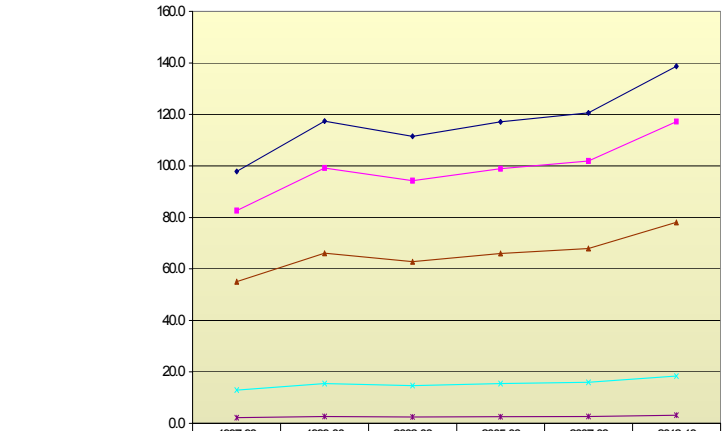
4.5.2.2 Sawnwood Consumption in Pune

The most of the timber import are in the form of roundwood logs as the import duty on roundwood is only 5% against 35% on sawnwood.

Almost 60% of the total roundwood are converted into sawnwood (0.136 Mn Cu.m. in 2002-03) while the remaining is used for other purposes. Again the Sawnwood mainly comprise of the Tropical Hardwood (0.127 Mn Cu.m) of which more than 55% is the imported tropical

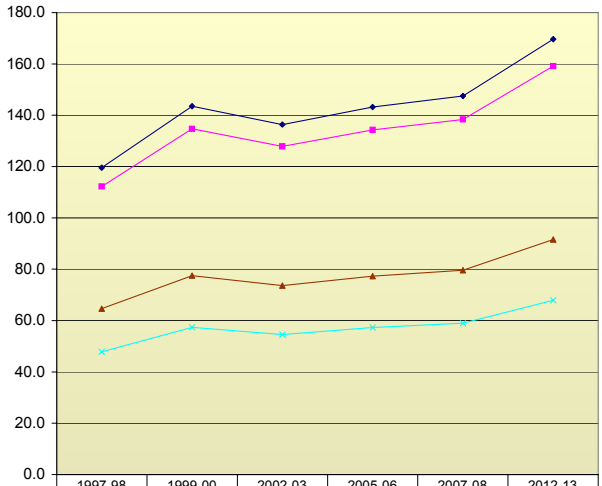
hardwood (Fig 4.14 & Fig 4.15) and rest domestically produced hardwood. However imported tropical softwood is also used for sawnwood (0.01 Mn Cu.m).

Figure 4.14: Timber Imports and Domestic Production in Pune ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total Timber Roundwood Imports	97.8	117.4	111.5	117.1	120.6	138.7
Tropical Hardwood Imports	82.7	99.2	94.2	98.9	101.9	117.2
Tropical Hardwood Domestic Prod.	55.1	66.1	62.8	66.0	67.9	78.1
Tropical Softwood Imports	12.9	15.5	14.8	15.5	16.0	18.3
Temperate Hardwood Imports	2.2	2.7	2.5	2.7	2.7	3.1

Figure 4.15: Sawnwood Tropical Hardwood Import & Domestic Consumption ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total Sawnwood	119.6	143.5	136.3	143.2	147.5	169.6
Sawnwood Tropical Hardwood	112.2	134.6	127.9	134.3	138.3	159.1
Sawnwood Imported Tropical Hardwood	64.6	77.5	73.6	77.3	79.6	91.6
Sawnwood Domestic Tropical Hardwood	47.8	57.4	54.5	57.3	59.0	67.8

4.5.2.3 Plywood (including Veneer) Consumption in Pune

The Plywood consumption in India is very less in general and all the consumption centres including Pune in particular. The import of plywood is negligible in Pune mainly on account

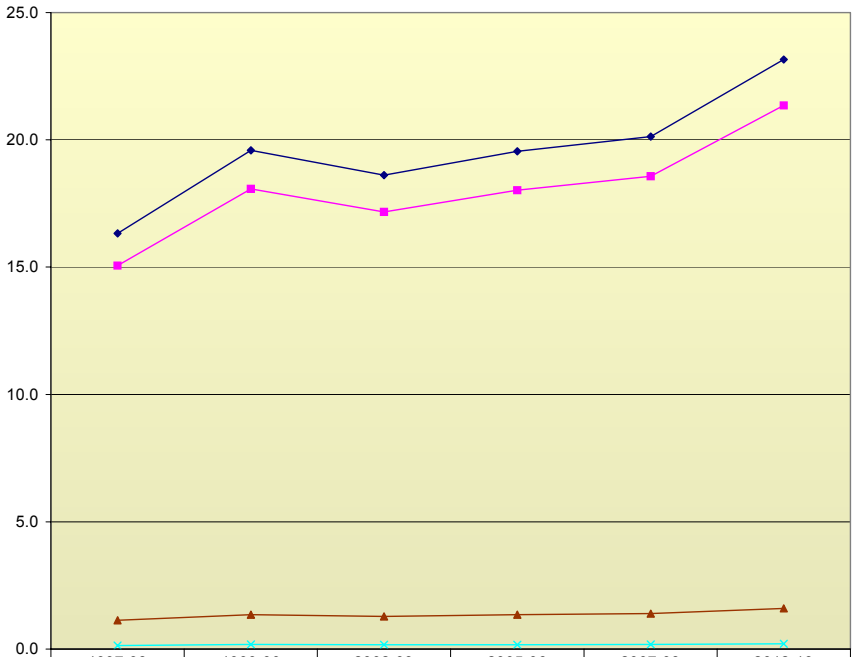
of high tariffs on plywood imports in India. However with the growing consumer preference for Plywood its imports are expected to go up in the coming years.

As is evident from Figure 2.11, only 0.018 Mn Cu.m plywood is reported to be consumed in Pune, which is almost 10% of the total log consumption during year 2002-03. Both tropical hardwood as well as tropical softwood is used for plywood making but almost 93% are tropical hardwood. Almost the entire plywood is made from the domestic hardwood species and not from the imported species. Trees outside the Forest (ToF) are becoming an increasingly important resource for the purpose.

4.5.2.4 Builder's Joinery Consumption in Pune

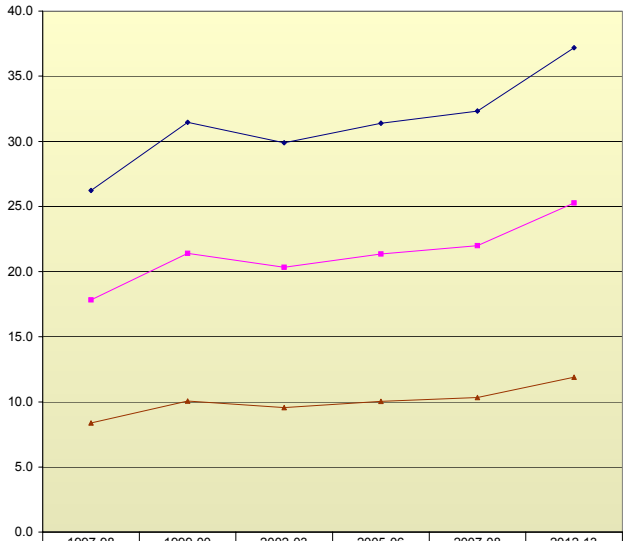
Only topical hardwood is used in builders' joinery in Pune. Out of the total quantity (0.019 Mn Cu.m. in 2002-03) used in builder's joinery in Pune; almost 70% are imported species while the rest are domestically produced species (Fig 4.16). Among the major domestic species include teak and sal.

Figure 4.16 : Plywood Consumption in Pune ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Plywood Total Consumption	16.3	19.6	18.6	19.5	20.1	23.2
Plywood Tropical Hardwood	15.1	18.1	17.2	18.0	18.6	21.4
Plywood Tropical Softwood	1.1	1.4	1.3	1.3	1.4	1.6
Plywood Temperate Hardwood	0.1	0.2	0.2	0.2	0.2	0.2

Figure 4.17: Total Consumption of Builder's Joinery in Pune ('000 Cu.m)



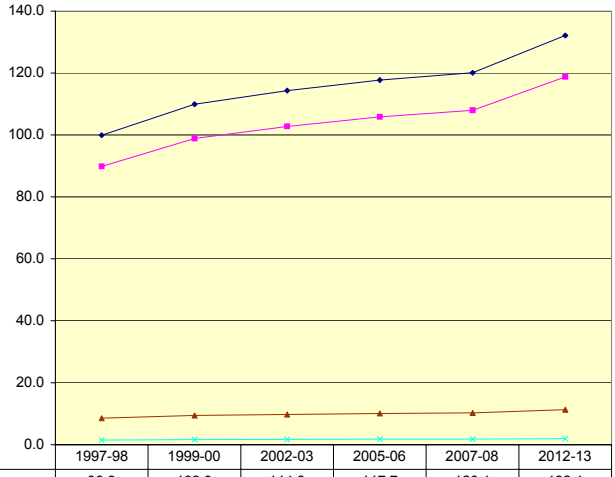
	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Builder's Joinery Total Consumption (Total Hardwood)	26.2	31.5	29.9	31.4	32.3	37.2
Builder's Joinery Imports	17.8	21.4	20.3	21.3	22.0	25.3
Builder's Joinery Domestic	8.4	10.1	9.6	10.0	10.3	11.9

4.5.3 Timber Consumption Trends and Prospects in SURAT

4.5.3.1 Total timber logs consumption: Domestic Production and Imports

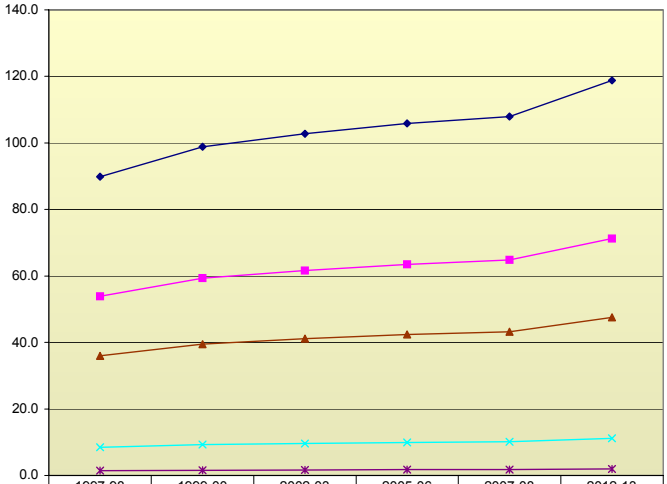
The total timber (Industrial roundwood) consumption in Surat has been reported at 0.114 Mn Cu.m in 2002-03 and is expected to increase to 0.132 Mn Cu.m by 2012-13 (Figure 4.18). Tropical hardwoods constitute almost 85% of the total industrial roundwood consumption (0.114 Mn Cu.m) followed by tropical softwood (13%) and temperate hardwoods (2%) consumed in. The imports of Tropical hardwoods (0.06 Mn Cu.m.) are much more than the domestic tropical hardwoods (0.041 Mn Cu.m) consumed in Surat (Fig 4.19).

Figure 4.18: Total Timber Logs Consumption in Surat ('000' Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total Timber Logs	99.9	109.9	114.3	117.7	120.1	132.1
Tropcial Hardwood Logs	89.9	98.8	102.8	105.9	108.0	118.8
Tropical Softwood Logs	8.6	9.4	9.8	10.1	10.3	11.3
Temperate Hardwood Logs	1.5	1.7	1.7	1.8	1.8	2.0

Figure 4.19: Tropical Hardwood Logs Imports & Domestic Production v/s Tropical Softwood and Temperate Hardwood Consumption in Surat ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Tropical Hardwood Logs Consumption	89.9	98.8	102.8	105.9	108.0	118.8
Tropical Hardwood Logs Imports	53.9	59.3	61.7	63.5	64.8	71.3
Tropical Hardwood Logs Domestic Prod.	35.9	39.5	41.1	42.3	43.2	47.5
Tropocal Softwood Logs imports	8.4	9.3	9.7	9.9	10.1	11.2
Temperate Hardwood Logs Imports	1.4	1.6	1.7	1.7	1.7	1.9

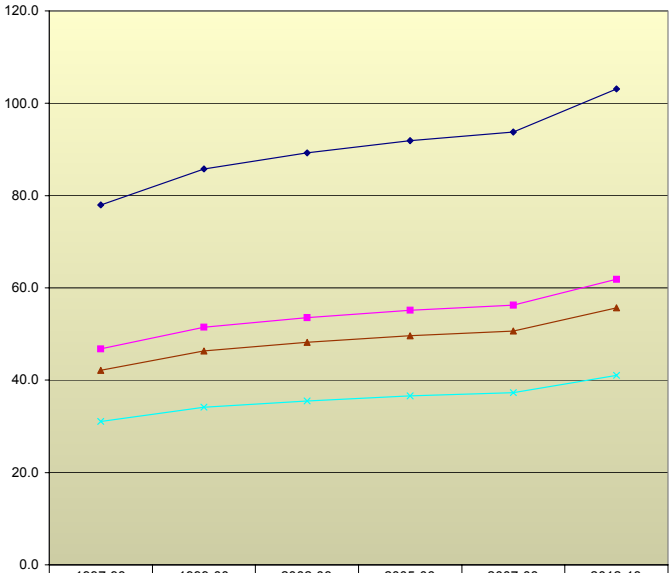
The reasons for preference for imported tropical timber are primarily the price competitiveness and the less availability of domestically produced timber in India against the increasing demand. The ban on clear felling by the Supreme Court has further accentuated the problem of low supply of timber and thus more dependence on the imports. This provides logic for further spurt in the imports of tropical timber in the country in coming years.

Among the major imported species include Nigerian teak followed by Burma Teak and Malaysian teak. The Myanmar Teak is the costliest one and hence is preferred by only the small class of rich people. Other wood imported timber from Malaysia includes Sal wood. The softwood is mainly Pine, which is imported from New Zealand.

4.5.3.2 Sawnwood Consumption in Surat

The most of the timber import are in the form of roundwood logs as the import duty on roundwood is only 5% against 35% on sawnwood. Almost 70% of the total roundwood are converted into sawnwood (0.09 Mn Cu.m in 2002-03) while the remaining is used for other purposes. Again the Sawnwood mainly comprise of the Tropical Hardwood (0.083 Mn Cu.m) of which more than 60% is the imported tropical hardwood (Fig 4.20).

Figure 4.20: Sawnwood Consumption in Surat: Domestic & Imports ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total Sawnwood	78.0	85.8	89.2	91.9	93.7	103.1
Total Sawnwood Imports	46.8	51.5	53.5	55.1	56.2	61.9
Sawnwood Imports Tropical Hardwood	42.1	46.3	48.2	49.6	50.6	55.7
Sawnwood DomesticTropical Hardwood	31.1	34.2	35.5	36.6	37.3	41.1

4.5.3.3 Plywood (including Veneer) Consumption in Surat

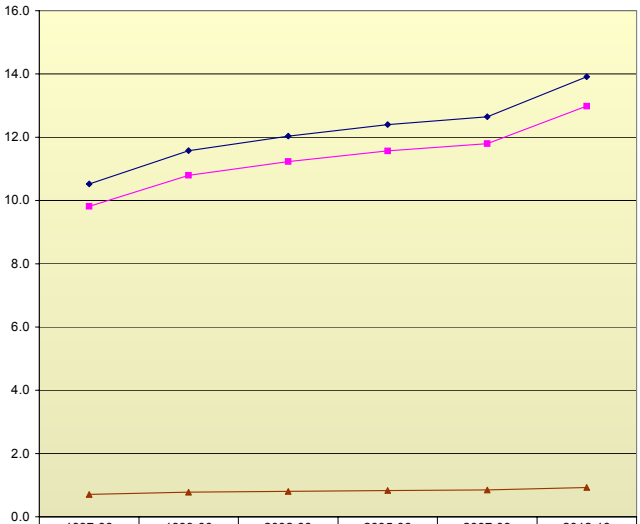
The Plywood consumption in India is very less in general and all the consumption centres including Surat in particular. The import of plywood is negligible in Surat mainly on account of high tariffs on plywood imports in India. However with the growing consumer preference for Plywood its imports are expected to go up in the coming years.

Only 0.012 Mn Cu.m of plywood is reported to be consumed in Surat, which is almost 10% of the total log consumption during year 2002-03. Both tropical hardwood as well as tropical softwood is used for plywood making but almost 93% are tropical hardwood. Almost the entire plywood is made from the domestic hardwood species and not from the imported species (Fig 4.21).

4.5.3.4 Builder's Joinery Consumption in Surat

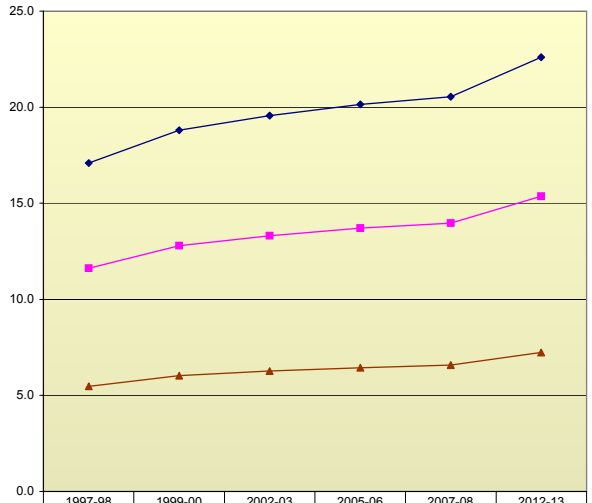
Only topical hardwood is used in builders' joinery in Surat. Out of the total quantity (0.0196 Mn Cu.m in 2002-03) used in builder's joinery in Surat, almost 60% is imported species while the rest are domestically produced species (Fig 4.22). Among the major domestic species used in builder's joinery are Teak and Sal.

Figure 4.21: Plywood Domestic Production in Surat ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total Plywood Domestic	10.5	11.6	12.0	12.4	12.6	13.9
Plywood DomesticTropical Hardwood	9.8	10.8	11.2	11.6	11.8	13.0
Plywood DomesticTropical Softwood	0.7	0.8	0.8	0.8	0.8	0.9

Figure 4.22: Total TH Builder's Joinery Import and Domestic Consumption in Surat ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Builder's Joinery Tropical Hardwood Total	17.1	18.8	19.6	20.1	20.6	22.6
Builder's Joinery Imports Tropical Hardwood	11.6	12.8	13.3	13.7	14.0	15.4
Builder's Joinery Domestic Tropical Hardwood	5.5	6.0	6.3	6.4	6.6	7.2

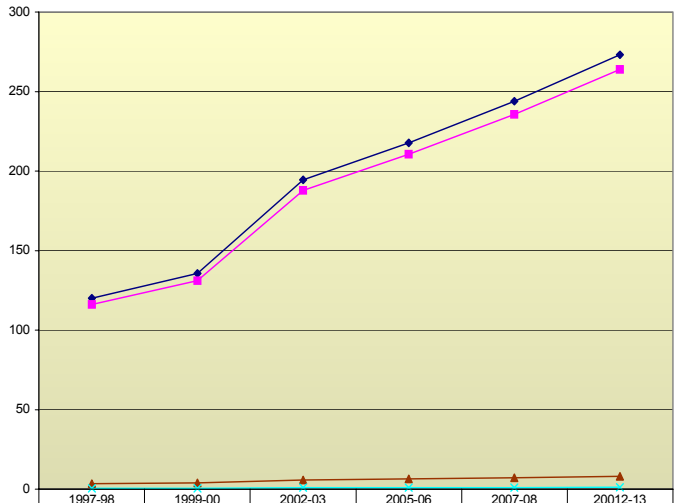
4.5.4 Timber Consumption Trends and Prospects in AHMEDABAD

4.5.4.1 Total timber logs consumption: Domestic Production and Imports

The total timber (Industrial roundwood) consumption in Ahmedabad has been reported at 0.194 Mn Cu.m in 2002-03 and is expected to increase to 0.273 Mn Cu.m by 2012-13 (Figure 4.23).

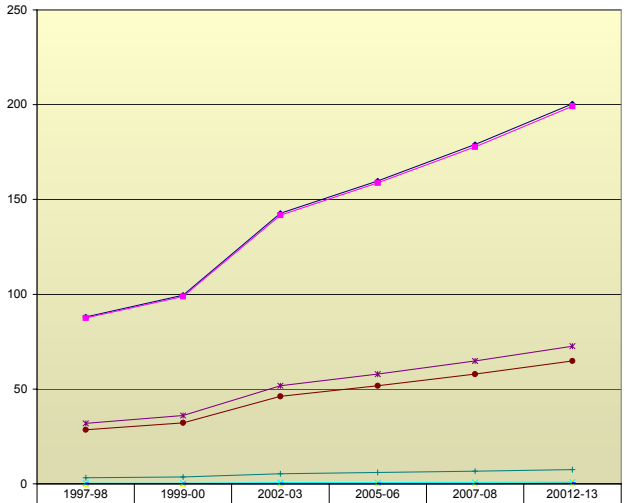
Tropical hardwoods constitute almost 95% of the total industrial roundwood consumption (0.187Mn Cu.m) followed by tropical softwood (4%) and temperate hardwood (less than 1%). The imports of Tropical hardwoods (0.142 Mn Cu.m) are much more than the domestic tropical hardwoods (0.046 Mn Cu.m) consumed in Ahmedabad (Figure 4.24). The consumption of tropical softwood and temperate hardwood species are very less.

Figure 4.23: Total Timber Logs/Roundwood Consumption in Ahmedabad ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	20012-13
Total Tropical Roundwood	120.0	135.6	194.4	217.7	243.9	273.1
Tropical Hardwood Logs	116.0	131.1	187.9	210.5	235.7	264.0
Tropical Softwood Logs	3.5	4.0	5.7	6.4	7.1	8.0
Temperate Hardwood Logs	0.5	0.6	0.8	0.9	1.0	1.1

Figure 4.24: Timber Type Logs Consumption (Imports and Domestic Prod.) in Ahmedabad ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	20012-13
Total Imports Logs	88.1	99.5	142.7	159.8	179	200.5
Imports Tropical Hardwood Logs	87.5	98.9	141.8	158.8	177.8	199.1
Import Tropical Softwood Logs	0.2	0.2	0.3	0.4	0.4	0.5
Imports Temperate Hardwood Logs	0.4	0.5	0.6	0.7	0.8	0.9
Total Domestic	31.9	36	51.7	57.9	64.8	72.6
DomesticTropical Hardwood Logs	28.5	32.2	46.2	51.7	57.9	64.9
DomesticTropical Softwood Logs	3.3	3.7	5.3	6.0	6.7	7.5
DomesticTemperate Hardwood Logs	0.1	0.1	0.2	0.2	0.2	0.2

The timber consumption in Ahmedabad has been on an increase over the last five years and the trend is expected to continue in next 5-10 years and thus provides rationale to conclude that imports of tropical hardwood will further increase in future.

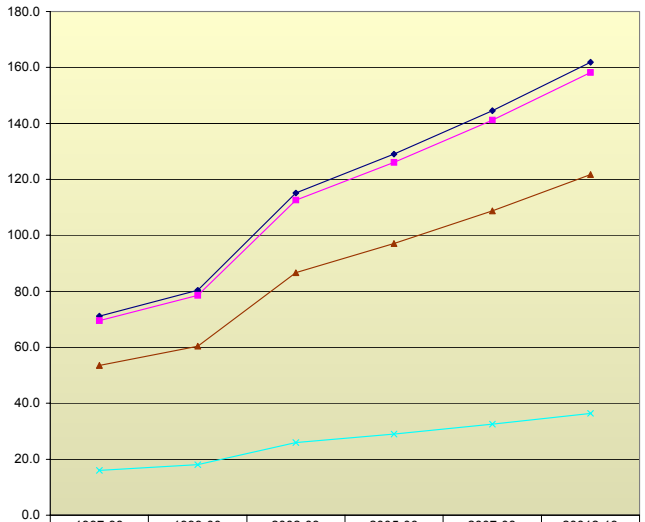
Among the major imported species include Nigerian teak followed by Burma Teak and Malaysian teak. The Myanmar Teak is the costliest one and hence is preferred by only the small class rich of people. Other wood imported timber from Malaysia includes Sal wood. The softwood is mainly Pine, which is imported from New Zealand.

4.5.4.2 Sawnwood Consumption in Ahmedabad

The most of the timber import are in the form of roundwood logs as the import duty on roundwood is only 5% against 35% on sawnwood. The roundwood imported at the ports is sawn and redistributed to various consumption centres in the country.

Of the 0.194 Mn Cu.m of total roundwood, 0.115 Mn Cu.m is converted into while the remaining is used for other purposes. Again the Sawnwood mainly comprise of the Tropical Hardwood (0.112 Mn Cu.m) of which more than 68% is the domestic tropical hardwood (Figure 4.25) and the remaining are imported species. There is an increasing trend for the consumption of Sawnwood in the city.

Figure 4.25: Sawnwood Consumption in Ahmedabad ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	20012-13
Sawnwood Total Consumption	71.1	80.3	115.2	129.0	144.5	161.8
Sawnwood Tropical Hardwood	69.5	78.5	112.6	126.1	141.2	158.2
Sawnwood Tropical Hardwood Domestic Prod	53.5	60.5	86.7	97.1	108.7	121.8
Sawnwood Tropical Hardwood Imports	16.0	18.1	25.9	29.0	32.5	36.4

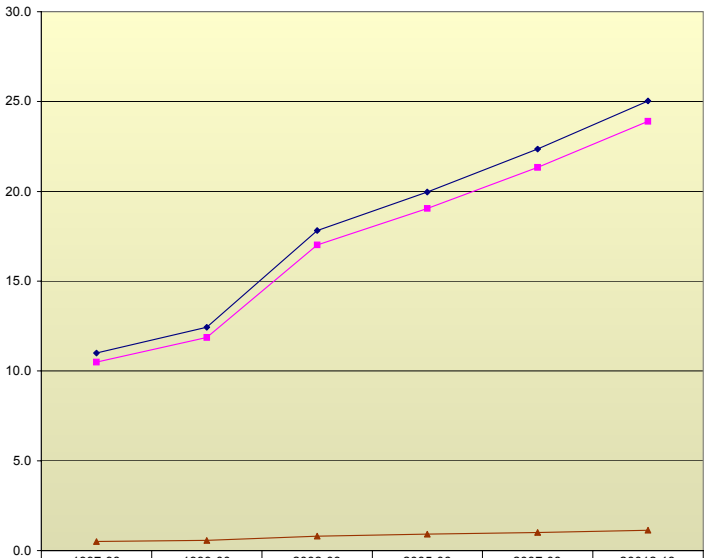
4.5.4.3 Plywood (including Veneer) Consumption in Ahmedabad

The Plywood consumption in India is very less in general and all the consumption centres including Ahmedabad in particular. However there is an increasing trend for plywood consumption through out the country. There is no separate data available on Veneer in almost all consumption centres and the quantity of veneer is included in the plywood consumption.

This is almost true for the whole country. The use of imported plywood is negligible in Ahmedabad mainly on account of high tariffs on plywood imports in India. However with the growing consumer preference for Plywood, its imports are expected to go up in the coming years.

The total consumption of plywood in Ahmedabad was 17880 Cu.m in 2003-03, which is less than 10% of the total log consumption during year 2002-03. Both tropical hardwood as well as tropical softwood is used for plywood making but almost 95% are tropical hardwood. Almost the entire plywood is made from the domestic hardwood species and not from the imported species (Figure 4.26). The major domestic hardwood species used in plywood making fairly fast grown ToF species. There is an increasing trend for the consumption of Plywood in the city as well as good prospects for imports of Plywood particularly from the tropical countries.

Figure 4.26: Plywood Consumption (Tropical Hardwood and Softwood Only) in Ahmedabad ('000 Cu.m)

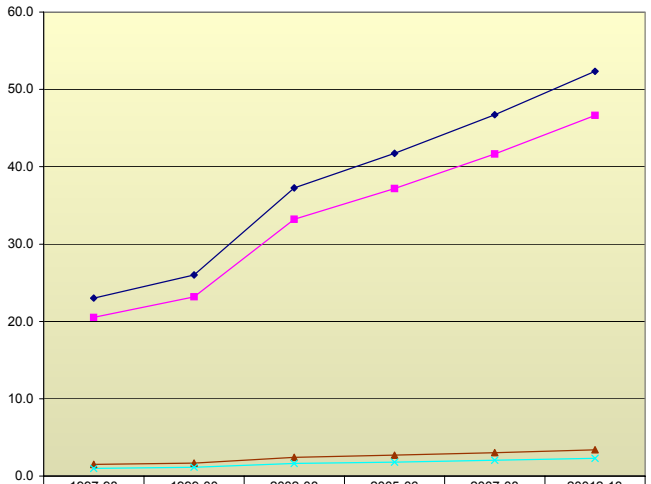


	1997-98	1999-00	2002-03	2005-06	2007-08	20012-13
Plywood Total	11.0	12.4	17.8	20.0	22.4	25.0
Plywood Tropical Hardwood	10.5	11.9	17.0	19.1	21.3	23.9
Plywood Tropical Softwood	0.5	0.6	0.8	0.9	1.0	1.1

4.5.4.4 Builder's Joinery Consumption in Ahmedabad

Only tropical hardwood is used in builders' joinery. The total Out of the total quantity (0.07 Mn Cu.m in 2002-03) used in builder's joinery in Mumbai, almost 70% is imported species while the rest are domestically produced species (Figure 4.27). Among the major domestic species include Teak and Sal. There is an increasing trend for the consumption of builder's joinery in the city as well as good prospects for imports particularly from the tropical countries. The consumption has sharply gone up from 2000 onwards.

Figure 4.27: Total Consumption of Builder's Joinery in Ahmedabad ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	20012-13
Builder's Joinery Total	23.0	26.0	37.3	41.7	46.7	52.3
Builder's Joinery Tropical Hardwood	20.5	23.2	33.2	37.2	41.7	46.7
Builder's Joinery Tropical Softwood	1.5	1.7	2.4	2.7	3.0	3.4
Builder's Joinery Temperate Hardwood	1.0	1.1	1.6	1.8	2.0	2.3

4.5.5 Timber Consumption Trends and Prospects in CHENNAI

4.5.5.1 Total consumption of imported timber logs

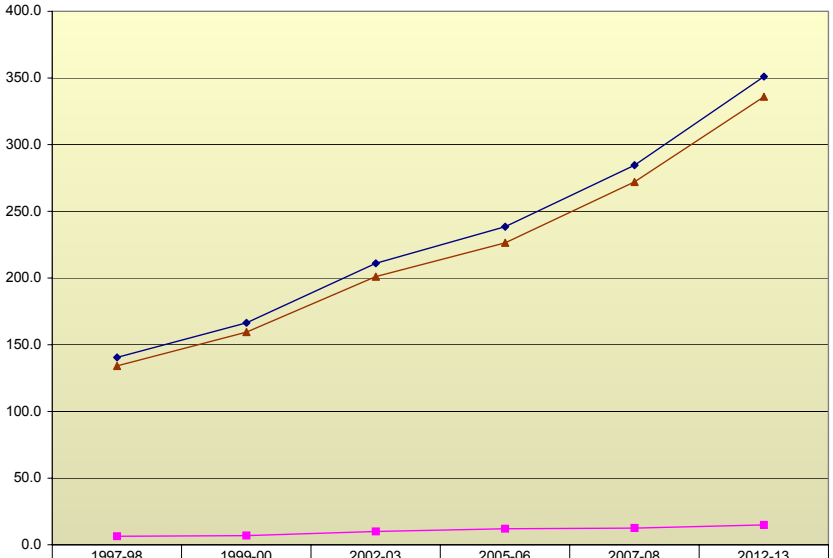
The total timber logs consumption in Chennai by way of imports has been reported at 0.211 Mn Cu.m in 2002-03 and is expected to increase to 0.351 Mn Cu.m by 2012-13 (Figure 4.28). All the timber consumption in Chennai is from imports alone and nothing is consumed from the domestic production. Also the tropical hardwood imports constitute more than 95% of the total imports of logs (0.201 Mn Cu.m). The import of softwood stands at mere 0.1 Mn Cu.m. This trend is likely to be uniform even in 2012-2013 where it is projected that the imports of tropical hardwood would constitute more than 95% of the total timber log imports.

The timber is imported from several countries and of different species. The main countries from which various species (as registered) of timber are imported are as follows:

West Africa	Teak and Padauk
South America	Teak (Colombia and Brazil)
Malaysia	Sal, Gurjan (Long length) and Keruing
Indonesia	Gurjan and Marbau
Burma	Teak and Gurjan
New Zealand	Pines

Timber imports at Chennai Port could increase to almost 500 % if the customs authorities stop delaying and systematise the verification of containers randomly. This random verification is discretionary and lies at the hands of the customs officials. This increases overhead charges to the importers in some way. These delays increase demurrage charges as well. As a result the cost of imports at Tuticorin Port may come down comparatively. As of now many importers prefer Tuticorin Port to the Chennai Port. They are ready to pay the freight charges by road from Tuticorin to Chennai, which they think more than compensates for the inconvenience caused on account of discretionary verification by Customs Officials at Chennai Port.

Figure 4.28: Total Timber Log Consumption (all imports) in Chennai ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total Logs	140.5	166.5	211.0	238.5	284.5	351.0
Tropical Softwood	6.5	7.0	10.0	12.0	12.5	15.0
Tropical Hardwood	134.0	159.5	201.0	226.5	272.0	336.0

The overall picture indicates that the demand for timber may increase in Chennai over the years to come. The Builders Joinery or any value added timber even Sawnwood is not imported only due to heavy customs duty. And the timber traders opined that if the customs duty is reduced, the imports in these categories might get a boost.

The Timber Trade in Chennai could increase substantially if following aspects are taken note of :

1. Procedures and rules related to approval of building plans by Metropolitan authorities are relaxed considerably. As of today, householders and Flat Promoters find it very difficult to get approval for their house plan and with considerable delay due to corruption.
2. Timber could be sold more to neighbouring states where port facilities are not available if the timber is removed from the Essential Commodities Act.
3. Customs authorities stop delaying and stop verification of containers randomly. The random verification is discretionary at the hands of Customs officials. This increases

overhead charges to the importers in an informal manner. The delay increases demurrage charges as well.

4. Demurrage charges are reduced to Rs. 1/- per Cu.m for the first 10 days and Rs. 10/- per Cu.m for the rest of the period (from Rs. 12/- per Cu.m per day and Rs. 24/- per Cu.m. per day respectively at present). Alternatively a 1000-acre area might be allotted by the Government for common Timber Storage Yard to store timber at nominal cost near the city outskirts. The Timber Merchant Association is ready to pay back the capital if soft loans are released at no or very minimum interest and to be paid over 20 years period.

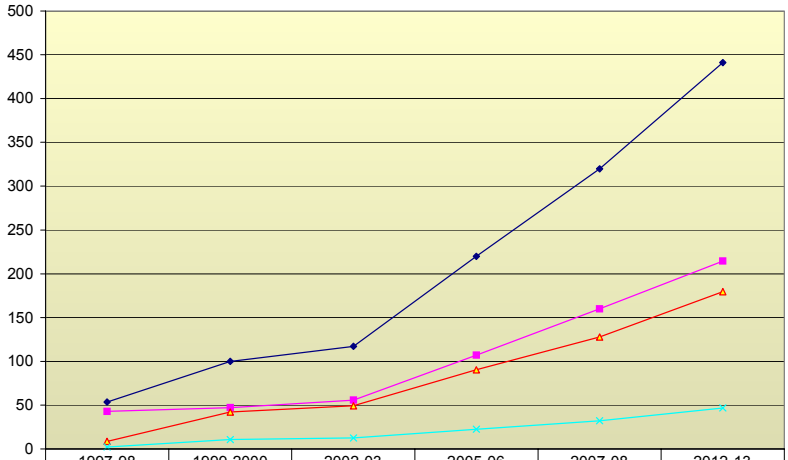
Sawmills and other infrastructure facilities may also be provided in the proposed large Timber Storage Yard to facilitate consumers and traders.

4.5.6 Timber Consumption Trends and Prospects in BANGALORE

4.5.6.1 Total timber logs consumption: Domestic Production and Imports

The total timber (Industrial roundwood) consumption in Bangalore has been reported at 0.117 Mn Cu.m.. in 2002-03 and is expected to increase to 0.441 Mn Cu.m. by 2012-13 (Figure 4.29). This growth in timber consumption is quite remarkable in comparison with the other consumption centres. Tropical hardwood constitutes 47% of the total timber consumption; the remaining consists of tropical softwood species imported mainly from New Zealand (Pine) during 2002-2003. The tropical hardwood is also primarily imported which accounts for 77% of the total tropical hardwood during 2002-03. The remaining tropical hardwood comes from domestic production. Among the domestic species include Eucalyptus, Neem, Acacia etc are plantation species while Teak, Mathi, Nandi, Honne are grown in the homesteads. The imported species of tropical hardwood include Tectona grandis, Shorea spp., Balau group from Myanmar and Nigeria; Merbau (Honne) from Malaysia, and Shorea spp (Sal) from Indonesia.

Figure 4.29: Total Logs Consumed in Bangalore ('000 Cu.m)



	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
Total Logs	53.66	99.84	117.22	219.96	319.60	441.00
Tro. HW	42.96	47.04	55.52	107.16	159.80	214.50
Tro. SW	8.56	42.24	49.36	90.24	127.84	179.60
Temp. HW	2.14	10.56	12.34	22.56	31.96	46.90

The domestic hardwood is mainly from the plantations nearby the city and the homesteads. Some quantity of the recycled woods such as the doors & windows of the demolished building are also considered. This is done on a regular scale in Bangalore. Sawn wood is not imported in Bangalore. Plywood is also not imported. Instead Veneer is brought from Assam, Gujarat and some of the northeastern states.

4.5.6.2 Total timber logs consumption: Sawnwood, Veneer and Plywood

According to the survey, the consumption of timber for sawnwood purposes has been increasing steadily over the years and the trend is expected to continue in next 5-10 years. The consumption of timber for sawnwood was recorded at 4112 Cu.m.. in 2002-03 made from the domestic species. However, there are no imports of sawnwood as such in Bangalore.

Similarly it has been reported in the survey that Veneer and Plywood is also not imported for consumption in Bangalore. However veneer and plywood is manufactured in Bangalore but in small quantities 4230 Cu.m and 9000 Cu.m, respectively, in 2002-03. It is also reported that the consumption of veneer is entirely from domestic timber.

4.5.7 Timber Consumption Trends and Prospects in HYDERABAD

4.5.7.1 Total timber logs consumption: Domestic Production and Imports

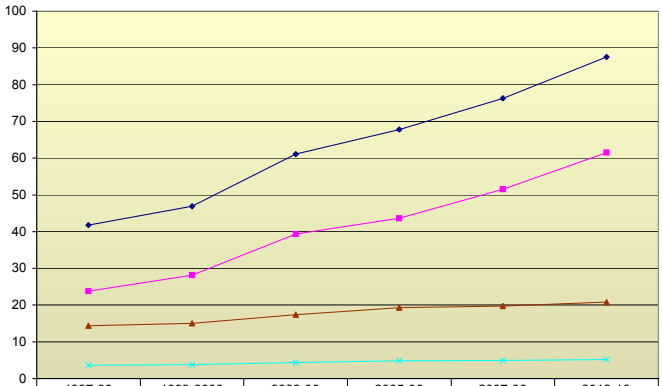
The total timber (Industrial roundwood) consumption in Bangalore has been reported at 0.061 Mn Cu.m in 2002-03 and is expected to increase to 0.088 Mn Cu.m by 2012-13 (Figure 4.30). This growth in timber consumption is quite high in comparison with the other consumption centres.

Tropical hardwood constitute almost 64% of the total timber consumption, the remaining consists of tropical softwood species including imported species mainly from New Zealand (Pine). The tropical hardwood is also primarily imported which accounts for 70% of the total tropical hardwood. The remaining tropical hardwood comes from domestic production.

Among the domestic species include *Acacia nilotica, Anogeissus latifolia, Bauhinia spp, Careya arborea, Dalbergia sissoo, Diospyros spp, Lophopetalum wightianum, Madhuca longifolia, Mitrgyna parvifolia, Pterocarpus maruspium, Stereospermum spp. Syszgium spp. Albizzia odoratissima, Adina cordifolia, Boswellia serrata, Dalbergia latifolia, Dillena pentagyna, Grewia spp., Kydia calcina, Lagerstremia parviflora, Mangefera indica, Palaquium ellipticum, Soymida ferbrifuga, Sterculia urens, Terminalia spp., Xanthophyllum spp., Acacia auriculiformis, Eucalyptus teeticornis, Leucanena leucoephala, Palmyrahetc.*

The imported species of tropical hardwoods include *Tectona grandis, Shorea spp.*, Balau group from Myanmar and Nigeria, *Merbau* (Honne) from Malaysia, and *Shorea spp* (Sal) from Indonesia.

Figure 4.30: Total Logs Consumed in Hyderabad ('000 Cu.m)



	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
Total Logs	41.79	46.89	61.06	67.78	76.23	87.50
Tro. HW	23.79	28.12	39.31	43.64	51.54	61.50
Tro. SW	14.4	15.016	17.4	19.312	19.76	20.8
Temp. HW	3.6	3.754	4.35	4.828	4.936	5.2

4.5.7.2 Total timber logs consumption: Sawnwood, Veneer and Plywood

The consumption of timber for sawnwood and veneer has not been reported in Hyderabad. However the manufactured of plywood is reported but in small quantities of 6639 Cu.m in 2002-03. The trend for consumption of Plywood in Hyderabad is an increasing one and is expected to continue in the next 5-10 years.

4.5.8 Timber Consumption Trends and Prospects in KOLKATA

4.5.8.1 Total timber logs consumption: Domestic Production and Imports

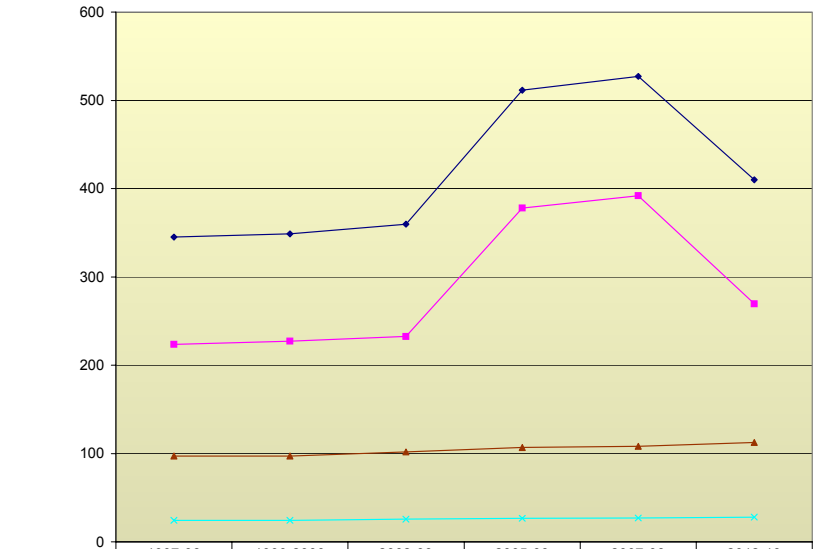
The total timber (Industrial roundwood) consumption in Kolkata has been reported at 0.359 Mn Cu.m in 2002-03 and is expected to increase to 0.41 Mn Cu.m by 2012-13 (Figure 4.31). This growth in timber consumption is not satisfactory in comparison with the other consumption centres. Tropical hardwood constitute majority of the total timber consumption, the remaining consists of tropical softwood and temperate hardwood species.

The tropical hardwood primarily imported include Teak (Myanmar, Nigeria, Ghana, Togo, etc.), Sal (Malaysia), Andaman Padauk (Indonesia, Malaysia, Myanmar), Meranti (Malaysia, Nigeria), others (Mahogany, Gurjan, Marsuea, Kapur, Lampati). The proportion of imported tropical hardwoods is slightly higher than the domestic tropical hardwood and the consumption is expected to remain in favour of imported tropical hardwood.

All "tropical" softwood is imported and comprises mainly Pines from New Zealand. Among the temperate hardwood species are Oak, Beech, Birch, willow, and Champ, as classified by the Customs authorities. All these may always not represent the species actually imported, which it was learnt were instead of higher quality hardwoods. An example was of willow, which the concerned researcher-cum-surveyor could hardly find in use, except for some sports goods but in small quantities and that too from domestic sources. Yet it was reported to be imported and included among the official records and data. On the whole, such data

"disparities" do not affect the outcome of the survey, as it was based on direct contacts and careful consultations.

Figure 4.31: Total Logs Consumed in Kolkata ('000 Cu.m)



	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
Total Logs	345.00	348.68	359.78	511.52	527.28	410.00
Tro. HW	223.70	227.13	232.45	378.00	392.00	269.60
Tro. SW	97.04	97.24	101.86	106.82	108.22	112.32
Temp. HW	24.26	24.31	25.47	26.70	27.06	28.08

4.5.8.2 Total timber logs consumption: Sawnwood, Veneer & Plywood and Builder's Joinery

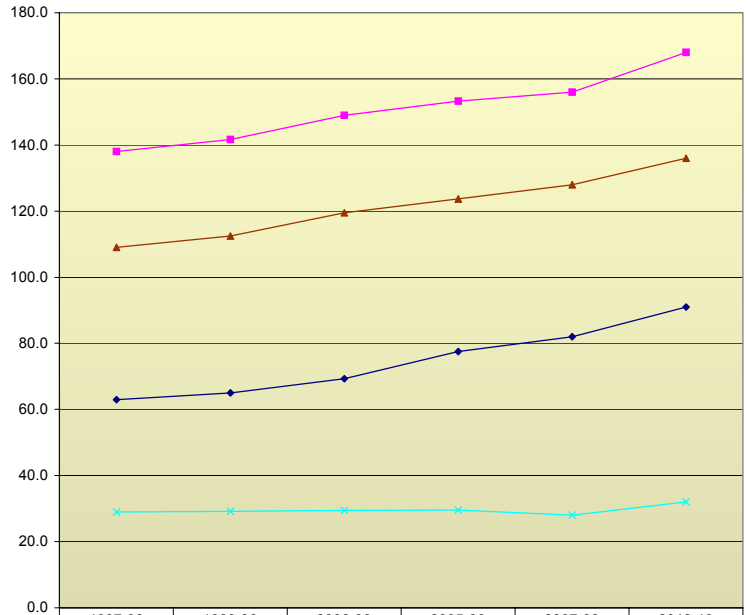
Of the total timber consumed in Kolkata, most is converted into Sawnwood (91.3% in 2002-03). Among the type of wood used for sawnwood include tropical hardwood (0.270 Mn Cu.m – 81%), tropical softwood (0.024 Mn Cu.m – 8.4%) and temperate hardwood (0.0364 Mn Cu.m – 10.6%) as depicted in figure 4.32. All the tropical softwood used in sawnwood is imported and the majority of temperate hardwood is also imported. There is an increasing trend for sawnwood consumption in Kolkata.

There are no break-up data available for Veneer & Plywood consumption rather the two are clubbed together. Similarly the data for imported Plywood are also not available and therefore it is assumed that no plywood is imported and all consumption of plywood is from domestic production. It is reported that 69,300 Cu.m of Veneer & Plywood was used in the year 2002-03 in Kolkata (Fig 4.32).

However, it has been indicated informally by the plywood traders/importers that some quantity of Plywood is imported, despite the higher tariff rate of 65 per cent for Plywood as against 5 per cent for logs. That would apparently be to cater to any particular consumer specifications or to local shortfall, especially in the aftermath of so much of the industry which was laid off in the neighbouring states.

Indeed, the trend for plywood consumption is on the upward side in Kolkata and also there is growing consumer preference for Plywood. As such its outsourcing is expected to go up in the coming years.

Figure 4.32: Plywood ,Veneer and Builder's Joinery consumption in Kolkata (000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Plywood Total	63.0	65.0	69.3	77.5	82.0	91.0
Builder's Joinery Total	138.0	141.7	148.9	153.2	156.0	168.0
Builder's Joinery tropical hardwood	109.0	112.5	119.5	123.7	128.0	136.0
Builder's Joinery Temperate hardwood	29.0	29.2	29.5	29.5	28.0	32.0

Mainly tropical hardwood is used in making builders' joinery in Kolkata, followed by temperate hardwood, which is primarily sourced through imports. Out of the total quantity of 0.148 Mn Cu.m of builder's joinery in Kolkata (2002-03), 0.119 Mn Cu.m was tropical hardwood and 0.028 Mn Cu.m was temperate hardwood. However the trend for use of temperate hardwood is on decline against an increasing consumption trend for builders' joinery.

4.5.9 Timber Consumption Trends and Prospects in KANPUR

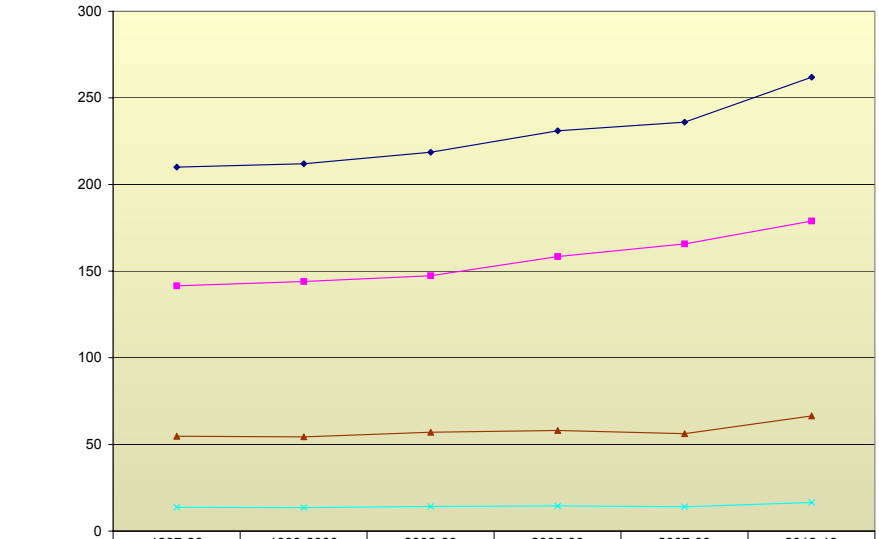
4.5.9.1 Total timber logs consumption: Domestic Production and Imports

The total timber (Industrial roundwood) consumption in Kanpur has been reported at 0.219 Mn Cu.m in 2002-03 and is expected to increase to 0.262 Mn Cu.m by 2012-13 (Figure 4.33). This growth in timber consumption is not satisfactory in comparison with the other consumption centres. Tropical hardwood constitute majority of the total timber consumption, the remaining consists of tropical softwood and temperate hardwood species.

The tropical hardwood is sourced from both imports as well as from domestic production. The proportion of domestic tropical hardwood is slightly higher than the imported tropical hardwood species. However it is expected to change in favour of imported tropical

hardwood by the year 2012-13. This could be because of the increasing demand for tropical hardwood and the stagnating/declining trend in the domestic production.

Figure 4.33: Total Logs Consumed in Kanpur ('000 Cu.m)



	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
Total Logs	210.00	212.10	218.62	231.05	236.00	262.00
Tro. HW	141.60	143.99	147.29	158.49	165.76	178.92
Tro. SW	54.72	54.49	57.06	58.05	56.19	66.46
Temp. HW	13.68	13.62	14.27	14.51	14.05	16.62

The main species include Teak (Myanmar, Nigeria, Ghana, Togo), Sal (Malaysia.), Andaman Padauk (Indonesia, Malaysia, Myanmar), Meranti (Malaysia, Nigeria), and others (Mahogany, Gurjan, Marsuea, Kapur, Lampati). All tropical softwood is imported and comprises mainly Pine spp from New Zealand. Among the main temperate hardwood spp are Oak, Beech, Birch, Willow and Champ.

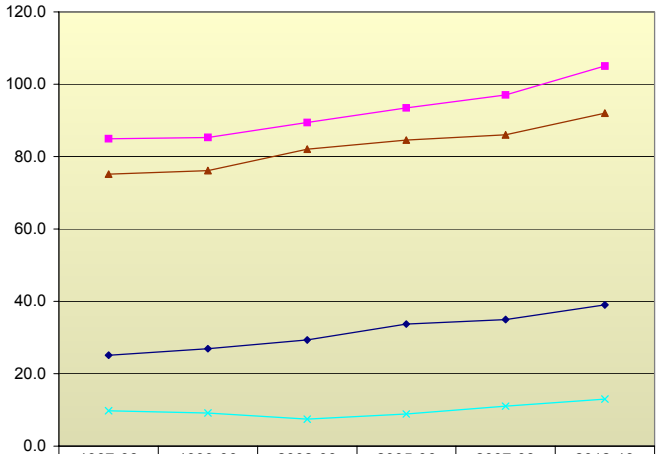
4.5.9.2 Total timber consumption: Sawnwood, Veneer & Plywood and Builder's Joinery

Of the total timber consumed in Kanpur, the majority timber quantity is converted into Sawnwood (0.184 Mn Cu.m which is 80% of total timber in 2002-03). Among the type of wood used for sawnwood include tropical hardwood (0.146 Mn Cu.m – 80%), tropical soft-wood (0.024 Mn Cu.m – 6.5%) and temperate hardwood (0.0364 Mn Cu.m – 13.5%) as shown in figure 4.34. All the tropical softwood used in sawnwood is imported and the majority of temperate hardwood is also imported. There is an increasing trend for sawnwood consumption in Kanpur.

There are no break-up data available for Veneer & Plywood consumption rather the two are clubbed together. Similarly the data for imported Plywood are also not available and therefore it is assumed that no plywood is imported and all consumption of plywood is from domestic production. It is reported that 29,400 Cu.m of Veneer & Plywood was used in the year 2002-03 in Kanpur.

The trend for plywood consumption is on upward side in Kanpur and also there is growing consumer preference for Plywood and therefore its imports are expected to go up in the coming years.

Figure 4.34: Plywood & Veneer and Builder's Joinery consumption in Kanpur ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Plywood Total	25.1	26.9	29.4	33.7	35.0	39.0
Builder's Joinery Total	84.9	85.3	89.5	93.5	97.0	105.0
Builder's Joinery tropical hardwood	75.1	76.1	82.0	84.6	86.0	92.0
Builder's Joinery Temperate hardwood	9.8	9.1	7.4	8.9	11.0	13.0

Mainly tropical hardwood is used in making builders' joinery in Kanpur, followed by temperate hardwood, which is primarily sourced through imports. Out of the total quantity of 0.089 Mn Cu.m of builder's joinery in Kanpur (2002-03), 0.082 Mn Cu.m was tropical hardwood and 0.007 Mn Cu.m was temperate hardwood. While the tropical hardwood is sourced both from imports as well domestic production, the temperate hardwood is primarily imported for use in builders' joinery in Kanpur.

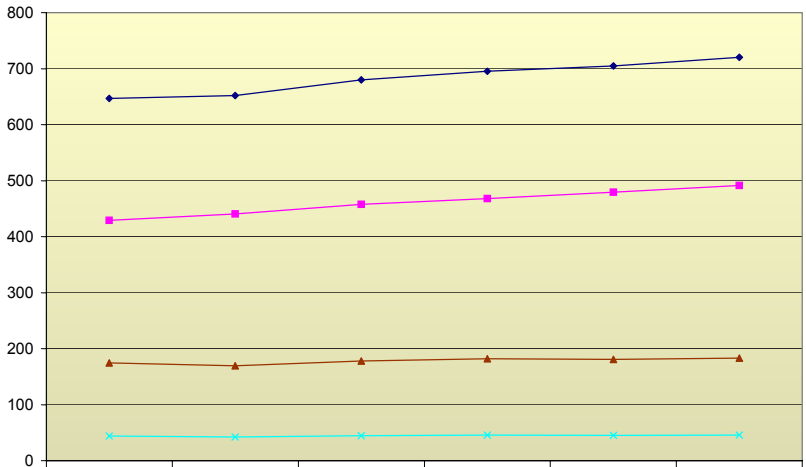
4.5.10 Timber Consumption Trends and Prospects in DELHI CITY

4.5.10.1 Total timber logs consumption: Domestic Production & Imports of Timber and Sawnwood

The total timber (industrial roundwood) consumption in Delhi City has been reported at 0.68 Mn Cu.m in 2002-03 and is expected to increase to a staggering quantity of 0.72 Mn Cu.m by 2012-13 (Figure 4.35). This growth needs to be validated further, for example through periodic monitoring surveys. Its sustainability can not be assured at this stage, given that the growth and consumption reported are significantly high in comparison with the other consumption centres as far as their quantities are concerned (i.e., growth of 0.04 Mn Cu.m). Nevertheless, as in most other centres, tropical hardwood constitutes a majority of the total timber consumption, while the remaining consists of temperate hardwood and tropical softwood species.

Of the total timber consumed in Delhi, most is converted into Sawnwood (90% in 2002-03). Among the types of wood used for sawnwood are tropical hardwood (0.470 Mn Cu.m – 77%), tropical softwood (0.048 Mn Cu.m – 8%) and temperate hardwood (0.098 Mn Cu.m – 10.6%). It is projected that the consumption of sawnwood would increase gradually and the quantity that is anticipated to be consumed during 2012-13 is 0.72 Mn Cu.m.

Figure 4.35: Total Logs Consumed in Delhi ('000 Cu.m)



	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
Total Logs	647	652	680.004	695	705	720
Tro. HW	429.02	440.32	457.80	467.70	479.30	491.20
Tro. SW	174.38	169.34	177.76	181.84	180.56	183.04
Temp. HW	43.60	42.34	44.44	45.46	45.14	45.76

The bulk of tropical hardwoods consumed are imported and comprise 51 per cent the overall consumption. The main imported species include Teak, Sal and other lesser-used species, such as Mahogany, Gurjan, Marsuea, Kapur, and Lampati. Timber consumption is expected to remain in favour of imported tropical hardwood in the foreseeable future too. The domestically produced tropical hardwood species include Teak (from Maharashtra, Assam, Chhattisgarh), Sal (from Uttar Pradesh, Uttaranchal), Shisham/Sissoo (from Bihar, Tripura), Gamari and Mango.

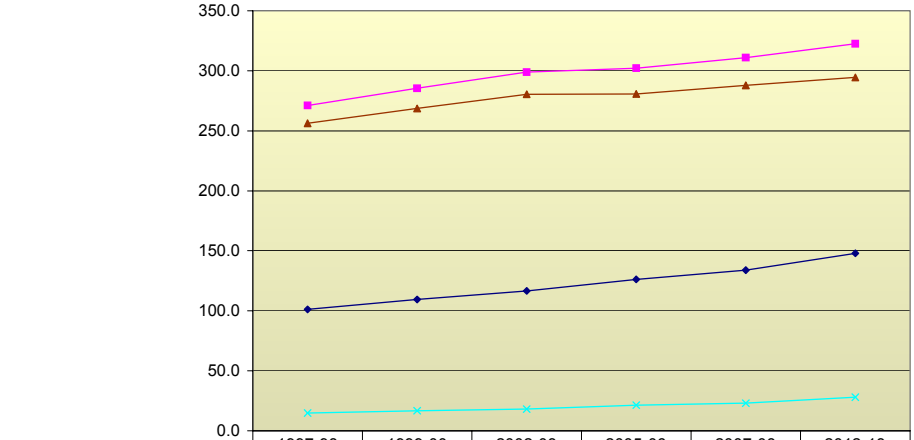
Most of the tropical softwood is imported and comprises mainly Pine spp. from New Zealand; only a negligible amount of tropical softwood produced domestically is utilised. Among the temperate hardwood spp include Oak, Beech, Birch, Willow and Champ.

4.5.10.2 Total timber logs consumption: Veneer & Plywood and Builder's Joinery

There are no break-up data available for Veneer & Plywood consumption rather the two are clubbed together. Similarly the data for imported Plywood are also not available and therefore it is assumed that no plywood is imported and all consumption of plywood is from domestic production. It is reported that 0.12 Mn Cu.m of Veneer & Plywood was utilised in the year 2002-03 in Delhi (Fig 4.36).

Mainly tropical hardwood is used in making builders' joinery in Delhi, followed by temperate hardwood, which are primarily sourced through imports. Out of the total quantity of 0.30 Mn Cu.m of builder's joinery in Delhi (2002-03), 0.281 Mn Cu.m (or 94 %) was tropical hardwood and 0.018 Mn Cu.m was temperate hardwood. Only a negligible quantity of tropical softwood species is used as builders' joinery.

Figure 4.36: Plywood & Veener and Builder's Joinery Consumption in Delhi ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Plywood & Veneer Total	101.2	109.5	116.49	126.17	133.78	147.92
Builder's Joinery Total	271.2	285.4	298.8	302.1	310.9	322.4
Builder's Joinery Tropical Hardwood	256.3	268.7	280.6	280.7	287.7	294.5
Builder's Joinery Temperate Hardwood	14.9	16.7	18.3	21.4	23.2	28.0

4.5.11 Timber Consumption Trends and Prospects in DELHI SATELLITE TOWNS

4.5.11.1 Total timber logs consumption: Domestic Production & Imports of timber and Sawnwood

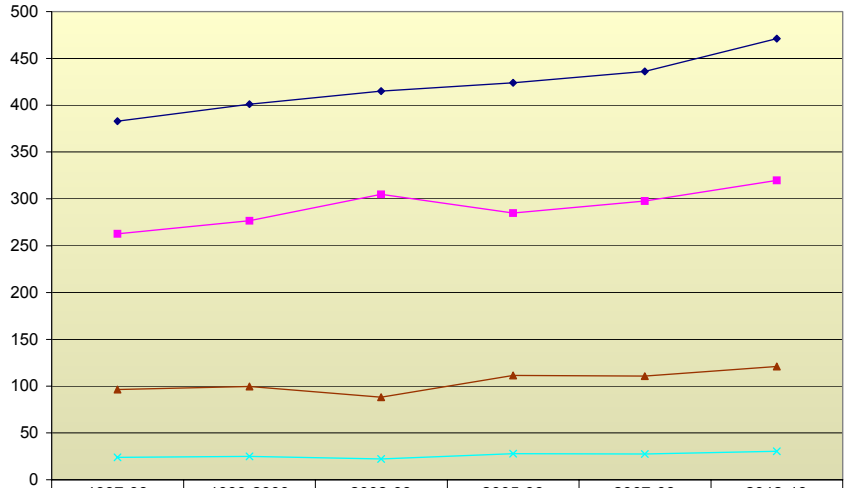
The total timber (industrial roundwood) consumption in Delhi Satellite Towns has been reported at 0.42 Mn Cu.m in 2002-03 and is expected to increase minimally to 0.47 Mn Cu.m by 2012-13 (Figure 4.37). However, during the period from 2007-08 to 2012-13 the projected consumption growth of timber is much more as compared to other periods. As in most other centres, tropical hardwood constitutes a majority of the total timber consumption while the remaining consists of temperate hardwood and tropical softwood species.

The tropical hardwood consumed is primarily imported while the remaining tropical hardwood comes from domestic production. The main species which are imported include Teak, Sal and other lesser-used species, such as Mahogany, Gurjan, Marsuea, Kapur, and Lampati.

Of the total timber consumed in Delhi Satellite Towns, most of it is converted into Sawnwood (88% in 2002-03). Among the type of wood used for sawnwood include tropical hardwood (0.30 Mn Cu.m), tropical softwood (0.024 Mn Cu.m) and temperate hardwood (0.05 Mn Cu.m) as depicted in Fig 2.32. It is projected that the consumption of sawnwood

would increase gradually and the quantity that is anticipated to be consumed during 2012-13 is 0.72 Mn Cu.m.

Figure 4.37: Total Logs Consumption in Delhi Satellite Towns ('000 Cu.m)



	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
Total Logs	383.09	401.00	415.00	424.00	436.00	471.00
Tro. HW	262.84	276.66	304.90	284.84	297.76	319.86
Tro. SW	96.20	99.47	88.08	111.33	110.59	120.91
Temp. HW	24.05	24.87	22.02	27.83	27.65	30.23

The proportion of imported tropical hardwood is only 30 per cent of the total for timber which is converted into sawnwood. Going by the current trend, it is expected to move further in favour of imported tropical hardwood over the future years. The domestically produced tropical hardwood species include Teak (Maharashtra, Assam, Chhattisgarh), Sal (Uttar Pradesh, Uttaranchal), Shisham/Sissoo (Bihar, Tripura), Gamari and Mango and their continued consumption will depend upon comparative competitiveness, mainly from plantations and TOF.

Most of the tropical softwood is imported and comprises mainly Pines. from New Zealand; only a negligible amount of tropical softwood produced domestically is utilised. Among the temperate hardwood species are Oak, Beech, Birch, and Champ.

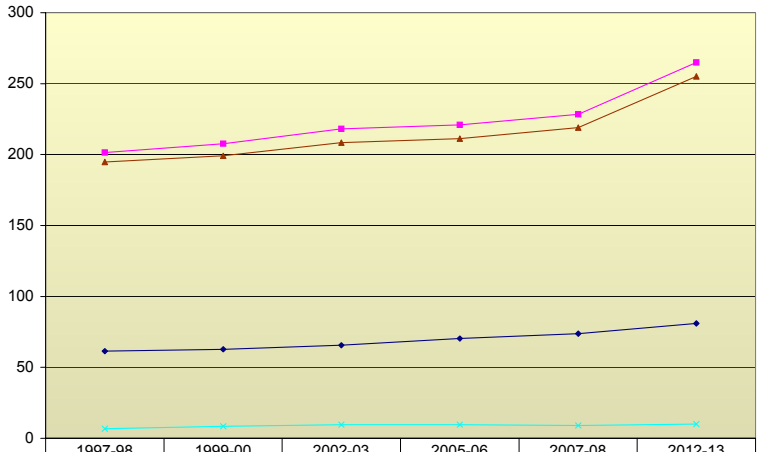
4.5.11.2 Total timber logs consumption: Veneer & Plywood and Builder's Joinery

There are no break-up data available for Veneer & Plywood consumption rather the two are clubbed together. Similarly the data for imported Plywood are also not available and therefore it is assumed that no plywood is imported and all consumption of plywood is from domestic production. It is reported that 0.066 Mn Cu.m of Veneer & Plywood was utilised in the year 2002-03 in Delhi Satellite Towns (Fig 4.38).

Mainly tropical hardwood is used in making builders' joinery in Delhi Satellite Towns, followed by temperate hardwood, which are primarily sourced through imports. Out of the total quantity of 0.218 Mn Cu.m of builder's joinery in Delhi (2002-03), 0.208 Mn Cu.m (or 95

%) is tropical hardwood and 0.018 Mn Cu.m was temperate hardwood. Only a negligible proportion of tropical softwood species is used as builders' joinery.

Figure 4.38: Veneer & Plywood and Builders' Joinery Consumption in Delhi Satellite Towns ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Veneer & Plywood Total	61.5	62.68	65.64	70.27	73.83	81
Builders' Joinery Total	201.48	207.59	218	221	228.24	265
Builder's Joinery Tropical Hardwood	194.7	199.1	208.3	211.2	219.1	255.0
Builder's Joinery Temperate Hardwood	6.8	8.5	9.7	9.8	9.1	10.0

4.5.12 Timber Consumption Trends and Prospects in YAMUNA NAGAR

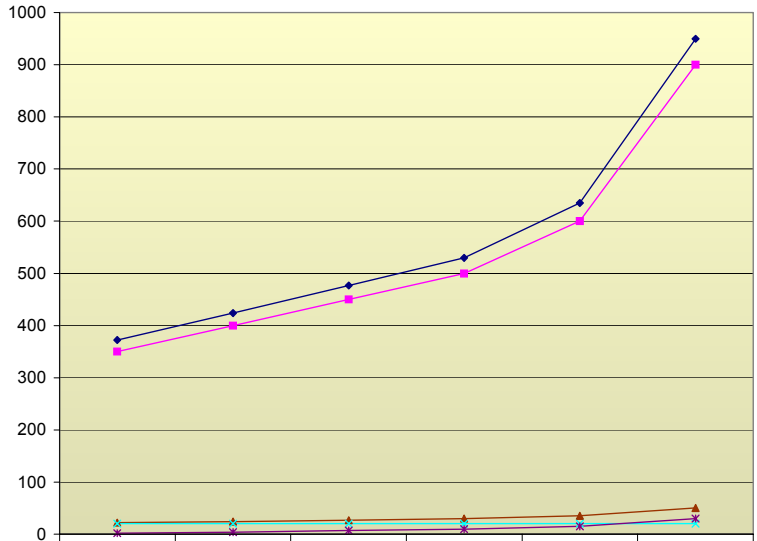
4.5.12.1 Total timber consumption: Logs, Sawnwood, Veneer & Plywood and Builder's Joinery

The total timber logs (industrial roundwood) consumption in Yamuna Nagar has been reported at 0.477 Mn Cu.m in 2002-03 and is expected to increase to 0.95 Mn Cu.m by 2012-13 (Fig 4.39). The timber type logs used at Yamuna Nagar are tropical hardwood (0.45 Mn Cu.m) which is sourced from domestic production and include such species as Poplar (0.325 Mn Cu.m in 2002-03) and Eucalyptus (0.125 Mn Cu.m in 2002-03). Apart from tropical hardwood, small quantity of tropical softwood is also used (27,000 Cu.m. in 2002-03), which is also mainly sourced from domestic production. Only 7,000 Cu.m of Pines are imported from New Zealand.

The limited quantity of tropical hardwood imports into Yamuna Nagar is mainly because of the readily available ToF timber resource of local species, namely Poplar and Eucalyptus, in sufficient quantity. These species are grown largely on roadsides, canal banks and borders of agriculture fields in the western part of Uttar Pradesh, adjacent to Yamuna Nagar town.

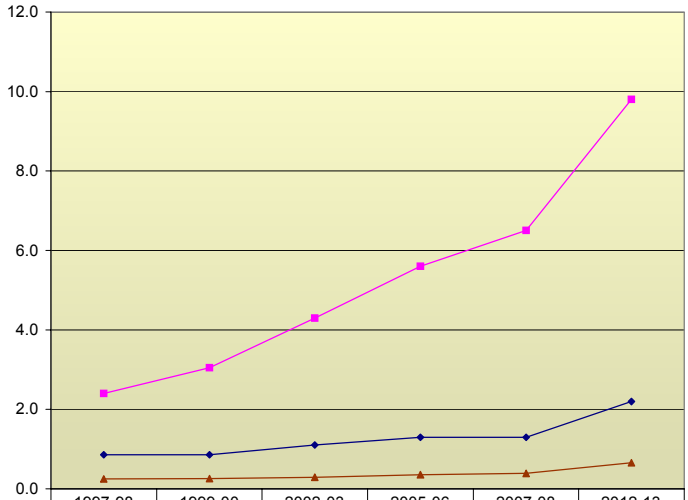
The consumption of other timber products is reported at 1,100 Cu.m for Sawnwood, 4,300 Cu.m for Plywood, and just 300 Cu.m for Builder's Joinery in 2002-03 (figure 4.40). The timber used in Sawnwood is all tropical hardwood sourced from both domestic production (45%) as well as imports (55%). The domestic species include Sal, Shisham and Teak while the imported species are mainly Malaysian Sal, Red Meranti, and African Teak.

Figure 4.39: Timber consumption in Yamuna Nagar ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total Logs consumption	372	424	477	530	635	950
Tropical HW (all domestic)	350	400	450	500	600	900
Total Tropical SW	22	24	27	30	35	50
Tropical SW Domestic	20	20	20	20	20	20
Tropical SW Imports	2	4	7	10	15	30

Figure 4.40: Timber consumption Product-wise in Yamuna Nagar ('000 Mn Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total Sawnwood (all TH)	0.9	0.9	1.1	1.3	1.3	2.2
Total Plywood (all Domestic)	2.4	3.1	4.3	5.6	6.5	9.8
Builder's Joinery (all TH)	0.3	0.3	0.3	0.4	0.4	0.7

The timber type used in Plywood is mostly tropical hardwood (83 %) all sourced from domestic production and some quantity of tropical softwood also sourced locally. The species are same as mentioned above.

The timber species used in Builders' Joinery are all tropical hardwood sourced from both domestic production (33%) as well as imports (67%). The domestic species include Sal, Shisham, and Teak while the imported species include Malaysian Sal, Red Meranti, and African Teak.

Yamuna Nagar has become a major centre for the manufacture of Veneer, which is supplied to various consumption centres in Northern and Western India. The total quantity of timber used in Veneer manufacture in Yamuna Nagar has been reported at 60,000 Cu.m in the year 2002-03. All the timber consumed for Veneer is tropical hardwood sourced from domestic production only and mainly includes Poplar (67%) and Eucalyptus (33%).

Yamuna Nagar, it may be noted, is a special case in the country, drawing upon ToF and distancing itself from the general pattern elsewhere, on account of its traditional processing facilities and vigorous marketing of products, unlike most other hubs. Apart from the consumption survey, it was thus subject to a case study of its own kind, particularly with respect to distribution channels, which is summarily reported in Annex 2.10.

4.6 CONCLUDING REMARKS

It is evident from the analysis of the primary data collected from the 15 urban consumption centres representing the major market for industrial wood in India is that there is a progressively increasing trend for timber consumption in the country in quantitative terms. Almost 80 per cent of the total timber consumption is of tropical hardwoods, followed by tropical softwood and temperate hardwoods. The contribution of the imported tropical hardwoods is demonstrating an increasing trend and it is expected to continue during the foreseeable 5 to 10 years.

Some of the local wood species, such as rubber wood which resembles more with the softwoods, might have been classified as tropical softwood but technically these are tropical hardwoods. Such misclassifications might have occurred during the survey resulting into showing more consumption of softwood, which might not be the correct reflection of the real situation. An in-depth follow up sample study might clear such misclassification as also in the customs data, and thereby provide an even more accurate picture of consumption of various timber types and species.

Despite the prevailing policies and the change in consumer taste in favour of substitute materials, such as steel and aluminium for construction and furniture, the consumption of timber is expected to increase for the basic reason of consumer's natural first choice for timber and its inherent competitiveness. The increasing incomes and the standard of living in India with the estimated future GDP growth rate of over 7 per cent per annum also supports this scenario. The possibly changing consumer taste in favour of other materials could be more than compensated by the increase in incomes and standard of living, though there are risks that the substitutes could erode the potential demand for timber, or even take over, if timber market intelligence is not developed and competitiveness is not maintained and enhanced, for which there is significant scope in the various consumption centres.

Chapter V

END-USE COMPOSITION

5.0 INTRODUCTION

Within the purview of the pre-project Review, this chapter discusses the results of the urban consumption survey which primarily purports that timber is mainly utilised for construction purposes, builders' joinery, plywood, flooring, furniture, furniture components and similar primary products. The past and present trends on the end use of timber are accordingly analysed. The end use pattern is also projected through 2012-13.

The analyses look into the species composition utilized for the various timber products. The classification is broadly based on the three types of species, namely, tropical hardwood, tropical softwood and temperate hardwood, as recorded in the last chapter and dealt with fairly in-depth in this chapter. It also discusses and compares the consumption of imported timber vis-à-vis domestically produced timber, as far as timber utilization is concerned.

Timber imported from various ITTO countries will be referred to in this chapter too. It is evidenced that imported tropical hardwoods are the main species types that are favoured by the consumer in India.

5.1 METHODOLOGY

Needless to repeat that both exploratory and survey methods of research were used to identify the end-use distribution (construction and builders' woodwork, furniture and furniture components, flooring and other items) for the tropical timber products. The data were collected from secondary as well as primary sources, the latter using the snowball sampling, as explained in the last chapter and in the glossary.

5.2 CONSUMPTION CENTRES

In total 15 consumption centres were studied for the survey, with four centres clubbed together as Delhi Satellite Towns. As such, this chapter also presents analyses for the following 12 urban consumption centres to identify end-use distribution for tropical timber products:

1	Mumbai	2	Pune
3	Surat	4	Ahmedabad
5	Chennai	6	Bangalore
7	Hyderabad	8	Kolkata
9	Kanpur	10	Delhi
11	Delhi Satellite Towns (Gurgaon, Ghaziabad, Noida, Faridabad)	12	Yamuna Nagar

5.3 ANALYSIS

The primary data collected through the questionnaire and direct contacts were tabulated to identify the end- use distribution of the tropical timber products. A detailed summary of data for each consumption centre has been appended as Annex 5.1.

Collecting and compiling the data of various consumption centres for each timber type for their end-uses category has generated the overall aggregate data for an analysis hereinbelow. The Gurgaon urban consumption centre was excluded for the purpose of aggregation since the same has been included in the 'Delhi Satellite Towns', taken together as one consumption centre.

5.4 END-USE SURVEY RESULTS

5.4.1 Aggregate End-Use of Timber in 12 Urban Consumption Centres

The end-use distribution of tropical timber in the main consumption centres is mainly for Construction, Builder's Joinery and Woodwork, and Furniture and Furniture components. The use of timber for flooring purpose in India is almost negligible. In the residences of some upper income classes as well as in some offices, timber is used for flooring, but overall it is an insignificant quantity.

The most commonly used timber product for various end-uses is sawnwood followed by plywood and veneer and for use of builder's joinery in construction. The end-use consumption of timber is available as the total quantity of sawnwood and plywood, but an exact data dispersion for product wise (Logs, Sawnwood, Veneer & Plywood and Builder's joinery) end-use is not reliably available and distinguishable. Nevertheless, the aggregate consumption of timber in the 12 consumption centres for the above noted end-uses has been assessed and compiled.

The aggregate consumption for the year 2002-03 is assessed as 1.05 Mn Cu.m, 0.247 Mn Cu.m, 0.03 Mn Cu.m, 0.3 Mn Cu.m, and 0.9 Mn Cu.m, respectively, for the end uses of Construction, Builder's Joinery and Woodwork, Flooring, Plywood, and Furniture and Furniture components. The end-use of builder's joinery is primarily in construction but the woodwork - included in the builder's joinery, is also used in furniture and furniture components. The segregated data of Builder's Joinery and Woodwork in the two end-uses of Construction and Furniture are not readily discernible. Similarly, the segregated data for the use of different types of timber products in separate end-uses are also not available; rather the total timber used in each end-use is relatively easily obtainable and available. That is also to avoid the possibility of overlapping of the quantity of timber in the use of different timber products in each end-use and to keep the estimates realistically conservative.

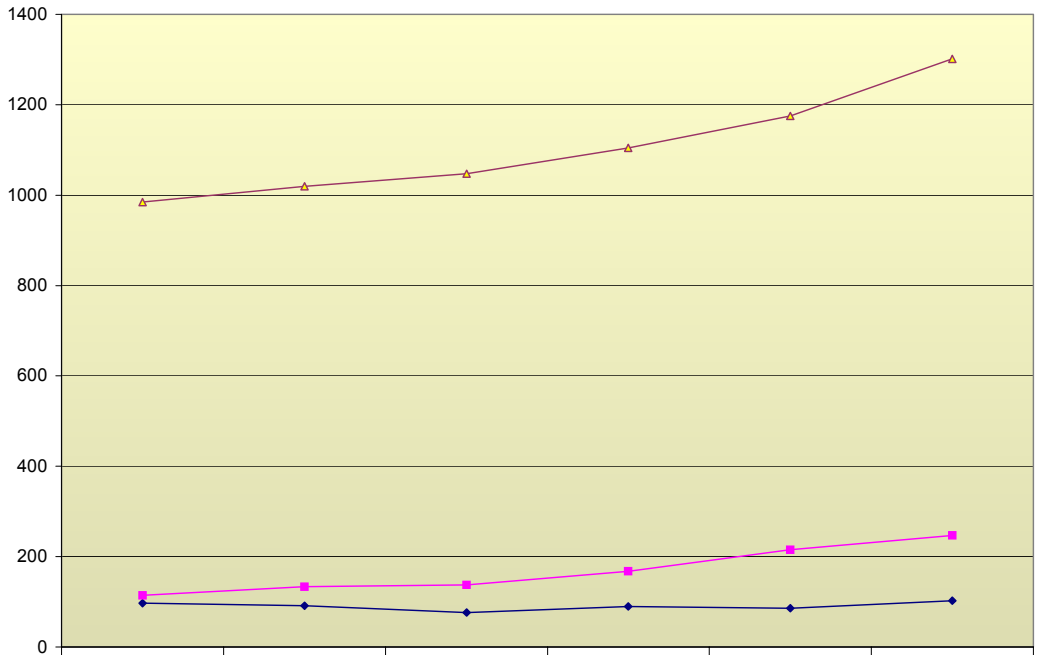
In all the components, such as construction, builders' joinery, plywood & veneer and other items of timber end uses, it needs to be noted that the sum of the components on the end use of timber in the 12 consumption centres do not tally as per the charts and tables, as the data break-up under the head of domestic and imports are not available and only the total end use of timber for the particular component is given. The data compiled for all the usages of imported and domestic produced timber are summarized in Table 5.1.

Table 5.1: Aggregate End-Use of Timber of 12 Urban Consumption Centres ('000 Cu.m)

	1997-98			1999-2000			2002-03			2005-06			2007-08			2012-13		
Construction	**Domestic**	**Imports**	**Total**	**Domestic**	**Imports**	**Total**	**Domestic**	**Imports**	**Total**	**Domestic**	**Imports**	**Total**	**Domestic**	**Imports**	**Total**	**Domestic**	**Imports**	**Total**
	96.97	114.00	985.02	91.63	133.40	1019.33	76.53	137.23	1047.08	90.06	167.41	1104.59	85.68	215.52	1175.10	102.68	247.34	1301.63
Builders' Joinery	84.05	127.37	235.62	96.77	147.57	271.63	87.32	138.33	264.41	93.27	149.64	287.14	95.16	165.82	311.72	109.93	190.98	359.26
Flooring	0.10	0.08	0.17	0.12	0.10	0.22	0.15	0.13	0.27	0.17	0.15	0.32	0.38	0.35	0.73	0.48	0.45	0.93
Plywood	NA	NA	255.49	NA	NA	291.53	NA	NA	303.11	NA	NA	349.85	NA	NA	396.32	NA	NA	546.24
Furniture and furniture components	House hold	Commer cial	Total	House hold	Commer cial	Total	House hold	Commer cial	Total	House hold	Commer cial	Total	House hold	Commer cial	Total	House hold	Commer cial	Total
	421.97	410.26	832.79	460.75	452.26	928.85	465.43	454.57	937.27	501.86	486.67	1022.38	522.24	465.09	1041.26	573.12	577.81	1216.95

In 2002-03, the total end use of timber is 1.05 Mn Cu.m for the 12 consumption centres, with construction being the main usage of timber. Conservatively estimated, the use of timber is expected to increase to 1.3 Mn Cu.m in 2012-13. The total use of imports are also projected to increase correspondingly and comparatively much more than that of timber from domestic production. This can be explained by the survey outcome that the demand for timber would escalate, but the domestic supply would remain more or less constant and be unable to bridge the increasing gap in demand for diverse end uses (Figure 5.1).

Figure 5.1: Total End-Use of Timber for 12 Consumption Centre ('000 Cu.m)

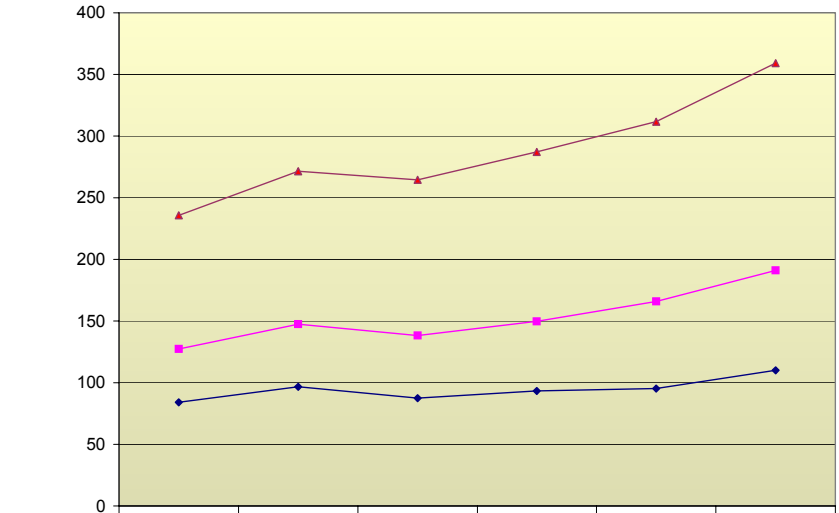


	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
Domestic	96.97	91.63	76.53	90.06	85.68	102.68
Imports	114.00	133.40	137.23	167.41	215.52	247.34
Total	985.02	1019.33	1047.08	1104.59	1175.10	1301.63

5.4.1.1 End-use of Builder's Joinery in 12 Urban Consumption Centres

The end-use of builder's joinery is in household and commercial construction, and it is mainly composed of tropical hardwoods. Out of the total quantity of tropical hardwood used in builder's joinery in urban consumption centres, there are both imported species as well as domestically produced timber. Among the major imported species used in builder's joinery are teak and sal. Among the major domestic timber typed used for the purpose are also the same species and some other local tropical hardwood species (Figure 5.2). Their continued supply is getting constrained because of harvesting restrictions and higher transaction costs for timbers procured for the purpose through PSU depots. In some cases ToF timbers were tried, but have not been found suitable for joinery in urban construction, as conveyed by respondents to questionnaires.

Figure 5.2: Use of Timber for Builders' Joinery in 12 Consumption Centres ('000 Cu.m)

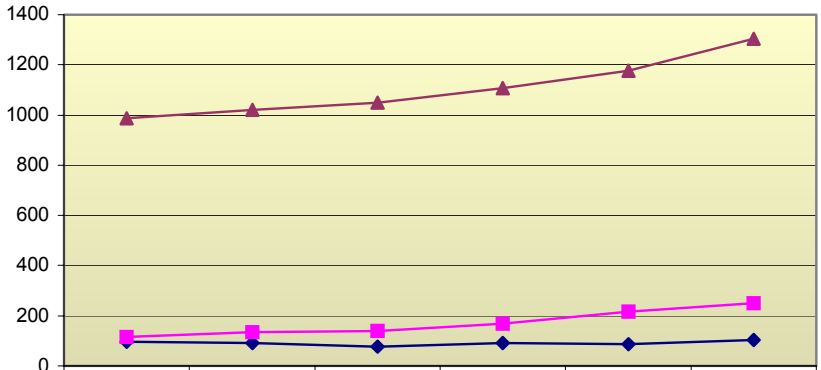


	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
Domestic	84.05	96.77	87.32	93.27	95.16	109.93
Imports	127.37	147.57	138.33	149.64	165.82	190.98
Total	235.62	271.63	264.41	287.14	311.72	359.26

5.4.1.2 End-use of tropical timber for Construction in 12 Urban Consumption Centres

It is reported in the consumption survey that only tropical hardwood is used in the construction industry and the major species include teak and sal, which are imported as well as available locally. As mentioned earlier that only the total quantity of tropical hardwood used in the construction is available and not for each timber product-wise. However, it has become clear that mainly sawnwood and builder's joinery are used in the construction and prefabs are not resorted to nor are they available.

Figure 5.3: End Use Distribution for Construction in 12 Consumption Centres ('000 Cu.m)



	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
Domestic	97.124	91.807	76.77	90.34	86.026	103.075
Imports	114.636	134.15	138.571	168.849	217.042	249.839
Total Co.	985.81	1020.257	1048.661	1106.309	1176.9712	1304.533584

The figures for builder's joinery also include woodwork, which might also be used in furniture making. Therefore, there could be some overlap in the data, but no double counting has been allowed to ensure that the estimates are either realistic or conservative.

5.4.2 End-Use Distribution Trends of Tropical Timber Products in MUMBAI

The end-use distribution of tropical timber in Mumbai is mainly for Builder's Joinery and Woodworking, Construction and Furniture & Furniture components. Use of timber for flooring purpose in India is almost negligible. Though some very rich class people as well as in some offices, timber is used for flooring purpose but in almost negligible quantity. The most commonly used timber product for end-use is sawnwood followed by plywood (including Veneer) and some use of builder's joinery in construction. The end-use consumption for these uses of timber is available in total quantity of sawnwood and plywood but the exact bifurcated data for product-wise (Logs, Sawnwood, Veneer, Plywood and Builder's joinery) end-use are not available.

The consumption figure for the end-uses Builder's Joinery & Woodwork, Construction and Furniture & Furniture components for the year 2002-03 are 0.116 Mn Cu.m, 0.08 Mn Cu.m and 0.2 Mn Cu.m, respectively. There are no data available for end-use flooring in Mumbai. The end-use of builder's joinery is primarily in construction but the Woodworking, which included in the builder's joinery, is also used in furniture & furniture components. However the segregated data of Builder's Joinery & Woodworking in the two end-uses of Construction and furniture are not available. Similarly the segregated data for use of different types of timber products in separate end-uses are also not available rather the total timber used in each end-use is available. Therefore, there is possibility of overlapping of the quantity of timber in the use of different timber products in each end-use, which has to be avoided in the consumption data compilation.

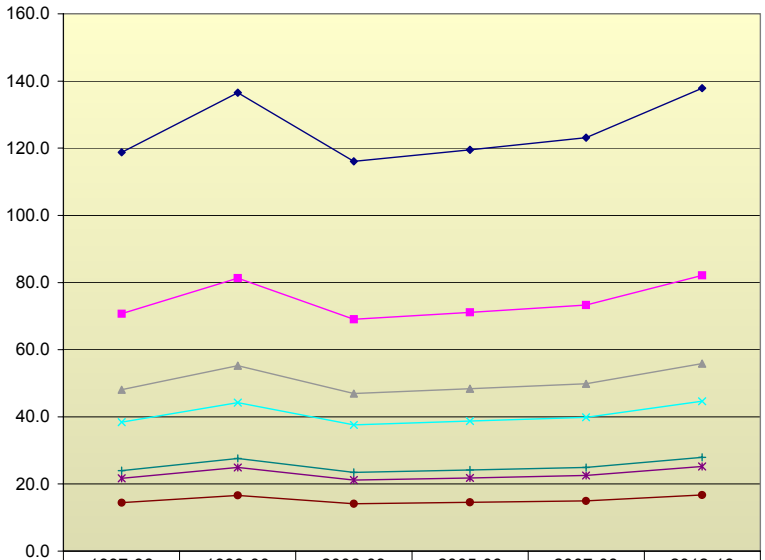
5.4.2.1 End-use of tropical Timber for Builder's Joinery

The end-use of builder's joinery is in the construction sector, which is booming in Mumbai, both for residential and commercial purposes. That is because it is the commercial capital of India, and both increased income and urbanization are taking place. This process is likely to continue in the foreseeable future and may even accelerate as the country's economy is entering into a take off stage and the renovation and replacement of existing structures and peri-urban development catches up, which has already been taking roots.

Out of the total quantity of tropical hardwood used (0.116 Mn Cu.m in 2002-03) in builder's joinery in Mumbai, almost 60% is of imported species, while the rest are domestically produced species. Among the major imported species used in builder's joinery include teak (55% of the total imports) and sal (31% of the imports). Similarly, among the major domestic species used also include sal (50% of total domestic in builders' joinery) and teak (30%), while the remaining are other local tropical hardwood species (Figure 5.4). This scenario may change still more in favour of imported tropical hardwoods, not only because of domestic supply limitations, but also as Mumbai's relatively newly established JNPT catches up as a cost-effective modern hub for imports and re-exports, for which the neighbouring port areas are being offered as economic exclusive zones for industrial processing. That may

involve shifts in on-site joinery and related end-use products preparation to established manufacturing units to cater to the increasing consumption, as also of furniture, taking note of the nearby middle-east market too.

Figure 5.4: End-Use Distribution of Timber for Builders Joinery in Mumbai ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total timber used in builders' joinery	118.7	136.6	116.1	119.6	123.1	137.9
Imported timber	70.7	81.3	69.1	71.2	73.3	82.1
Domestic timber	48.1	55.3	47.0	48.4	49.8	55.8
Teak imports	38.4	44.2	37.6	38.7	39.9	44.6
Sal imports	21.7	25.0	21.2	21.8	22.5	25.2
Teak Domestic	14.4	16.6	14.1	14.5	15.0	16.7
Sal Domestic	24.0	27.6	23.5	24.2	24.9	27.9

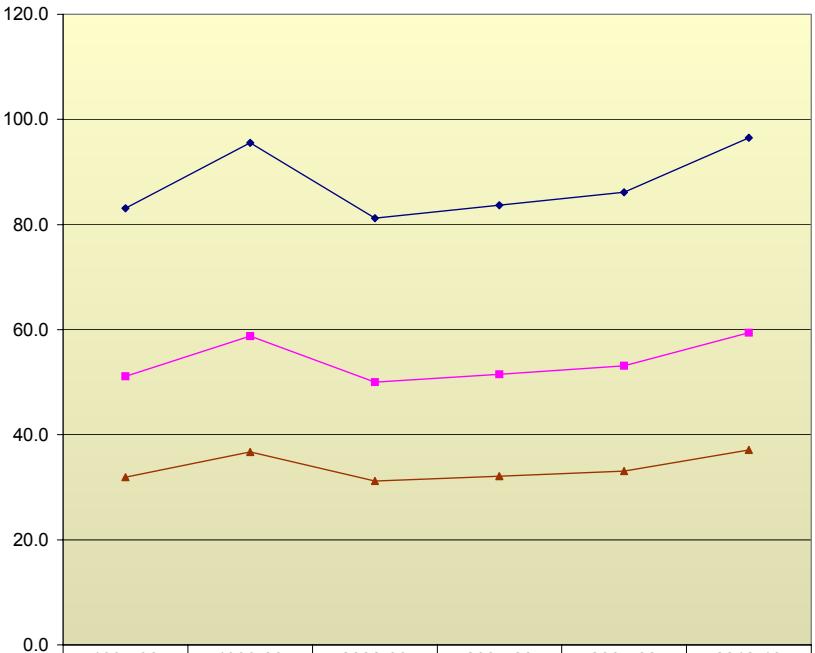
5.4.2.2 End-use of tropical timber in Construction

It is reported in the consumption survey that only tropical hardwood is used in the Construction industry and the major species include Teak and Sal which are imported as well as available locally. As mentioned earlier that only the total quantity of tropical hardwood used in the construction is available and not each timber product-wise. However it is obvious that mainly sawnwood and builder's joinery are used in the construction. While the figures for builder's joinery include woodwork, which might also be used in furniture making, there could be some overlapping in the data.

It was noted during interviews with the builders that on an average 0.75 Cu.m of timber is used per 1000 square feet construction area in Mumbai. On an average approximately 8% of the total house construction cost goes towards use of timber/wood in Mumbai. It was also reported that the type of wood used in construction include Country wood (domestic), Padauk and Sal. The imported wood comes mainly from Malaysia. The Country wood (Oak and Mango wood) is mainly used in construction, while Sal is used in making doors and windows (construction joinery).

The quantity of tropical hardwood used in construction in Mumbai in 2002-03 is 81,2000 Cu.m, out of which 50,00 Cu.m was imported wood while the rest came from the domestic production (Figure 5.5).

Figure 5.5: Tropical Hardwood Consumption for Construction in Mumbai ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Tropical Hardwood	83.1	95.5	81.2	83.6	86.2	96.5
Tropical Hardwood Imports	51.1	58.8	50	51.5	53.1	59.4
Tropical Hardwood Domestic	31.9	36.7	31.2	32.1	33.1	37.1

The use of teak is currently very limited primarily on account of its high price and hence use of other domestic hard wood species has been increasing. However there is scope for plantation teak timber in the future, as reported by some builders and retailers.

The doors used in house construction are generally flush doors which economise on the quantity of timber used and hence the cost of wood. Flush doors are mainly fitted at the entrance and other places where security of the house is more important. In other areas of houses, door-frames are done with country wood while on the structures, plywood is fitted. Complete door panels made of plywood and laminated sheets are also readily available for use and are being increasingly used where security is not a concern, such as for bathrooms.

There is also an increasing trend for use of glass for windows for its low price as well as aesthetic appeal. In recent years there is a positive trend for use of aluminium and metal (black wrought iron) for the window frames. Despite the use of alternatives to timber, the use of timber is bound to increase in absolute quantitative terms for its obvious first preference among the consumers.

There is another trend reported in the construction sector for use of standardised size of doors and windows, which are sold in unfinished form and are just fitted while the house is under construction. The finishing is done at the end-use during construction. This has on

one hand reduced the cost for the consumers on the other hand have created demand for readymade door and window panels or flush-doors for large-scale manufacturing.

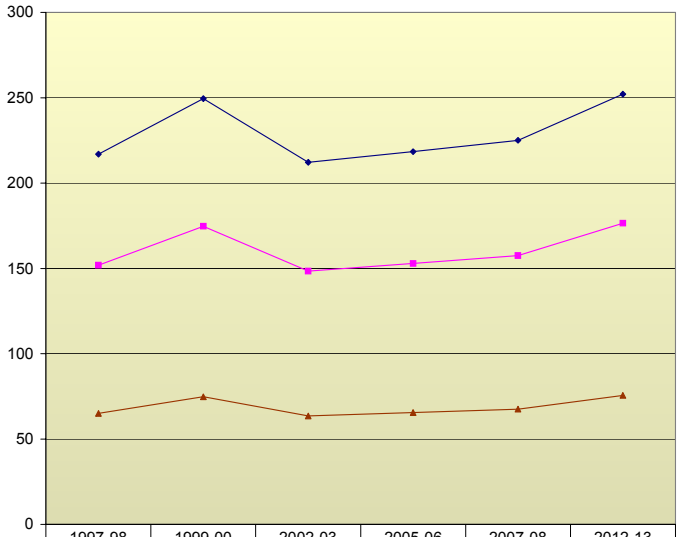
As the house construction sector is growing fast and hence the demand for timber and timber products is expected to grow as well. The boom in house construction and real estate has been fuelled primarily by the decreasing interest rates and attractive & consumer friendly loan schemes. People invest in housing both for self-use as well as an investment opportunity. As a result the demand for wood and wood products will increase due to increase in construction activity. During the current year the consumption of timber products has marginally declined due to economic slow down but is expected to pick up by the next year.

This increasing trend of construction and hence increased wood consumption has been observed through out the Indian Economy and holds true for all the consumption centres considered in this Review.

5.4.2.3 End-use of Tropical Timber in Furniture & Furniture Components

The total timber used in furniture & furniture components in Mumbai during 2002-03 was 212,000 Cu.m, which is almost half of the total industrial roundwood consumption in Mumbai. Only the tropical hardwood is used in furniture & furniture components. The timber products used in furniture & furniture components include sawnwood (majority), roundwood and plywood. However, the data for each timber product is not available; rather the total timber used in furniture & furniture components are available. Mainly the imported tropical hardwood (85% of the total) is used in furniture & furniture components. Among the major species used in furniture & furniture components are Teak and Sal (imported) and Rosewood & other Country wood. The ratio of the Household to Commercial furniture is 30:70 (Figure 5.6).

Fig 5.6: Timber Use in Furniture and Furniture Components in Mumbai ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total Timber use in Furniture	217	249.6	212.1	218.5	225.0	252.0
Household Furniture	151.9	174.7	148.5	152.9	157.5	176.4
Commercial Furniture	65.1	74.9	63.6	65.5	67.5	75.6

The use of Teak is on decline because of its high price. Plywood (made with cheaper wood) is becoming the preferred timber product for furniture and furniture components as against the costly teak timber.

5.4.3 End-Use Distribution Trends and Prospects in PUNE

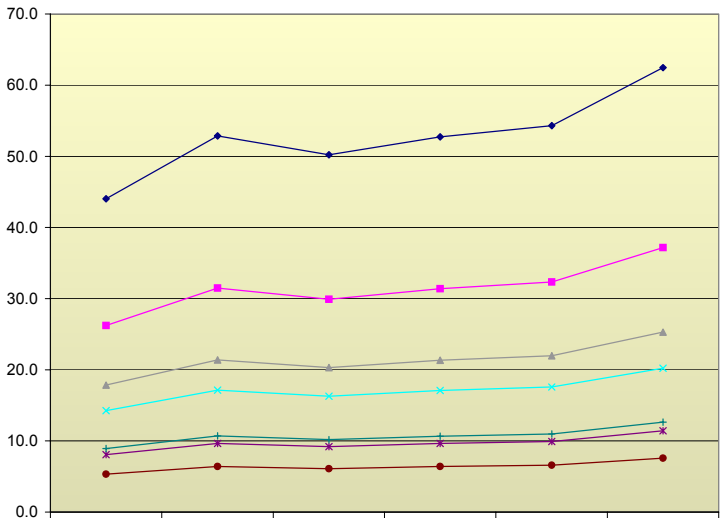
The end-use distribution of tropical timber in Pune consumption centre is mainly for Builder's Joinery & Woodworking, Construction and Furniture & Furniture components. Use of timber for flooring purpose in India is almost negligible. Though some very rich class people as well as in some offices, timber is used for flooring purpose but in almost negligible quantity. The most commonly used timber product for end-use is sawnwood followed by plywood (including Veneer) and builder's joinery in construction. The end-use consumption for these uses of timber is available in total quantity of sawnwood and plywood but the exact bifurcated data for product wise (Logs, Sawnwood, Veneer, Plywood and Builder's joinery) end-use is not available.

The consumption data for the end-uses Builder's Joinery & Woodworking, Construction and Furniture & Furniture components for the year 2002-03 are 0.05 Mn Cu.m, 0.035 Mn Cu.m and 0.09 Mn Cu.m, respectively. There are no data available for end-use flooring in Pune and indicates that the use of timber for flooring is limited.

5.4.3.1 End-use of tropical timber in Builder's Joinery

Only tropical hardwood is used in builders' joinery in Pune. Out of the total quantity of tropical hardwood used (0.05 Mn Cu.m in 2002-03) in builder's joinery in Pune, almost 60% are imported species while the rest are domestically produced species (Figure 5.7).

Figure 5.7: End-Use Distribution of Timber in Builder's Joinery ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total timber used in builders' joinery	44.1	52.9	50.2	52.7	54.3	62.5
Imports	26.2	31.5	29.9	31.4	32.3	37.2
Domestic	17.8	21.4	20.3	21.3	22.0	25.3
Teak Imports	14.3	17.1	16.3	17.1	17.6	20.2
Sal Imports	8.1	9.7	9.2	9.6	9.9	11.4
Teak Domestic	5.3	6.4	6.1	6.4	6.6	7.6
Sal Doemstic	8.9	10.7	10.2	10.7	11.0	12.6

Among the major imported species used in builder's joinery include Teak (55% of the total imports) and Sal (31% of the imports). Similarly, the major domestic species used also include Sal (50% of total domestic in builders' joinery) and Teak (30%), while the remaining timber is derived from other local tropical hardwood species.

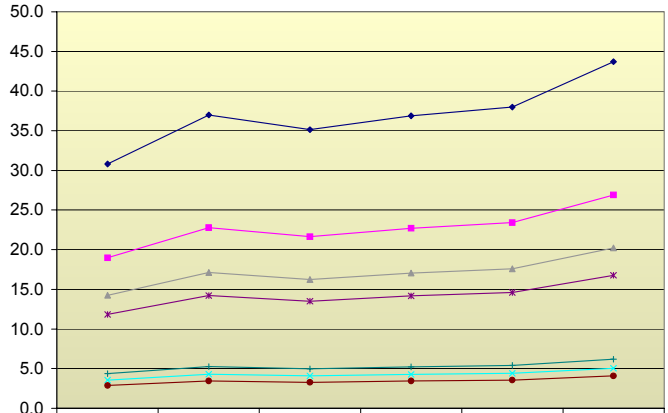
5.4.3.2 End-use of Tropical Timber in Construction

It is reported in the consumption survey that only tropical hardwood is used in the Construction industry and the major species include Teak and Sal, which are imported as well as available locally. As mentioned earlier that only the total quantity of tropical hardwood used in the construction is available and not by each timber product-wise. However it is obvious that mainly sawnwood and builder's joinery are used in the construction. While the figures for builder's joinery also include woodworking, which might also be used in furniture making, there could be some overlapping in the data.

It was reported during the interview with the builder's that the type of wood used in construction include country wood (domestic), Paddock and Sal. The imported wood comes mainly from Malaysia. The Country wood (Oak and Mango wood) is mainly used in construction while Sal is used in making doors and windows (construction joinery).

The quantity of tropical hardwood used in the construction in Pune in 2002-03 is 35,100 Cu.m out of which majority (21,600 Cu.m) was imported wood while the rest came from the domestic production (Figure 5.8). Among the imported species include Teak (almost 75% and Sal (25%). The major species domestically consumed in construction include Sal, Teak and other local species.

Figure 5.8: Timber Use in Construction in Pune ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total Consumption in Construction	30.8	37.0	35.1	36.9	38.0	43.7
Total Import	19.0	22.8	21.6	22.7	23.4	26.9
Teak Import	14.3	17.1	16.3	17.1	17.6	20.2
Sal Import	3.6	4.3	4.1	4.3	4.4	5.1
Total Domestic	11.8	14.2	13.5	14.2	14.6	16.8
Teak Domestic	2.9	3.4	3.3	3.4	3.5	4.1
Sal Domestic	4.4	5.2	5.0	5.2	5.4	6.2

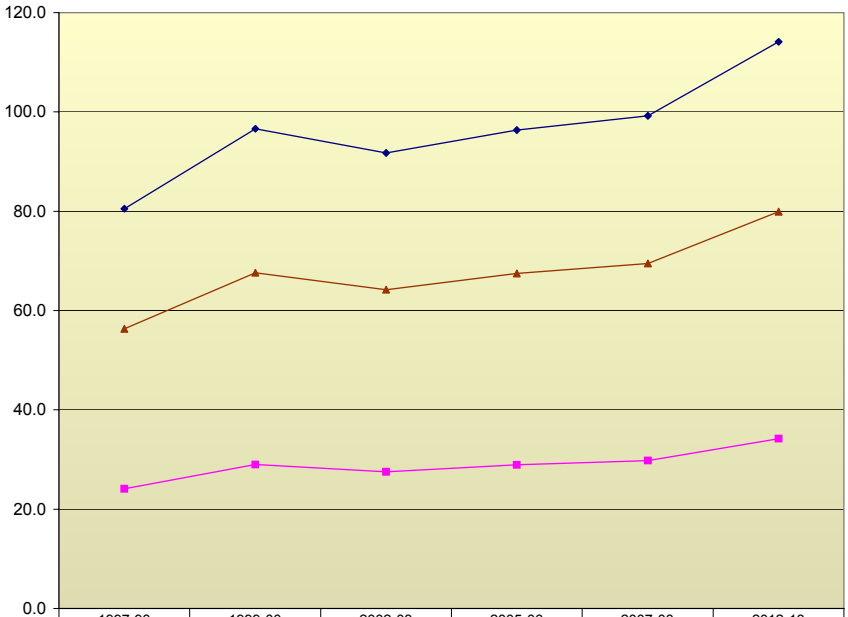
The use of teak is less, primarily on account of its high price, and hence use of other domestic hard wood species has been increasing. The trend for use of tropical hardwood in

construction is increasing and with the increasing supply pressure on domestic production, competitive imports are expected to increase over the years.

5.4.3.3 End-use of tropical timber in Furniture & Furniture Components

The total timber used in furniture & furniture component in Pune during 2002-03 was 0.092 Mn Cu.m, which is more than half the total timber logs consumption in the centre. Only the tropical hardwood is used in furniture & furniture components. The timber products used in furniture & furniture components include sawnwood (majority), roundwood and plywood. However the data for each timber product is not available rather the total timber used in furniture & furniture components are available. Mainly the imported tropical hardwood species (85% of the total) are used in furniture & furniture components. Among the major species used in furniture & furniture components include Teak and Sal (imported) and Rosewood & other country wood. The ratio of the Household to Commercial furniture is 30:70 (Figure 5.9). The use of Teak is on decline because of its high price. Plywood (made with cheaper wood species) is becoming the preferred timber product for furniture & furniture components against the costly teak timber.

Figure 5.9: Timber Use in Furniture and Furniture Components in Pune ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total Timber use in Furniture	80.5	96.6	91.8	96.4	99.3	114.1
Household Furniture	24.2	29.0	27.5	28.9	29.8	34.2
Commercial Furniture	56.4	67.6	64.2	67.5	69.5	79.9

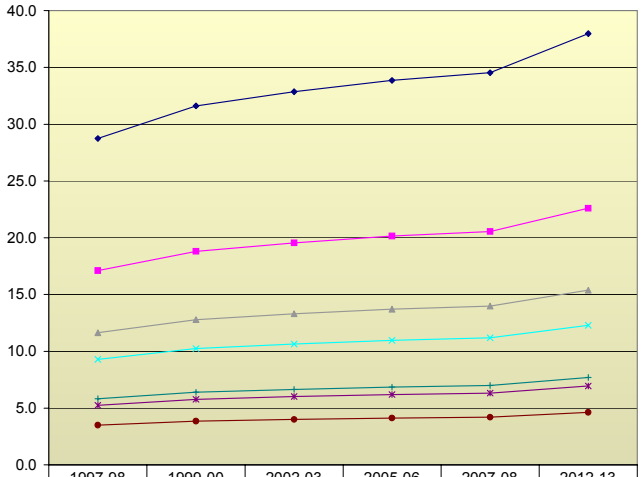
5.4.4 End-Use Distribution Trends of Tropical Timber Products in SURAT

5.4.4.1 End-use of tropical timber in Builder's Joinery

Only tropical hardwood is used in builders' joinery in Surat. Out of the total quantity of tropical hardwood used in builder's joinery in Surat (0.032 Mn Cu.m in 2002-03), almost 60% is imported species while the rest are domestically produced species (Figure 5.10). Among

the major species include Teak and Sal. Of the total imported timber used in builders joinery 54% is teak while the 31% are Sal. Similarly among the major domestic species used are also Sal (50% of total domestic in builders' joinery) and Teak (30%), while the remaining are other local tropical hardwood species.

Figure 5.10: End-Use Distribution of Timber in Builder's Joinery in Surat ('000 Cu.m)



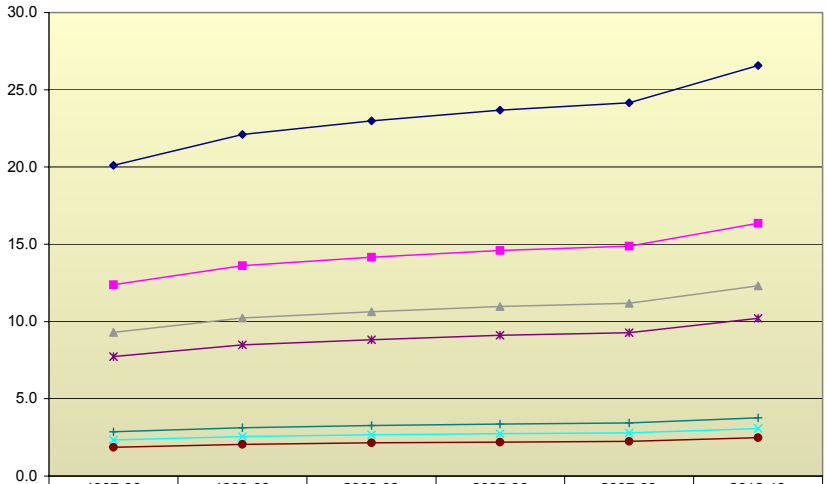
	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total timber used in builder's joinery	28.7	31.6	32.9	33.9	34.5	38.0
Imports	17.1	18.8	19.6	20.1	20.6	22.6
Domestic	11.6	12.8	13.3	13.7	14.0	15.4
Teak imports	9.3	10.2	10.6	11.0	11.2	12.3
Sal imports	5.3	5.8	6.0	6.2	6.3	6.9
Teak domestic	3.5	3.8	4.0	4.1	4.2	4.6
Sal domestic	5.8	6.4	6.7	6.9	7.0	7.7

5.4.4.2 End-use of tropical timber in Construction

It is reported in the consumption survey that only tropical hardwood is used in the Construction industry in Surat and the major species include Teak and Sal which are imported as well as available locally. As mentioned earlier that only the total quantity of tropical hardwood used in the construction is available and not by each timber prioduct-wise. However it is obvious that mainly sawnwood and builder's joinery are used in the construction.

The total timber end-use in construction for the year 2002-03 is reported as 23,000 Cu.m, which is expected to go up 26,600 Cu.m by the year 2012-13 (Figure 5.11). The timber used in construction is sourced from domestic production as well as imported from the tropical countries. However the domestic timber quantity is very less as compared to the imported timber. In the year 2002-03, it is reported that 14,2000 Cu.m of tropical hardwood was imported for use in construction against 8,800 Cu.m sourced from the domestic production. Among the major imported species include Teak (75%) and Sal (19%), and some Meranti. While Sal (38%) and Teak (24%) are also the main domestic species used in the Construction, some other local species are also used for construction in Surat, especially for interior purposes and there are some signals of substitutes, though they are not so popular in the fast expanding urban centre, relatively recently.

Figure 5.11: Species, Imports & Domestic Construction Consumption in Surat ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total wood in constructionm	20.1	22.1	23.0	23.7	24.2	26.6
Imports	12.4	13.6	14.2	14.6	14.9	16.4
Teak Import	9.3	10.2	10.6	11.0	11.2	12.3
Sal Import	2.3	2.6	2.7	2.7	2.8	3.1
Domestic	7.7	8.5	8.8	9.1	9.3	10.2
Teak Domestic	1.9	2.1	2.1	2.2	2.2	2.5
Sal Domestic	2.9	3.1	3.3	3.4	3.4	3.8

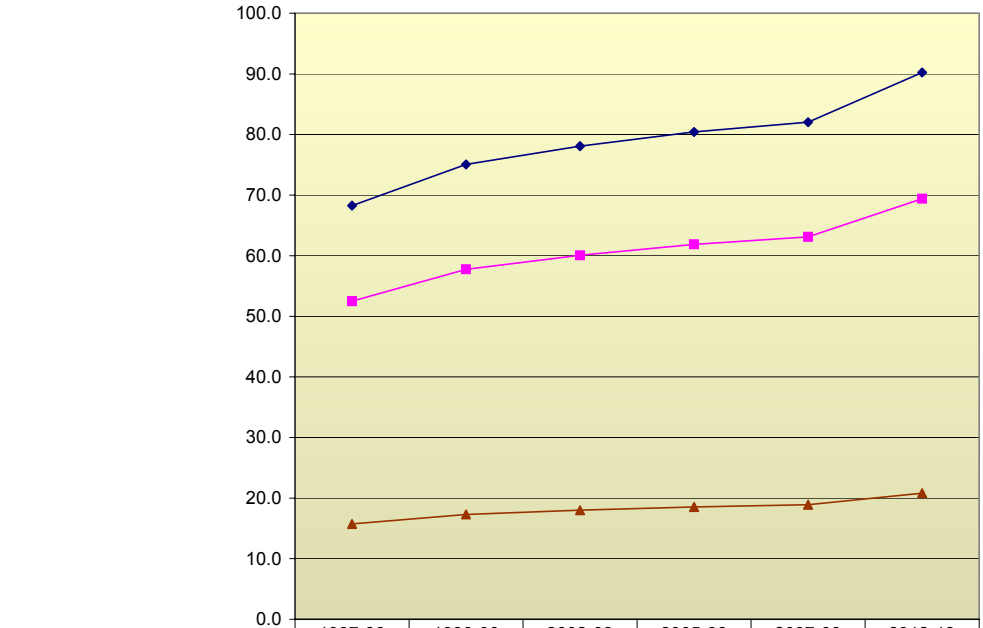
The use of teak is less, primarily on account of its high price and hence use of other domestic hard wood species has been increasing. The trend for use of tropical hardwood in construction is increasing and with the increasing supply pressure on domestic production, the imports are expected to increase over the years, as the city gets in full swing of expansion that has already started.

The increasing trend for house construction, which is observed throughout India, is equally, or even more vigorously, applicable for this consumption centre and hence the demand for tropical hardwood for construction end-use will see an increasing trend in the medium term.

5.4.4.3 End-use of tropical timber in Furniture & Furniture Components

The total timber used in furniture & a furniture component in Surat during 2002-03 was 0.078 Mn Cu.m which is more than half the total timber logs consumption. Only the tropical hardwood is used in furniture & furniture components. The timber products used in furniture & furniture components include sawnwood (majority), roundwood and plywood. However the data for each timber product is not available rather the total timber used in furniture & furniture components are available. Mainly the imported tropical hardwood species (85% of the total) are used in furniture & furniture components. Among the major species used in furniture & furniture components include Teak and Sal (imported) and Rosewood & other Country wood produced domestically. The ratio of the Household to Commercial furniture is almost 1:3 (Figure 5.12).

Figure 5.12: End- Use Distribution of Timber in Furniture and Furniture Components in Surat ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total Timber in Furnitutre	68.3	75.1	78.1	80.4	82.0	90.2
Commercial / Office Furniture	52.5	57.8	60.1	61.9	63.1	69.4
Household Furniture	15.8	17.3	18.0	18.6	18.9	20.8

The use of Teak is on decline because of its high price. Plywood (made with cheaper wood species) is becoming the preferred timber product for furniture & furniture components, as against the costly teak timber.

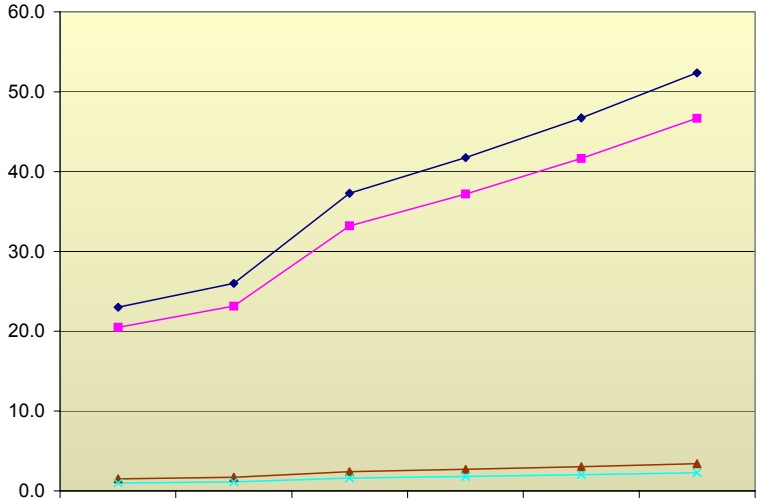
5.4.5 End-Use Distribution Trends of Tropical Timber Products in AHMEDABAD

5.4.5.1 End-use of tropical timber in Builder's Joinery

Mainly tropical hardwood is used for builders' joinery in Ahmedabad. Out of the total quantity of tropical hardwood used in builder's joinery in Ahmedabad (0.037 Mn Cu.m in 2002-03), more than 90 per cent comprises imported species, while the rest are species produced domestically. Among the major imported species used for builder's joinery are Teak and Sal. In Ahmedabad, while the builder's joinery is generally made out of tropical hardwood species, it consists of nearly 90 per cent of the total builder's joinery during 2002-03 (Figure 5.13).

This particular city is under the process of rebuilding and reconstruction, apart from urban expansion, with sizeable repatriation of resources for the purpose from the Indian expatriates abroad, who are seeking relatively higher class residential apartments and houses for themselves and their relatives. As such, the nature of demand includes a sizeable end use category of higher quality imported tropical hardwoods and better specifications for the builder's joinery and related woodwork, including furniture.

Figure 5.13: Total Consumption of Builder's Joinery in Ahmedabad ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	20012-13
Builder's Joinery Total	23.0	26.0	37.3	41.7	46.7	52.3
Builder's Joinery Tropical Hardwood	20.5	23.2	33.2	37.2	41.7	46.7
Builder's Joinery Tropical Softwood	1.5	1.7	2.4	2.7	3.0	3.4
Builder's Joinery Temperate Hardwood	1.0	1.1	1.6	1.8	2.0	2.3

5.4.5.2 End-use of tropical timber in Construction

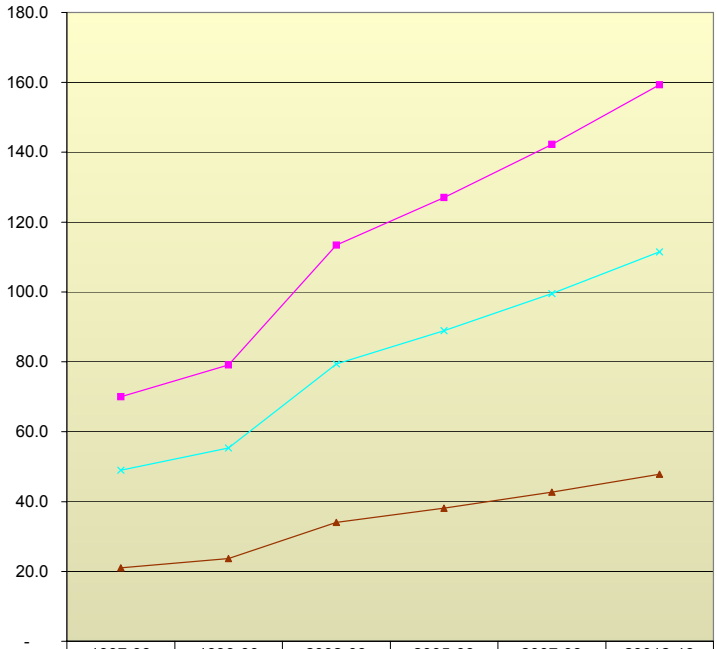
It is reported in the consumption survey that only tropical hardwood is used in the Construction industry at Ahmedabad. During the period 2002-03, 0.041 Mn Cu.m timber was used for construction purposes. The consumption of timber for the construction industry is projected to be at 0.06 Mn Cu.m during 2012-13.

5.4.5.3 End-use of tropical timber in Furniture & Furniture Components

The total timber used in furniture & a furniture component in Ahmedabad during 2002-03 was 0.12 Mn Cu.m, which is 58% of the total timber logs consumption. Only the tropical hardwood is used in furniture & furniture components. Among the major species used in furniture & furniture components include Teak, Sal and Rosewood & other Country wood produced domestically. The ratio of the Household to Commercial furniture is almost 85:15 (Figure 5.14).

The ready-made furniture market has also been flourishing in the city. These are like small-scale factories where 20 to 30 persons work on a regular basis. The traders and manufactures try to take advantage of ignorance of the consumers as they mix different types of wood for various components. According to the manufactures they use teak as sawn wood for the outer sides of a bed or other pieces of furniture. But they also use *babul* for legs and other joints of furniture. Besides, veneer is fixed as a finishing material and underneath is used some non-descript wood. This flamboyance on part of traders and local retailers may not continue, if there were better economic information and market intelligence, which is bereft of transparency, as in most of the country.

Figure 5.14: Furniture & Furniture Components Consumption in Ahmedabad ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	20012-13
Furniture and Furniture Components	70.0	79.1	113.4	127.0	142.2	159.3
Household Furniture	21.0	23.7	34.0	38.1	42.7	47.8
Commercial Furniture	49.0	55.4	79.4	88.9	99.6	111.5

It is noted that furniture is brought from the states of Haryana, Delhi and elsewhere, as it is cheaper to have such furniture, often using ToF. This is mainly because of the use of locally available cheaper timber species, such as poplar and eucalypts, which are planted on the boundaries of agricultural fields in Haryana and western Uttar Pradesh coupled with nearby processing and distribution channels, with Yamuna Nagar as an outstanding example.

5.4.6 End-Use Distribution Trends of Tropical Timber Products in CHENNAI

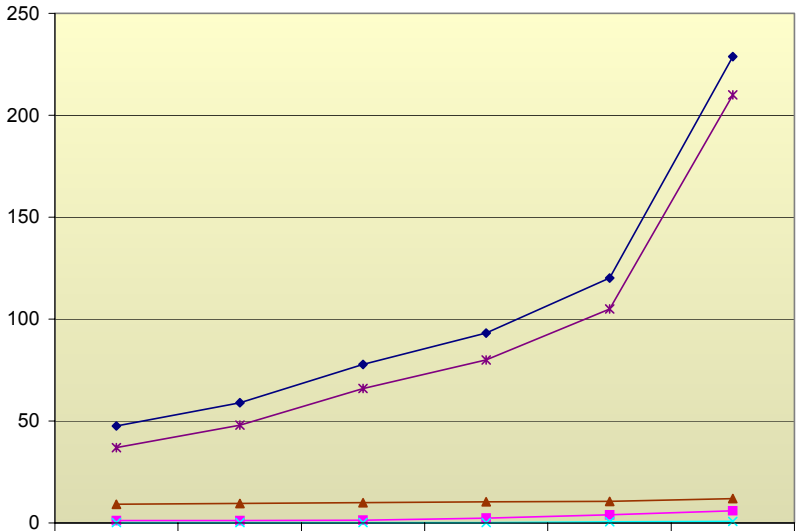
5.4.6.1 Different End-Use of Timber

The total end use of timber in Chennai is 0.078 Mn Cu.m as reported in 2002-03. It is projected to go up very fast between 2007-08 and 2012-13 and reach 0.23 Mn Cu.m in 2012-13. The maximum end use of timber is that for plywood. For the year 2002-03, the use of plywood was reported to be more than 85 per cent of the total. This trend may continue up to 2012-13 with the ratio of plywood and the total increasing steadily over the years. However, it is seen from figure 5.15 that the other end-uses, namely, builder's joinery, furniture & furniture components and flooring make up for the remaining percentage, as far as end use of timber is concerned.

This trend is, however, likely to be deflected, as the city is almost solely dependent on imported tropical hardwoods and as liberalization of trade takes place, as is being envisaged, say with a reduction in tariff for imported sawnwood. This has a heavy demand among constructors and consumers, as conveyed by respondents to questionnaires, many of

whom are resorting to securing imported tropical hardwood timber supplies from the distant Tuticorin port, but often without submitting to recording and reporting.

Figure 5.15: End-Use of Timber in Chennai ('000 Cu.m)



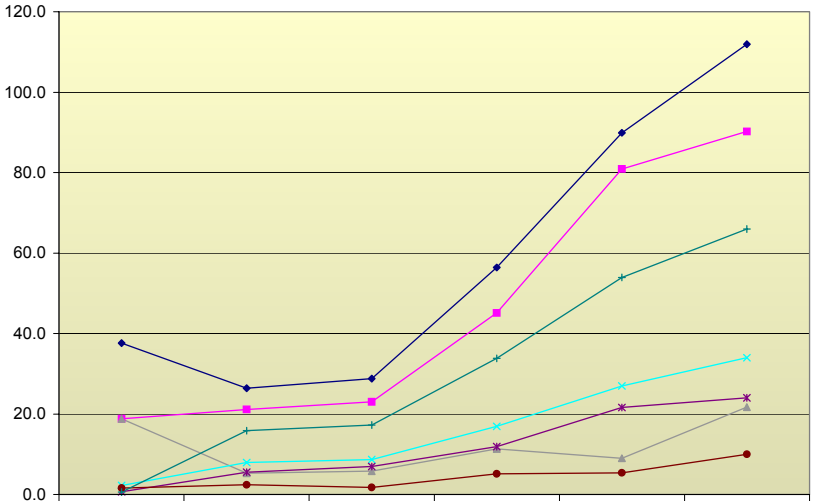
	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total End-Use	47.55	59.1	77.75	93.3	120.3	228.9
End-Use Builder's Joinery Tropical Hardwood Total Imports	1.2	1.3	1.5	2.5	4	6
End-Use Furniture and Funiture Component Tropical Hardwood Total Domestic	9.2	9.6	10	10.5	10.6	12
End-Use Flooring Total Tropical hardwood	0.15	0.2	0.25	0.3	0.7	0.9
End-Use Plywood Total Imports	37	48	66	80	105	210

5.4.7 End-Use Distribution Trends of Tropical Timber Products in BANGALORE

5.4.7.1 Different End-Use of Timber:

The total end use distribution of timber in Bangalore as reported in 2002-03 was 28,800 Cu.m in construction, 8,600 Cu.m in builders' joinery and 17,300 Cu.m in Furniture & Furniture components. It is projected to go up fast in next 5 to 10 years and reach 0.11Mn Cu.m, 0.034 Mn Cu.m, and 0.066 Mn Cu.m for construction, builders' joinery and Furniture respectively in 2012-13 (Figure 5.16). The maximum end use of timber is that for plywood. For the year 2002-03, the use of plywood was reported to be more than 85% of the total. This trend is likely to continue up to 2012-13, with the ratio of plywood and the total increasing steadily over the years. Of the total timber used in construction 80% is the imported timber. Similarly the proportion of imported timber in end-use builders' joinery is about 70%. However, the timber used in Furniture & Furniture Components is sourced only from the domestic production. It is also reported that some quantity of the recycled wood from the old doors / windows is used for furniture making. Additionally, container wood (wooden container material) and the marine wood material is also used in furniture making.

Figure 5.16: Consumption of Wood for Different End-Use in Bangalore ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Construction Total	37.6	26.4	28.8	56.4	89.9	111.9
Construction Import	18.8	21.1	23.0	45.1	80.9	90.2
Construction Domestic	18.8	5.3	5.8	11.3	9.0	21.7
Builder's Joinery Total	2.3	7.9	8.6	16.9	27.0	34.0
Builder's Joinery Import	0.7	5.5	6.9	11.8	21.6	24.0
Builder's Joinery Domestic	1.6	2.4	1.7	5.1	5.4	10.0
Furniture (Total Domestic)	0.6	15.8	17.3	33.8	53.9	66.0

The rubber wood and other jungle wood (earlier it was used for packaging) is also used for furniture making. Of late, for the office furniture timber is being replaced by aluminum, plastic, fibre, glass and steel.

There are no data for end-use flooring available in Bangalore and it is reported that there is almost negligible use of timber in flooring there, which is true for all most of the other consumption centres as well.

Report on Housing in Bangalore

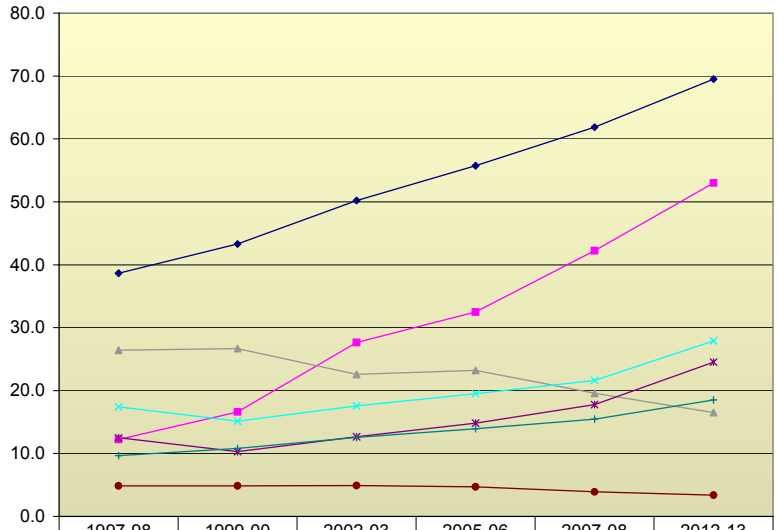
In the year 2002-03, about 38,000 house plans were cleared by Bangalore Mahanagar Palika within its limits. Adjacent to this there are eight other CMC's, which also clear the house construction plans. They clear about 8-10,000 houses per year (since this is not in city limits, the usage of wood in these houses is not considered for the calculation purpose. But these areas will be brought under corporation limits within three to four years). In the present scenario, an average of 0.49 Cu.m. of wood is used per house. With this, the usage of wood purely for housing purpose requires about 18,620 Cu.m. of wood. In this, the replacement for wood will be mainly for toilet doors. For this plastic is being increasingly used. This accounts to about 1.1% of wood consumption. Apart from this, big builders use aluminium for window frames. This replacement accounts to about 3.2%. Other than this, wrought iron is also used as door frame and shutter, but this is very less (about 1.2%). Other than these materials there is not much competition from other materials. But the usage of aluminium is increasing by at least 5-6% per annum mainly for window frames. The rise of non-wood substitutes in this high-tech city is a threat and a challenge to timber market, unless the trend is reversed, for which there is much scope.

5.4.8 End-Use Distribution Trends of Tropical Timber Products in HYDERABAD

5.4.8.1 Different End-Use of Timber

The total end use distribution of timber in Hyderabad as reported in 2002-03 was 55,200 Cu.m in Construction, 17,600 Cu.m in Builders' joinery and 12,600 Cu.m in Furniture & Furniture components. It is projected to go up in next 5-10 years and reach 0.068 Mn Cu.m, 0.029 Mn Cu.m, and 0.018 Mn Cu.m for construction, builders' joinery and Furniture respectively in 2012-13 (Figure 5.17). Of the total timber used in construction, 55% is the imported timber. Similarly the proportion of imported timber in end-use builders' joinery is about 72 per cent. However, the timber used in Furniture & Furniture Components is sourced only from the domestic production and the major species include *Albizia lebek, Albizia odoratissima, Chloroxylon switetenia, Dalbergia latifolia, Dalbergia sisso, Dysoxylum malabaricum, Gluta travancorica, Tectona grandis, Albizia procera, Artocarpus hirustu, Calophyllum elatum, Fagara burdrunga, Michelia spp, Palaquium ellipticum, Syzgium cuminii, Termialia alata, Terminalia arjuna, Terminalia paniculata, Toona ellata, and Machilus spp.*

Figure 5.17: End-Use Distribution of Timber in Construction, Builders' Joinery, and Furniture & Components in Hyderabad ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
End-use Constrn	38.6	43.3	50.2	55.7	61.9	69.5
EUC Imports	12.2	16.6	27.6	32.5	42.3	53.0
EUC Domestic	26.4	26.7	22.6	23.2	19.6	16.5
End-use Builders' Joinery	17.4	15.1	17.6	19.5	21.6	27.9
ECBJ Imports	12.5	10.3	12.7	14.8	17.8	24.5
ECBJ Domestic	4.9	4.8	4.9	4.7	3.9	3.4
End-use Furniture & Components	9.7	10.8	12.6	13.9	15.5	18.5

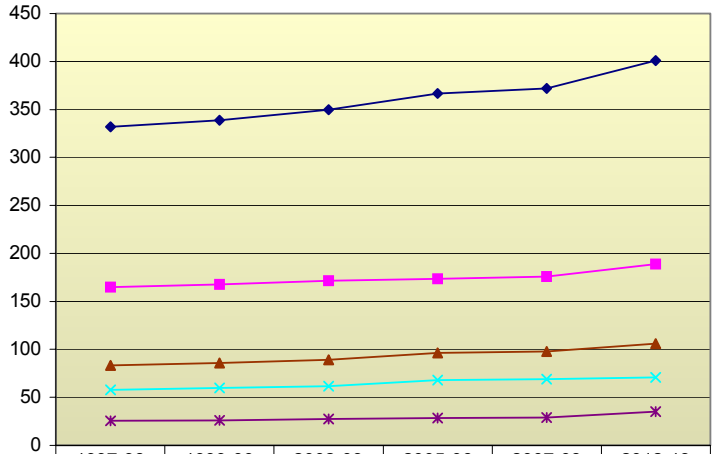
The preference criteria for using wood in furniture in Hyderabad are cited as strength, grain and texture, colour and figure, weight, retention of shape, seasoning behaviour, working quality and finishing property. No data for Flooring end-use are reported in Bangalore. It indicates that there is almost negligible use of timber in flooring in Bangalore, which is similar to all the other consumption centres surveyed for this Review.

5.4.9 End-Use Distribution Trends of Tropical Timber Products in KOLKATA

5.4.9.1 Different End-Use of Timber

The total end use distribution of timber in Kolkata as reported in 2002-03 was 0.172 Mn Cu.m. in Construction, 0.149 Mn Cu.m. in Builders' joinery and 0.089 Mn Cu.m. in Furniture & Furniture components. It is projected to go up in next 5-10 years and reach 0.189 Mn Cu.m., 0.168 Mn Cu.m., and 0.106 Mn Cu.m. in 2012-13 for the three end-use categories, respectively (Figure 5.18). The type of timber used in construction, builders' joinery and in furniture & furniture components is sourced both from imports as well as from domestic production.

Figure 5.18: End-Use Distribution of Timber in Kolkata ('000 Cu.m.)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
End-use Distribution of Total Timber	331.98	338.9	349.8	366.44	372	401
End-Use in Construction	165.0	167.5	171.6	173.5	176.0	189.0
End-Use in Furniture	83.5	85.7	89.1	96.5	98.0	106.0
Household Furniture	57.8	59.5	61.5	67.9	69.0	71.0
Commercial Furniture	25.7	26.1	27.6	28.6	29.0	35.0

The proportion of timber consumption for household furniture and commercial furniture is reported as at 70:30 (61,500 Cu.m and 27,600 Cu.m in 2002-03). It is also reported that domestic species are used more than the imported species in furniture making in Kolkata.

No data for end-use Flooring are reported in Kolkata. It indicates that there is almost negligible use of timber in flooring in Kolkata, which is true for all other consumption centres as well. Timber consumption for construction remains at the highest level.

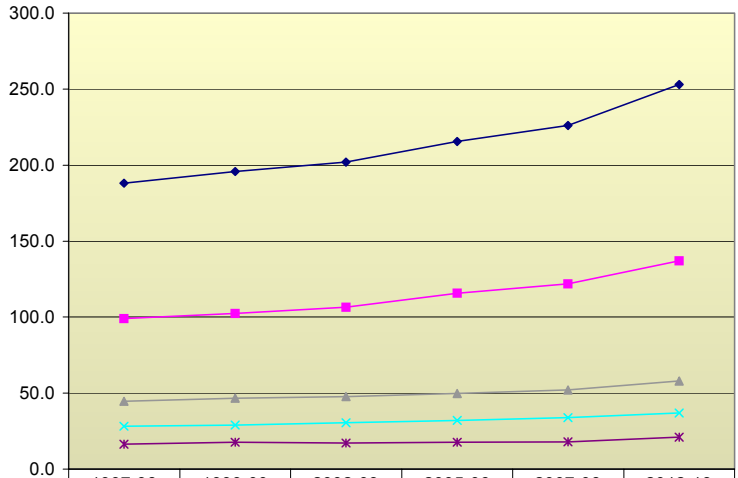
5.4.10 End-Use Distribution Trends of Tropical Timber Products in KANPUR

5.410.1 Different End-Use of Timber

The total end use distribution of timber in Kanpur as reported in 2002-03 was 0.106 Mn Cu.m for Construction, 0.089 Mn Cu.m for Builders' joinery and 0.048 Mn Cu.m for

Furniture & Furniture components. It is projected to go up in next 5-10 years and reach 0.137 Mn Cu.m, 0.105 Mn Cu.m, and 0.06 Mn Cu.m for construction, builders' joinery and Furniture & furniture components respectively in 2012-13 (Figure 5.19). The type of timber used in end use in construction, builders' joinery and in Furniture & Furniture Components is sourced both from imports as well as from domestic production.

Figure 5.19: End-Use Distribution of Timber in Kanpur ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
End-Use Distribution of Total Timber	188.0	195.7	201.9	215.5	226.0	253.0
End-Use Construction	98.9	102.3	106.5	115.8	122.0	137.0
End-Use Furniture Total	44.6	46.7	47.7	49.9	52.0	58.0
End-Use Household Furniture	28.2	29.0	30.6	32.2	34.0	37.0
End-Use Commercial Furniture	16.4	17.7	17.2	17.7	18.0	21.0

The proportion of household furniture and the commercial furniture is reported as at 64:36 (30,550 Cu.m and 17,200 Cu.m in 2002-03). It is also reported that domestic species are used more than the imported species in furniture making in Kanpur.

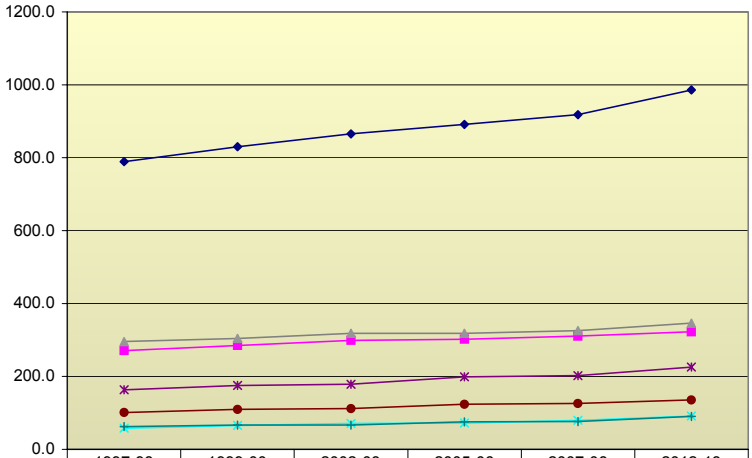
No data for end-use Flooring are reported in Kanpur. It indicates that there is almost negligible use of timber in flooring in Kanpur, which is true for all other consumption centres as well.

5.4.11 End-Use Distribution Trends of Tropical Timber Products in DELHI

5.4.11.1 Different End-Use of Timber

The total end use distribution of timber in Delhi as reported in 2002-03 was 0.32 Mn Cu.m. in Construction, 0.30 Mn Cu.m in Builders' joinery, 0.18 Mn Cu.m in Furniture & Furniture components, and 0.071 Mn Cu.m in plywood and veneer. It is projected to go up in 10 years (i.e. in 2012-2013) and reach 0.35 Mn Cu.m, 0.32 Mn Cu.m, 0.23 Mn Cu.m and 0.091 Mn Cu.m for construction, builders' joinery, furniture & furniture components, and plywood & veneer, respectively (Figure 5.20). The rate of increase in the end use of timber for different purpose is somewhat similar.

Figure 5.20: End-Use of Timber in Delhi ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total End-Use	789.2	830.3	865.9	891.9	917.8	985.6
Builder's Joinery Total	271.2	285.4	298.8	302.1	310.9	322.4
End-Use Construction	295.9	303.9	317.8	318.4	325.3	346.7
End-Use Plywood and Veneer	58.4	65.4	70.5	72.2	79.7	91.1
End-Use Total Furniture	163.67	175.65	178.79	199.22	201.88	225.37
End-Use Household Furniture	101.33	109.22	112.01	123.69	126.05	135.22
End-Use Commercial Furniture	62.34	66.43	66.78	75.53	75.83	90.15

Of the total timber used in builders' joinery, 94 per cent is tropical timber and the remaining is temperate hardwood. No softwood is used for builders' joinery.

No data for end-use of timber for Flooring are reported in Delhi. It indicates that there is almost negligible use of timber for flooring in Delhi, which is true for almost all the other consumption centres as well.

5.4.12 End-Use Distribution Trends of Tropical Timber Products in DELHI SATELLITE TOWNS

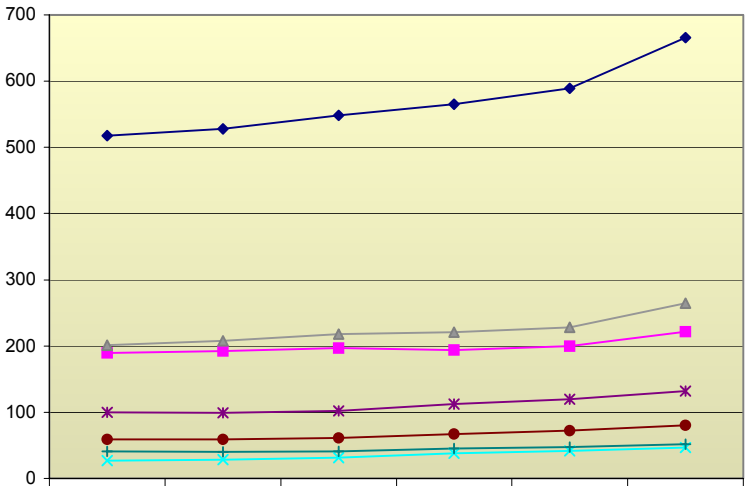
5.4.12.1 Different End-Use of Timber

Majority of the timber is used for builders' joinery, which constitutes more than 40 per cent of the total end use for timber. The total end use distribution of timber in Delhi Satellite Towns as reported in 2002-03 was 0.20 Mn Cu.m for Construction purposes, 0.22 Mn Cu.m in Builders' joinery, 0.010 Mn Cu.m for Furniture and Furniture Components, and 0.031 Mn Cu.m for Plywood and Veneer. It is projected to go up in next 5-10 years and reach 0.22 Mn Cu.m, 0.27 Mn Cu.m, 0.13 Mn Cu.m and 0.05 Mn Cu.m, respectively, for construction, builders' joinery, furniture and furniture components, and for plywood and veneer in 2012-13 (Figure 5.21).

The Delhi satellite towns are booming in construction of all kinds in view of fast paced urbanization and the phenomenal population increases of the National Capital Region in the recent years, shift of business house affiliates and commercial establishments, which are

mushrooming in the region. The demand for timber and furniture is of all end use categories and income groups and it is rising rapidly. It could be motor for market promotion of ITTO type of tropical timbers, and the Yamuna Nagar establishment seems to have taken charge, though there are dealers and furniture makers who have expressed their inclination for diversifying their sources of supply, if they had an opportunity, especially to cater to the exclusive market for quality tropical timbers. Middle income group housing schemes are also flourishing and they have particular requirements of joinery products of medium quality for fairly large scale quantities, but outsourcing alternative distribution channels with easy access were considered to be a constraint.

Figure 5.21: End-Use of Timber in Delhi Satellite Towns ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
Total End-Use	517.56	527.86	548.27	565.37	589.02	666
End-Use for Construction	189.3	192.4	196.9	194.1	199.8	222.0
End Use for Builder's Joinery	201.5	207.6	218.0	221.0	228.2	265.0
End-Use Plywood and Veneer	27.1	28.4	31.3	37.9	41.3	47.0
End-Use for Furniture	99.78	99.46	102.1	112.37	119.68	132
End-Use for Domestic Furniture	58.79	59.03	61.26	67.04	72.35	80
End-Use for Commercial Furniture	40.99	40.43	40.84	45.33	47.33	52

Of the total timber used in builders' joinery, 95 per cent is tropical timber and the remaining is temperate hardwood. No softwood is used for builders' joinery.

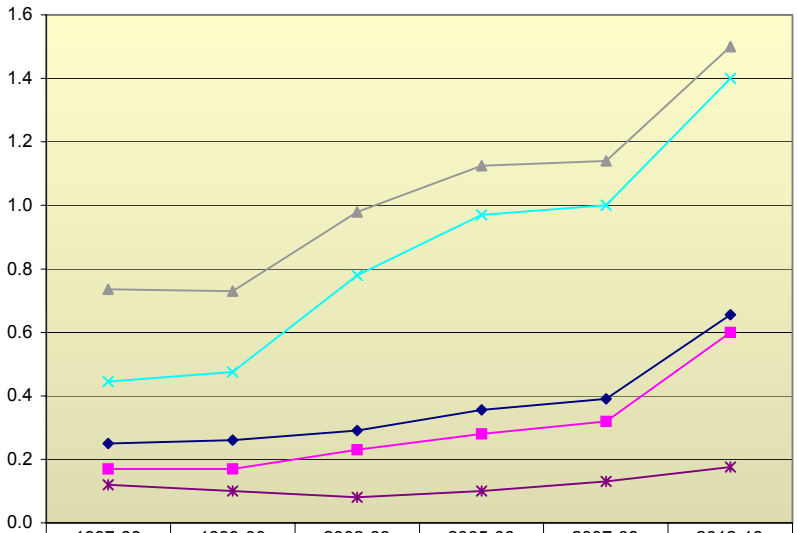
No data for end-use of timber for flooring are reported in Delhi. It indicates that there is almost negligible use of timber for flooring in Delhi, which is true for all other consumption centres as well.

5.4.13 End-Use Distribution Trends of Tropical Timber Products in YAMUNA NAGAR

The end-use distribution of tropical timber for Builder's Joinery & Woodworking, Construction, and Furniture & Furniture components in Yamuna Nagar is very limited as compared to other consumption centres. The reported use in 2002-03 was only 300 Cu.m, 1000 Cu.m, and 100 Cu.m, respectively. All the timber for these end-uses is tropical hardwood, which is sourced both from imports as well as from domestic production.

Among the important species used for construction include Sal, Shisham, Teak, Malaysian Sal, Red Meranti, and African Teak. The species used for furniture and components are Shisham, Teak, and African Teak. At the same time, the unregistered flow from neighbouring forests and from ToF is being processed and channelled through Yamu Nagar for markets nearby and further afield. This is not to suggest that these manufacturing facilities or distribution systems should be struck down, but merely to point out that their *modus-operandi* may not be -in fact is not- in conformity with proclaimed national policy for conservation, on the one hand, and they do not enable taking advantage of price competitive and better quality timbers for the consumer available from ITTO export partners of India, on the other hand. Nevertheless, Yamuna Nagar is flourishing as an industrial roundwood processing and distributing, and sets an example for those interested in promoting, developing and diversifying timber trade and market in the country.

Figure 5.22: End-Use Distribution of Timber in Yamuna Nagar ('000 Cu.m)



	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
End-Use Builder's Joinery (all TH)	0.3	0.3	0.3	0.4	0.4	0.7
Builder's Joinery Imports	0.2	0.2	0.2	0.3	0.3	0.6
End-Use Construction (all TH	0.7	0.7	1.0	1.1	1.1	1.5
End-Use Construction Imports	0.4	0.5	0.8	1.0	1.0	1.4
End-Use Furniture and Furniture Components(all TH)	0.1	0.1	0.1	0.1	0.1	0.2

5.5 CONCLUDING REMARKS

From the survey and the analysis here on the various end uses of timber for the 15 consumption centres clubbed into 12 for the purpose of reporting here, it can be seen that the majority of the timber is utilised for construction, furniture and furniture components followed by plywood and builder's joinery.

The type of timber used in construction, furniture and furniture components, and for builder's joinery is generally of high quality tropical hardwoods. These are mainly imports from countries like Malaysia, Myanmar and Indonesia, while the tropical softwood is used

for plywood. One of the major consumption areas for these end-uses is Delhi and Delhi Satellite Towns, though there are upcoming consumption centres, such as Surat and Ahmedabad.

It is observed that though Yamuna Nagar consumes a large quantity of timber, this is not reflected in the end-use section. That is because Yamuna Nagar has got established as major hub for the production and distribution, mainly of veneer, which is marketed in other consumption centres, such as Delhi and Mumbai. The veneer is then refurbished and converted into the final product like value-added plywood at these consumption centres. This is *prima-facie* a success case which seems to contravene national policies for conservation, by acting as a hub for unregistered and unregulated flow from neighbouring forests and ToF for serving the appetite of timber market at the cost of more competitive and environmentally sound sources of timber from elsewhere, especially for better quality tropical timber from the diverse forest resources of the ITTO partners of India.

The trend for timber use is, nevertheless, likely to continue, by which timber imports, especially tropical hardwood species, are projected to increase progressively over the medium term future, up and down aberrations in between notwithstanding. Yet, there are rising threats and challenges from alternates, as observed in Bangalore in particular, which too may warrant to be addressed for the benefit of social, economic and environmental objectives which increased timber use can better serve than the energy intensive alternates. That calls for appropriate market organization and intelligence as well as economic information about the domestic and international availability of tropical timbers, and the competitiveness of such timber and timber products for the various end uses.

Chapter VI

STATISTICS AND MARKET INTELLIGENCE

6.1 STATE OF SECTOR STATISTICS

6.1.1 Introduction

The Board of Forestry in 1925, realizing the importance of forestry statistics in India, decided that all provinces would conduct an economic survey of forest resources. Formats were designed for collection of information and the Forest Research Institute (FRI) at Dehra Dun did the needful for compilation of an 'All India' view. The British Indian Government collected such forest sector statistics periodically till 1947. The coverage was gradually extended to include forests located in the former princely states after independence.

The Directorate of Economics and Statistics (DES) in the Ministry of Agriculture and Irrigation standardized State forestry statistics collection formats in 1958-59, and began compiling national level data, though the accuracy of data and the timeliness of its collection and compilation were limited. Several States did not have a unit or staff member in their Forest Departments devoted to collecting or compiling statistics.

A Central Forestry Commission (CFC) was set up in the Ministry of Agriculture in 1965[1], with the objective of collecting, compiling and publishing standardized forestry statistics. The CFC revised the DES formats and started collecting standardized statistics with inputs from the States. There were, however, many limitations for prompt collection, compilation and analysis, as was foreworded in the first formal Digest of Forest Statistics published in the country with data regarding production, prices, market and trade of timber and other forest produce from State forests (Muthoo, M. K. and R. K. Khushoo, 1966).

Following the creation of the Ministry of Environment and Forests (MoEF) in 1982, the CFC was reconstituted into separate Statistics and Utilisation Divisions. During this period the FRI collected basic timber price information through its Forest Utilisation Wing, and also compiled selected forestry statistics that were published by the MoEF as 'India's Forests'. Consequent to the abolition of the post of Forest Utilisation Officer in FRI, these activities were also discontinued and several agencies in India collected and stored data on different aspects of forestry without any consolidation at the national level.

With the World Bank aided "Forestry Research, Extension and Education Project (FREEP)", an attempt was made to develop a forest information data base and subsequently a Division of Statistics was created in the Indian Council Forest Research and Education (ICFRE) to collect, collate, process, publish and circulate data covering all aspects of forestry at the national level. Till date, data have been published for the years 1988-94, 1995, 1996 and 2000. The Division of Statistics gathers data on production and trade of forest products from the State Forest Departments, Federal Ministry of Commerce, National Planning Commission,

[1] In the Government of India, Forestry was a Division in the Ministry of Agriculture till 1981.

Ministry of Environment and Forests (MOEF), Forest Survey of India (FSI) and the Central Statistical Organisation (Annual Survey of Industries - ASI) and trade associations, such as IAPMA and FIPPI. There in no such association or institution compiling data in respect of industrial roundwood, sawnwood and other timber products. In the absence of any single source for the purpose of assessing the reliability and timeliness of data for this Review , recourse has been taken to data obtainable through ASI, DGCIS, FIPPI, FSI, ICFRE, MoC, MoEF, State Forest Departments, and some statistical institutes and international sources, such as ADB, FAO, ITTO, IBRD, IMF, UN-COMTRADE, UN-ECA and UN-ECE, among others. Needless to say that the basic source of such information are the usually outdated data from State Forest Departments, which is regurgitated and reassessed through desk studies in distant offices, without direct access to original sources of information.

6.1.2 State Forest Departments and ICFRE

Forest product information is currently collected and collated by the public sector State Forest Departments using standard formats reviewed at the FORSTAT–96 national workshop organized by the FRI's Directorate of Statistics in 1996 at ICFRE. The format has remained unchanged despite several policy shifts about the role of the forest sector in the process of an emerging economy with greater private sector participation, on the one hand, and heightened awareness about global environmental concerns, on then other hand.

Data from forest ranges -the lowest data collection unit, are determined through a chain of custody system. Information from different field offices is compiled at Divisional level and transmitted annually to the State Forest Department headquarters, where statewide statistics are expected to be collated and consolidated. The State Forest Departments are required to send data in the standard format to ICFRE where, after analysis and discussion with State Forest Departments, the data are compiled for the country as a whole. The validity of data is supposed to be checked at State level with the help of ICFRE.

ICFRE, however, compiles data only on forest production. Even so, the time lag is usually long and beyond ICFRE's control, for it depends on the State organs for timely reporting. The latest available data are only until the financial year of 1999-2000, i.e., largely through to 1999. Apart from serious inconsistencies with other databases, as often pointed out elsewhere in this report, it was noted that despite the delay, data are not available in the case of sawnwood after 1997-98. One reason for the delay and incompleteness is that several State Forest Departments are unable to adhere to the prescribed formats and timeframe and lack an efficient statistical system for the compilation and dissemination of data.

6.1.3 Federation of Indian Plywood and Panel Industries (FIPPI)

The Federation of Indian Plywood and Panel Industries (FIPPI) collects data on decorative veneers, particleboard, hardboard and medium density fibreboard from the member manufacturing units. Given the tendency for tax evasion in many cases, this may lead to underreporting; actual production and consumption may be at a higher level, but there seems no option under the existing circumstances. It has also been observed that data are missing for several large states, such as Uttar Pradesh, Rajasthan, Madhya Pradesh, Andhra Pradesh and Tamil Nadu, which account for about 50 per cent of the total forest cover of the

country as well as total timber production. Suffice it to say that the reliability of the data reported by FIPPI is questionable and does not represent national production or consumption. The following two tables are self-explanatory in this behalf.

Table 6.1: Plywood Capacity and Production

State	Annual capacity	No. Units	Production (million m2, 4 mm)					
			1995	1996	1997	1998	1999	2000
Andaman & Nicobar Islands	10.057	3	1.491	5.889	8.462	8.397	7.712	8.294
Arunachal Pradesh	30.674	9	-	-	-	0.051	18.46	17.6
Assam	44.512	22	1.019	-	0.783	3.214	39.084	42.956
Karnataka	9.749	8	2.286	2.397	1.465	0.867	1.031	0.820
Kerala	8.790	8	0.513	0.639	0.689	0.915	0.734	0.764
Maharashtra	1.437	2	1.440	1.077	1.260	1.596	1.465	1.810
West Bengal	2.716	2	2.124	1.220	0.121	0.263	0.856	0.905
Nagaland	4.200	2	2.605	-	-	-	-	-
Meghalaya	2.600	1	-	-	-	-	-	-
Andhra Pradesh	1.500	1	-	-	-	-	-	-
Uttar Pradesh	0.558	1	2.035	2.487	-	-	-	-
Rajasthan	1.500	1	-	-	-	-	-	-
Madhya Pradesh	5.750	2	-	-	-	-	-	-
Tamilnadu	1.177	1	-	-	-	-	-	-

Source: Federation of Indian Plywood and Panel Industry.

Table 6.2: Production of Decorative Veneers, Particleboard, Hardboard and Medium Density Fiberboard

Product	Production		
	1997-98	1998-99	1999-00
Decorative veneers (m2)	-	2,092,021	23,356,997
Particle board (tonnes)	34,634	63,683	92,728
Hardboard (tonnes)	45,126	81,290	78,414
Medium density fiberboard (tonnes)	30,632	39,085	43,567

Source: Federation of Indian Plywood and Panel Industry.

Besides the data gaps with respect to states and years, the above tables also show that the latest data available are for the year 2000. Moreover, since FIPPI compiles the data received from its member units and a large number of small scale industries which have mushroomed in the wake of closure of practically all large/medium scale industries in the North Eastern region [2], the figures neither reflect the complete picture and nor are the data robust enough.

6.1.4 Central Statistical Organisation (Annual Survey of Industries - ASI)

In National Industrial Classification (NIC) codes, which are used by ASI statistics, the two-digit classification '27' includes manufacture of wood and wood products and furniture and

[2] One such group of industries is situated in and around Yamuna Nagar ,which was specifically taken up for an additional urban centre Primary Survey and a Case Study for this Review, confirming that data are either not reported or else they are distorted deliberately.

fixtures. At the three-digit level, '270' and '271' provide information relating to sawing and planing of wood (other than plywood) and the manufacture of veneer sheets, plywood and their products respectively. However, in the ASI 1999-2000 issue, data relating to '270' is not available. Again, according to Annual Survey of Industries conducted by the Central Statistical Organization of the Government of India, there were 4213 units associated with manufacture of products from wood, furniture and fixtures during the year 1999-2000 employing about 78,240 persons. This seems to be a gross underestimate since there are about 23,000 sawmills in the country as reported in the NFAP– India 2000 (NFAP, 1999). This underestimation is due to the fact that only industries registered under Factories Act come within the purview of this survey. The latest data availability is for 2001 and was consulted nevertheless in the process of the Review.

CSO also maintains the price data of the wood products in the form of Wholesale Price Index (WPI) and the latest data are available for 2001-02. However, WPI includes only two types of wood products, namely, plywood planks and timber planks, apart from a consolidated category of wood and wood products, which does shed some light on price movement, which otherwise is unavailable from any other forest sector statistics.

6.1.5 Federal Ministry of Commerce

The Ministry of Commerce and Industries maintains the Export-Import Data Bank and its main source of information on wood imports and exports is the data compiled by the Directorate General of Commercial Intelligence and Statistics (DGCIS), under the Ministry of Commerce and Industries, Government of India. The primary source of these data is the daily trade reports and custom clearance records of import and export of Forest Products collated by the Department of Customs and Central Excise.

The DCGIS publishes export and import data in its 'Monthly Statistics of Foreign Trade' following the World Customs Organisation's Harmonised System of classification of commodities. Data are available in hard copy as well in electronic form on floppy discs. The latest data available while conducting the Review was for the year 2001-2002 and was obtained both through direct contacts and from its publications.

The compilation of foreign trade statistics was found to be based on sound methodology. However, some data deficiencies were noted and suffice it here to refer to one of those to illustrate the problem of possible data discrepancy for imports into the country, if not anything else. Abnormally high figures in respect of plywood and sawn wood imports have been recorded and reported for 2000-2001. An in-depth enquiry revealed that this was essentially due to two unusually large consignments respectively recorded for (i) import from Thailand -HS code 44071909 through Kandla port in March 2001 for a volume of 104,400 Cu.m, and (ii) import from Indonesia –HS Code 44121909 through JNPort, also in March 2001 for a volume of 75,443 Cu.m. The value recorded for the latter is Rs. 4.9 million as against Rs. 5.9 million recorded for another consignment of similar material from the same country for a volume of only 740 Cu.m imported through Chennai port, and Rs. 1.4 million for a still smaller volume of 95 Cu.m imported through Cochin port. Despite hard questioning and study by surveyors of the Review, this discrepancy was difficult to fathom and import records have been retained as reported and recorded in international statistics.

In view of the inquiries by the researchers, it should not come as a surprise if the records are set right, for example, by correspondingly reducing the volumes and/or values for imports in the subsequent year (2002-03) to make up for the discrepancy.

In order to establish the reliability of data related to forest products in India, another comparison was made between forest products import and export data from 1990-2000 FAOSTAT and from the Monthly Statistics of Foreign Trade published by the Directorate of Commercial Intelligence and Statistics, Ministry of Commerce (MoC). Significant discrepancies were found in the availability and quality of data from the two sources.

Since the DGCIS data are based on authentic official records of the customs department, these were considered more reliable for purposes of the Review. That nevertheless involved confronting the problem that the trade data are recorded and reported in almost an adhoc manner and without precision regarding itemizing timber types and species. This is particularly problematic for a large bulk of traded wood and wood products which are clubbed together under the "other" category. Recourse was taken to various in-country and other secondary sources, including UN COMTRADE, FAO and ITTO, for comparison and an overall insight into the trade and market trends, apart from the primary sources that were drawn upon for the Review. The problem of adhoc reporting is an international issue, which ITTO and others may consider taking up at the next revision of HS classification.

6.1.6 FAO, ITTO and India

The FAO is reputed for its exhaustive and long standing database with data archived for decades and updated periodically as Yearbooks about production, consumption, export and import according to various categories of wood products. The latest available FAO statistics pertains to 2001. The ITTO also regularly updates statistics, specifically and more elaborately about the sector's trade and market development with an exhaustive annual review and assessment and also timber trade related bulletins, which are updated through the course an year and can be accessed on their website. But their data can be only as good as they receive from the member states, though attempts are made to harmonize the same, such as from

Table 6.3: FAO-ITTO Data Discrepancies

Plywood Production and Consumption

Year of Publication and Data Source	1997	1998	1999	2000	2001	2002
Production Figures (FAO)#						
2000	310	310	310	310		
2001	61	51	55	59		
Production Figures (ITTO*)						
2002	310	310	310	310	310	310
Consumption Figures (FAO#)						
2000	323	331	325	314		
2001	74	72	70	63		
Consumption Figures (ITTO*)						
2002		237	272	314	312	312

FAO Year Book 2000, 2001

*ITTO Annual Review and Assessment of the world Timber Situation 2002

government reports, if and when available, and from the UN COMTRADE on import export data. During the Review, a lot of inconsistencies were observed in these data while comparing with other databases, such as between FAO and ICFRE data on timber production. The same is true for the different FAO year-wise publications. One glaring instance is of plywood production and consumption figures recorded in FAO publications of 2000 and 2001 as reproduced in the above Table 6.3.

It is noteworthy that the same international organization shows the plywood production at one fifth of what it had formally published an year earlier and consistently so across a number of years with similar discrepancy in the figures for consumption. Moreover, several data gaps were also observed in FAO database during the course of this study. Besides such data mismatch and non-availability, it was observed that the FAO production and consumption data for some of the timber products remained the same over a long period of years, e.g., the production of sawnwood was retained unchanged at a level of 2,500 thousand Cu. m. from 1991 to 1995. The ITTO data, at the face of it, may not appear so incredible, though it too seems far too constant across years in some cases, such as for plywood production, as shown in the above table.

The unreliability and inconsistency in the data published by the international organisations could be because of various reasons, such as the source, purpose of collection, time lags in data collection and publication and some major changes in the legal or market situations. For example, there has been a reduction in the official logging in the natural forests in response to the requirements of the Apex Court order of December 1997. Since consumption has continued to increase, the additional demand is met from tree outside forests (ToF) and illegal felling to a large extent that are neither reported nor recorded. Obviously, it is difficult for the international organizations based far away in Rome and Yokohama or at Bangkok and New York to guess the impact of these policies on production, unless they receive reliable data from the country concerned, which they hardly do.

It was apparent that the international organisations had attempted to update the data regarding India's timber production, consumption, and trade in a fairly comprehensive manner, but suffered from the inherent drawback of lack of access to data from the country, wherefrom they have not received any response to the Joint Forest Questionnaire over several recent years. As such, these are largely guesstimates and are obvious in some cases from the simple and safe repetition of figures over years, such as in the FAO's Forest Products Statistics Yearbook. These gaps and inconsistencies in economic information about forest production and consumption in India will continue to be a matter of debate till India puts in place an efficient and credible system of collection, collation and publication of statistical data on timber production and consumption and disseminates the same in a transparent and timely manner.

It is the need of the hour to improve the national forest products statistical systems. To achieve this, the state and national level data collection formats should be harmonised and professionally well-trained statistical units equipped with Information Technology Systems should be set up to facilitate accurate and timely data reporting, compilation and concomitant dissemination. Targeted training courses may also be conducted.

6.2 FOREST SECTOR STATISTICAL SYSTEM

6.2.1 Background

India is the only major producer country from Asia besides a few from Africa, which has not responded to the Joint Forest Questionnaire of ITTO/FAO/ECE in the recent years, or else its response is incredibly inconsistent and inordinately delayed. Somewhat similar seems to be the situation about reporting to UN COMTRADE, which has indicated some severe data gaps.

The previous section makes it evident that the available secondary data on timber and timber products in the country is inadequate, inconsistent and marked with serious time lag for a proper analysis required to monitor and assist the industry. Discussions with timber traders, construction industry, applied economists and statisticians, and forest sector staff and experts reveal that a requisite and reliable statistical information and market intelligence system -which is essential for building up consumer confidence, efficient trade mechanism and marketing strategies- does not exist in the country. Similar view has been expressed in a study of the forest products statistics in South and South-East Asia which was undertaken under an EC-FAO Partnership Programme (2000-2002)[3]. It is not surprising that even this internationally sponsored study appends data, the defects of which would not be discernible unless it is pointed out that those are some of the very same un-updated and unreliable statistical tables about which reference was made earlier in the chapter, including the FIPPI data. Not only that, the study has presented data going back to 1995 in some cases, since when so much evolution has taken place in the marketplace. The section on India goes far to state that besides ICFRE, at the national level, well organized data is also generated by other agencies such as FSI, MoEF, CSO and FIPPI. Yet, somewhat contradictorily, but correctly, the study does conclude that there are several difficulties with ensuring the reliability of data, that gaps in information are therefore inevitable, and on occasion there is considerable hesitancy in sharing data for one reason or another. In fact, the Review Team has observed and confronted such hesitancy at several stages, especially at national institutions overseeing the forest statistical system and which should normally be keen to divulge and disseminate data, as is done for other commodities -in the best national interests, unless they are not sure of themselves.

6.2.2 The Forest Products Statistical System

Data on different aspects of forest sector were collected and stored by different agencies in India and were not maintained by any particular entity devoted to the subject matter. This caused difficulties in projecting a complete and consistent picture of the sector and related issues. In order to redress the situation, the Indian Council of the Forestry Research and Education (ICFRE) organised a directorate of statistics in 1995 with the role and responsibility of the directorate -renamed as the Division of Statistics, to collect, collate, process and publish statistics covering all aspects of the forest sector at the national level.

[3] "An Overview of Forest Products Statistics in South and South-East Asia", EC-FAO partnership programme, 2002.

At present, the Division of Statistics gathers data on production and trade of forest products from State Forest Departments, IAPMA, FIPPI and the Ministry of Commerce. In addition to production and trade data, information in also received from the Planning Commission and MOEF, the Forest Survey of India and the Central Statistical Organisation.

6.2.3.1 Data Collected through State Forest Departments

Forest products information obtained from field offices is transmitted annually to the State Forest Department headquarters, where the state specific statistics are collated and consolidated. The State Forest Departments are expected to transmit the data in standard format to ICFRE for being compiled by the Division of Statistics.

6.2.3.2 System for Determination of Timber Production

Production figures from State Forests Departments are collected through the following chain of custody:

i) timber removals are based on marking book records with species and girth;

ii) all removals are recorded in a felling register which bears the total volume and number of pieces from each stump;

iii) transport of removals is recorded in a transit pass register;

iv) removals are taken to Government depots, where a copy of the transit pass is deposited and receipt indicated on a duplicated copy;

v) in Government Depots, all incoming material is measured and recorded;

vi) annual arrivals at, and disposals from the depot is reported to Division/state level authorities in an annual basis. Discussion with industry people and knowledgeable personnel confirms that apparently no validation mechanism exists for the chain of custody from local to the national level. Another important point worth mentioning is that the illegal felling and production from TOF, which constitutes a sizeable proportion of the total timber production, goes unrecorded. Therefore, the official production data seems to be an underestimate.

6.2.3.3. Data dissemination

The statistical information collected and compiled by the Division of Statistics is stored in a database with a report published bi-annually in hard copy and on the Internet (http://www.icfre.org). The report is sent to all the State Forest Departments, State Forest Corporations, concerned Government of India Ministries and other users who request such information from ICFRE.

6.2.4 Reliability and timeliness of production and trade data

The reliability and timeliness of pertinent data can be gauged by citing any of the Forestry Statistics issues of ICFRE. For example, the consolidated Table 12.11 on Forest Products of India cites the Source: Forest Products Yearbook, and that too of 1993. This is for the ICFRE issue released in 1999, and it has already been highlighted how inconsistent the production and consumption data in the Yearbook can be. Belated issuance of information applies to

other sources too, such as FSI's State of the Forest Report 2001, which has just been released in 2003. One of the major problems, particularly about production and trade data, is that those involved in collecting it at the grassroots levels in the Ranges and below have no idea of the purpose and relevance of these data nor are they familiar about the market place, for they are almost exclusively trained about the trees, forest and wildlife. To add to their woes, there is lack of transparency in trade. The non-availability of economic information is commonplace, or else it is distorted, as for example recorded in the Kandla case study undertaken for this Review, which could not unravel the secrecy maintained by timber traders.

There are therefore several difficulties in ensuring the reliability of the data from different sources that are collated by the Division of Statistics. These are related not only to the direct providers of information, but also to the chain of information conduits through which the Division receives the data. The various weaknesses and constraints observed in the current statistical system are summarily tabulated below.

Activity	Weaknesses	Constraints
Data collection	• Information may be inaccurate and unreliable • Information is reported irregularly or not at all. • The production data formats used at the state and national level are not uniform. • About 50 per cent of imports are clubbed into "other" category.	• General lack of staff and also a lack of staff trained in relevant fields. • Lack of funds. • Responsibility for state level reporting is not entrusted to the Directorate of Statistics. • No single agency is responsible for providing state level information. • Limited species-specific reporting of trade.
Data Compilation and analysis	• Data may go unchecked or unanalysed. • As the data is compiled by various agencies at different stages, it is difficult to maintain the authenticity of the quality. • Data capture and the direction of analysis does not cover most of the market requirements to sustain timber trade and industry.	• Insufficient staff and electronic equipment. • Inappropriate database management system. • Lack of a free flowing statistical system, and of appropriately trained software and data managers. • No authentic validation mechanism of the chain of custody. • Lack of an agency to generate market intelligence and economic information.
Dissemination	• No priority is given to timely collection and supply of information by the states. • Difficulties are found in publishing final reports on time. • Heavy delays in data dissemination.	• Lack of funds. • Low level of co-ordination among agencies.. • Limited or lacking internet administration. • Perception and/or practice of indifference to information sharing. • Lack of accessible databases.

Sources: An Overview of Forest Products Statistics in South and South-East Asia, EC-FAO Partnership Programme, 2002, primary survey research, and discussions with experts, institutions and enterprises.

6.2.5 Right to Information

The multi-dimensional aspects of forestry are being well recognized globally and locally. The loophole is the lack of basic information to convert talk into action. The problem of data gap could be part of the culture among the forestry professionals worldwide and in Asia, who still view the data that they collect as proprietary nor recognize the legitimacy of information that other stakeholders provide (FAO-EC, 2003). In this context, it is a welcome step that a National Forest Commission -headed by an highly esteemed former head of India's judiciary- has recently been instituted in India with a time–bound mandate to look into various aspects, including administrative efficiency, of the forestry sector (Annex 6.2). The Review, as such, harbours the hope that India may soon demonstrate leadership in providing transparency to the forest sector, not the least by respecting the right to information for all.

In this era of globalization and information overload, with a World Summit on Information Society held in 2003, the raging concern is about access to information by the needy. This could not be more true for the forest sector in India. Yet, the perception prevailing about forest sector statistics and market intelligence among most of the stakeholders consulted and contacted was as if there are deliberate restrictions and controls on the requisite information and communication channels between "proprietors" and "the public". The challenge is greater still because the so-called proprietory segment suffers no less for want of access to reliable information and most of those in this segment too are concerned**. This was depicted by the Down-to Earth report by a national NGO in early 2003 even before the State of Forest Report 2001 was released and the debate that it generated on the transparency and accuracy of the forest statistics. No wonder that Blanton (2002) states that often the momentum towards openness has arisen from scandals, such as corruption and graft endemic to local governments in India. Legal actions for environmental information have had some successes with several States having enacted Right to Information Law, and even though far from perfect, it is an achievement for the enlightened poor (Roy and Dey, 2002).

The issue at hand is not only of a particular group, enlightened or otherwise, but it is for all the stakeholders from forest planners and producers to timber traders and consumers. It is a matter of good governance at all levels and a share of it among all -through free flowing and objective information to make the sum of their activities transparently efficient in everyone's interests. In most cases, however, the information is not being provided in the manner or time frame that it should be. In some cases it is not being provided at all. But why?

Perhaps a simplistic answer, but largely true, is that there have been limited resources and lack of attention at all levels in devising and implementing a fully functional and effective statistical system for the sector, rather than many malafides attributed to the overstressed

(**) Suffice it to quote just four among high ranking and highly committed officials directly concerned with and about forest sector statistics: " the whole system thrives on garbage in and garbage out basis, retaining the cream for themselves or just sour cream" "there are data gaps, inconsistency in data, reliability of data.." "the data are masterminded because that is the way it is" "there is no reliable statistics and all the figures are…"

authorities and experts concerned. There has been perhaps no provocation towards addressing the genuine concern for right to information about the sector that they have been entrusted to manage for and on behalf of the people. Since there is no accountability about the profit and loss in economic terms from the forest estate, there has been little motivation for transparency in its management, much less the market that it is supposed to serve. Perhaps, again, that suits the small-scale entrepreneurs and market players, for they are not in a position to be brought to book, if and when needed, and hence they too have not raised their voice for better market intelligence and economic information about timber trade and industry.

This may not have been so if there were an organized timber market in the country. It remains disperse and without even one national timber trade association that could have catered to the requirements of the industry as a whole and partnered with the public authorities for sharing the statistics, both national and international, about outsourcing timber at competitive prices and on the basis of comparative advantage for various products, processed and otherwise. As of today there is no mutual trust or mistrust between the public and the private sector, only divergent activities in a compartmentalized manner, the price for which must be paid by someone, perhaps the consumer. Yet, the consumer is the queen and should count largest – not only in number but also for meeting their demand for timber and other goods and services, that the forest sector could provide rather than the environmentally inappropriate substitute industries which are on the rise, being better informed and organized. Catering to the Right to Information of the consumer, both urban and rural, would help promote the market that would valorize the forest wealth and thereby ensure its sustainability at home and abroad.

6.2.6. Market Intelligence

Whatever the weaknesses and constraints in the current statistical system, they are not difficult to overcome and could be addressed if a coordinated plan of action were implemented. Some even conjure that the data are not released deliberately and that there is a lack of transparency in the entire forests sector statistical system. Motivation for that is difficult to visualize in this era of globalization, but the perception is there, be that an outcome of mere lethargy or lack of resources to fulfill the mandate given to ICFRE and its collaborators, especially the State Forest Departments.

Needless to mention, at the risk of repetition, that any strategic planning, be it on the part of the Government or public or private enterprises, requires an updated database that reflects the contemporary market behaviour. This is even more important for a country of the size of India, more so in the context of its ongoing second generation economic reforms aimed at fostering privatisation and market oriented development policies. A database that does not reflect the current market realities hardly serves the purpose of the reforms process in the case of timber and related trade, market and industry. This -may be inadvertently- lends credibility to prevailing perceptions and is counterproductive for the forest sector, apart from the risk of missing the high tide in the market.

It is in this context that the traditional objective of forest management relating to timber production has paved the way to more diversified and expanded forest policies and

management over the past decades. In tune with the traditional aims of forest management, the main focus of forestry statistics in India has however remained very limited. Now, the demand for information from different users and interest groups is growing rapidly. In order to meet the demand for economic information, the statistical system of the forestry sector needs to (a) identify the requirement of data by different interest groups and users, (b) collect the relevant data in a comprehensive and timely manner with in-built validation and checks, (c) professionally process and analyse the data, and (d) have a proper dissemination channel so that the processed and analysed data are available to the various interest groups and users either on a subscription basis or as complementary copies.

The statistical system of the forestry sector in India has a lot of inefficiencies in each of the stages mentioned above, mainly because the purpose of statistics is not elaborated. The data requirement of various stakeholders, especially the timber traders and consumers, is not given due importance and the data that are being generated about the forest sector is essentially from state forest services for their own limited purposes. This data is being compiled from working plans, largely concerning forests and does not involve monitoring the cost quantity and quality of production, nor about consumption and trade. For example, in the survey of consumption centres, the respondents of questionnaires and those contacted (constructors and traders in particular) regretted lack of information as a major constraint in organising and expanding their activities and they have, therefore, no option but to get into costly and environmentally unfriendly substitutes. Economic information with respect to diverse supply sources and price play a pivotal role in any market analysis. The consumption data, which is available, is not actual but a derived one. Product-specific and species-specific price data are not recorded. CSO maintains the price data of the wood products in the form of Wholesale Price Index (WPI). But, WPI includes only two types of wood products, namely, plywood planks and timber planks, apart from the collective category of wood and wood products.

A serious consideration has to be given to set up an economic information and market intelligence system which would give due attention to the timber market's data requirement – the starting phase of any research and analysis and an important basis for designing a holistic sector statistical system. A mechanism has to be devised to ensure flow of information from and to national and local traders in terms of product-specific and species-specific consumption and price with periodic demand projections for different regions.

The collection of consumption, price and trade data is not possible from each and every individual trader/manufacturer/retailer. It would be pertinent to promote the formation of associations for different timber products both at the local and national levels. The associations should be formed to create and maintain database on consumption, price, tariff and other relevant areas of the wood industry and to share with the nodal Government agency. This will facilitate understanding of the market for the Government as well as for the industry people and the policies can be formulated accordingly.

The State Forest Departments collect information/data from forest ranges and send them to the Division of Statistics. However, the lack of statistical units in some State Forest Departments and differences between data collection formats used by different agencies have failed to ensure data accuracy and timely submission. To improve the national forest

products statistical systems, state and national level data collection formats should be harmonised and professionally well-trained statistical units equipped with Information Technology Systems should be set up in State Forest Departments to facilitate accurate and timely data reporting and compilation.

The processing and analysis of the data should involve, other than the nodal Government agency, national institutes specialised in the field of economics and statistics. A public-private partnership may be encouraged in this respect. The dissemination of information should be undertaken at the local as well as national levels, so that all the stakeholders may access the information wherever and whenever required.

The databases may include forest information chain, from felling, production, consumption and price of various timber products to transport, export, imports, forest related taxes and forest companies. Geographical Information System (GIS) should be utilized more widely and intensively in order to provide a mechanism for analysis as well as monitoring. Apart from the nodal Government agency/agencies, national institutes specialised in the field of economics and statistics should be involved at various stages. A public-private partnership may also be encouraged in this respect.

6.2.6.1 Trade and Marketing

Markets for forest products have been found to be variable through the different regions of the country and at the same time they are vulnerable to variation, volatility and uncertainty. Among the most needed measures to mitigate these risks and weaknesses is to raise awareness about the nature of the national and local market and the scope for adjustments, for which regularly updated information is required. That should include data about the national and regional economy and the competitiveness of domestic and internationally traded timber of various types and categories. None of such economic information is available to traders, constructors and consumers, who are awakened only after they may face raw material shortages, as is needlessly the case of cart manufacturers and other small-scale wood-based industries in Karnataka (Rathakrishnan, 2003). If the traders had been aware of the demand on the hand and the scope for importing timber on the other hand, such market uncertainties can be minimized and timber utilization could be sustained rather than be substituted.

While there is a reasonably well established overall trend for an increasing tropical timber consumption in the country, the nature and magnitude vary fairly considerably, calling for regional specialization of trading hubs and national coordination through widely disseminated and regularly updated economic information about trade and markets in different parts of the country and its major consumption centres. This should take into account the moves to further liberalize trade and to communicate with opinion makers through national and regional timber traders associations and national institutions in order to reduce tariff and non-tariff barriers for easing supply constraints for preferred tropical timber species through market diversification. The net impact could also be a comparative advantage through EEZs, cheap skilled labour and scale economies for the export and re-export of SPWP by outsourcing high quality tropical hardwoods, for example.

A strategic approach based on sound economic information is required to link trade and markets. For instance, the Review found a widespread lack of information on national markets, comparative international timber prices and the economics of timber utilization for various end use categories. The role of the forest sector statistical system is not merely to churn figures, many of which hardly serve any such purpose. It is to raise awareness about the importance of marketing, improve current marketing and manufacturing practices, and to ease pressure on traders and retailers emanating from convoluted reporting and bureaucratic procedures of little import but counterproductive for promoting international trade to strengthen the domestic market and consumer confidence. Needless to summarize that efficient marketing depends on the availability of and access to adequate information, which is woefully wanting in the Indian timber market and among its local trading partners.

6.3 CONCLUDING REMARKS

Market intelligence plays a crucial role in assessing the demand and supply situation of timber and timber products. But such a system is presently lacking in India. Introduction of market intelligence will benefit the traders and the consumers as well as help the policy makers to monitor the situation and take effective decisions, as required. But the present statistical system of the forestry sector leaves much to be desired as far as coverage, timeliness and dissemination of data are concerned. One reason for this is that Indian statistical system is a decentralized one and the State Forest Departments, which provide the data at the state level, do not have satisfactory strength of professional experts to address the workload adequately for collection, processing and dissemination of forest sector data. Lack of priority as testified by insufficient budgetary allocations is a constraint that most of the states and federal forest statistical units face in delivering the data.

The state and national level data collection formats need to be harmonized and statistical units equipped with appropriate information and communication technology to facilitate accurate and timely data compilation and concomitant dissemination. That implies the professionalisation of the process of planning, creating and maintaining a proper database for forest statistics. The urgency for the forest sector to catch up in line with the country's developments warrants the institution of a multidisciplinary group of experts to examine the present system of data collection, suggest steps for the introduction of best international practices -with modifications, as may be required, to suit Indian conditions, and to provide guidance for a fully functional forest sector statistical, economic information and market intelligence system. International technical cooperation would be useful at the initial stages.

Keeping the forgoing in view, the following points are presented for the consideration of national authorities and their collaborators:

- It is recommended to develop an efficient national economic information and market intelligence system for the forest sector.
- It may consist of a nodal central unit in charge of promoting, coordinating and operating the system, and disseminating the information to users at different levels. This unit should collaborate with other national organisations of repute in the fields of economics and statistics, apart from forestry.

- It is suggested to establish such databases at regional and State levels also.
- The databases may include forest information chain, from felling, production, consumption and price to transport, export, imports, forest related taxes, forest companies, with a wider and more intensive use of the Geographic Information System .
- The central, regional and state units may disseminate the information to various users through publications such as Yearbooks, Technical Newsletters targeting the forest sector, and Information Newsletters targeting the general public.
- A web site may be established with links to all related sites where users can have on-line access to diverse information on forest statistics at the national, regional and state levels.

6.3.1 Project Proposal

An immediate action-oriented internationally assisted project merits to be executed to meet the priority need for improving the national forest sector statistical system and market information as suggested below in order to serve the policy planners, managers, consumers and other stakeholders for promoting forest industry in a holistically sustainable manner.

Goal

Enhanced contribution to sustainable social and economic development from forests, and forest industry, timber trade and marketing.

Immediate objective

Improved economic information, market intelligence and streamlined statistical system to enable better planning, monitoring, coordination and promotion of efficient timber trade and related activities of the forest and commercial sectors.

Justification

Lack of a system of transparent, timely and reliable statistics, economic information and market intelligence; disorganised and disperse timber industry sector with limited means of partnerships and networking among and between them and the national and State authorities and various stakeholders including retailers, manufacturers, constructors, importers, and exporters; difficult access for importers and exporters and potential partners; inability to provide proper responses to national and international agencies, including the Joint Forest Questionnaire.

Outputs

Improved market intelligence, economic information and appropriately strengthened statistical system; promote stakeholder participation and help build private-public partnerships; transparent data dissemination and readily accessible periodic timber bulletins; compile update information on timber industries, retailers and traders; assistance in monitoring, implementation and review of national policies and strategies for forestry, timber trade, market diversification and investment promotion.

Chapter VII

CONCLUSION

Drawing upon primary and secondary data, this Review reveals an increasing consumption trend of timber and timber products. This trend should continue in the forseeable future, buttressed by fast-paced urbanisation, increasing number of households in middle and upper income groups, and lucrative housing schemes available in the market. All together, the scenario offers good medium to long term prospects for imported tropical timber in order to bridge the growing gap between demand and domestic supply for the preferred tropical hardwoods. Yet, these trends and prospects may suffer some transitory set-backs, largely on account of the lack of an organized market infrastructure, especially market intelligence. In order to minimize and mitigate such aberrations and risks, the prevailing weak forest sector statistical system and almost non-existent economic information regarding the comparative advantages of timber and timber products merits to be addressed for the sake of sustainability of the industry.

The Review explored the trends and prospects of production, consumption, import and export of industrial roundwood, sawnwood, veneer and plywood. Such an analysis in the case of builders' joinery was difficult for want of the secondary data. There has been a decreasing trend, both in terms of production and consumption for some of such timber products, notwithstanding the heightening housing requirements as ascertained by an intensive primary survey undertaken in major urban areas.

The Review studied the relationships between consumption and income as well as consumption and price. It observed that both these relationships, *prima-facie*, deviate from the normal inter-dependencies as exist for other commodities or for timber in most other situations. A careful probe into this non-logical trend suggests that inadequate data availability, discrepancies within and across various databases, and non-recording or non-reporting of actual production and consumption have led to this misleading scenario.

Such a theoretical scenario is well over-ridden by the emerging consumption trend based on primary survey in 12 national urban conglomerations and a Rapid Rural Appraisal (RRA). The levels of consumption in the recent past and at present were identified at substantially higher levels than those could be gauged from various available secondary databases. A forecast has also been made for each of the timber products based on the primary survey.
Suffice it to note here that urban timber consumption alone of industrial roundwood is projected to grow by almost 8.5 million cubic metres over the next ten year period. With well over 80 per cent of that being estimated to be tropical hardwoods and 43 per cent of which are imported even at the current lower level of deficit compared with the future, it is not difficult to foresee a burgeoning growth for tropical timber imports, unless the trends are deflected due to unforeseen factors and the lack of an organized timber market and market intelligence.

The timber trade data are relatively better managed and ostensibly more reliable -despite their own limitations, than the production and consumption data. The Review has recorded that the imports of logs, sawnwood and plywood have all increased considerably over the last decade. The proportion of industrial roundwood import was much higher than all other timber products, having grown from around 850 thousand cubic metres of logs to well over 2.5 million cubic metres in 2001-02. This is primarily due to prevailing higher tariffs for processed and semi-processed products. Even so, sawnwood and plywood imports have also increased manifold, though their volumes of 74 thousand and 45 thousand cubic metres, respectively, pale into insignificance compared with industrial roundwood. Export from the country is still at a low level, though there could be scope for value-added re-exports, with plywood recording significant increase over time.

Among the various types of timber, India is a major producer as well as consumer of tropical timber. The domestic supply of tropical timber is not sufficient to meet the demand and as a result India has become the third largest importer of tropical logs, mainly from Malaysia, Myanmar and Indonesia, though exporters from other regions have been making inroads. There are several reasons for the existing and envisaged deficit between the domestic supply and demand, e.g., production potential limitations of the natural forests, physical restriction regarding forest and tree cover, massive Indian population, and policies of the Government with regard to lifting of land ceiling act for plantation purposes and ban on green felling. As summarily depicted below, the import trend therefore has been upbeat, industrial tropical timber roundwood imports having almost tripled during last 5 years reaching well over 2 million Cu.m., while most of the increased domestic production is outsourced from ToF and from unknown sources or unregistered felling from the forest.

Industrial Roundwood Trends (million Cu.m)

Years	Imports	Consumption	Production
1991-92	0.853	41	40
1996-97	0.869	42	41
1997-98	1.362	44	42
2001-02	2.605	49	46

Based on the above trend, the prospects are for further medium term growth in imports as well as domestic production to meet the growing consumption requirements in the country for industrial roundwood. Accordingly, the immediately upcoming deficit between domestic production and consumption trend could be envisioned of the order of 3.64 million Cu.m for industrial roundwood plus 90 thousand Cu.m of sawnwood and 40 thousand Cu.m of plywood. These prospects are reflected in the rounded figures regarding industrial wood recorded in the following table, noting that most of the additional domestic production under the current conditions and emerging trends are likely to be derived from ToF, Joint Forest Management and similarly managed natural forest areas, and from private sector plantations and related investment. Otherwise, the gap could be greater still and

substitution shall speed up, unless measures are taken for enhanced private sector participation in the forest sector and improved timber trade and market efficiency.

Industrial Roundwood Prospects (million Cu.m)

Years	2003-04	2005-06	2012-13
Consumption	53	57	71
Production	50	52	60
Gap (Total)	3	5	11
Gap (THW)	2.8	4.4	10.0

While the survey of consumption centres shows that the share of tropical hardwood consumption is around 80 per cent, the FAO data depict that tropical hardwood constitutes more than 98 per cent of the total Indian import of industrial roundwood. A similar trend is observed in the case of consumption of sawnwood and builder's joinery. However, the panel products processing industry generally prefers locally grown species rather than imported timber.

As far as competitiveness of tropical timber versus others is concerned, majority of the survey respondents expressed higher preference for tropical hardwood products *vis-à-vis* temperate hardwoods. The demand for tropical timber has accentuated through consumer confidence and strong housing demand supported by low interest rates and unprecedented availability of loans and mortgage facilities. Among other factors favouring the competitiveness of tropical timber is its relatively lower total cost due to inherent properties of ease in machining, maintenance, durability and damage resistance.

The survey has highlighted that among the middle income group, price and availability are among important factors that influence the choice of tropical timber products. Tropical and temperate softwoods were identified to be the preferred types mainly for panel products. Temperate hardwoods were hardly seen as a serious competitor, though some preference has been noticed for their use in furniture and flooring in certain parts of the country in view of changing tastes.

Within the tropical timber species, the survey has revealed that tropical timbers imported by private traders are likely to be of better quality and price competitive compared with domestically produced tropical timber due to the higher transaction costs of the public sector undertakings (PSUs), which deal with domestic timber through their depots. That however does not obviate the need to reduce some un-necessary financial transaction costs, bureaucratic processing and other obstacles to international tropical timber trade, including improved shipping, storage, transportation and port handling.

Alternates and substitutes of timber are posing a threat to the timber market in India. Reconstituted materials are used in building construction (e.g., moisture resistant medium

density fibreboards), furniture making, packaging and home built applications. Composite materials -incorporating plastics, insulation and decorative surfaces- are also becoming common. In the exterior joinery sector, metals were seen as the main competing material, whereas plastics were noted as serious competitors in interior joinery and furniture production. Among other substitutes are aluminium for windows and door frames; marble, cement and tiles for floors; steel, plastic and glass for furniture; concrete for railway sleepers -which has almost taken over tropical timber; and of course, bricks and mud, especially for semi-solid construction in the country-side.

Not long ago, the use of wood was discouraged in construction, and materials like steel, aluminium and other products were encouraged. However, in the post UNCED scenario, the UNFCCC, and the Kyoto Protocol signed by the Government in 2002, there is an awakening among policy planners for reducing green house gas emissions and encouraging afforestation and reforestation for environmental services. Though there is no strict policy shift so far in this regard, the government is likely to encourage renewable sources of energy and other products in order to comply with its commitment to the implementation of the Protocol. Hence, given the availability of imported tropical timber and the domestic supply constraints, timber traders could consider India as a potentially important destination for the imported timber. But this is yet to be vouschafed as a medium to long term process, given the vagaries of the market, the lack of market promotion, and consequent short term cycles and swings, calling for institutionalizing the staying power of the tropical timber market and removing hurdles arising from scanty and unreliable market information.

One of the most important conclusions emerging from the Review is that the secondary data sources are marked with discrepancies, serious time lag and lack of robustness. The actual consumption, trade and price data, which are the pre-requisites for any economic and market analysis, are not available – either coherently or from any single source. Even in the case of production data, validation mechanisms do not exist. Therefore, the reliability of the entire secondary database can not be assured, to say the least. The trade data, which is relatively more authentic in terms of collection and dissemination, also suffers from the lack of updation and appropriate categorisation, in order to be meaningful enough for planners and traders.

A score-based SWOT analysis was undertaken of the Indian timber market, the summary results of which are reproduced below as a conclusion of this Review:

Strengths

- Traditional and continuing consumer preference for tropical hardwoods
- Inherent timber and timber product competitiveness -especially of durable and easily machine-able tropical hardwoods *versus* high energy consuming alternates in a country with chronic power shortage and lack of fossil fuel reserves
- Recently rising trends of tropical timber imports to bridge the growing gap between demand and supply

Weaknesses

- Lack of timber market intelligence and economic information, untimely and unreliable sector statistical system, data disparities and apparent lack of transparency
- Unorganized timber market, industry and trade
- Disperse distribution channels and instances of high intermediary costs
- Trade barriers –perceived and otherwise, especially non-tariff barriers constraining smooth and economically efficient international trade
- Lack of market diversification and limited secondary wood processing for exports

Opportunities

- Unprecedented -ongoing and projected- growth of the economy, urbanization, housing, construction, and middle and upper-middle income groups
- Market and trade liberalisation, increasing foreign exchange reserves, innovative investment and incentives for value-added exports and re-exports, including secondary processed wood products -with timber having been placed under OGL
- Recently available mortgages, loans and facilities for housing starts, including those for lower and middle income nuclear families
- Rising awareness and possible policy shifts in favour of green economics and even more stringent conservation of natural forests and controlled harvesting of ToF
- Increased timber and related renewable resource utilisation rather than energy intensive and polluting products, which timber can substitute on a sustainable basis, especially if supplies are derived from tropical countries assuring reasonable eco-labelling, competitive pricing and sustainable supplies
- Increasing access to tropical timber producers within and outside the ASEAN region, with scope for widened outsourcing, joint ventures and bargaining for prices, specific timber types and categories

Threats

- Leveraging of the housing, construction, furniture and other traditional tropical timber market by better organized alternate industry producers of substitutes and concomitant consumer taste shifts through targeted market promotion
- Lack of timber trading agreements with exporters to ensure sustained supplies to meet domestic deficit, high tariffs on sawnwood and other timber products that exporters may increasingly prefer to produce, and non-tariff barriers and high transaction costs, thereby diverting organized exporters to other rising markets
- Risk of downward spiralling of tropical timber imports and consumption as a result of an apparent or real reduction in imports in a particular period -either due to data inconsistencies or fluctuations in international timber trading and other transient factors, especially if left unmitigated and unexplained among traders, dealers, retailers and constructors
- Continued constraints for promoting tropical timber trade and use, viz., lack of consistent economic information, market intelligence, timely and transparent statistics

The conclusion drawn from the Review is that there is space and scope for converting the current weaknesses and potential challenges into outstanding opportunities that India offers for tropical timber trade and marketing. This essentially requires measures and means to organize the timber industry, to build multi-stakeholder partnerships and alliances, to raise awareness about the comparative advantage and environmental appropriateness of wood and wood products, and to enhance and draw upon their inherent competitiveness in the market. None of that can be attained unless there is readily accessible and reliable economic information, market intelligence and a fully functioning forest sector statistical system. This calls for priority attention to pre-empt the threats and prevent missing a golden opportunity for the sector's sustainable growth, transient volatility of trade notwithstanding.

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LIST OF TABLES AND FIGURES

TABLES

FIGURES

GLOSSARY

Afforestation: The establishment of a tree crop on an area from which it has always or very long been absent and had not been classified as forest land.

Coniferous species (softwoods): All woods derived from trees classified botanically as Gymnospermae. These timber species are generally referred to as softwoods and include *Abies spp., Araucaria spp., Cedrus spp., Chamaecyparis spp., Cupressus spp., Larix spp., Picea spp and Pinus spp.*

Deforestation: Conversion of forest to another land-use or change of forest cconstitution with depletion of tree crown cover to less than 10 per cent threshold.

Exploitable forest: Forest and other wooded land on which there are no legal, economic or technical restrictions on wood production. It includes areas where, although there are no such restrictions, harvesting is not currently taking place, for example, areas included in long-term utilization plans or intentions.

Exports (Quantity, Value): Products of domestic origin or manufacture shipped out of the country. It includes re-exports. It excludes "in-transit" shipments. It is reported in cubic metres of solid volume or metric tonnes and values are normally recorded as free-on-board (i.e. FOB).

Fibreboard: A panel manufactured from fibres of wood or other ligno-cellulosic materials with the primary bond deriving from the felting of the fibres and their inherent adhesive properties (although bonding materials and/or additives may be added in the manufacturing process). It includes fibreboard panels that are flatpressed and moulded fibreboard products.

Forest: Ecosystem with a minimum of 10 percent crown cover of trees and/or bamboos, generally associated with wild flora and fauna and natural soil conditions, and not subject to agricultural practices. Could be natural or planted.

Fuelwood and charcoal: Includes "wood in the rough" (from trunks and branches of trees) to be used as fuel, such as for cooking, heating or power production. Wood for charcoal is included.

Hardboard: Fibreboard of a density exceeding 0.8 g/cm3. It excludes similar products made from pieces of wood, wood flour or other ligno-cellulosic material where additional binders are required to make the panel; and panels made of gypsum or other mineral material. It is reported in cubic metres solid volume.

Imports (Quantity, Value): Products imported for domestic consumption or processing shipped into a country. It includes imports for re-export. It excludes "in-transit" shipments. It is reported in cubic metres of solid volume or metric tonnes and values normally include cost, insurance and freight (i.e. CIF).

Industrial roundwood: The commodities included are sawlogs or veneer logs, pulpwood and other industrial roundwood. In the case of trade, chips and particles and wood residues are also included.

Insulating Board: Fibreboard of a density not exceeding 0.5 g/cm3 . It is reported in cubic metres solid volume.

Lakh: Commonly used Indian word for a hundred thousand, including usage for weight, volume, area, population, and especially the national currency -denominated in Indian Rupees.

Medium Density Fibreboard (MDF): Fibreboard of a density exceeding 0.5 g/cm3 but not exceeding 0.8 g/cm3 It is reported in cubic metres solid volume.

Natural forests: Those forests which are composed of tree species known to be indigenous to the area.

Non-coniferous species (hardwoods): All woods derived from trees classified botanically as Angiospermae. These are generally referred to as hardwoods and include broadleaved species, e.g., *Acer spp., Dipterocarpus spp., Entandroprhagma spp., Eucalyptus spp., Fagus spp., Populus spp., Quercus spp., Shorea spp., Swietonia spp. and Tectona spp.*

Other wooded land: Land that has some forestry characteristics but is not forest as defined above. It includes open woodland and scrub, shrub and brushland (see below), whether or not used for pasture or range. It excludes land occupied by "trees outside the forest".

Packaging Materials: Paper or paperboard mainly used for wrapping and packaging purposes. Excluded: Unbleached kraft paper and paperboard that are no Sack kraft paper or Kraftliner and weighing more than 150 g/m² but less than 225 g/m²; felt paper and paperboard; Tracing papers; not further processed uncoated paper weighing 225 g/m² or more. It is reported in metric tonnes.

Paper And Paperboard: The paper and paperboard category is an aggregate category. In the production and trade statistics, it represents the sum of: graphic papers; sanitary and household papers; packaging materials and other paper and paperboard. Products in this category are generally manufactured in strips or rolls of a width exceeding 15 cm (36 cm for HS 48.13 and 48.19) or in rectangular sheets with one side exceeding 36 cm and the other exceeding 15 cm in the unfolded state. It excludes manufactured paper products such as boxes, cartons, books and magazines, etc. It is reported in metric tonnes.

Particle Board: (Including Oriented Strandboard (OSB)): A panel manufactured from small pieces of wood or other ligno-cellulosic materials (e.g. chips, flakes, splinters, strands, shreds, shives, etc.) bonded together by the use of an organic binder together with one or more of the following agents: heat, pressure, humidity, a catalyst, etc. The particle board category is an aggregate category. It includes particle board; oriented strandboard (OSB) and flaxboard. It excludes wood wool and other particle boards bonded together with inorganic binders.

Plantation forests: Established artificially by afforestation on lands which previously did not carry forest within living memory, or by reforestation which may involve replacement of the indigenous species by different species or genetic variety.

Plywood (Coniferous/Non-Coniferous of which tropical): A panel consisting of an assembly of veneer sheets bonded together with the direction of the grain in alternate plies generally at right angles. The veneer sheets are usually placed symmetrically on both sides of a central ply or core that may itself be made from a veneer sheet or another material.

Production: The solid volume or weight of all the production of various wood products. These include products that may immediately be consumed in the production of another product (e.g., wood pulp, which may immediately be converted into paper as part of a continuous process). It excludes the production of veneer sheets that are used for plywood production within the same country. It is reported in cubic metres of solid volume in the case of roundwood, sawnwood and wood based panels and metric tonnes in the case of charcoal, pulp and paper products.

Pulp for paper: Includes both wood pulp (mechanical, semi-chemical and chemical) and other fibre pulp (straw, bamboo and bagasse, etc.).

Reforestation: Establishment of a tree crop on -often degraded or denuded- forest land.

Roundwood: Wood in its natural state as removed from forests and from trees outside the forest; wood in the rough. Commodities include all forms of industrial roundwood and fuelwood.

Sawnwood: Wood (including sleepers) sawn lengthwise or produced by a profile-chipping process, and planed wood.

Snowball (Sampling) Technique: Also known as snowballing, it is a sampling technique which is used when the overall population is difficult to reach or the target groups are not readily recorded or identified. Research asks a subject if they could put them in touch with others in a similar situation. Snowball sampling is, in effect, a data collection method in which the researcher finds one respondent that may be interested in participating in the research and then that participant recommends another respondent. This process continues until the researcher has the requisite sample size that is needed to conduct the study satisfactorily from a probabilistic viewpoint. It is usually enough under such circumstances to implement what is called a "snowball sample". That is, for example, the assessors interview knowledgeable members of the advisory board and review readily available documents to get a first-cut list of consumers or service providers. Then they interview the directors of these agencies, collecting necessary information and also asking them to name other agencies that provide similar services. Thus the sample increases in size, like a snowball rolling down a hill. The main advantage is that it is likely to produce a relatively high response rate and hence the time frame and cost of sampling is likely to be relatively low. The main disadvantage is that it may produce a non-representative sample, but this can be catered to by double checking with other actors in the supply chain or through the consumption channels, as has been ensured in the urban timber consumption survey, i.e.,

contacting both the providers, intermediaries and eventual consumers including households of different income categories.

Stakeholder: An individual, social group or institution that possesses a direct, significant and specific interest in a resource or a service.

Trees outside Forests: The concept is defined by FAO by default in terms of the forest, as follows: trees growing outside the forest and not belonging to the category of forests, forest lands, or other wooded land. According to this definition, Trees outside forests are located on "other land", such as agricultural land, built-up areas such as settlements and infrastructure, and bare land (dunes, former mining areas, etc.), rivers, road/canal sides etc. and also block plantations over non-forest lands

Tropical timber: It is defined in the International Tropical Timber Agreement (1994) as follows "Non-coniferous tropical wood for industrial uses, which grows or is produced in the countries situated between the Tropic of Cancer and the Tropic of Capricorn.

Veneer Sheets (Coniferous/Non-Coniferous of which tropical): Thin sheets of wood of uniform thickness, rotary cut (i.e. peeled), sliced or sawn. It includes wood used for the manufacture of laminated construction material, furniture, veneer containers, etc. It excludes wood used for plywood production within the same country. It is reported in cubic metres solid volume.

Wood-based panels: An aggregate term including the following commodities: veneer sheets, plywood, particle board and fibreboard. Particleboard includes varieties such as oriented strand board and flakeboard. Fibreboard includes hardboard, medium-density fibreboard and insulation fibreboard.

Woodfuel: An aggregate term including fuelwood, charcoal and black liquor.

ABBREVIATIONS

ADB: Asian Development Bank

APFSOS: Asia Pacific Forestry Sector Outlook Study

ASEAN: Association of Southeast-Asian Nations

ASI: Annual Survey of Industries

ASSOCHAM: Associated Chambers of Commerce

BIS: Bureau of Indian Standards

CAGR: Compounded Annual Growth Rate

CIF: Cost, Insurance and Freight

CII: Confederation of Indian Industries

CSO: Central Statistical Organisation

CSOs: Civil Society Organisations

DES: Directorate of Economics and Statistics

DGCIS: Directorate General of Commercial Intelligence and Statistics

DGFT: Director General of Foreign Trade

DIPP: Department of Industrial Policy and Promotion

EDI: Electronic Data Interchange

FAO: Food and Agriculture Organization of the United Nations

FAG: Forestry Advisers Group

FIPPI: Federation of Indian Plywood and Panel Industries

FOB: Free on Board

FREEP: Forestry Research, Extension and Education Project

FRI: Forest Research Institute

FSI: Forest Survey of India

GATT: General Agreement on Tariffs and Trade

GDP: Gross Domestic Product

GIS: Geographical Information System

GNP: Gross National Product

GoI: Government of India

GSP: Generalized Scheme of Preferences

HACCP: Hazard Analysis and Critical Control Points

IARC: International Agricultural Research Centre

IBRD: International Bank for Reconstruction & Development

ICFRE: Indian Council of Forestry Research and Education

IEC: Importer Exporter Certificate

IEC: International Electrotechnical Commission

IFS: Indian Forest Service

IHPA: International Wood Products Association

IIFM: Indian Institute of Forest Management

IMF: International Monetary Fund

IPIRTI: Indian Plywood Industries Research and Training Institute

ISO: International Organization for Standardization

ITTO: International Tropical Timber Organization

ITTC: International Tropical Timber Council

JFM: Joint Forest Management

JFSQ: Joint Forest Sector Questionnaire

LCA: Life Cycle Analysis

LoC: Letter of credit

MDF: Medium Density Fibreboard

MFN: Most Favoured Nation

MIS: Market Information System

MoC: Ministry of Commerce

MoEF: Ministry of Environment & Forests

NCA: National Commission for Agriculture

NCAER: National Council for Applied Economic Research

NCR: National Capital Region

NFAP: National Forestry Action Programme

NFP: National Forest Programme

NGO: Non-Governmental Organization

NHDR: National Human Development Report

NWFP: Non-wood Forest Product

OGL: Open General License

PSU: Public Sector Undertaking

R & D: Research and Development

SAARC: South Asian Association for Regional Cooperation

SAPTA: South Asian Preferential Trade Arrangement

SFM: Sustainable Forest Management

SPS: Agreement on the Application of Sanitary and Phyto-Sanitary Standards

SPWP: Secondary Processed Wood Products

SWOT: Strengths, Weakness, Opportunity and Threats

TBT: Technical Barriers to Trade

THW: Tropical Hardwood

UN COMTRADE: United Nations Commodity Trade Flow (database)

UNCTAD: United Nations Conference on Trade and Development

UNFCCC: United Nations Framework Convention on Climate Change

WCFSD: World Commission on Forests and Sustainable Development

WPI: Wholesale Price Index

WTO: World Trade Organization

International Tropical Timber Organization

Preliminary Pre-Project Report

Review of the Indian Timber Market

[PPD 49/02 (M)]

ANNEXES

LIST OF ANNEXES

Annex 1.1

TERMS OF REFERENCE
PPD 49/02 (M) 'REVIEW OF THE INDIAN TIMBER MARKET'

At its Thirtieth session in May 2002, the ITTO Committee on Economic information and Market Intelligence approved the pre-project aimed at undertaking a review of the Indian timber market in order to gain an insight into the current supply and demand of the market and the opportunities in India for ITTO exporters. An International consultant would work as the Team Leader of a group of

trade and consumption of timber from relevant forest-related Indian agencies and to coordinate the collection of primary data in main urban consumption centres through the engagement of national, regional and local consultants, researchers and surveyors. The following terms of reference describe the nature of the consultancy work.

I. Statistical Data Review

1. Collect, analyse and present data on Indian imports, exports, production and consumption of timber identifying trends for tropical hardwoods, softwoods and temperate hardwood. This analysis should cover industrial roundwood, sawnwood, veneer, plywood and builders joinery.

2. Identify the sources of statistical data used in (1) above and provide an assessment of the reliability and timeliness of this data.

3. Consider possible actions that India and ITTO could undertake to enhance the transparency of the Indian timber market and the forest sector including through the development of forest sector statistical data systems.

II. Tropical Timber Consumption Analysis

4. For the main urban consumption centres of Mumbai, Kolkata, Delhi, Chennai, Bangalore, Hyderabad, Ahmedabad, Pune, Surat and Kanpur, report on trends in the last 3-5 years in consumption of the products noted in (1) above and identify the consumption trends for tropical hardwood products relative to other timbers.

5. For each of the urban consumption centres above, identify and report on the end-use distribution (construction, builders' woodworking, furniture, furniture components, flooring, etc.) for each tropical timber product referred to above.

6. Report on distribution channels in the Indian tropical timber market. This report, where possible, should include the end-uses for each tropical timber product.

7. Assess the current trends of the Indian market for tropical timber products, providing a view of - end-use sectors where tropical timbers are likely to be competitive vis-à-vis temperate hardwoods, softwoods and other substitutes.

8. Analyse and report on import tariffs, product specifications and quality requirements in the Indian timber market and their implications and opportunities for ITTO exporters.

9. Assess the perceived non-tariff barriers to tropical timber imports, especially those related to import/export financial payments, rules and traditions.

III. Final Reporting

10. Prepare a preliminary report and an executive summary for the consideration of the Secretariat.

11. Prepare a final report and an executive summary incorporating the comments from the ITTO Secretariat and present it to the Committee on Economic Information and Market Intelligence (CEM) during 3-8 November 2003 in Yokohama, Japan.

12. Prepare an edited print-ready final report and an executive summary incorporating the comments from the Committee.

13. Prepare an article for possible publication in ITTO's newsletter "Tropical Forest Update". Appropriate photographs should be provided in digital form, if possible.

Annex 2.1

RAPID RURAL APPRAISAL OF TIMBER CONSUMPTION TRENDS

Rural consumption of timber

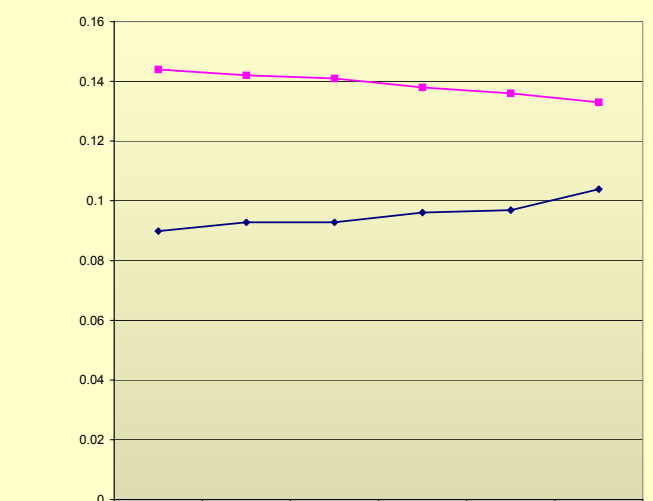
A quick sample surveys was undertaken of timber consumption in 6 rural districts in the country to validate the data for consumption of timber in rural housing and households, for it was noted that rural timber consumption is manifold that of urban consumption (i.e. apart from fuelwood); despite of the fast urbanization, India will continue to have majority of its population living in rural areas and with improving standard of living, albeit still very low. This has an indirect impact, if not so direct, on the gap between domestic timber supply and demand, and therefore on the potential for tropical timber imports. The districts were selected from the states of Andhra Pradesh, Jammu & Kashmir, Maharashtra, Meghalaya, Orissa and Rajasthan.

This survey was conducted only for the consumption of timber for construction purposes, as during the course of the survey the utilization of processed builders' joinery, veneer & plywood and sawnwood was found to be relatively negligible. However, in some of the progressive rural areas such as in Punjab, Haryana, Himachal Pradesh, Kerala and Tamil Nadu the consumption of builders' joinery, veneer & plywood and sawnwood is reportedly catching on, but the survey did not cover those areas, given the objective of this rapid rural appraisal to focus on an household survey to represent and reflect the current mainstream consumption trend of timber in the rural areas of the country as a whole.

Utilization of timber for construction purposes

There is an increasing trend in the utilization of timber in the rural areas as observed by the survey. From Table 2.13 in Chapter II earlier, it can be seen that the per capita consumption of timber for construction purposes in the mountainous state of Jammu & Kashmir (0.144 Cu.m in 2002-03) and Meghalaya (0.147 Cu.m in 2002-03) is maximum as compared to other states, while the least per capita consumption of timber for construction purposes is in the state of Rajasthan (0.137 Cu.m in 2002-03), where availability of timber is very limited.

Per capita Consumption of Timber for Construction Purposes in Urban and Rural Areas (Cu.m)



	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
Urban Areas	0.0899	0.0928	0.0928	0.0961	0.0969	0.1039
Rural Area	0.144	0.142	0.141	0.138	0.136	0.133

The per capita consumption of timber for construction purposes for rural areas drops drastically (as shown in the figure above) because, as stated below, the villagers are apprehensive on the availability of timber in the near future and hence would not be able to utilize timber that is sourced locally to the extent required and also due to the increase of population in the rural areas. The per capita consumption can be maintained at the present level if the villagers have easy access to imported timber or the government makes some policy changes which is pro- rural as far as forest vis-à-vis timber is concerned.

The percentage-wise population ratio in rural areas is decreasing (though according to the 2001 census there is a slight percentage increase through 1991 of rural population from 71.6% to 72.1%), but in absolute terms the population continues to increase steadily, albeit, slowly as compared with previous decadal growth of population. This fact together with the improvements in income, increasing agricultural productivity, economic diversification and repatriation of earnings of emigrant village workers from elsewhere -in-country and abroad, has given rise to improving the housing standards in rural areas. Yet, the perception among the villagers is that there is growing scarcity of timber and hence the trends reflect substitution by non-timber products (cement and metals) even if their preference would have been for timber.

Most of the rural people source the timber from forests owned by the government or community and from plantations or trees outside forest. In most cases, based on the perception of the people the usage of timber per household for construction purposes would diminish as they foresee that the resources available by then would be limited. However, there is an upgrading of houses, both in practice and in perception, say from kutcha to semi-pucca and to pucca and also in the increasing number of housing due to breakdown of congested jointly families and improving economic conditions. So in net, the demand for overall volume of wood and other construction materials will grow and be greater.

The increasing trend for demand of timber in the rural areas for construction purpose is further substantiated by the National Human Development Report, 2001 as sown in the table below:

Houses in rural areas in India (figures in percentage against the urban areas)

	1981	1991	1993-94
Pucca (Solid)	22.30	30.59	29.20
Semi-pucca (Semi Solid)	36.93	35.65	38.10
Kutcha (Temporary)	40.55	33.76	32.70

Source: National Human Development Report, 2003.

From the above table, it can be seen that the percentage of kutcha houses are on the decline, and on the other hand, the semi-pucca houses and pucca houses are steadily increasing over the period. This can be explained on the basis that the standard of living in the rural areas have improved considerably, and is moving in that direction. A major portion of the raw materials for construction of houses constitute timber, especially in semi-pucca houses. Tropical hardwood timber species is generally preferred in most of the areas. However, with the increasing pressure on the forests and other sources, it is most likely, that the supply will fall short and have to be met by imports.

Annex 2.2

WOOD IMPORT VALUE (MILLION US $[1])

HS Code	Commodity	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002
4401	Fuel wood, log billet etc; wood chips/ particles sawdust and wood waste w/n agglomerated in log briquette pellet or similar form	0.09	0.08	0.11	0.09	0.31	0.16
4402	Wood charcoal (incl. shl/nut charcoal) w/n agglomerated	0.01	0.00	0.00	0.00	0.00	0.00
4403	Wood in rough w/n stripped of bark/sapwood or roughly squared	246.68	386.64	339.43	429.15	457.94	509.78
4404	Hoop wood split poles, piles, pickets & stack of wood pointed but not cut to length-wise; wooden sticks chipwood etc.	0.03	0.26	0.12	0.07	0.04	0.11
4405	Wood wool, wood floor	0.00	0.00	0.00	0.00	0.00	0.01
4406	Railway & trmy sleepers(crossties) of wood	0.00	0.04	0.05	0.48	0.17	0.07
4407	Wood sawn or chipped in length sliced or peeled w/n planed, sanded or finger-jointed thickness above 6 mm	4.84	4.53	3.57	2.81	5.69	11.06
4408	Veneer sheet and sheets for plywood (w/n spliced) & other wood sawn in length sliced/peeled w/n planed or finger jointed thickness < or = 6mm	6.43	10.29	12.43	3.94	2.43	2.46
4409	Wood(incl. strips, frizs for particle flooring not assembled) continuously shaped(tonged, grooved, V-jointed etc.) along any edges/faces w/n planed	3.08	0.14	3.61	0.35	0.78	0.95
4410	Particle board and similar board of wood other lignus materials w/n agglomerated with resin or other organic binding substances	3.61	4.13	3.87	6.60	8.81	8.57
4411	Fibre board of wood or other lignus materials w/n bonded with resin/other organic substances	0.68	8.03	8.40	8.45	7.81	9.83
4412	Plywood veneer panels & similar laminated wood	4.17	7.14	8.90	5.59	4.07	4.91
4413	Densified wood in blocks plates strips or profile shapes	0.01	0.52	0.43	0.24	0.52	0.92
4414	Wooden frames for paintings photographs mirrors or similar objects	0.00	0.00	0.02	0.03	0.14	0.25
4415	Packing cases, boxes, crates, drums & similar packings of wood; cable drums of wood; pallet, box pallets & other load boards of wood	0.03	81.49	0.25	0.28	0.40	0.27
4416	Casks, barrels, vats, tubs & other coopers' product of wood including staves	0.07	0.12	0.30	0.36	0.53	0.07
4417	Tools, tool bodies, tool handles, broom or brush bodies and handles, wood boot or shoe lasts and trees of wood	0.00	0.07	0.01	0.04	82.56	0.04
4418	Builders' joinery and carpentry of wood including cellular wood panels assembled parquet panels, shingles & shakes	0.34	0.50	0.63	1.06	0.72	0.95
4419	Table/kitchenware of wood	0.02	0.01	0.05	0.10	0.14	0.16
4420	Marquatry & inlaid wood caskets/cases for jewellery/cutlery & similar articles statues and other ornaments of wood not falling 94 inch	0.00	0.03	0.06	0.11	0.11	0.25
4421	Other articles of wood	0.27	0.35	0.36	0.46	0.42	0.78

[1] Extracted from the Export Import Data Bank data on the web site of the Ministry of Commerce, Government of India.

ANNEX 2.3

IMPORT OF LOGS IN ROUGH HS CODE 4403[2] QUANTITY ('000 CU.m)

	Quanitiies '000 cum	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02
440310	Treated wood	0.00	0.00	0.00	0.00	0.00	0.85	0.76	0.40	8.29	22.71	0.42
440320												
44032001	Coniferous wood	1.41	7.00	0.01	1.49	0.95	1.42	5.36	0.05	0.48	0.07	0.11
44032002	Coniferous NES	1.87	0.00	0.00	0.00	0.77	0.77	4.12	1.57	0.04	0.21	0.37
440341	Meranti	0.00	0.02	0.00	0.00	0.00	0.83	0.00	0.00	0.00	0.00	4.55
440349												
44034901	Teak	57.57	79.73	72.27	110.91	162.70	140.96	209.00	74.83	293.79	249.07	433.10
44034909	Others	313.08	266.77	161.86	155.81	140.00	60.66	147.71	196.73	132.79	195.07	109.54
440334	Okoune Obeche Sapelli Sipo Acajoud	0.00	0.00	8.50	0.02	1.00	0.00	0.00	0.00	0.00	0.00	0.00
440335	Tiama,Mansonia,Ilomba, Dibetou,Lmba & Azobe	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44039100	Oak wood	0.00	0.00	0.00	0.06	0.20	0.02	0.14	0.03	7.73	0.29	0.22
44039200	Beech wood	0.05	0.50	0.08	0.31	0.33	0.07	0.17	20.76	1.84	1.97	1.08
440399												
44039901	Andaman padauk	0.00	0.00	0.00	0.00	0.00	1.02	0.00	6.65	40.45	53.86	101.28
44039902	Bonsom(Phoebe goalparensis)	0.00	0.00	0.00	10.90	0.00	0.00	0.00	0.00	3.78	0.05	2.26
44039903	Gurgun	0.00	0.42	9.04	0.00	7.82	13.50	11.79	16.15	47.89	35.01	48.77
44039904	Khair	0.00	3.43	0.24	0.00	0.41	0.00	0.00	0.00	0.00	0.00	0.13
44039908	Red Saunders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
44039911	Rose wood	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
44039915	Walnut	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
44039921	White Cedar	0.00	1.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	1.21
44039905	Lampati(Duabanga grandiflora)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00
44039912	Sal	0.00	0.00	0.00	0.00	0.00	0.60	14.20	4.00	0.35	0.00	0.00
44039917	Birch	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.06	0.00	0.00	0.00
44039906	Laurel	0.00	0.00	0.00	0.00	0.00	0.00	1.16	0.00	0.00	0.00	0.00
44039913	Sandal wood	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.03	0.01
44039929	Others	477.94	450.83	227.41	387.47	420.14	648.10	967.85	1,293.56	1,583.01	1,539.39	1,901.99[3]
	TOTAL	**851.92**	**810.09**	**479.47**	**666.97**	**734.33**	**868.80**	**1,362.26**	**1,614.80**	**2,120.57**	**2,097.92**	**2,605.22**

[2] Extracted from the statistics published by the Directorate General of Commercial Intelligence & Statistics, Kolkata

[3] Country wise details in Annex 2.5.

Annex 2.4

IMPORT OF LOGS IN ROUGH (HS CODE 4403)[4] VALUE (MILLION US$)

	Import Value Million US$	90-91	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02
440310	Treated wood	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.22	0.13	2.75	7.03	0.12
440320	Wood in Rough Coniferous												
44032001	Coniferous wood	3.10	0.44	0.87	0.00	0.64	0.37	0.29	1.22	0.01	0.11	0.04	0.03
44032002	Coniferous NES	0.00	0.11	0.00	0.00	0.00	0.27	0.25	0.88	0.34	0.00	0.05	0.15
440341	Meranti	0.00	0.00	0.01	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.57
440349	Other tropical wood												
44034901	Teak	11.18	17.05	35.74	32.79	48.28	63.22	51.28	76.20	27.10	93.26	86.77	133.45
44034909	Other	44.46	44.80	52.45	43.20	43.91	46.73	14.87	46.81	51.40	30.93	50.20	25.91
440334	Okoune Obeche Sapelli Sipo Acajoud	0.00	0.00	0.00	2.26	0.02	0.33	0.00	0.00	0.00	0.00	0.00	0.00
440335	Tiama,Mansonia,Ilomba,Dibetou, Lmba & Azobe	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44039100	Oak wood	0.03	0.00	0.00	0.00	0.02	0.09	0.01	0.04	0.01	0.39	0.09	0.07
44039200	Beech wood	0.01	0.02	0.17	0.02	0.10	0.10	0.02	0.09	0.27	0.56	0.63	0.32
440399	Other wood in Rough												
44039901	Andaman padauk	0.62	0.00	0.00	0.00	0.00	0.00	0.37	0.00	1.79	8.15	14.98	22.68
44039902	Bonsom (Phoebe goalparensis)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94	0.01	0.51
44039903	Gurgun	0.00	0.00	0.10	3.09	4.19	2.87	4.64	3.91	3.79	10.89	9.38	9.77
44039904	Khair	0.07	0.00	0.66	0.11	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.03
44039908	Red Saunders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
44039911	Rose wood	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
44039915	Walnut	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
44039921	White Cedar	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.29
44039905	Lampati(Duabanga grandiflora)	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
44039912	Sal	0.12	0.00	0.00	0.00	0.00	0.00	0.17	3.44	0.86	0.07	0.00	0.00
44039917	Birch	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00
44039906	Laurel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00
44039913	Sandal wood	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.03	0.02
44039929	Others	78.85	65.54	81.57	52.92	106.98	105.25	174.19	253.61	253.70	289.52	288.69	315.81[5]
	TOTAL	138.76	127.96	171.82	134.46	204.12	219.31	246.68	386.64	339.43	437.59	457.94	509.78

[4] Extracted from the statistics published by the Directorate General of Commercial Intelligence & Statistics, Kolkata

[5] Country wise details in Annex 2.5

Annex 2.5

COUNTRY-WISE IMPORTS YEAR 2001-02
ARTICLE CODE 4403 9929 'OTHERS' [6]

Countries	Quantity '000 Cu.m	Value Million US $	Avg Value US$/ Cu.m
Australia	31.16	3.01	96.74
Belgium	0.23	0.06	282.35
Benin	0.32	0.08	245.71
Bhutan	0.14	0.04	252.83
Brazil	0.18	0.08	419.54
Cameroon	0.24	0.04	154.35
Canada	0.94	0.49	525.32
C Afri Rep	0.34	0.07	204.51
Chinese Taipei	0.21	0.06	292.24
China P Rp	0.1	0.05	481.03
Colombia	0.24	0.40	1,699.51
Congo P Rep	0.76	0.16	216.88
Costa Rica	0.82	0.17	208.77
Denmark	0.22	0.06	284.11
Ecuador	4.02	0.68	169.2
El Salvador	0.09	0.02	216.71
France	11.56	1.93	167.15
Gabon	43.49	8.66	199.06
German F Rep	0.75	0.25	332.41
Ghana	11.71	2.73	233.57
Guinea	2.75	0.52	190.94
Guyana	9.99	1.81	180.79
Hong Kong	18.21	3.91	214.65
Hungary	0.02	0.01	336.82
Indonesia	294.41	55.68	189.11
Italy	0.11	0.04	363.37
Ivory Coast	38.04	9.00	236.72
Korea Rp	0.28	0.04	149.77
Malaysia	927.13	133.03	143.48
Mali	0.7	0.12	170.85
Mayanmar	176.55	45.83	259.6
Mexico	0.03	0.01	314.77
New Zealand	163.66	12.54	76.65
Nicaragua	2.48	0.55	221.14
Nigeria	64.77	15.68	242.09
Panama Republic	0.26	0.08	293.7
Papua N Gna	0.07	0.02	313.98
Philippines	0.01	0.00	301.4
Romania	0.03	0.01	496.72
Russia	0.02	0.00	211.04
Saudi Arab	0.02	0.02	1,049.67
Singapore	17.96	3.93	218.66
Solomon Is	29.65	4.02	135.66
South Africa	33.6	6.40	190.32
Spain	0.05	0.02	340.37
Sri Lanka	0.2	0.07	339.62
Sweden	0.04	0.01	225.16
Switzerland	0.02	0.00	275.06
Tanzania Rep	0.18	0.06	343.14
Togo	6.28	1.78	284.24

[6] Extracted from Export-Import Data bank from the website of the Ministry of Commerce, Government of India.

Countries	Quantity '000 Cu.m	Value Million US $	Avg Value US$/ Cu.m
Turkey	0.03	0.01	417.39
U Arab Emts	0.13	0.02	142
U K	0.11	0.02	237.3
U S A	0.47	0.13	269.37
Uruguay	0.02	0.01	291.79
Venezuela	3.03	0.74	243.72
Zambia	2.09	0.61	289.6
Unspecified	0.12	0.03	259.84
TOTAL 4403 9929 other wood in rough 'Others'	1,901.99	315.81	166.04

Annex 2.6

COUNTRY WISE IMPORT: WOOD IN ROUGH [7] (MILLION US $)

Sl. No.	Country	96-97	97-98	98-99	99-00	00-01	01-02	% Growth last year
1	Malaysia	69.55	109.73	101.90	106.27	85.96	142.08	74.65
2	Mayanmar	43.29	71.96	82.33	133.91	131.33	110.09	-11.43
3	Indonesia	0.34	0.12	18.13	38.79	41.77	65.81	66.5
4	Nigeria	27.03	51.08	53.64	42.59	45.18	57.39	34.22
5	Ivory Coast	36.52	29.12	17.44	35.75	42.92	37.87	-6.78
6	New Zealand	0.00	10.75	24.09	13.60	17.00	12.42	-22.83
7	Gabon	5.82	9.22	8.68	4.83	13.85	9.11	-30.49
8	Ghana	0.37	0.02	0.04	1.89	11.46	8.31	-23.43
9	Togo	1.07	2.94	0.81	0.45	4.32	7.49	83.12
10	Singapore	26.63	36.45	1.31	6.41	19.56	6.95	-62.44
11	South Africa	2.10	12.19	6.04	6.52	6.23	6.28	6.57
12	Hong Kong	2.19	3.30	0.01	1.61	1.36	4.18	224.49
13	Solomon Is	0.93	1.80	7.85	1.29	2.90	4.05	47.53
14	Ecuador	5.22	5.13	0.68	5.27	5.82	3.83	-30.36
15	Australia	0.00	0.00	0.14	0.18	1.75	2.96	78.62
16	France	0.21	0.09	0.02	0.21	4.40	2.36	-43.39
17	Colombia	0.62	1.63	1.70	2.09	2.24	2.25	5.81
	Others	24.79	41.12	14.60	27.48	19.87	16.77	

[7] Extracted from Export-Import Data bank from the website of the Ministry of Commerce, Government of India.

Annex 2.7

Top Exporters of Wood to India[8] ('000 Cu.m)

Year ⇒ / Country ⇓	96-97	97-98	98-99	99-00	00-01	01-02
Malaysia	304.93	434.42	554.66	612.11	533.01	1,003.72
Myanmar	99.61	173.27	251.79	413.10	439.47	387.25
Indonesia	1.19	0.45	96.93	255.42	186.33	354.26
Nigeria	77.04	157.75	170.36	140.91	200.20	225.90
New Zealand	0.00	75.18	244.22	177.35	6.50	163.90
Ivory Coast	120.67	59.12	59.13	111.26	156.84	126.83
Gabon	22.58	37.52	41.92	22.79	72.73	46.65
Ghana	1.29	0.07	0.09	4.95	32.80	29.88
Togo	3.23	9.13	2.84	15.36	16.46	18.08

[8] Extracted from Export-Import Data bank from the website of the Ministry of Commerce, Government of India.

Annex 2.8

International Trade of wood & Wood Products – India[9] (2000-2001) (Million US$)

Article Code	Articles	Import Value	Export Value
4401	Fuel wood, in log billets, etc.; wood in chips/particles; sawdust and wood waste; w/n agglomerated in log briquette, pellets or limit form	0.31	0.16
4403	Wood in rough w/n stripped of bark/sapwood or roughly squared	457.94	1.39
4404	Hoop wood split poles, piles, pickets & stack of wood pointed but not cut to length-wise; wooden sticks chipwood etc.	0.04	0.04
4405	Wood wool, wood floor	0.00	0.00
4406	Railway & trmy sleepers (crossties) of wood	0.17	0.00
4407	Wood sawn or chipped in length sliced or peeled w/n planed, sanded or finger-jointed thickness above 6 mm	5.69	0.29
4408	Veneer sheet and sheets for plywood (w/n spliced) & other wood sawn in length sliced/peeled w/n planed or finger jointed thickness < or = 6mm	2.43	3.53
4409	Wood(incl. strips, frizs for particle flooring not assembled) continuously shaped(tonged, grooved, V-jointed etc.) along any edges/faces w/n planed	0.78	0.23
4410	Particle board and similar board of wood other lignus materials w/n agglomerated with resin or other organic binding substances	8.81	2.06
4411	Fibre board of wood or other lignus materials w/n bonded with resin/other organic substances	7.81	3.10
4412	Plywood veneer panels & similar laminated wood	4.07	7.44
4413	Densified wood in blocks plates strips or profile shapes	0.52	0.09
4414	Wooden frames for paintings photographs mirrors or similar objects	0.14	0.74
4415	Packing cases, boxes, crates, drums & similar packings of wood; cable drums of wood; pallet, box pallets & other load boards of wood	0.40	4.37
4416	Casks, barrels, vats, tubs & other coopers' product of wood including staves	0.53	0.02
4417	Tools, tool bodies, tool handles, broom or brush bodies and handles, wood boot or shoe lasts and trees of wood	0.02	0.44
4418	Builders' joinery and carpentry of wood including cellular wood panels assembled parquet panels, shingles & shakes	0.72	0.96
4419	Table/kitchenware of wood	0.14	1.48
4420	Marquatry & inlaid wood caskets/cases for jewellery/cutlery & similar articles statues and other ornaments of wood not falling 94 inch	0.11	2.02
4421	Other articles of wood	0.42	2.89
Total 44	**Wood**	491.06	31.25
46011000	Plaits and similar products of plaiting materials w/n assembled into strips	0.00	0.00
46012001	Coir mat and matting bound in parallel stand	0.02	0.31
46021001	Palm leaf basket etc	0.01	0.24
4701	Mechanical wood pulp	12.12	0.00
4702	Chemical wood pulp dissolving in grades	64.71	0.00
4703	Chemical wood pulp, soda or sulphate other than dissolving in grade	64.84	0.00
4704	Chemical wood pulp sulphite	2.95	0.00
	Except dissolving grade	0.00	0.00
4705	Semi chemical wood pulp	5.06	0.00
4706	Pulps of fiber derived from recovered (waste and scrap) paper/paper boards/cellulosic materials	4.12	0.09
4707	Recovered (waste and scarp) paper/paper board	128.47	1.41
Total 47	**Pulp (all kinds)**	282.31	2.06
4801	News print in rolls or sheets	261.24	5.57
4802	Uncoated paper and paper boards for writing printing or graphic purposes, punch card stick and punch type paper of handling 4801/4803: hand made paper and paper board	54.80	45.31
4803	Toilet/facial tissue, stick, etc. for house hold/sanitary purposes	0.69	0.23
4804	Uncoated kraft paper and paper board in rolls or sheets other than heading no.	8.55	6.02

[9] Extracted from the statistics published by the Directorate of Commercial Intelligence and Commerce, Kolkota.

Article Code	Articles	Import Value	Export Value
	4802/4803		
4805	Other uncoated papers and paper board in rolls/sheets: not further worked/processed	14.19	4.87
4806	Vegetable parchment paper grease proof papers, tracing papers and lassine and other glazed transparent or translucent paper in reels/sheets	2.62	0.52
4807	Composite paper/paper board not surface coated/impregnated w/n internally reinforced in rolls/sheets	0.13	1.83
4808	Papers, paper boards, corrugated (with/without glued, flat surface sheets) crpd., crnkld, embossed/perforated in rolls/sheets other than heading no. 4803	0.69	0.64
4809	Carbon self copy paper and other copying/transfer paper (including coated/impregnated paper) w/n printed in rolls and sheets	0.83	1.40
4810	Paper/paper board coated on one/both sides with kaln/other inorganic substances, and no OTR coating, w/n surface coloured/decorated/printed in rolls/sheets	44.60	38.51
4811	Paper, paper board, cellulose wading and webs of cellulose fibers coated, impregnated , etc. other than heading 4803, 4809, 4810	16.26	20.07
4812	Filter block slabs and plats of paper pulp	0.20	0.05
4813	Cigarette paper, w/n cut to size or in form, booklet or tubes	1.53	2.98
4814	Wall paper, similar wall covering, window transparencies of paper	0.20	0.28
4815	Floor covering on base of paper or paper board, w/n cut to size	0.00	0.05
4816	Carbon self copy paper and other copying/transparency papers (other than heading no. 4809)	0.78	3.49
4817	Envelopes, letters, plain post cards and correspondence cards of papers/paper board box, pouch, etc.	0.51	3.34
4818	Toilet paper or similar: pulp, cellulose, wdg., webs of cellulose fibers used in home/ hospital/sanitary,	2.84	0.68
	Apparel of width < = 36 cm or cut to size/shape	0.00	0.00
4819	Cartons, boxes, cases, bags and other containers of paper, & paper boards	8.47	9.79
4820	Registers, A/c books, etc of paper and paper boards	1.41	17.69
4821	Paper or paper board labels w/n printed	11.77	2.45
4822	Bobbins, spools, cops and similar supports of paper pulp, paper/paper board, w/n perforated/hardened	0.75	0.28
4823	Other paper, paper board	11.16	12.82
Total 48	**Paper (all kinds)**	444.19	178.86
94015000	Seats of cane, osier, bamboo/similar materials	0.00	0.04
94016100	Upholstered seats with wooden frame	0.12	0.00
94016900	Other seats with wooden frames	0.50	0.02
94033001	Wooden furniture of a kind used in offices, cabinet ware	1.04	1.78
94034000	Wooden furniture of a kind used in the kitchen	0.65	0.96
94035001	Wooden furniture of a kind used in the bed room, bed stead	0.21	0.48
94035009	Other wooden furniture used in bed room	0.60	1.80
94036000	Other wooden furniture	2.78	20.17
94038001	Furniture of other materials including cane, osier, bamboo/similar materials	0.12	0.08
Total 94	**Furniture**	6.02	25.33
95021001	Dolls of wood	0.03	0.03
95034901	Toys of wood	0.25	0.05
95043001	Carrom board	0.10	0.57
95064000	Articles and equipment for table tennis	0.35	0.86
95065100	Lawn tennis rackets	0.36	0.00
95065901	Badminton Rackets, w/n strung	0.89	0.05
95069902	Cricket bat	0.01	3.04
95069903	Cricket requisites	0.14	1.89
95069905	Hockey sticks and blades	0.01	0.72
95069908	Tennis and badminton racket	0.02	0.03
Total 95 (PT)	**Toys/sports goods**	2.14	7.26
96099009	Pencils	0.00	1.75
96100000	Slates and boards	0.16	0.13
Total 96 (PT)	**Pencils/Slates, Boards**	0.16	1.88
97019001	Domestic articles of wood	0.06	0.05

Article Code	Articles	Import Value	Export Value
99914001	Woodwork of rose wood	0.00	16.54
99914002	Woodwork of sandal wood	0.00	1.87
99914003	Woodwork of seesham wood	0.00	8.66
99914004	Woodwork of walnut wood	0.00	2.80
99914005	Lacquered wooden waste	0.00	0.48
Total 99 (PT)	**Decorative wood items**	0.06	30.40
12119001	Agar wood (including chips and dust)	0.26	0.98
12119018	Sandal wood chips and dust	0.01	9.37
1301	Lac: natural gums, resins, oleo resins	14.98	82.28
13021906	Extracts, neem	0.00	0.24
13023100	Agar agar w/n modified	0.34	0.08
Total 13 (PT)	**Lac, Gums, resins, agar etc.**	15.60	92.96
14011000	Bamboos	0.02	0.01
14012000	Rattans	0.04	0.00
14019001	Other cane used as plaiting	0.19	0.05
14049001	Beedi wrapper leaves (tendu)	0.02	4.38
14049002	Soapnuts	0.01	0.01
	Sum	0.27	4.45
	Grand Total	**1,241.75**	**374.45**

Annex 2.9

CASE STUDY: KANDLA PORT -INDIA'S MAJOR TIMBER PORT

- Kandla port has become the major port for the import of Timber in India. More than 50% of 2.6 Cu.m of the total imports in India take place at Kandla Port alone. The major spurt in timber imports was observed in the year 1997-98 when the imports sharply increased from 0.185 Mn Cu.m to 0.847 Mn Cu.m, understandably because of the Supreme Court restrictions on green felling in India. Since then the port city of Kandla has become the hub for supplying imported timber to the Northern, Western and even the Central Indian consumption centres.

- A flat rate of 5% import duty is levied on all types of timber logs imported at Kandla. However, the rates for other timber products is much higher.

- The major consumption centers for imported timber in Western and Central regions include Ahmedabad, Rajkot, Surat, Vadodara, Pune, Mumbai, Nagpur, Jaipur, Indore, Bhopal, while those in the Northern region include Delhi, Gurgaon, Faridabad, Karnal, Yamunanagar and Jagadri, Ghaziabad, Meerut, Hapur and Rajpura.

Trends in timber import at Kandla (all Species) in Lakh Cu.m & Million Rupees

Year	Cu.m (lakhs)	Value (Mn.Rs.)
1996-97	1.85	1,850.9
1997-98	8.47	6,672.2
1998-99	9.01	6,231.8
1999-00'	12.54	8,340.9
2000-01	12.94	9,002.3
2001-02	13.40	9,939.8
2002-03*	14.45	11,000.0

*Projected
Source: Kandla Timber Association.

Proportion of Tropical Softwood (mainly Pine) in total timber imports at Kandla port

Years	Tropical Softwood (mainly Pine) Imports '000 Cu.m	Total timber imports at Kandla import '000 Cu.m	% Share of Tropical Softwood
1998-1999	294.9	901	32.6
1999-2000	364.5	1,254	29.0
2000-2001	428.7	1,294	33.1
2001-2002	325.6	1,340	24.2

Source: Kandla Timber Association.

- The timber imports at Kandla are mainly in the form of logs which are converted into sawnwood at different sawing centres like Gandhidham (near Kandla port in Gujarat), New Delhi, Mumbai, Agra and elsewhere. From these places the sawnwood is transported to the major consumption centers.

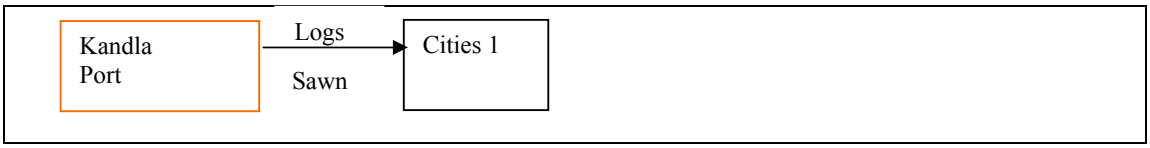
- The movement of imported timber from Kandla port to other places is possible with Transit Permits issued by Forest Department officials at Kandla wherein the quantity, value, type of timber/Species, and names of seller and receiver/buyers are recorded.

- The sawnwood sizes varies greatly Sizes, e.g., 10 x10 x5, 9 x10 x5, 8 x10 x5, 6 x 10 x5

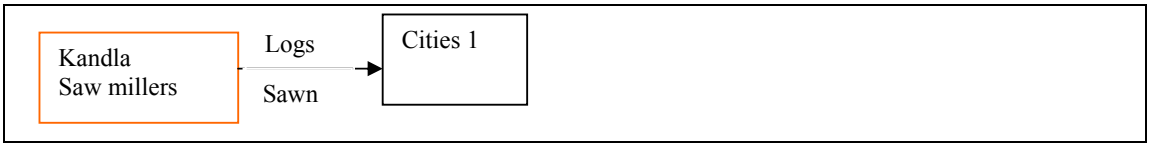
KANDLA DISTRIBUTION CHANNELS

The following diagram depicts the pattern of various distribution channels used for imported timber at Kandla and transported to different cities in Northern and Western Region of India.

Chain A

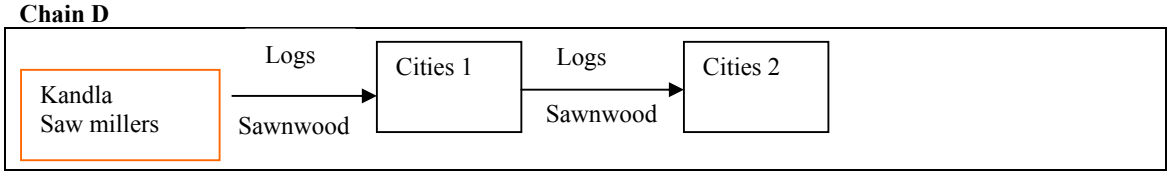


Chain B

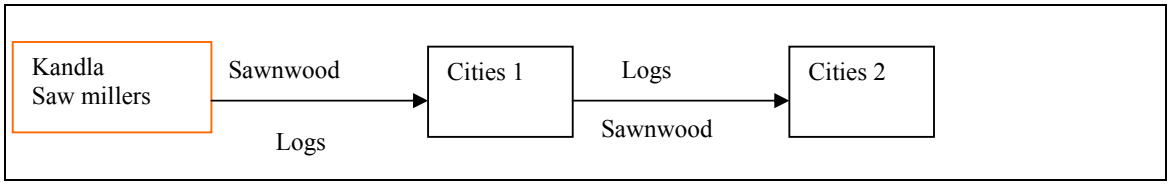


Chain C

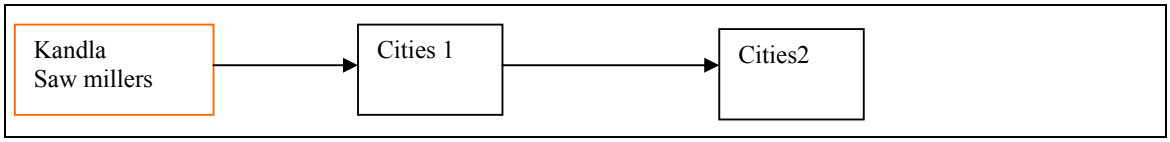
Chain D



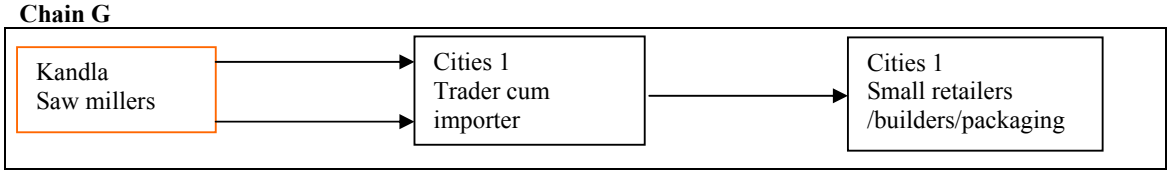
Chain E



Chain F



Chain G



The **Channels of Distribution** are classified on the basis of the number and type of sourcing in that consumption centre and is as under:

- ***Category city 1:*** The consumption centre receives supply of imported timber directly from Kandla only.
- ***Category 2:*** The consumption centre receives the supply of imported timber from another The consumption centre and not from Kandla directly.
- ***Category 3:*** The consumption centre receives supply of imported timber directly from Kandla as well as from another consumption centre.

Average city wise consumption for pine on monthly basis in 2001-02

S No.	Consumption centre	Cu.m	% share
1.	New Delhi	2,490	24
2.	Vadodara	168	2
3.	Rajkot	900	8
4.	Surat	882	8
5.	Ahmedabad	480	5
6.	Karnal	360	3
7.	Yamunagar	510	5
8.	Ghaziabad	270	3
9.	Hapur	600	6
10.	Rajpura	690	6
11.	Mumbai	840	8
12.	Pune	966	9
13.	Indore	360	3
14.	Bhopal	450	4
15.	Jaipur	660	6
	Total	10,626	100

End-use of Imported Pine timber (2001-02)

End-use	Construction	Furniture	Packaging & Plywood	Total
Consumption in Cu.m	4,831	1,654	4,141	10,626
% share	45.5	15.6	39.0	100

Tropical Softwoods comprise the second largest timber type imported at Kandla (about 24%) after the Tropical Hardwoods. However there has been a decline in the tropical softwood imports in the recent years and as a result its share in total timber imports has come down from a high of 33% in 2000-01 to 24% in the year 2001-02. The New Zealand pine alone accounts for almost 40% of all tropical softwood imports at Kandla port.

The consumption of imported Tropical Softwood (Mainly pine) and the prevailing prices in the major consumption centres in Northern and Western/Central India is summarized below:

1. **Gandhidham**
   - The estimated consumption per month is 12750 Cu.m out of which Sawnwood is 80%.
   - The average purchase price of Pine timber is Rs 85 /CFT while the average selling price of Sawnwood is Rs 140 /CFT.

2. New Delhi

- The estimated consumption per month is 2650 Cu.m (including Gurgaon and Faridabad) out of which Sawnwood is 63%.
- The average purchase price of Pine timber is Rs 160 /CFT while the average selling price of Sawnwood is Rs 225 /CFT.
- End Uses of pine wood include
  - (A) ***Construction (66%):*** Shuttering, Doorframes (Chokhats), Partitions.
  - (B) ***Furniture (13%):*** Cushion Framework, Table tops
  - (C) ***Packaging (21%):*** Machinery Crates, Fruit Boxes
- However there is a shift in preference for iron and aluminum for making door frames and window frames, while glass is used for partitions
- Big timber trading centres in Delhi are Panchkuan Road (for Furniture) and Paharganj (for Plyboard)
- There is lack of transparency in the trade and non availability of the information (secrecy maintained by the traders) in the timber trade

3. Yamunanagar

- The estimated consumption per month is 510 out of which Sawnwood is 84%.
- The average purchase price of Pine timber is Rs 185/CFT while the average selling price of Sawnwood is Rs 226/CFT.
- Big timber traders supply to other smaller towns like Saharanpur, Jagadri etc as there is increasing demand in rural areas for this cheap wood for use in Shuttering, Doorframes
- End Uses of pine wood include
  - (A) ***Construction (60%):*** Shuttering, Doorframes (Chokhats), Partitions.
  - (B) ***Furniture (30%):*** Cushion Framework, Table tops, Particle boards
  - (C) ***Packaging (10%):***
- Big timber trading centre is on Saharanpur road, purani sabzi mandi.
- There is lack of transparency in the trade and non availability of the information (secrecy maintained by the traders) in the timber trade

4. Jagadri

- The estimated consumption per month is 150 out of which Sawnwood is 99%.
- The average purchase price of Pine timber is Rs 190/CFT while the average selling price of Sawnwood is Rs 246/CFT.
- Big timber traders supply to other smaller towns as there is increasing demand in rural areas for this cheap wood for use in Shuttering, Doorframes
- End Uses of pine wood include
  - (A) ***Construction (86%):*** Doorframes (Chokhats), Door Partitions.
  - (B) ***Furniture (14%):*** Framework, Particleboard, and Plywood
  - (C) ***Packaging (0%):***
- The retailers give commissions to small carpenters to promote use of imported softwood.

5. Rajpura

- The estimated consumption per month is 690 Cu.m out of which Sawnwood is 95%.
- The average purchase price of Pine timber is Rs 147 /CFT while the average selling price of Sawnwood is Rs 190 /CFT.
- Big timber traders supply to other cities like Jalandhar, Ludhiana, Amritsar as there is increasing demand in rural areas for this cheap wood for use in Shuttering, Doorframes
- End Uses of pine wood include
  - (A) ***Construction (75%):*** Doors, Windows, Cupboards
  - (B) ***Furniture (3%):*** Cushion Framework
  - ***(C) Packaging & Others(22%):***

6. Hapur

- The estimated consumption per month is 600 Cu.m out of which Sawnwood is 52%.
- The average purchase price of Pine timber is Rs 170 /CFT while the average selling price of Sawnwood is Rs 229 /CFT.
- The local demand at Hapur is less while timber traders supply to other cities like Moradabad, Delhi, Gurgaon, Noida etc
- End Uses of pine wood include
    1. ***Construction (58%):*** Doors, Windows, Cupboards
    2. ***Furniture (23%):*** Cushion Framework
    3. ***Packaging & Others(19%):***
- There is lack of transparency in the trade and non availability of the information (secrecy maintained by the traders) in the timber trade

7. Ghaziabad

- The estimated consumption per month is 270 Cu.m out of which Sawnwood is 94%.
- The average purchase price of Pine timber is Rs 180 /CFT while the average selling price of Sawnwood is Rs 225 /CFT.
- End Uses of pine wood include
    1. ***Construction (74%):*** Partitions, Doorframes (Chokhats), shuttering
    2. ***Packaging (26%):***Machinery Crates, Fruit Boxes
- There is lack of transparency in the trade and non availability of the information (secrecy maintained by the traders)in the timber trade

Annex 2.10

CASE STUDY: DISTRICT YAMUNA NAGAR, HARYANA
INDIA'S MAJOR TIMBER DISTRIBUTION CHANNEL

This case study provides an example from India which complements (a) the predictions that natural forests can not and need not meet the demand for world wood demand and that an increasing proportion of the wood could come from palntations. They already furnish around one third of the world's industrial wood although they make up only 5 percent of total forest cover; and (b) the scope for small and medium enterrprises, farmers and other growers of trees outside forests as significant suppliers of wood raw material. The success of agro forestry in Haryana and neighboring districts of Punjab, U.P and Uttranchal States of Northern region of India has led to evolution of an annual market of wood products worth more than Rs.10,000 million in Yamuna Nagar district of Haryana, benefiting not only farmers but has also generated employments of various kinds at different levels.

Raw Material for Industries

A study has been conducted to analyse the marketing pattern and facilities, and price trends for various groforestry species and products. The results reveal that there are at least four lakh hectares of private plantations out of which the daily turnover is computed to be over Rs.15 million of raw wood and about Rs.40-50 million of finished wood products. This has benefited the people holistically as employment is generated and also the related sectors, such as transport and technology, got a boost from this development.

Plywood Industry in Haryana

There are about 250 units in Haryana, of which 188 have been identified in Yamuna Nagar, 10 in Sonipat, 12 in Rohtak, and 40 in Sanpla. Plywood industry in Haryana is expected to contribute Rs.150 millions as revenue to the government.

Choice of Species, supply and comparative prices

The choice by the farmers and entrepreneurs in the region is in favour of fast grown species, though that may not always be so, as there was also a consideration for high value species, such as of teak and shisham, but that has not caught up in the area under study. The area under Poplar is about 81% compared to 19% under Eucalyptus in this area. This shows that Poplar has been preferrred as compared with Eucalyptus by selected farmers over the last 5-6 years. The reason is relatively better economic returns from Poplar. However, Eucalyptus planting on farmers field is increasing as the figure shows more trees in lower girth classes for Eucalyptus.

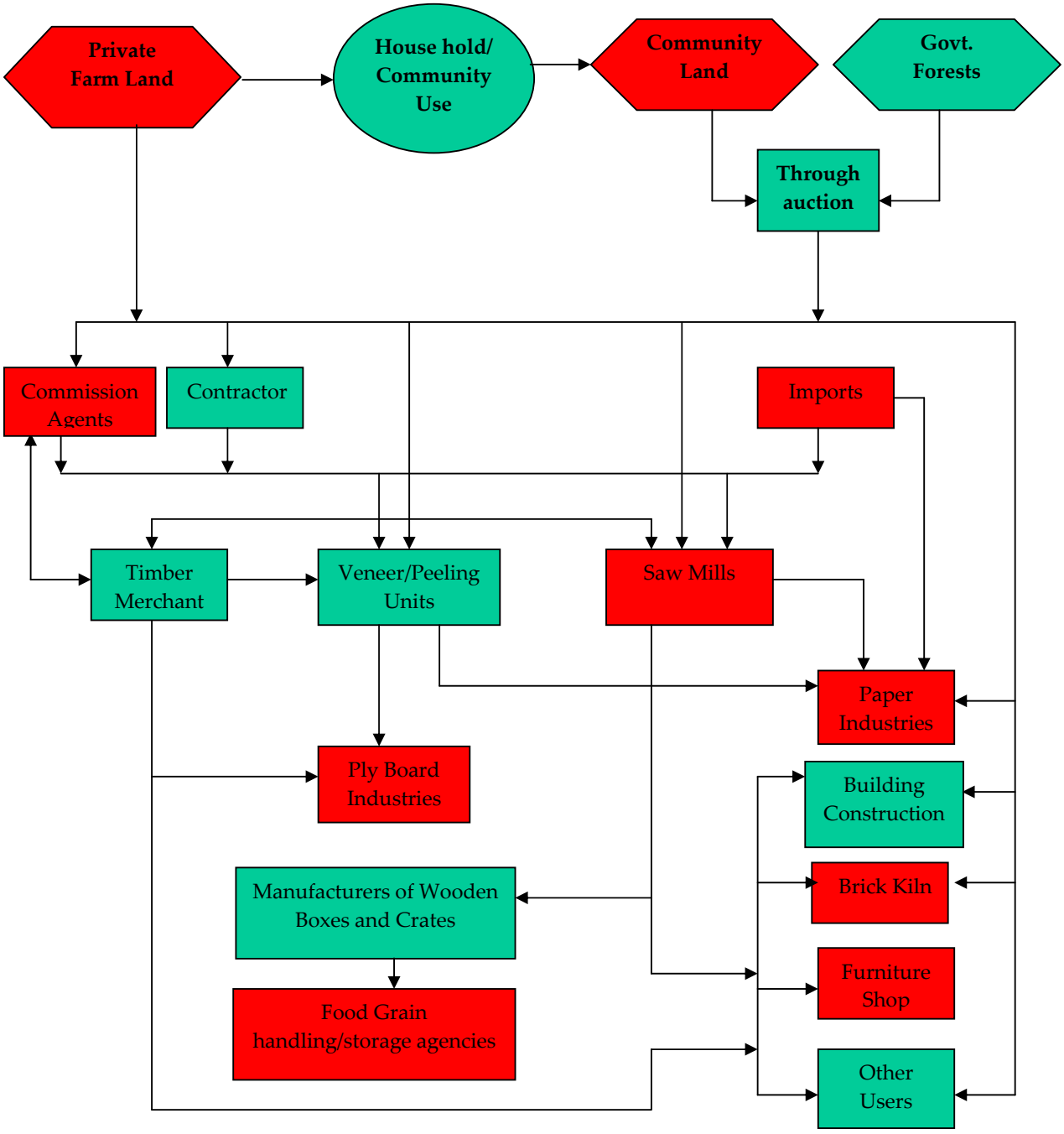
The average daily arrival of Eucalyptus and Poplar is about 8203.9 tonnes, having approximate value of Rs.17.23 million. Poplar comprises about 72% of the total arrival, while the share of Eucalyptus is about 28 % only.

The arrival increases after harvesting of crops, when fields are empty. The assumption of daily arrival of wood worth Rs.10 million means annual raw wood market of Rs.3,000 million, and the market for finished agroforestry based wood products at Rs.10,000 million.

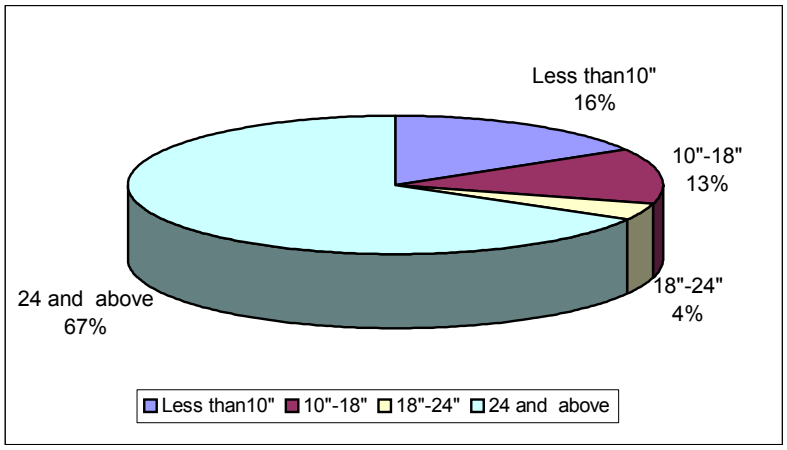
During, 2002, there was a sharp fall in the poplar prices while Eucalyptus prices were stable. As per discussion with local traders, on an average, the daily arrivals during October 2002, was about 2 to 3 times less than the normal. About 1,000 loads (96% Trolleys, 3.5% trucks & 0.5% carts), arrive in

Yamuna Nagar market daily, having wood quantity of approximately 75,000 quintals, with a value of Rs.12.5 million daily, at present prices. However, during November 2002 the arrival has more or less stabilized to 1,000 to 1,200 loads, on an average. The arrival of Eucalyptus is about 5% to 10% of the total timber arrival in this centre

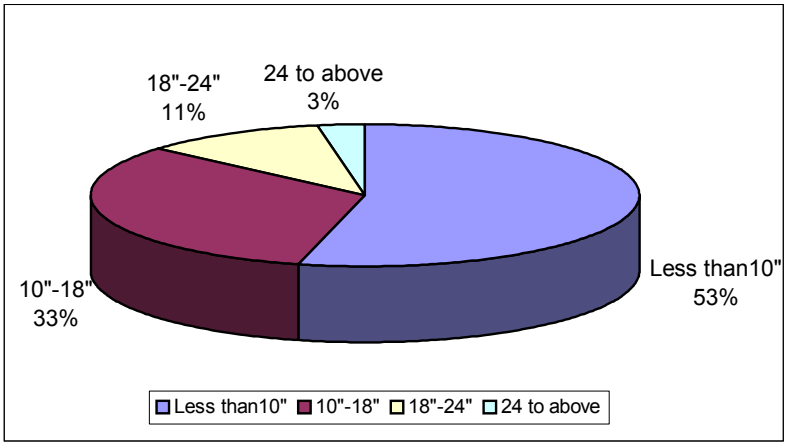
Yamuna Nagar
Product Flow of Farm & Forest Grown Wood



Yamuna Nagar Proportion of Poplar girth classes in farmer's fields



Yamuna Nagar Proportion of Eucalypus girth classes in farmer's fields



Wood Market of Yamuna Nagar

The proportion of Poplar in higher girth classes is about 67%, as shown above. This is in part implies that more Poplar trees were planted in the previous 5-6 years. The less number of trees in lower girth classes at the same time implies that preference for Poplar planting has started showing a declining trend.

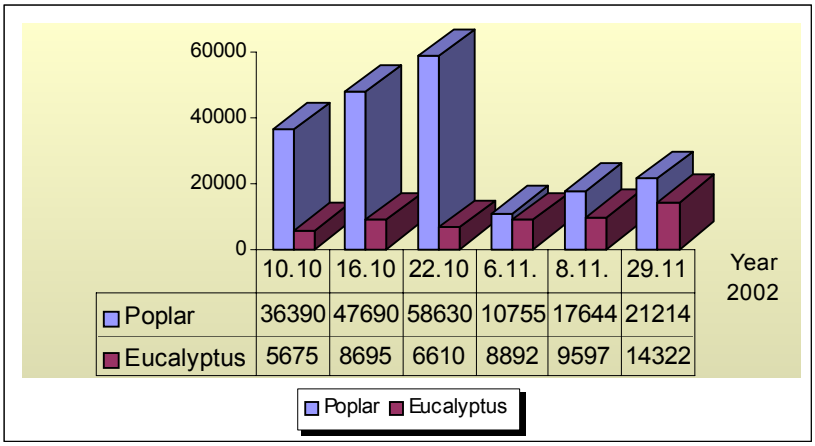
The arrival pattern of Eucalyptus and Poplar wood was also studied in detail for the project. The data from weighing centres (*Dharam Kanta*), situated on main roads were collected on 10th June, 16th June, 22nd june, 6th July, 8th July and 29th July 2003. This is depicted in the following diagram with data records for the corresponding dates in previous post-harvest peak periods in October and November 2002.

Meanwhile, Poplar prices have fallen by about 30% compared to 2001, while compared to peak rates of 1998, the decline has been 53%, which means overall net loss to primary producer. Loss to commission agents, weighing centres etc. has been compensated to some extent due to increase in quantity of arrivals.

About 90% of the plywood produced in Haryana is exported to Maharashtra, Gujarat and other states while 60% of the Punjab's production is exported. A large number of farmers who have raised Poplar

and Eucalyptus plantations are selling raw wood of Poplar at crashed price level of about Rs. 2,000 per tonne.

Yamuna Nagar: Arrival Pattern of of major timber species: poplars and eucalypts



Among the reasons that can be summarized for the crashing of poplar prices are the fact that the year 2002 has been a drought year, resulting in heavy losses to the farmers from agricultural crops. Due to monetary requirements, small farmers have resorted to felling of poplar even before rotation to meet the subsistence needs in order to meet the social and economic obligations. As a result of the land consolidation in Western U.P. & Uttranchal, farmers have resorted to pre-mature felling of trees, as farmers are not sure about location of re-alloted land after consolidation.

Planting Pattern: Since 1996 onwards, because of improvement in Eucalyptus prices and increase in demand, the planting of eucalyptus has shown increasing trend on farmlands. As an outcome of the decreasing price trend of Poplar, farmers are again resorting to Eucalyptus planting and are selling poplar wood in panic, due to fear of less return on investment on the standing crop in future. During current year farmers are not so enthusiastic about planting of Poplar plants.

Wood-based Manufacturing Units at Yamuna Nagar

Plyboard Industries

There are about 200 factories that manufacture ply board. These factories consumes 250 to 300 quintal of Poplar per day per factory amounting to approximately Rs.42,000 to Rs.45,000. And for Eucalyptus consumption is about 100 quintal per day per day per factory which amounts to approximately Rs.22,500.

Assuming the each factory is operational for 300 days per annum, the total wood requirement per unit is 11,250 tonnes at a value of Rs.22.50 million. Therefore the total wood requirement for Yamuna Nagar for ply board manufacturing is 2.25 million tonnes per annum at a value of Rs.450 million. The production capacities of these units is substantial as 10,000 sq. ft. of ply board is produced per unit per day at a value of Rs.0.20 to 0.22 million.

After value addition to wood, the value of the finished products is worked out to be approx. 4.5 to 5 times to that of raw wood. It was estimated that land, machinery, material, operational labour and other inputs was calculated to be approximately 2 times that of raw wood cost. The net value addition after inculcating all the inputs was worked out to be approximately 3 times that of raw wood.

Veneer Factories

There is about 125 to 150 veneer making units in Yamuna Nagar. These units consume about 200 quintal of Eucalyptus and Poplar per unit per day, for producing mainly the *Phatti* and the core. Each unit has the capacity of producing about 35000 running ft per day. The total wood required for manufacturing veneer is 0.75 million tonnes that is valued at approx. Rs.140 million.

Saw Mills

There are about operating 300 saw mill units in Yamuna Nagar. These units consumes 50-60 quintal of wood per day for making packing cases and *Balli*. The total requirement for manufacturing these is calculated to be 0.45 million tonnes, which is valued at Rs.85 million.

Paper Mill

There is only one paper mill in Yamuna Nagar, namely, Ballarpur Paper Mill. This mill's per day consumption of wood is 600 tonnes valued at Rs.0.75 million approx. This mill produces 150 tonnes of paper pulp per day. The purchase value was at the rate of Rs.1,150-1,250 per tonne. The annual wood required for the mill is 0.198 million tonnes value at Rs.250 million. The purchasing of Raw material is usually done all through the year. Supply of pulp is more than the demand this year, already 15000 tonnes inventory in lying in the yard. Last year, it was 4000 tonnes.

The total paper production of the mill is around 72,000 tonnes per year, which is valued at Rs.3,250 million approximately.

Distribution of different species of wood

Year	Euc.	Poplar	Bamboo	Others*
2000	59%	20%	20%	1%
2002	20%	59%	20%	1%

Procurement (Presently, procurement rate for debarked material at mill gate varies from Rs. 950 to 1,150 per MT; With bark rate: Rs. 750 per MT; Pulpwood with girth 19 cms to 59 cms. is purchased):

Year	Total Procurement (MT)	Procurement through Local Sources (MT)
1998-99	114,829	104,829
1999-00	144,952	110,952
2000-01	172,763	108,237
2001-02	198,306	117,039
2002-03	144,177	106,105

Type	No. of units	Annual Wood Reqd. (MT)	Value (Mn. Rs.)	Value of final product
Plywood	200	2.25	450	2,250
Veneer	150	0.75	140	700
Paper Mill	1	0.198	250	3,250
Sawmills	300	0.45	85	425

Analysis

- About 100 lakh seedlings of Eucalyptus and Poplar are being planted annually under farm forestry in Haryana.
- Private nurseries have emerged as an important economic activity.

- Assuming average planting density of about 500 to 700 plants per ha, about 15,000 to 18,000 ha are planted annually under agroforestry on farmlands.
- The success percentage of plantations under farm forestry vary between 60% to 90%.
- Assuming 70% success on an average, afforestation efforts under farm-forestry has the potential of wood production of approximately 1.9 million tonnes worth Rs. 3,500 million at present prices. Moreover, 60% of wood consumed in Haryana is brought from Punjab, U.P & Uttranchal states.
- Assuming same levels of afforestation trends, potential import of approximately 3.7 million tones raw wood worth Rs.7,200 million exists. Improved site-specific clones have potential of increasing productivity, two to three times.

Annex 2.11

CASE STUDY OF MUMBAI: THE MAJOR URBAN CENTRE

- Mumbai has played an important role in the development of country's trade and commerce, which is why it is the commercial capital of India. Mumbai has achieved this status because of having a great potential for trade and commerce. It is supposed to be the first international trade centre of India.

- Mumbai's rise to eminence was largely due its strategic located port, situated almost midway along the west coast of India and being gifted with a natural harbor which provided ample shelter for shipping throughout the year. Yes, the Mumbai Port, which has a checquered history of 126 years has since been a principal trade Gateway of India. However due to fast growth of the international trade and commerce there was an urgent need for the development of a deep draft port in the Mumbai which could received modern ships particularly those carrying containerized and bulk cargo. Hence the government of India took a decision to develop a new port on the opposite shore of Mumbai port in 1981.This was given the name as Nhava Sheva Port initially but subsequently the name changed to Jawaharlal Nehru (JN) Port. JN port was dedicated to the Nation for the traffic in November 1989. This peculiar and unique phenomena has made the Mumbai urban center the only place to have a satellite major port.

- Due to massive increase in consumption of timber products in Mumbai, mainly due to large construction activities and also probably due to Supreme Court's ban on tree/wood cutting there has been considerable increase in the import of timber to Mumbai city.

- The timber import in Mumbai is mainly in the form of Logs as the import duty on logs/round wood is only 2.5% while it is 35% on sawn wood.

- The log wood imported in Mumbai through Mumbai port or JN Port is mostly sent to Nagpur where it is sawn and redistributed to timber trade as per the distribution channel flow chart as given in section 1.3 of chapter 1 (Page 33–36). There are about 1200 sawmills in Nagpur itself and about 300 of them in Mumbai. Most of the sawmills in Mumbai work on labour rate basis where as the case is vice versa in Nagpur. Of the total round wood the proportion of sawn wood could from about 70-75%. The rest of the wood goes in making flush doors because this residual wood cannot be used in furniture and any other Industry.

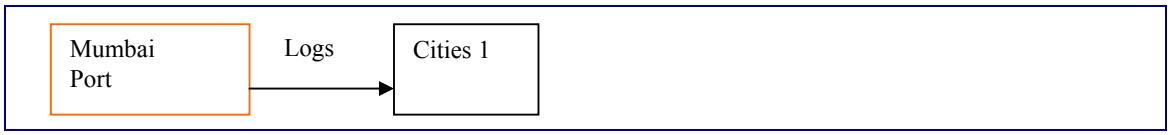
- The major consumption places for imported timber being catered from Mumbai includes Pune, Ahmednagar, Hydrabad, Nagpur, Goa, Nashik, Surat, Ahmedabad, Rajkot, Vadodara, Jaipur, Indore and Bhopal.

Trends in Timber import to Mumbai (Lakh Cu.m)

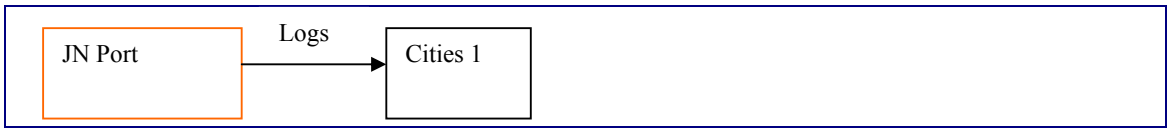
Year	Cu.m (Lakhs)	Value (Mn.Rs)
1997 – 98	4.00	3,000
1999 – 00	4.30	3,100
2002 – 03	4.50	3,400
2005 – 06	4.80	3,660

Various distribution channels used for imported timber at Mumbai and transported to different cities in Western region of India.

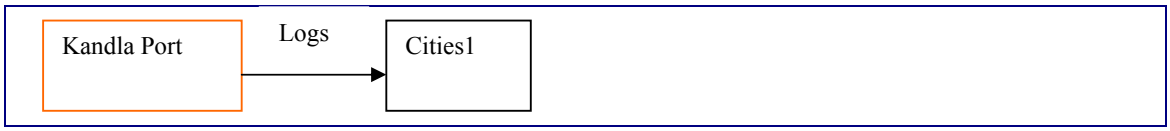
Chain A



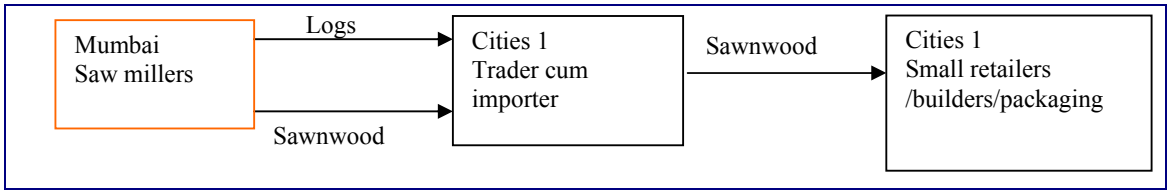
Chain B



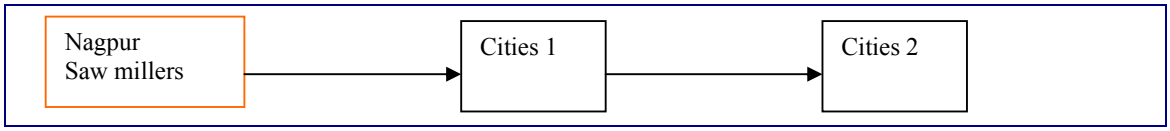
Chain C



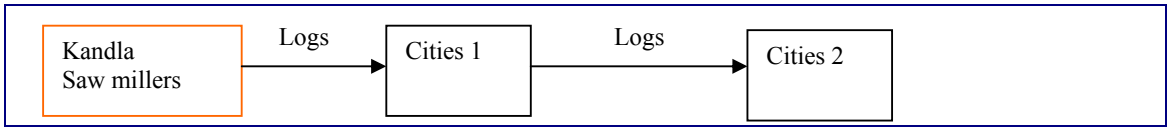
Chain D



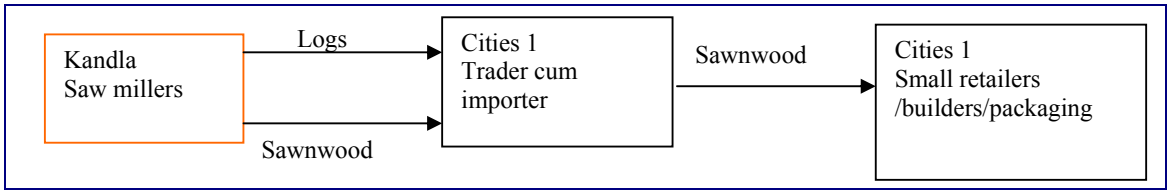
Chain E



Chain F



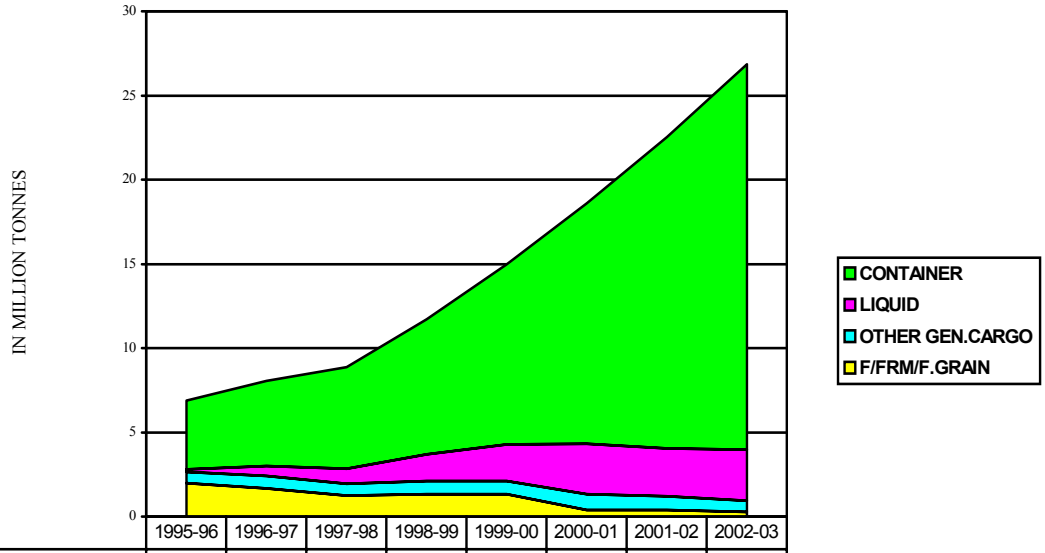
Chain G



The **Channel of Distribution** in Mumbai are classified on the basis of the number and types of sourcing in the category center and is as under:

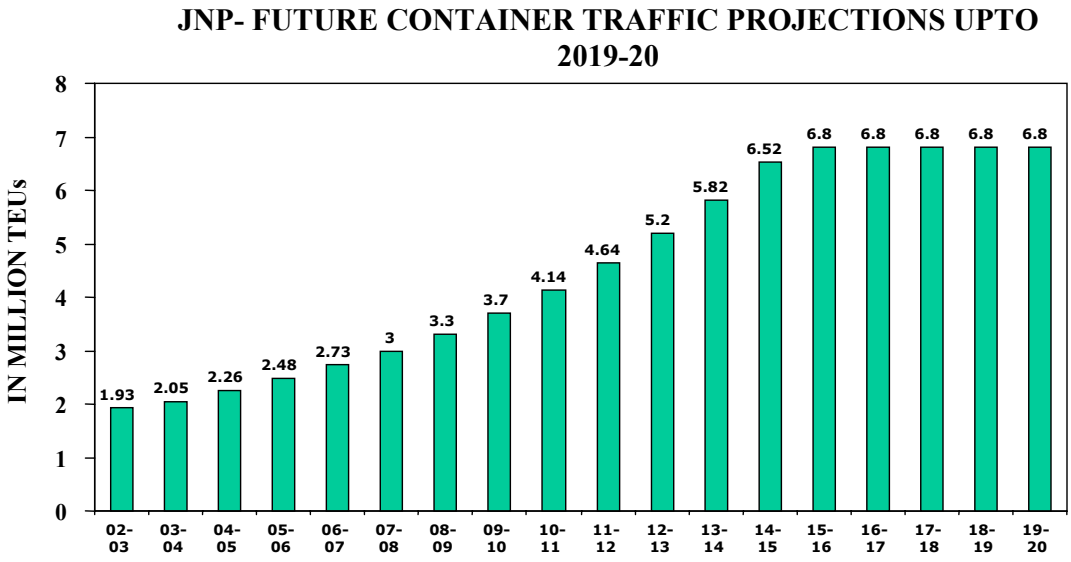
- ***Category 1 :*** Mumbai receives the supply of imported timber directly from Mumbai Port & JNPT.
- ***Category 2 :*** Mumbai receives the supply of imported timber from another consumption center and not from Mumbai & JN Ports
- ***Category 3:*** Mumbai receives the supply of imported timber directly from MPT & JNPT and also from Kandla Port.
- There has been considerable growth in import of tropical timber to Mumbai which has mostly come from either Mumbai Port or JN Port or Kandla Port. The form of timber is Logs which comes in closed containers and is thus distinguished as Containerized cargo.
- Here are various trends of traffic handled and projected by one of the most high-tech and leading port of Mumbai i.e. JN Port.

JNPT Total Traffic (1995-96 TO 2002-2003)

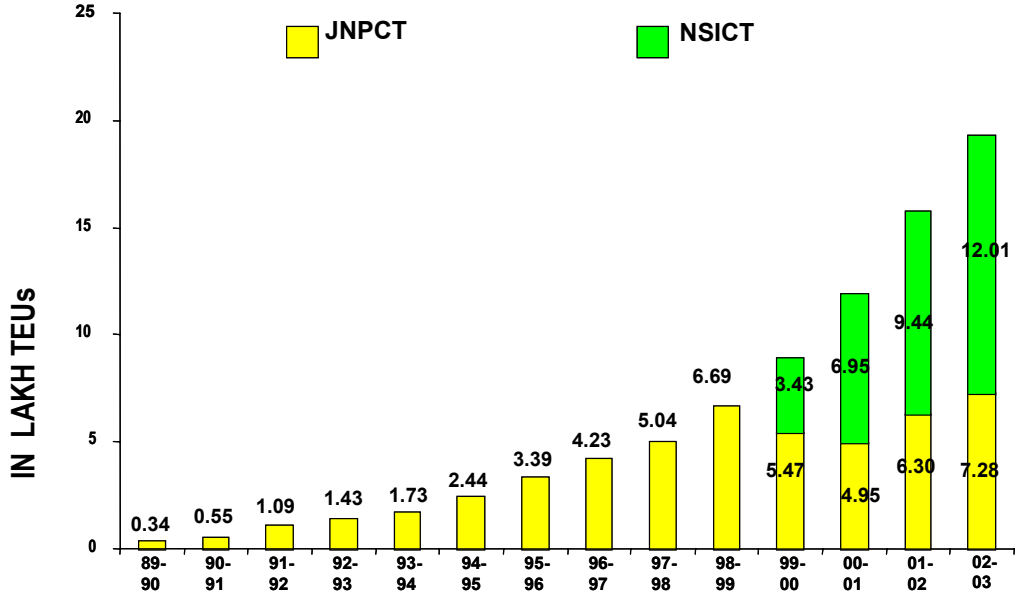


	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03
CONTAINER	4.07	5.08	6.05	8.03	10.68	14.28	18.48	22.86
LIQUID	0.14	0.58	0.9	1.58	2.17	2.96	2.85	3.04
OTHER GEN.CARGO	0.66	0.74	0.7	0.8	0.78	0.94	0.79	0.68
F/FRM/F.GRAIN	2	1.67	1.24	1.31	1.34	0.4	0.4	0.26
TOTAL	6.87	8.07	8.89	11.72	14.98	18.57	22.52	26.84

JNP – Future Container Traffic Projections upto 2019-20



Performance of Container Terminals



Annex 3.1

BOUND TARIFF RATES UNDER WTO[10]

Tariff item Number	Description of the product	Rate of duty Ad Valorem %	U/B[11]	Bound rate of duty %
4402.00	Wood charcoal (including shell or nut charcoal), whether or not agglomerated	105	U	40
4403	Wood in rough			
4403.10	-Treated with paint, stains, creosote or other preservatives	15	U	25
4403.20	-Other, coniferous			
4403.31	--Dark Red Meranti, Light Red Meranti and Meranti Bakau			
4403.32	--White Lauan, White Meranti, White Seraya, Yellow Meranti and Alan			
4403.33	--Keruing, Ramin, Kapur, Teak, Jongkong, Merbau, Jelutong and Kempas			
4403.34	--Okoume, Obeche, Sapelli, Sipo, Acajoud'Afrique, Makore and Iroko			
4403.35	--Tiama, Mansonia, Ilomba, Dibetou, Limba and Azobe			
4403.91	--Of oak (Quercus spp)			
4403.92	--Of beech (Fagus spp)			
4403.99	--Other			
4404	Hoopwood split poles, pickets & Stacks of wood-Coniferous & Non-coniferous,	105	U	40
4405	Wood wool; wood flour	105	U	40
4406	Railway Tramway Sleepers of wood			
4407	Wood sawn or chipped in length, sliced or peeled or finger jointed thickness > 6mm.			
4407.10	-Coniferous	55	U	40
4407.21	--Dark Red Meranti, Light Red Meranti, Meranti, Bakau, White Lauan, White Meranti, White Seraya, Yellow Meranti, Alan, Keruing, Ramin, Kapur, Teak, Jongkong, Merbau, Jelutong and Kempas			
4407.22	--Okoume, obeche, Sapelli, Sipo, Acajou d'Afriquie, Makore, Iroko, Tiama, Mansonia, Ilomba, dibetou, Limba and Azobe			
4407.23	--Baben Mahogany (Swieteniaspp), Imbuia and Balsa			
4407.91	--Of oak (Querus spp)			
4407.92	--Of beech (Faqus spp)	35	B	35
4407.99	--Other			
4408	Veneer sheets and sheets for plywood thickness < 6 mm			

[10] Extracted from the market access schedule of India obtained from the WTO. The bound rates are not announcements of tariff rates. They represent commitments not to increase tariffs above the listed rates – the rates are "bound' Thus the bound rates serve as ceiling. Countries can break commitments but only with difficulty. To do so they have to negotiate with the countries most concerned and that could result in compensation for trading partners' loss of trade.

[11] U means the tariff rates were unbound at the time of Uruguay round of discussion and B mean the tariff rates were already bound at the Uruguay round of trade negotiations. Base rate means the rates during the period that was accepted to be the basis for discussion at the Urugay round.

Tariff item Number	Description of the product	Rate of duty Ad Valorem %	U/B[11]	Bound rate of duty %
4408.10	- Coniferous			
4408.20	- Of the following tropical woods Dark Red Meranti, Light Red Meranti, White Lauan, Sipo, Limba, Okoume ,Obeche, Acajou d'Afrique, Sapelli, Baboen, Mahogany(Swietenia spp.), Palissandre du Bresil and Bois de Rose femelle	105	U	40
4408.90	- Other			
4409.10	-Wood including stripes/frizs parquet flooring Coniferous	105	U	40
4410	Particle board and similar board of wood and other lignocellulosic materials	105	U	40
4411	Fibre board of wood and other lignocellulosic materials --	145	U	40
4412	Plywood veneered panels & similar laminated wood			
4412.11	-- With at least one outer ply of the following tropical woods Dark Red Meranti, Light Red Meranti, White Lauan, Sipo, Limba, Okoume, Obeche, Acajou d'Afrique,Sapelli, Baboen, Mahogany (Swietenia spp.), Palissandre du Bresil or Bois de Rose femelle			
4412.12	-- Other, with at least one outer ply of non-coniferous wood	105	U	40
4412.19	-- Other			
4412.21	-- Containing at least one layer of particle board			
4412.29	-- Other			
4412.91	-- Containing at least one layer of particle board			
4412.99	-- Other			
4413.00	Densified wood, in blocks, plates, strips or profile shapes	105	U	40

Annex 3.2

TARIFFS FOR WOOD AND ARTICLES OF WOOD & WOOD CHARCOAL (per cent)

	Description	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	2000-01	2001-02	2002-03
4401.10	Fuel wood, in logs, in billets, in twigs, in faggots or in similar forms; wood in chips or particles;												
4401.21	Coniferous												
4401.22	Non-Coniferous	60	60	85	65	50	10	NIL	NIL	5	5	5	5
4401.30	Sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms												
4402.00	Wood charcoal (including shell or nut charcoal), whether or not agglomerated												
4403	Wood in rough												
4403.10	Treated with paint, stains, creosote or other preservatives												
4403.20	Other, coniferous												
4403.31	Dar Red Meranti, Light Red Meranti and Meranti Bakau												
4403.32	White Lauan, White Meranti, White Seraya, Yellow Meranti and Alan												
4403.33	Keruing, Ramin, Kapur, Teak, Jongkong, Merabau, Jelutong and Kempas	60	60	85	65	25	10	NIL	NIL	5	5	5	5
4403.34	Okoume, Obeche, Sapelli, Sipo, Acajou,d' Afrique, Makore and Iroko												
4403.35	Tiama, Mansonia, Ilomba, Dibetou, Limba and Azobe												
4403.91	Of, oadk (Quercus Spp.)												
4403.92	Of beech (Fagus Spp.)												
4403.99	Other, coniferous												
4404	Hoop wood split poles piles & stacks of wood												
4404.10	Coniferous												
4404.20	Non-Coniferous												
4405.00	Wood wool; wood flour	60	60	85	65	50	30	30	25	25	25	25	25
4406.10	Railway Tramway sleepers - Not impregnated												
4406.90	Other												
4407	Wood sawn or chipped in length, sliced or peeled, thickness > 6mm.												
4407.10	Coniferous												
4407.21	Dark Red Meranti, Light Red Meranti and Meranti Bakau, White Lauan, White Meranti, White Seraya, Yellow Meranti, Alan Keruing, Ramin Kapur, Teak, Jongkong, Merbau, Jelutong and Kempas												
4407.22	Okoume, Obeche, Sapelli, Sipo, Acajou,d' Afrique, Makore and Iroko, Tiama, Mansonia, Ilomba, Dibetou, Limba and Azobe	60	60	85	65	50	30	30	25	25	25	25	25
4407.23	Baboen, Mahogany (Swietenia spp.), Imbuia and Balsa												
4407.91	Of oak (Quercus Spp.)												
4407.92	Of beech (Fagus Spp.)												
4407.99	Other												
4408	Veneer sheers and sheet sfor plywood thickness < 6mm												
4408.10	Coniferous	60	60	85	65	50	30	30	30	35	35	35	30

	Description	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	2000-01	2001-02	2002-03
4408.20	Of the following tropical woods: Dark Red Meranti, Light Red Meranti, White Lauan, Sipo, Limba, Okoume, Obeche, Acajou,d' Afrique, Sapelli, Baboen, Mahogany (Swietenia spp.), Palissandre du Bresil and Bois de Rose femelle												
4408.90	Other												
4409	Wood including stripes, frizs for parquet flooring Coniferous & non coniferous	60	60	85	65	50	30	30	30	35	35	35	30
4410	Particle boards and similar boards of wood and other lignocellulosic materials	60	60	85	65	50	30	30	40	40	35	35	30
4411	Fibre board of wood and other lignocellulosic materials	100	65	85	65	50	30	30	40	40	35	35	30
4412	Plywood veneered panels & similar laminated wood												
4412.11	With at least one outer ply of the following tropical woods: Dark Red Meranti, Light Red Meranti, White Lauan, Sipo, Limba, Okoume, Obeche, Acajou,d' Afrique, Sapelli, Baboen, Mahogany (Swietenia spp.), Palissandre du Bresil and Bois de Rose femelle	60	60	85	65	50	30	30	30	35	35	35	30
4412.12	Other, with at least one outer ply of non-coniferous wood												
4412.19	Other												
4412.21	Containing at least one layer of particle board												
4412.29	Other												
4412.91	Containing at least one layer of particle board												
4412.99	Other												
4413.00	Densified wood, in blocks, plates, strips, or profile shapes	60	60	85	65	50	30	30	30	35	35	35	30
4414.00	Wooden frames for paintings, photographs, mirrors or similar objects	60	60	85	65	50	30	30	30	35	35	35	30
4415.10	Cases, boxes, crates, drums and similar packings; cable-drums	60	60	85	65	50	30	30	30	35	35	35	30
4415.20	Pallets, box pallets and other load boards												
4416	Casks, barrels vats, tubs and other coopers' products and parts thereof, of wood, including staves	60	60	85	65	50	30	30	30	35	35	35	30
4417	Tools, tool bodies, tool handles, broom or brush bodies and handles, of wood; boot or shoe lasts and trees, of wood	60	60	85	65	50	30	30	30	35	35	35	30
4418.10	Windows, French-windows and their frames	60	60	85	65	50	30	30	30	35	35	35	30
4418.20	Doors and their frames and thresholds												
4418.30	Parquet panels												
4418.40	Shuttering for concrete constructional work												
4418.50	Shingles and shakes												
4418.90	Other												
4419	Tableware and kitchenware, of wood	60	60	85	65	50	30	30	30	35	35	35	30
4420.10	Statuetts and other ornaments, of wood	60	60	85	65	50	30	30	30	35	35	35	30

Notes:

For the purposes of sub-heading Nos. 4403.41 to 4403.49,4407.24 to 4407.29, 4408.31 to 4408.39 and 4412.13 to 4412.99, the expression 'tropical wood' means one of the following types of wood :-

Abura, Acajou d'Afrique, Afrormosia, Ako, Alan, Andiroba, Aningre, Avodire, Azobe, Balau, Balsa, Bosse clair, Bosse fonce, Cativo, Cedro, Dabema, Dark Red Meranti, Dibetou, Doussie, Framire, Freijo, Fromager, Fuma, Geronggang, Ilomba, Imbuia, Ipe, Iroko, Jaboty, Jelutong, Jequitiba, Jongkong, Kapur, Kempas, Keruing, Kosipo, Kotibe, Koto, Light Red Meranti, Limba, Louro, Macaranduba, Mahogany, Makore, Mansonia, Mengkulang, Meranti Bakau, Merawan, Merbau, Merpauh, Mersawa, Moabi, Niangon, Nyatoh, Obeche, Okoume, Onzabili, Orey, Ovengkol, Ozigo, Padauk, Paldao, Palissandre de Guatemala, Palissandre de Para, Palissandre de Rio, Palissandre de Rose, Pau Marfim, Pulai, Punah, Ramin, Sapelli, Saqui-Saqui, Sepetir, Sipo, Sucupira, Suren, Teak, Tiama, Tola, Virola, White Lauan, White Meranti, White Seraya, Yellow Meranti.

Annex 4.1

RESEARCH METHODOLOGY FOR TIMBER CONSUMPTION SURVEY AND ANALYSIS

Reaserach Objectives

1. Identify the consumption trend for last 5 years of timber products - industrial roundwood, sawnwood, veneer, plywood and builders joinery (tropical hardwoods, softwoods and temperate hardwood) for the main urban centres of Mumbai, Kolkata, Delhi, Chennai, Bangalore, Hyderabad, Gurgaon, Ghaziabad, Yamunanagr, Faridabad, Ahmedabad, Pune, Surat and Kanpur and identify the consumption trend for tropical hardwood products relative to the other timbers, viz., tropical softwoods and temperate timbers

2. Identify end-use pattern (construction, builders' woodworking, furniture, furniture components, flooring, etc.) for the above consumption centres for each tropical timber product - industrial roundwood, sawnwood, veneer, plywood and builders joinery

3. Identify the distribution channels in the Indian Tropical Timber Market including the end uses for each tropical timber product (where possible).

4. Assess the current trends of the Indian market for tropical timber products, providing a view of end-use sectors where tropical timbers are likely to be competitive vis-à-vis temperate hardwoods, softwoods and other substitutes.

5. Analyse and report on import tariffs, product specifications and quality requirements in the Indian timber market and their implications and opportunities for ITTO exporters.

6. Assess the perceived non-tariff barriers to tropical timber imports, especially those related to import/export financial payments, rules and traditions.

Research Type

Exploratory and survey method

Data Type

Both secondary and primary

Data Source

Secondary data sources:

- Government – MoC/DGCIS/Customs etc
- Timber Trade Associations
- Plywood Manufacturer's association
- Town Planners
- Builders/Architect

Primary data sources:

As mentioned below in the sample unit.

Sampling Method

The Snowball sampling technique would be used for collecting the data from the field. The snowball sampling procedure is used to select the individual respondents in each sampling unit category such as the timber traders/builders/forest officials/households/furniture shopkeepers in each of the Survey City. This is done because the list of the timber traders/builders/forest officials in each city is not readily available with researchers and also no information with respect to the number and size of timber traders/builders in a particular city is available.

(This sampling technique is used when the overall population is difficult to identify. Research asks a subject if they could put them in touch with others in a similar situation).

Data collections tools

In-depth Interviews and observation method

Sample unit

For each of urban consumption centre following type of respondents would be contacted:

1. Timber traders in the Sample City (including retailer/wholesaler)
2. Timber Traders' Associations
3. Purchase Managers of end user companies
4. Senior Officials of State Forest Development Corporations
5. Individual households
6. Saw mills
7. Furniture Shopkeepers
8. PSUs like Indian Railways
9. Builders/Architect/City Planners
10. SSI units using timber/wood as raw material like handicraft artisans
11. Senior Officials of State Forest Department
12. Officials of the Customs Department/Port Officials / Ministry of Commerce/ DGCIS/ICFRE

Sample Size

The sample size for each sample unit would be decided for each survey site

Urban Consumption Survey centres

Ahmedabad, Bangalore, Chennai, Delhi, Faridabad, Ghaziabad, Gurgaon, Hyderabad, Kanpur, Kolkata, Mumbai, NOIDA, Pune, Surat and Yamuna Nagar

Period of data collection survey

March-May, 2003

Data Analysis

- Simple tabulation and cross tabulation for
- Frequency distribution for user preferences – current and future trends
- Averages & means of dispersion for major variables
- Trends analysis for imports of timber (timber type and exporting country specific) – from secondary data
- Trends analysis for domestic consumption of timber by end uses
- Price trends for different timber types and end-uses
- Changes in government policies – tariffs, non-tariff barriers etc – from secondary data

Reporting

- First stage reports would be prepared by the regional consultants (with help from research-cum-survey teams) which would include compilation, tabulation and analysis of the data, inferences of results and conclusions.
- The second stage report would be prepared by the National consultants (with help from regional consultants) which shall include the modification in the city specific reports on consumption and an aggregate report on all the consumption cities surveyed plus national level trend analysis for demand, preferences, consumption etc including strategic options for tropical timber exporting countries.
- The third stage report would be finalised with inputs from the Roman Forum.

General Points on Regional Consultant Report

- The regional consultants are required to furnish the summarised report in the following format based on the primary survey and secondary data including their discussions with key players in each segment/trade (and guestimates).
- These data are to be sent in the excel format. In fact all the data is to be recorded in the excel sheet only and be sent along with the analysis in the form of the Annexure. However the original data (filled in questionnaires) should be retained and stored for 12 months after the submission of the final reports.
- A summary of wood terminology with the species is also included
- The simplified and modified questionnaires are enclosed
- All timber quantity figures must be in Cubic Meter (M3). One cubic meter is equivalent to 35 Cubic Feet (CFT)
- Most data are required for five time periods: that is 1997-98 (5 years back), 1999-2000 (3 years back), 2002-03 (Current Year), 2005-06 (3 years from now), 2007-08 (5 years from now), and 2012-2013 (projected estimates of consumption 10 years from now)
- In case of any doubt feel free to ask any of the netions team members, especially IIFM Marketing Faculty member, Prof. Dr. Manmohan Yadav
- The regional/local consultants report is to be submitted latest by 14th May, 2003

FORMAT for Regional & local Consultant Summary Report

S.N.	Items	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
1.	Total timber consumption (Industrial roundwood/Logs) in Cubic metres M^3 (000)						
2.	Tropical Hardwood (TH) Logs in M^3 and major species (such as Teak (Burma-T, American T, Panama T, Ghana-T, Plantation-T etc., Gurjan, Marsuea, Meranti, Mahogany, Birch, Rose wood, Sal, Keruing, Kapur, Andaman Padaouk, Lampati, Laurel, etc.)						
3.	Tropical Softwood(TS) Logs in M^3 and major species (All types of pine – Radianta, New Zealand Pine, Australian Pine and France Pine etc)						
4.	Temperate Hardwood(TeH) Logs in M^3 and major species (such as Oak, Beech)						
5.	Imported TH (Tropical Hardwood) Logs M^3 major species and country-wise						
6.	Imported SW (Tropical Softwood) Logs in M^3 and major species						
7.	Imported Temperate Hardwood Logs in M^3 and major species						
8.	Domestic HW Logs in M^3 with major species and source-wise						
	F (Forest department)						
	P (Plantation/ Agro Forestry)						
	H (Homestead)						
9.	Domestic SW Logs in M^3 with major species and source-wise						
	F (Forest department)						
	P (Plantation/ Agro Forestry)						
	H (Homestead)						
10.	Domestic Temperate Hardwood Logs in M^3 with major species and source-wise						
11.	Sawnwood total in M^3 with type of wood that is TH, TS, and TeH and major species in each category						
	Imports in M^3 with type of wood that is TH, TS, and TeH and major species in each category and country-wise						
	Domestic in M^3 with major species with type of wood that is TH, TS, and TeH and major species in each category						
12.	Veneer (only HW) total in M^3 with major species in each category						
	Imports in M^3 With major species and country-wise						
	Domestic in M^3 with major species						

S.N.	Items	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
13.	Plywood – total in M^3 with type of wood that is TH, TS, and TeH and major species in each category						
	Imports in M^3 with type of wood that is TH, TS, and TeH and major species in each category and country-wise						
	Domestic in M^3 with type of wood that is TH, TS, and TeH and major species in each category						
14.	Price competitiveness by species and country wise vis-à-vis domestic						
15.	End-use of timber in						
	1. Construction Total in M^3 (Proportion of Door frames/window frames, door shutters/window shutters/ward robes flooring and others. Inclusive of all income groups High /Medium/Low as based on total houses constructed)						
	A. Major import species and quantity country wise						
	B. Major species in domestic market and quantity						
	C. Preference criteria for use in Construction						
	2. Builders' Joinery/ Woodworking total in M^3						
	A. Major import species and quantity country wise						
	B. Major species in domestic market and quantity						
	C. Preference criteria for use in Builders' Joinery/ Woodworking						
	3. Furniture/ furniture components Total in M^3 (Proportion of Household and Commercial furniture and also Proportion of imported and domestic species in each)						
	A. Proportion of Household and Commercial furniture						
	B. Proportion of imported and domestic species in Household furniture (Name Major species)						
	C. Proportion of imported and domestic species in Commercial furniture (Name Major species)						
	D. Preference criteria for use in Furniture/ furniture components						

S.N.	Items	1997-98	1999-2000	2002-03	2005-06	2007-08	2012-13
	4. Flooring Total in M^3						
	A. Proportion of imported species in Total Flooring (Name Major species)						
	B. Proportion of domestic species Total Flooring (Name Major species)						
	C. Preference criteria for use in Flooring						
	5. Plywood Total in M^3						
	A. Proportion of imported species in Total Plywood (Name Major species)						
	B. Proportion of domestic species in Total Plywood (Name Major species)						
	C. Preference criteria for use in Plywood						
16.	Preference for any value added-imported timber products						

17. Trends in Channels of Distribution of each timber product (as of now and 5 years ago)

18. Trends in Tariffs on Timber/ Timber product Imports to India (as of now and 5 years ago)

Annex 4.2

Questionnaire 1: Survey of Tropical Timber Products Importers/Timber Traders/ Plywood Manufacturers/Furniture Manufacturers

Q 1. I am interested in what you consider to be the main economic factors influencing the sales of your products on the domestic market.

Please tick a maximum of three of the factors listed below for the products applicable to you. Feel free to state and comment on other factors you think are more relevant.

	PRODUCT				
DRIVER	**Tropical Industrial Roundwood**	**Tropical Sawn timber**	**Tropical Plywood**	**Tropical Veneers**	**Tropical Builder's Joinery**
Gross Domestic Product (GDP)					
Housing starts/completion					
All construction activity					
Furniture Sales					
Consumer spending					
Others (please state)					

Q 2. What are the five main timber products you use and what are their main end uses?

	Products	**End Uses**
	e.g. Industrial Roundwood/Logs Sawnwood Plywood Veneers Builder's Joinery	Construction Builder's Woodworking Furniture Furniture components Flooring
1		
2		
3		
4		
5		

Q 3. Taking the main end uses given in question 2, please indicate in the table below your main criteria in selecting the timber products you use.

Please tick up to three characteristics per section and indicate how well timber products perform against alternative materials. G = Good, S = Satisfactory or P = Poor. Please also state what the main competitive materials are.

Characteristics	Use in construction (by species)		Use in Builder's Woodworking (by species)		Use in Furniture (by species)		Use in Furniture components (by species)		Use in Flooring (by species)	
	Key Criteria	Rating	Key Criteria	Rating	Key Criteria	Rating	Key Criteria	Rating	Key Criteria	Rating
Price Competitiveness										
Appearance										
Colour consistency										
Natural durability										
Machinability/Workability										
Dimensional stability										
Regular and reliable supply										
Other (please specify)										
What are the main competitive materials										

Q 4. What have been the main products where your imports/sales have grown over the last 5 years, what are the sources for these imports and what are the reasons for this growth?

Products including species	Sources	Increasing/declining	Reasons for increase/decline

Q 5. At the end of year 2005-06 and year 2007-08, which timber products (and species) and which timber products markets do you think will show the fastest growth?

	Timber Products	Timber Product End-Use
2005-06		
2007-08		

Q.6 What are the main distribution channels you use in your main markets and how are these changing? (Source to end-use)

Product 1 **Product 2** **Product 3**

Channels
Used in 1997-98

Channels
Used in 2002-2003

Q 7. What are the main difficulties you face in importing/trading in timber products? (Please draw attention to specific difficulties for individual products and source including exporting countries)

Q 8. Looking ahead 5 years I am interested in your views of the strengths, weaknesses, opportunities and threats for your business in domestic markets.

What do you think are your main strengths? **What do you think are your major weaknesses?**

What are the best opportunities for your business? **What are the main threats to your business?**

Q 9. What has been/would be the Demand for following type of Timber Products in your city in following years:

Timber Product	**Demand**									
	1997-98		**1999-2000**		**2002 – 2003**		**2005-06**		**2007-08**	
	Species	Quantity Cu.m	Species	Quantity Cu.m	Species	Quantity Cu.m	Species	Quantity Cu.m	Species	Quantity Cu.m
Industrial roundwood-logs										
Sawnwood										
Veneer										
Plywood										
Builders joinery										

Q 10. What Type of Timber (such as tropical hardwood – TH, Tropical Softwood – TS, temperate hardwood - TeH including species) is used for each of timber products. Also mention the source of the timber used (such as locally available- Forest Department F, Farm Forestry/Plantations P, Homestead Forestry H, from other states – OS, imported – IM with name of the country).

Timber Product	Type and Source of Timber					
	1997-98		1999-2000		2002-2003	
	Type of timber (name the species)	Source of Timber	Type of timber (name the species)	Source of Timber	Type of timber (name the species)	Source of Timber
Industrial roundwood/logs						
Sawnwood						
Veneer						
Plywood						
Builders joinery						

Q 11. Has there been any Demand/Supply gaps in the following Timber Products? If yes then what is the extent of gaps (Demand as % of Supply) and the reasons for gaps.

Timber Product	Type and Source of Timber								
	1997-98			1999-2000			2002-2003		
	Demand of Timber Cu.m	Supply as % of D	Reasons for gaps	Demand of Timber Cu.m	Supply as % of D	Reasons for gaps	Demand of Timber Cu.m	Supply as % of D	Reasons for gaps
Industrial roundwood/logs									
Sawnwood									
Veneer									
Plywood									
Builders joinery									

Q 12. What has been the comparative price of timber sourced from different sources in the following years? (Such as locally available- Forest Department F, Farm Forestry/Plantations P, Homestead Forestry H, from other states – OS, imported – IM with name of the country)

Timber Product	Source of Timber and Price (Rs. per Cu.m)					
	1997-98		1999-2000		2002-2003	
	Source of Timber by species	Price by species	Source of Timber by species	Price by species	Source of Timber by species	Price by species
Industrial roundwood-logs						
Sawnwood						
Veneer						
Plywood						
Builders joinery						

Q 13. What are the main uses of timber in your city and what percentage of total timber is consumed for a particular end-use? (List the use as Construction, builders' woodworking, furniture, furniture components, flooring, etc.)

Timber Product	**End-use and Proportion of Timber**					
	1997-98		**1999-2000**		**2002-2003**	
	End-use by	Proportion of timber by Species	End-use by	Proportion of timber by Species	End-use by	Proportion of timber by Species
Industrial roundwood (logs)	1 Construction 2 Builders' woodworking 3 Furniture 4 Furniture components 5 Flooring 6 7		1 Construction 2 Builders' woodworking 3 Furniture 4 Furniture components 5 Flooring 6 7		1 Construction 2 Builders' woodworking 3 Furniture 4 Furniture components 5 Flooring 6 7	
Sawnwood	1 Construction 2 Builders' woodworking 3 Furniture 4 Furniture components 5 Flooring 6 7		1 Construction 2 Builders' woodworking 3 Furniture 4 Furniture components 5 Flooring 6 7		1 Construction 2 Builders' woodworking 3 Furniture 4 Furniture components 5 Flooring 6 7	
Veneer	1 Construction 2 Builders' woodworking 3 Furniture 4 Furniture components 5 Flooring 6 7		1 Construction 2 Builders' woodworking 3 Furniture 4 Furniture components 5 Flooring 6 7		1 Construction 2 Builders' woodworking 3 Furniture 4 Furniture components 5 Flooring 6 7	
Plywood	1 Construction 2 Builders' woodworking 3 Furniture 4 Furniture components 5 Flooring 6 7		1 Construction 2 Builders' woodworking 3 Furniture 4 Furniture components 5 Flooring 6 7		1 Construction 2 Builders' woodworking 3 Furniture 4 Furniture components 5 Flooring 6 7	
Builders joinery	1 Construction 2 Builders' woodworking 3 Furniture 4 Furniture components 5 Flooring 6 7		1 Construction 2 Builders' woodworking 3 Furniture 4 Furniture components 5 Flooring 6 7		1 Construction 2 Builders' woodworking 3 Furniture 4 Furniture components 5 Flooring 6 7	

Q 14. What is the consumption of timber for each of the following uses?

End-use	Type of Timber and quantity for each End-use									
	1997-98		1999-2000		2002 – 2003		2005-06		2007-08	
	Quantity of timber Cu.m	Type of timber	Quantity of timber Cu.m	Type of timber	Quantity of timber Cu.m	Type of timber	Quantity of timber Cu.m	Type of timber	Quantity of timber Cu.m	Type of timber
Construction										
Builders' woodworking										
Furniture										
Furniture components										
Flooring										

Q 15. What type and quantity of timber is used for the following End-uses (such as tropical hardwood – TH, Tropical Softwood – TS, temperate Hardwood - TeH including species)?

End-use	Type of Timber and quantity for each end use									
	1997-98		1999-2000		2002 – 2003		2005-06		2007-08	
	Type of species	Quantity Cu.m	Type of species	Quantity Cu.m	Type of species	Quantity CU. M	Type of species	Quantity Cu.m	Type of species	Quantity Cu.m
Construction (species such as Meranti, Teak, Sal, Pine, Oak, Beach etc and, local species such as Mango, Shisham	1 2 3									
Builders' woodworking	1 2 3									
Furniture	1 2 3									
Furniture components	1 2 3									
Flooring	1 2 3									

Q 16. Open ended discussion. (Develop topics of interest brought up in earlier discussions).
Also ask respondents for preference for value added/imported wood products and their willingness to pay for the same.

Name of the City: Name of the Surveyor:

Date:

Respondent Profile

Name of the firm/Company/Department:

Address (with telephone/Fax/email)

Annex 4.3

QUESTIONNAIRE 2 : SURVEY OF HOUSEHOLD/BUILDER/ARCHITECT (WOOD USE)

City ……

Date: Signature

Name of Surveyor

Name of the House Owner /Builder or Construction Agency/Architect:

Q 1.

1.	**Reference of the Stratum**	
2.	Type of Building actually visited as a sample unit Serial No. of the building out of the total buildings to be visited	Katcha/pucca (one-two storeyed) /multi-storeyed
3.	No. of storeys total and used for living only [to be filled in if more than one storey]	
4.	No. of house-holds living in the building	
5.	Total number of persons living in the house-hold	
6.	Average annual income of the family. Nature of occupation	Service (Govt/Pvt.) /Industry/Business/Others
7.	Average plinth area occupied by each house includes veranda covered by roof and floor	
8.	[a} No. of living rooms	
	[b] No. of storage rooms	
	[c] No. of common rooms	
	[d] Other category viz., bath rooms, latrines, Kitchen, cowshed, etc.	

Q 2. Use of wood for house construction

Sr. No	End Product Type	1997-98	1999-2000	2002 – 2003	2005-06	2007-08
1.	Door Frames,/ Window Frames / Ward Robes (Proportion of material used Wood/iron/aluminium/RCC)					
	If wood used then total quantity of Sawnwood in Cu.m and name of the major wood species used (Both Imported and local)					
	Proportion of Type of timber-TH, TE, THE, TS, TES/local					
2.	Door Shutters /Window Shutters /Wardrobe Shutters (Proportion of Door panel / Flush Door)					
	A. Total quantity of Sawnwood in Cu.m and name of the major wood species used in Wood Panel (Both Imported and local)					
	B. Preference criteria for use of species					
	C. Total quantity in Cu.m and name of the major wood species used in Flush Door (Both Imported and local)					
	D. Preference criteria for use of species					
3.	Flooring Total quantity in Cu.m and name of the major wood species used in Flooring (Both Imported and local)					
	A. Preference criteria for use of species					
4.	Palemats / palemats roads Total quantity in Cu.m and name of the major wood species used (Both Imported and local)					
	A. Preference criteria for use of species					
5.	Wall Panelling / Ceiling Total quantity in Cu.m and name of the major wood species used (Both Imported and local)					
	A. Preference criteria for use of species					
6.	Others (please specify)					

Q 3. Use of Wood for Furniture

1997-98

Sr. No.	Item	Numbers	Proportion of Wood / Wood Panel / Non-wood Material	Quantity of Wood in Cu. m and Species used (Both imported & local)	Preference criteria for use of species	Quantity of Wood Panel in Cu.m and Species - imported & local	Preference criteria for use of species
1.	Household furniture						
	Chairs						
	Tables						
	Wooden Almirahs						
	Cots						
	Others (Please Specify) A B C						
2.	Commercial furniture (Hotels/shops/ offices etc.)						
	Partition walls						
	Panelling						
	Shelves						

1999-2000

Sr. No.	Item	Numbers	Proportion of Wood / Wood Panel / Non-wood Material	Quantity of Wood in Cu. m and Species used (Both imported & local)	Preference criteria for use of species	Quantity of Wood-Panel in Cu.m and Species used (Both imported & local)	Preference criteria for use of species
1.	Household furniture						
	Chairs						
	Tables						
	Wooden Almirahs						
	Cots						
	Others (Please Specify) A B C						
2.	Commercial furniture (Hotels/shops/ offices etc.)						
	Partition walls						
	Panelling						
	Shelves						

2002-03

Sr. No.	Item	Numbers	Proportion of Wood / Wood Panel / Non-wood Material	Quantity of Wood in Cu. m and Species used (Both imported & local)	Preference criteria for use of species	Quantity of Wood-Panel in Cu.m and Species used (Both imported & local)	Preference criteria for use of species
1.	Household furniture						
	Chairs						
	Tables						
	Wooden Almirahs						
	Cots						
	Others (Please Specify) A B C						
2.	Commercial furniture (Hotels/Shops/ Offices etc.)						
	Partition walls						
	Panelling						
	Shelves						

2005-06

Sr. No.	Item	Numbers	Proportion of Wood / Wood Panel / Non-wood Material	Quantity of Wood in cum. m and Species used (Both imported & local)	Preference criteria for use of species	Quantity of Wood-Panel in cum. and Species used (Both imported & local)	Preference criteria for use of species
1.	Household furniture						
	Chairs						
	Tables						
	Wooden Almirahs						
	Cots						
	Others (Please Specify) A B C						
2.	Commercial furniture (Hotels/shops/ offices etc.)						
	Partition walls						
	Panelling						
	Shelves						

2007-08

Sr. No.	Item	Numbers	Proportion of Wood / Wood Panel / Non-wood Material	Quantity of Wood, in Cu.m, and Species used (Both imported & local)	Preference criteria for use of species	Quantity of Wood-Panel, in Cu.m, and Species used - imported & local	Preference criteria for use of species
1.	Household furniture						
	Chairs						
	Tables						
	Wooden Almirahs						
	Cots						
	Others (Please Specify) A B C						
2.	Commercial furniture (Hotels/shops/ offices etc.)						
	Partition walls						
	Panelling						
	Shelves						

Note: Question 3 can be also framed in the same manner as question number 2.

Q 4. Open ended discussion. (Develop topics of interest brought up in earlier discussions)
Also ask respondents for preference for value added/imported wood products and their willingness to pay for the same

Annex 4.4.1

CONSUMPTION CENTRE SUMMARY REPORT FOR URBAN CITY: MUMBAI (Cu.m)

S.N.	Items	1997-98	1999-2000	2002-03	2005-06	2007-08	20012-13
1	Total timber consumption (Industrial roundwood/Logs) (2+3+4)	412,920	474,858	403,629	415,738	428,210	479,595
2	Tropical Hardwood (TH) Logs in M3 and major species (such as Teak (Burma-T, American T, Panama T, Ghana-T,	371,380	427,087	363,024	373,915	385,132	431,348
	Ghana-T, Plantation-T etc., Gurjan, Marsuea, Meranti, Mahogany, Rose wood, Sal, Keruing, Kapur,						
	Andaman Padaouk, Lampati, Laurel, Bonsom etc.) (5+8)						
3	Tropical Softwood(TS) Logs and major species (All types of pine – Radianta, New Zealand Pine,	35,340	40,641	34,545	35,581	36,648	41,046
	Australian Pine and France Pine etc)						
4	Temperate Hardwood(TeH) Logs and major species (such as Oak, Beech, Birch, willow)	6,200	7,130	6,061	6243	6,430	7,202
5	Imported TH (Tropical Hardwood) Logs major species and country-wise	222,828	256,252	217,814	224,348	231,078	258,807
6	Imported SW (Tropical Softwood) Logs and major species	34,875	40,106	34,090	35,113	36,166	40,506
7	Imported Temperate Hardwood Logs iand major species	5,983	6,880	5,848	6,023	6,204	6,948
8	Domestic HW Logs with major species and source-wise	148,552	170,835	145,210	149,566	154,053	172,539
	F (Forest department)	7,428	8,542	7,261	7,479	7,703	8,627
	P (Plantation/ Agro Forestry)	103,986	119,584	101,646	104,695	107,836	120,776
	H (Homestead) From other states	37,138	42,709	36,303	37,392	38,514	43,136
9	Domestic SW Logs with major species and source-wise	Nil	Nil	Nil	Nil	Nil	Nil
	F (Forest department)	Nil	Nil	Nil	Nil	Nil	Nil
	P (Plantation/ Agro Forestry)	Nil	Nil	Nil	Nil	Nil	Nil
	H (Homestead) From other states	465	535	455	469	483	541
10	Domestic Temperate Hardwood Logs with major species and source-wise	217	250	213	219	226	253
11	Sawnwood total in M3 with type of wood that is TH, TS, and TeH and major species in each category (11.4 + 11.8)	322,400	370,760	315,146	324,600	334,338	374,459
	11.1 Sawnwood tropical hardwood (TH) and major species (11.5 +11.9)	302,436	347,801	295,631	304,500	313,635	351,271
	11.2 Sawnwood tropical softwood (TS) and major species (11.6 +11.10)	19,034	21,889	18,606	19,164	19739	22,108
	11.3 Sawnwood temperate hardwood (TeH) and major species (11.7 +11.11)	930	1,070	910	937	965	1,081
	11.4 Total Sawnwood Imports in M3 with type of wood that is TH, TS, and TeH and major species in each category	193,440	222,456	189,088	194,761	200,604	224,676
	and country-wise (11.5+11.6+11.7)						
	11.5 Sawnwood Imports of tropical hardwood (TH) and major species and country-wise	174,096	200,210	170,179	175,284	180,543	202,208
	11.6 Sawnwood Imports of tropical softwood (TS) and major species and country-wise	18,600	21,390	18,182	18,727	19,289	21,604
	11.7 Sawnwood Imports of temperate hardwood (TeH) and major species and country-wise	744	856	728	750	773	866
	11.8 Sawnwood total domestic in M3 with major species with type of wood that is TH, TS, and the and major	128,960	148,304	126,058	129,840	133,735	149,783
	species in each category (11.9+11.10+11.11						
	11.9 Sawnwood domestic of tropical hardwood (TH) and major species	128,340	147,591	125,452	129,216	133,092	149,063
	11.10 Sawnwood domestic of tropical softwood (TS) and major species	434	499	424	437	450	504
	11.11 Sawnwood domestic of temperate hardwood (TeH) and major species	186	214	182	187	193	216
12	Plywood – total with type of wood that is TH, TS, and TeH and major species in each category (12.4 + 12.8)	44,020	50,623	43,030	44,321	45,651	51,129
	12.1 Plywood tropical hardwood (TH) and major species (12.5 +12.9) Average Thickness considered is 12mm	40,595	46,684	39,681	40,871	42,097	47,149
	12.2 Plywood tropical softwood (TS) and major species (12.6 +12.10)	3,038	3,494	2,970	3,059	3,151	3,529
	12.3 Plywood temperate hardwood (TeH) and major species (12.7 +12.11)	388	446	379	390	402	450
	12.4 Plywood total Imports with type of wood that is TH, TS, and TeH and major species in each category	527	606	515	530	546	612
	and country-wise (12.5+12.6+12.7)						

S.N.	Items	1997-98	1999-2000	2002-03	2005-06	2007-08	20012-13
	12.5 Plywood Imports of tropical hardwood (TH) and major species and country-wise	16	18	15	15	15	17
	12.6 Plywood Imports of tropical softwood (TS) and major species and country-wise	124	143	122	126	130	146
	12.7 Plywood Imports of temperate hardwood (TeH) and major species and country-wise	388	446	379	390	402	450
	12.8 Plywood Domestic in M3 with type of wood that is TH, TS, and TeH and major species in each category (12.9+12.10+12.11)	43,493	50,017	42,514	43,789	45,103	50,515
	12.9 Plywood domestic of tropical hardwood (TH) and major species	40,579	46,666	39,666	40,856	42,082	47,132
	12.10 Plywood domestic of tropical softwood (TS) and major species	2,914	3,351	2,848	2,933	3,021	3,384
	12.11 Plywood domestic of temperate hardwood (TeH) and major species	Nil	Nil	Nil	Nil	Nil	Nil
13	Builders' Joinery/ Woodworking total with type of wood that is TH, TS, and TeH and major species in each category (13.4 + 13.8)	118,742	136,554	116,072	119,555	123,142	137,919
	13.1 Builders' Joinery tropical hardwood (TH) and major species (13.5 +13.9)	70,680	81,282	69,090	71,163	73,298	82,094
	13.2 Builders' Joinery tropical softwood (TS) and major species (13.6 +13.10)	Nil	Nil	Nil	Nil	Nil	Nil
	13.3 Builders' Joinery temperate hardwood (TeH) and major species (13.7 +13.11)	Nil	Nil	Nil	Nil	Nil	Nil
	13.4 Builders' Joinery total Imports with type of wood that is TH, TS, and TeH and major species in each category and country-wise (13.5+13.6+13.7)	48,062	55,271	46,980	48,389	49,841	55,822
	13.5 Builders' Joinery Imports of tropical hardwood (TH) and major species and country-wise	48,062	55,271	46,980	48,389	49,841	55,822
	13.6 Builders' Joinery Imports of tropical softwood (TS) and major species and country-wise	Nil	Nil	Nil	Nil	Nil	Nil
	13.7 Builders' Joinery Imports of temperate hardwood (TeH) and major species and country-wise	Nil	Nil	Nil	Nil	Nil	Nil
	13.8 Builders' Joinery Domestic with type of wood that is TH, TS, and TeH and major species in each category (13.9+13.10+13.11)	22,618	26,011	22,109	22,772	23,455	26,270
	13.9 Builders' Joinery domestic of tropical hardwood (TH) and major species	22,618	26,011	22,109	22,772	23,455	26,270
	13.10 Builders' Joinery domestic of tropical softwood (TS) and major species	Nil	Nil	Nil	Nil	Nil	Nil
	13.11 Builders' Joinery domestic of temperate hardwood (TeH) and major species	Nil	Nil	Nil	Nil	Nil	Nil
14	Price competitiveness by species and country wise vis-à-vis domestic	--	--	--	--	----	
15	End-use of timber in:						
	15.1 Construction Total of timber	83,080	95,542	81,211	83,647	86,156	96,495
	(Proportion of Door frames/window frames, door shutters/window shutters/ward robes flooring and others. Inclusive of all income groups High /Medium/Low as based on total houses constructed)						
	15.1 A. Major import species and quantity country wise used in construction						
	Teak :-	38,440	44,206	37,575	38,702	39,863	44,647
	Sal :-	9,622	11,065	9,405	9,687	9,978	11,175
	Others :-	3,100	3,565	3,030	3,121	3,215	3,601
	Tota Imported timber used in Construction	51,162	58,836	50,010	51,510	53,056	59,423
	15.1 B. Major species in domestic market and quantity used in construction						
	Teak :-	7,738	8,899	7,564	7,791	8,025	8,988
	Sal :-	11,780	13,547	11,515	11,860	12,216	13,682
	Others :-	12,400	14,260	12,121	12,485	12,860	14,403
	Total Domestic timber used in Construction	31,918	36,706	31,200	32,136	33,101	37,073
	15.1 C. Preference criteria for use in Construction						
	15.2 Builders' Joinery/ Woodworking total	70,680	81,282	69,090	71,163	73,298	82,094
	15.2 A. Major import species and quantity country wise used in Builder's Joinery						
	Teak :-	38,440	44,206	37,575	38,702	39,863	44,647
	Sal :-	21,700	24,955	21,212	21,848	22,503	25,203
	Others :-	10,540	12,121	10,303	10,612	10,930	12,242
	Tota timber used in Builder's Joinery	70,680	81,282	69,090	71,162	73,296	82,092
	15.2 B. Major species in domestic market and quantity used in Builder's Joinery						
	Teak :-	14,419	16,582	14,095	14,518	14,954	16,748
	Sal :-	24,031	27,636	23,491	24,196	24,922	27,913
	Others :-	9,612	11,054	9,396	9,678	9,968	11,164

S.N.	Items	1997-98	1999-2000	2002-03	2005-06	2007-08	20012-13
	Tota Domestic timber used in Builder's Joinery	48,062	55,272	46,982	48,392	49,844	55,825
	15.2 C. Preference criteria for use in Builders' Joinery/ Woodworking						
	15.3 Furniture/ furniture components Total timber	217,000	249,550	212,118	218,482	225,036	252,040
	Proportion of Household and Commercial furniture and also Proportion of imported and domestic species in each category						
	15.3 A. Proportion of Household and Commercial furniture	30:70	30:70	30:70	30:70	30:70	30:70
	15.3.A.1 Timber consumption in Household Furniture	65,100	74,865	63,635	65,544	67,510	75,611
	15.3.A.2. Proportion of imported and domestic species in Household furniture	85:15	85:15	85:15	85:15	85:15	85:15
	Name Major species -both imported and domestic species	Teak	Teak	Teak	Teak	Teak	Teak
		Sal	Sal	Sal	Sal	Sal	Sal
		Rose wood	Rose wood	Rose wood	Rose wood	Rose wood	Rose wood
	15.3.B.1 Timber consumption in Commercial Furniture	151,900	174,685	148,482	152,936	157,524	176,427
	15.3 B. 2 Proportion of imported and domestic species in Commercial furniture	85:15	85:15	85:15	85:15	85:15	85:15
	Name Major species -both imported and domestic species	Same as 15.3.A.2	Same as 15.3.A.2	Same as 15.3.A.2	Same as 15.3.A.2	Same as 15.3.A.2	Same as 15.3.A.2
	15.3.C. Preference criteria for use in Furniture/ furniture components	--	--	--	--	----	
	15.4. Flooring Total timber consumption	Nil	Nil	Nil	Nil	Nil	Nil
	15.4.A Proportion of imported species used in Flooring , name of country and major species	Nil	Nil	Nil	Nil	Nil	Nil
	15.4. B. Proportion of domestic species used in Flooring , and major species	Nil	Nil	Nil	Nil	Nil	Nil
	15.4.C Preference criteria for use in Flooring	--	--	--	--	----	
	15.5 . Plywood Total timber consumption	44,020	50,623	43,030	44,321	45,651	51,129
	15.5.A. Proportion of imported species used in Plywood , name of country and major species	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
	B. Proportion of domestic species used in Plywood , and major species	Teak: 20 %, Sal :80%	Teak: 20 %, Sal :80%	Teak: 20 %, Sal :80%	Teak: 20 %, Sal :80%	Teak: 20 %, Sal:80%	Teak: 20 %, Sal :80%
	C. Preference criteria for use in Plywood	--	--	--	--	----	
16	Preference for any value added-imported timber products (Name of the Value added product and the preference criteria)	--	--	--	--	----	

Annex 4.4.2

CONSUMPTION CENTRE SUMMARY REPORT FOR URBAN CITY: PUNE (Cu.m)

S.N.	Items	1997-98	1999-2000	2002-03	2005-06	2007-08	20012-13
1	Total timber consumption (Industrial roundwood/Logs) (2+3+4)	153,180	183,816	174,625	183,356	188,857	217,186
2	Tropical Hardwood (TH) and major species (such as Teak (Burma-T, American T, Panama T, Ghana-T, Ghana-T, Plantation-T etc., Gurjan, Marsuea, Meranti, Mahogany, Rose wood, Sal, Keruing, Kapur, Andaman Padaouk, Lampati, Laurel, Bonsom etc.) (5+8)	137,770	165,324	157,058	164,911	169,858	195,337
3	Tropical Softwood(TS) and major species (All types of pine – Radianta, New Zealand Pine, Australian Pine and France Pine etc)	13,110	15,732	14,945	15,692	16,163	18,587
4	Temperate Hardwood(TeH) and major species (such as Oak, Beech, Birch, willow)	2,300	2,760	2,622	2,753	2,836	3,261
5	Imported TH (Tropical Hardwood) major species and country-wise	82,662	99,194	94,234	98,946	101,914	117,201
6	Imported SW (Tropical Softwood) and major species	12,938	15,526	14,750	15,488	15,953	18,346
7	Imported Temperate Hardwood and major species	2,220	2,664	2,531	2,658	2,738	3,149
8	Domestic HW with major species and source-wise	55,108	66,130	62,824	65,965	67,944	78,136
	F (Forest department)	2,755	3,306	3,141	3,298	3,397	3,907
	P (Plantation/ Agro Forestry)	38,576	46,291	43,976	46,175	47,560	54,694
	H (Homestead) From other states	13,777	16,532	15,705	16,490	16,985	19,533
9	Domestic SW with major species and source-wise	Nil	Nil	Nil	Nil	Nil	Nil
	F (Forest department)	Nil	Nil	Nil	Nil	Nil	Nil
	P (Plantation/ Agro Forestry)	Nil	Nil	Nil	Nil	Nil	Nil
	H (Homestead) From other states	173	208	198	208	214	246
10	Domestic Temperate Hardwood with major species and source-wise	81	97	92	97	100	115
11	Sawnwood total with type of wood that is TH, TS, and TeH and major species in each category (11.4 + 11.8)	119,600	143,520	136,344	143,161	147,456	169,574
	11.1 Sawnwood tropical hardwood (TH) and major species (11.5 +11.9)	112,194	134,633	127,901	134,296	138,325	159,074
	11.2 Sawnwood tropical softwood (TS) and major species (11.6 +11.10)	7,061	8,473	8,049	8,451	8,705	10,011
	11.3 Sawnwood temperate hardwood (TeH) and major species (11.7 +11.11)	345	414	393	413	425	489
	11.4 Total Sawnwood Imports in M3 with type of wood that is TH, TS, and TeH and major species in each category and country-wise (11.5+11.6+11.7)	71,760	86,112	81,806	85,896	88,473	101,744
	11.5 Sawnwood Imports of tropical hardwood (TH) and major species and country-wise	64,584	77,501	73,626	77,307	79,626	91,570
	11.6 Sawnwood Imports of tropical softwood (TS) and major species and country-wise	6,900	8,280	7,866	8,259	8,507	9,783
	11.7 Sawnwood Imports of temperate hardwood (TeH) and major species and country-wise	276	331	314	330	340	391
	11.8 Sawnwood total domestic with major species with type of wood that is TH, TS, and the and major species in each category (11.9+11.10+11.11)	47,840	57,408	54,538	57,265	58,983	67,830
	11.9 Sawnwood domestic of tropical hardwood (TH) and major species	47,610	57,132	54,275	56,989	58,699	67,504
	11.10 Sawnwood domestic of tropical softwood (TS) and major species	161	193	183	192	198	228
	11.11 Sawnwood domestic of temperate hardwood (TeH) and major species	69	83	79	83	85	98
12	Plywood – total in M3 with type of wood that is TH, TS, and TeH and major species in each category (12.4 + 12.8)	16,330	19,596	18,616	19,547	20,133	23,153
	12.1 Plywood tropical hardwood (TH) and major species (12.5 +12.9) Average Thickness considered is 12mm	15,059	18,071	17,167	18,025	18,566	21,351
	12.2 Plywood tropical softwood (TS) and major species (12.6 +12.10)	1,127	1,352	1,284	1,348	1,388	1,596
	12.3 Plywood temperate hardwood (TeH) and major species (12.7 +12.11)	144	173	164	172	177	204

S.N.	Items	1997-98	1999-2000	2002-03	2005-06	2007-08	20012-13
	12.4 Plywood total Imports in M3 with type of wood that is TH, TS, and TeH and major species in each category and country-wise (12.5+12.6+12.7)	196	235	223	234	241	277
	12.5 Plywood Imports of tropical hardwood (TH) and major species and country-wise	6	7	7	7	7	8
	12.6 Plywood Imports of tropical softwood (TS) and major species and country-wise	46	55	52	55	57	66
	12.7 Plywood Imports of temperate hardwood (TeH) and major species and country-wise	144	173	164	172	177	204
	12.8 Plywood Domestic with type of wood that is TH, TS, and TeH and major species in each category (12.9+12.10+12.11)	16,135	19,362	18,394	19,314	19,893	22,877
	12.9 Plywood domestic of tropical hardwood (TH) and major species	15,054	18,065	17,162	18,020	18,561	21,345
	12.10 Plywood domestic of tropical softwood (TS) and major species	1,081	1,297	1232	1,294	1,333	1,533
	12.11 Plywood domestic of temperate hardwood (TeH) and major species	Nil	Nil	Nil	Nil	Nil	Nil
13	Builders' Joinery/ Woodworking total with type of wood that is TH, TS, and TeH and major species in each category (13.4 + 13.8)	26,220	31,464	29,891	31,386	32,328	37,177
	13.1 Builders' Joinery tropical hardwood (TH) and major species (13.5 +13.9)	26,220	31,464	29,891	31,386	32,328	37,177
	13.2 Builders' Joinery tropical softwood (TS) and major species (13.6 +13.10)	Nil	Nil	Nil	Nil	Nil	Nil
	13.3 Builders' Joinery temperate hardwood (TeH) and major species (13.7 +13.11)	Nil	Nil	Nil	Nil	Nil	Nil
	13.4 Builders' Joinery total Imports with type of wood that is TH, TS, and TeH and major species in each category and country-wise (13.5+13.6+13.7)	17,830	21,396	20,326	21,342	21,982	25,279
	13.5 Builders' Joinery Imports of tropical hardwood (TH) and major species and country-wise	17,830	21396	20,326	21,342	21,982	25,279
	13.6 Builders' Joinery Imports of tropical softwood (TS) and major species and country-wise						
	13.7 Builders' Joinery Imports of temperate hardwood (TeH) and major species and country-wise						
	13.8 Builders' Joinery Domestic with type of wood that is TH, TS, and TeH and major species in each category (13.9+13.10+13.11)	8,390	10,068	9,565	10,043	10,344	11,896
	13.9 Builders' Joinery domestic of tropical hardwood (TH) and major species	8,390	10,068	9,565	10,043	10,344	11,896
	13.10 Builders' Joinery domestic of tropical softwood (TS) and major species	Nil	Nil	Nil	Nil	Nil	Nil
	13.11 Builders' Joinery domestic of temperate hardwood (TeH) and major species	Nil	Nil	Nil	Nil	Nil	Nil
14	Price competitiveness by species and country wise vis-à-vis domestic	--	--	--	--	--	--
15	End-use of timber in						
	15.1 Construction Total of timber (Proportion of Door frames/window frames, door shutters/window shutters/ward robes flooring and others. Inclusive of all income groups High /Medium/Low as based on total houses constructed)	30,820	36,984	35,135	36,892	37,999	43,699
	15.1 A. Major import species and quantity country wise used in construction						
	Teak :-	14,260	17,112	16,256	17,069	17,581	20,218
	Sal :-	3,570	4,284	4,070	4,274	4,402	5,062
	Others :-	1,150	1,380	1,311	1,377	1,418	1,631
		18,980	22,776	21,637	22,720	23,401	26,911
	15.1 B. Major species in domestic market used in construction						
	Teak :-	2,870	3,444	3,272	3,436	3,539	4,070
	Sal :-	4,370	5,244	4,982	5,231	5,388	6,196
	Others :-	4,600	5,520	5,244	5,506	5,671	6,522
		11,840	14,208	13,498	14,173	14,598	16,788
	15.1 C. Preference criteria for use in Construction						
	15.2 Builders' Joinery/ Woodworking total	44,050	52,860	50,217	52,728	54,310	62,456
	Imports	26,220	31,464	29,891	31,386	32,328	37,177
	Domestic	17,830	21,396	20,326	21,342	21,982	25,279

S.N.	Items	1997-98	1999-2000	2002-03	2005-06	2007-08	20012-13
	15.2 A. Major import species country wise used in Builder's Joinery						
	Teak :-	14,260	17,112	16,256	17,069	17,581	20,218
	Sal :-	8,050	9,660	9,177	9,636	9,925	11,414
	Others :-	3,910	4,692	4,457	4,680	4,820	5,543
	Total Imported timber use in Builder's Joinery	26,220	31,464	29,890	31,385	32,326	37,175
	15.2 B. Major species in domestic market used in Builder's Joinery						
	Teak :-	5,349	6,419	6,098	6,403	6,595	7,584
	Sal :-	8,915	10,698	10,163	10,671	10,991	12,640
	Others :-	3,566	4,279	4,065	4,268	4,396	5,055
	Total Domestic timber use in Builder's Joinery	17,830	21,396	20,326	21,342	21,982	25,279
	15.2 C. Preference criteria for use in Builders' Joinery/ Woodworking						
	15.3 Furniture/ furniture components Total timber (Proportion of Household and Commercial furniture and also Proportion of imported and domestic species in each)	80,500	96,600	91,770	96,359	99,250	114,138
	15.3 A. Proportion of Household and Commercial furniture						
	15.3.A.1 Timber consumption in Household Furniture	24,150	28,980	27,531	28,908	29,775	34,241
	15.3.A.2. Proportion of imported and domestic species in Household furniture (Name Major species both						
	imported-with country name and domestic species)	Teak	Teak	Teak	Teak	Teak	Teak
		Sal	Sal	Sal	Sal	Sal	Sal
		Rose wood	Rose wood	Rose wood	Rose wood	Rose wood	Rose wood
	15.3.B.1 Timber consumption in Commercial Furniture	56,350	67,620	64,239	67,451	69,475	79,896
	15.3 B. 2 Proportion of imported and domestic species in Commercial furniture (Name Major species both	85:15	85:15	85:15	85:15	85:15	85:15
	Imported-with country name and domestic species)	Same as 15.3.A.2	Same as 15.3.A.3	Same as 15.3.A.4	Same as 15.3.A.5	Same as 15.3.A.6	Same as 15.3.A.7
	15.3.C. Preference criteria for use in Furniture/ furniture components	--	--	--	--	--	--
	15.4. Flooring Total timber consumption	nil	nil	nil	nil	nil	nil
	15.4.A Proportion of imported species used in Flooring, name of country and major species	nil	nil	nil	nil	nil	nil
	15.4. B. Proportion of domestic species used in Flooring, and major species	nil	nil	nil	nil	nil	nil
	15.4.C Preference criteria for use in Flooring	--	--	--	--	--	--
	15.5 . Plywood Total timber consumption	16,330	19,596	18,616	19,547	20,133	23,153
	15.5.A. Proportion of imported species used in Plywood, name of country and major species	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
	B. Proportion of domestic species used in Plywoodand major species	Teak : 20 %, Sal :80%	Teak : 20 %, Sal :80%	Teak : 20 %, Sal :80%	Teak : 20 %, Sal :80%	Teak : 20 %, Sal :80%	Teak : 20 %, Sal :80%
	C. Preference criteria for use in Plywood	--	--	--	--	--	--
16	Preference for any value added-imported timber products (Name of the Value added product and the preference criteria)	--	--	--	--	--	--
17	Trends in Channels of Distribution of each timber product (as of now and 5 years ago)						
	Imported :- Importer - Saw mills - distributor- stockist - Wholesale dealer - Retailer - Consumer						
	Domestic :- Government Auctioner / Agro plantation Co's - Saw mills - distributor- stockist - Wholesale dealer - Retailer - Consumer						
18	Trends in Tariffs on Timber/ Timber product Imports to India (as of now and 5 years ago)						

Annex 4.4.3

CONSUMPTION CENTRE SUMMARY REPORT FOR URBAN CITY: SURAT (Cu.m)

S.N.	Items	1997-98	1999-2000	2002-03	2005-06	2007-08	20012-13
1	Total timber consumption (Industrial roundwood/Logs) (2+3+4)	99,900	109,890	114,286	117,715	120,069	132,076
2	Tropical Hardwood (TH) and major species (such as Teak (Burma-T, American T, Panama T, Ghana-T, Ghana-T, Plantation-T etc., Gurjan, Marsuea, Meranti, Mahogany, Rose wood, Sal, Keruing, Kapur, Andaman Padaouk, Lampati, Laurel, Bonsom etc.) (5+8)	89,850	98,835	102,788	105,872	107,989	118,788
3	Tropical Softwood(TS) and major species (All types of pine – Radianta, New Zealand Pine, Australian Pine and France Pine etc)	8,550	9,405	9,781	10,074	10,275	11,303
4	Temperate Hardwood(TeH) and major species (such as Oak, Beech, Birch, willow)	1,500	1,650	1,716	1,767	1,802	1,982
5	Imported TH (Tropical Hardwood) major species and country-wise	53,910	59,301	61,673	63,523	64,793	71,272
6	Imported SW (Tropical Softwood) and major species	8,438	9,282	9,653	9,943	10,142	11,156
7	Imported Temperate Hardwood and major species	1,448	1,593	1,657	1,707	1,741	1,915
8	Domestic HW with major species and source-wise	35,940	39,534	41,115	42,348	43,195	47,515
	F (Forest department)	1,797	1,977	2,056	2,118	2,160	2,376
	P (Plantation/ Agro Forestry)	25,158	27,674	28,781	29,644	30,237	33,261
	H (Homestead) From other states	8,985	9,884	10,279	10,587	10,799	11,879
9	Domestic SW with major species and source-wise	Nil	Nil	Nil	Nil	Nil	Nil
	F (Forest department)	Nil	Nil	Nil	Nil	Nil	Nil
	P (Plantation/ Agro Forestry)	Nil	Nil	Nil	Nil	Nil	Nil
	H (Homestead) From other states	113	124	129	133	136	150
10	Domestic Temperate Hardwood with major species and source-wise	53	58	60	62	63	69
11	Sawnwood total in M3 with type of wood that is TH, TS, and TeH and major species in each category (11.4 + 11.8)	78,000	85,800	89,232	91,909	93,747	1,03,122
	11.1 Sawnwood tropical hardwood (TH) and major species (11.5 +11.9)	73,170	80,487	83,706	86,217	87,941	96,735
	11.2 Sawnwood tropical softwood (TS) and major species (11.6 +11.10)	4,605	5,066	5,269	5,427	5,536	6,090
	11.3 Sawnwood temperate hardwood (TeH) and major species (11.7 +11.11)	225	248	258	266	271	298
	11.4 Total Sawnwood Imports with type of wood that is TH, TS, and TeH and major species in each category and country-wise (11.5+11.6+11.7)	46,800	51,480	53,539	55,145	56,248	61,873
	11.5 Sawnwood Imports of tropical hardwood (TH) and major species and country-wise in M3	42,120	46,332	48,185	49,631	50,624	55,686
	11.6 Sawnwood Imports of tropical softwood (TS) and major species and country-wise in M3	4,500	4,950	5,148	5,302	5,408	5,949
	11.7 Sawnwood Imports of temperate hardwood (TeH) and major species and country-wise in M3	180	198	206	212	216	238
	11.8 Sawnwood total domestic with major species with type of wood that is TH, TS, and the and major species in each category (11.9+11.10+11.11	31,200	34,320	35,693	36,764	37,499	41,249
	11.9 Sawnwood domestic of tropical hardwood (TH) and major species in M3	31,050	34,155	35,521	36,587	37,319	41,051
	11.10 Sawnwood domestic of tropical softwood (TS) and major species in M3	105	116	121	125	128	141
	11.11 Sawnwood domestic of temperate hardwood (TeH) and major species in M3	45	50	52	54	55	61
12	Plywood – total with type of wood that is TH, TS, and TeH and major species in each category (12.4 + 12.8)	10,650	11,715	12,184	12,550	12,801	14,081
	12.1 Plywood tropical hardwood (TH) and major species (12.5 +12.9) Average Thickness considered is 12mm	9,821	10,803	11,235	11,572	11,803	12,983
	12.2 Plywood tropical softwood (TS) and major species (12.6 +12.10)	735	809	841	866	883	971
	12.3 Plywood temperate hardwood (TeH) and major species (12.7 +12.11)	94	103	107	110	112	123
	12.4 Plywood total Imports with type of wood that is TH, TS,	128	141	147	151	154	169

S.N.	Items	1997-98	1999-2000	2002-03	2005-06	2007-08	20012-13
	and TeH and major species in each category and country-wise (12.5+12.6+12.7)						
	12.5 Plywood Imports of tropical hardwood (TH) and major species and country-wise in M3	4	4	4	4	4	4
	12.6 Plywood Imports of tropical softwood (TS) and major species and country-wise in M3	30	33	34	35	36	40
	12.7 Plywood Imports of temperate hardwood (TeH) and major species and country-wise in M3	94	103	107	110	112	123
	12.8 Plywood Domestic with type of wood that is TH, TS, and TeH and major species in each category (12.9+12.10+12.11)	10,523	11,575	12,038	12,399	12,647	13,912
	12.9 Plywood domestic of tropical hardwood (TH) and major species in M3	9,818	10,800	11,232	11,569	11,800	12,980
	12.10 Plywood domestic of tropical softwood (TS) and major species in M3	705	776	807	831	848	933
	12.11 Plywood domestic of temperate hardwood (TeH) and major species in M3	Nil	Nil	Nil	Nil	Nil	Nil
13	Builders' Joinery/ Woodworking total with type of wood that is TH, TS, and TeH and major species in each category (13.4 + 13.8)	17,100	18,810	19,562	20,149	20,552	22,607
	13.1 Builders' Joinery tropical hardwood (TH) and major species (13.5 +13.9)	17,100	18,810	19,562	20,149	20,552	22,607
	13.2 Builders' Joinery tropical softwood (TS) and major species (13.6 +13.10)	Nil	Nil	Nil	Nil	Nil	Nil
	13.3 Builders' Joinery temperate hardwood (TeH) and major species (13.7 +13.11)	Nil	Nil	Nil	Nil	Nil	Nil
	13.4 Builders' Joinery total Imports with type of wood that is TH, TS, and TeH and major species in each category and country-wise (13.5+13.6+13.7)	11,628	12,791	13,303	13,702	13,976	15,374
	13.5 Builders' Joinery Imports of tropical hardwood (TH) and major species and country-wise in M3	11,628	12,791	13,303	13,702	13,976	15,374
	13.6 Builders' Joinery Imports of tropical softwood (TS) and major species and country-wise in M3						
	13.7 Builders' Joinery Imports of temperate hardwood (TeH) and major species and country-wise in M3						
	13.8 Builders' Joinery Domestic with type of wood that is TH, TS, and TeH and major species in each category (13.9+13.10+13.11)	5,472	6,019	6,260	6,448	6,577	7,235
	13.9 Builders' Joinery domestic of tropical hardwood (TH) and major species in M3	5,472	6,019	6,260	6,448	6,577	7,235
	13.10 Builders' Joinery domestic of tropical softwood (TS) and major species in M3	Nil	Nil	Nil	Nil	Nil	Nil
	13.11 Builders' Joinery domestic of temperate hardwood (TeH) and major species in M3	Nil	Nil	Nil	Nil	Nil	Nil
14	Price competitiveness by species and country wise vis-à-vis domestic	--	--	--	--	--	--
15	End-use of timber in						
	15.1 Construction Total of timber (Proportion of Door frames/window frames, door shutters/window shutters/ward robes flooring and others. Inclusive of all income groups High /Medium/Low as based on total houses constructed)	20,100	22,110	22,994	23,684	24,158	26,574
	15.1 A. Major import species country wise used in construction						
	Teak :-	9,300	10,230	10,639	10,958	11,177	12,295
	Sal :-	2,328	2,561	2,663	2,743	2,798	3,078
	Others :-	750	825	858	884	902	992
		12,378	13,616	14,160	14,585	14,877	16,365
	15.1 B. Major species in domestic market used in construction						
	Teak :-	1,872	2,059	2,141	2,205	2,249	2,474
	Sal :-	2,850	3,135	3,260	3,358	3,425	3,768
	Others :-	3,000	3,300	3,432	3,535	3,606	3,967
		7,722	8,494	8,833	9,098	9,280	10,209
	15.1 C. Preference criteria for use in Construction						
	15.2 Builders' Joinery/ Woodworking total	28,728	31,601	32,864	33,851	34,528	37,981
	Imports	17,100	18,810	19,562	20,149	20,552	22,607

S.N.	Items	1997-98	1999-2000	2002-03	2005-06	2007-08	20012-13
	Domestic	11,628	12,791	13,302	13,702	13,976	15,374
	15.2 A. Major import species country wise used in Builder's Joinery						
	Teak :-	9,300	10,230	10,639	10,958	11,177	12,295
	Sal :-	5,250	5,775	6,006	6,186	6,310	6,941
	Others :-	2,550	2,805	2,917	3,005	3,065	3,372
		17,100	18,810	19,562	20,149	20,552	22,608
	15.2 B. Major species in domestic market used in Builder's Joinery						
	Teak :-	3,488	3,837	3,990	4,110	4,192	4,611
	Sal :-	5,814	6,395	6,651	6,851	6,988	7,687
	Others :-	2,326	2,559	2,661	2,741	2,796	3,076
		11,628	12,791	13,302	13,702	13,976	15,374
	15.2 C. Preference criteria for use in Builders' Joinery/ Woodworking						
	15.3 Furniture/ furniture components Total timber (Proportion of Household and Commercial furniture and also Proportion of imported and domestic species in each)	52,500	57,750	60,060	61,862	63,099	69,409
	15.3 A. Proportion of Household and Commercial furniture						
	15.3.A.1 Timber consumption in Household Furniture	15,750	17,325	18,018	18,559	18,930	20,823
	15.3.A.2. Proportion of imported and domestic species in Household furniture (Name Major species both imported-with country name and domestic species)						
		Teak	Teak	Teak	Teak	Teak	Teak
		Sal	Sal	Sal	Sal	Sal	Sal
		Rose wood	Rose wood	Rose wood	Rose wood	Rose wood	Rose wood
	15.3.B.1 Timber consumption in Commercial Furniture in M3	36,750	40,425	42,042	43,303	44,169	48,586
	15.3 B. 2 Proportion of imported and domestic species in Commercial furniture (Name Major species both	85:15	85:15	85:15	85:15	85:15	85:15
	imported-with country name and domestic species)	Same as 15.3.A.3	Same as 15.3.A.4	Same as 15.3.A.5	Same as 15.3.A.6	Same as 15.3.A.7	Same as 15.3.A.8
	15.3.C. Preference criteria for use in Furniture/ furniture components	--	--	--	--	--	--
	15.4. Flooring Total timber consumption in M3	nil	nil	nil	nil	nil	nil
	15.4.A Proportion of imported species used in Flooring, name of country and major species	nil	nil	nil	nil	nil	nil
	15.4. B. Proportion of domestic species used in Flooring and major species	nil	nil	nil	nil	nil	nil
	15.4.C Preference criteria for use in Flooring	--	--	--	--	--	--
	15.5 . Plywood Total timber consumption in M3	10,650	11,715	12,184	12,550	12,801	14,081
	15.5.A. Proportion of imported species used in Plywood , name of country and major species	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
	B. Proportion of domestic species used in Plywood and major species	Teak : 20 %, Sal :80%	Teak : 20 %, Sal :80%	Teak : 20 %, Sal :80%	Teak : 20 %, Sal :80%	Teak : 20 %, Sal :80%	Teak : 20 %, Sal :80%
	C. Preference criteria for use in Plywood	--	--	--	--	--	--
16	Preference for any value added-imported timber products (Name of the Value added product and the preference criteria)	--	--	--	--	--	--
17	Trends in Channels of Distribution of each timber product (as of now and 5 years ago)						
	Imported :- Importer - Saw mills - distributor- stockist - Wholesale dealer - Retailer - Consumer						
	Domestic :- Government Auctioner / Agro plantation Co's - Saw mills - distributor- stockist - Wholesale dealer - Retailer - Consumer						
18	Trends in Tariffs on Timber/ Timber product Imports to India (as of now and 5 years ago)						

Annex 4.4.4

CONSUMPTION CENTRE SUMMARY REPORT FOR URBAN CITY: AHMEDABAD (Cu.m)

S.N.	Items	1997-98	1999-00	2002-03	2005-06	2007-08	20012-13
1	Total timber consumption (Industrial roundwood/Logs) (2+3+4)	120,000	135,600	194,400	217,728	243,855	273,118
2	Tropical Hardwood (TH) and major species (such as Teak (Burma-T, American T, Panama T, Ghana-T,	1,16,000	131,080	187,920	210,470	235,727	264,014
	Ghana-T, Plantation-T etc., Gurjan, Marsuea, Meranti, Mahogany, Rose wood, Sal, Keruing, Kapur,						
	Andaman Padaouk, Lampati, Laurel, Bonsom etc.) (5+8)						
3	Tropical Softwood(TS) and major species (All types of pine – Radianta, New Zealand Pine,	3,500	3,955	5,670	6,350.4	7,112.45	7,965.94
	Australian Pine and France Pine etc)						
4	Temperate Hardwood(TeH) and major species (such as Oak, Beech, Birch, willow)	500	565	810	907.2	1016.06	1137.99
5	Imported TH (Tropical Hardwood) major species and country-wise	87,500	98,875	141,750	158,760	177,811	199,149
6	Imported SW (Tropical Softwood) and major species	200	226	324	362.88	406.426	455.197
7	Imported Temperate Hardwood and major species	400	452	648	725.76	812.851	910.393
8	Domestic HW with major species and source-wise	28,500	32,205	46,170	51,710	57,915.6	64,865.5
	F (Forest department)						
	P (Plantation/ Agro Forestry)						
	H (Homestead) From other states						
9	Domestic SW with major species and source-wise	3,300	3,729	5,346	5,987.5	6,706.02	7,510.75
	F (Forest department)						
	P (Plantation/ Agro Forestry)						
	H (Homestead) From other states						
10	Domestic Temperate Hardwood with major species and source-wise	100	113	162	181.44	203.213	227.598
11	Sawnwood total with type of wood that is TH, TS, and TeH and major species in each category (11.4 + 11.8)	71,100	80,343	115,182	129,004	144,484	161,822
	11.1 Sawnwood tropical hardwood (TH) and major species (11.5 +11.9)	69,500	78,535	112,590	126,101	141,233	158,181
	11.2 Sawnwood tropical softwood (TS) and major species (11.6 +11.10)	1,400	1,582	2,268	2,540.2	2,844.98	3,186.38
	11.3 Sawnwood temperate hardwood (TeH) and major species (11.7 +11.11)	200	226	324	362.88	406.426	455.197
	11.4 Total Sawnwood Imports with type of wood that is TH, TS, and TeH and major species in each category and country-wise (11.5+11.6+11.7)	16,090	18,182	26,066	29,194	32,696.9	36,620.6
	11.5 Sawnwood Imports of tropical hardwood (TH) and major species and country-wise	16,000	18,080	25,920	29,030	32,514	36,415.7
	11.6 Sawnwood Imports of tropical softwood (TS) and major species and country-wise	40	45.2	64.8	72.576	81.2851	91.0393
	11.7 Sawnwood Imports of temperate hardwood (TeH) and major species and country-wise	50	56.5	81	90.72	101.606	113.799
	11.8 Sawnwood total domestic with major species with type of wood that is TH, TS, and the and major species in each category (11.9+11.10+11.11)	55,010	62,161	89,116	99,810	111,787	125,202
	11.9 Sawnwood domestic of tropical hardwood (TH) and major species	53,500	60,455	86,670	97,070	108,719	121,765
	11.10 Sawnwood domestic of tropical softwood (TS) and major species	1,360	1,536.8	2,203.2	2,467.6	2,763.69	3,095.34
	11.11 Sawnwood domestic of temperate hardwood (TeH) and major species	150	169.5	243	272.16	304.819	341.398
12	Plywood – total with type of wood that is TH, TS, and TeH and major species in each category (12.4 + 12.8)	11,000	12,430	17,820	19,958	22,353.4	25,035.8
	12.1 Plywood tropical hardwood (TH) and major species (12.5 +12.9) Average Thickness considered is 12mm	10,500	11,865	17,010	19,051	21,337.3	23,897.8
	12.2 Plywood tropical softwood (TS) and major species (12.6 +12.10)	500	565	810	907.2	1,016.06	1,137.99
	12.3 Plywood temperate hardwood (TeH) and major species (12.7 +12.11)	0	0	0	0	0	0
	12.4 Plywood total Imports with type of wood that is TH, TS, and TeH and major species in each category and country-wise (12.5+12.6+12.7)	0	0	0	0	0	0
	12.5 Plywood Imports of tropical hardwood (TH) and major species and country-wise	0	0	0	0	0	0
	12.6 Plywood Imports of tropical softwood (TS) and major species and country-wise	0	0	0	0	0	0
	12.7 Plywood Imports of temperate hardwood (TeH) and major species and country-wise	0	0	0	0	0	0
	12.8 Plywood Domestic with type of wood that is TH, TS, and TeH and major species in each category (12.9+12.10+12.11)	11,000	12,430	17,820	19,958	22,353.4	25,035.8
	12.9 Plywood domestic of tropical hardwood (TH) and major species	10,500	11,865	17,010	19,051	21,337.3	23,897.8

	12.10 Plywood domestic of tropical softwood (TS) and major species	500	565	810	907.2	1,016.06	1,137.99
	12.11 Plywood domestic of temperate hardwood (TeH) and major species						
13	Builders' Joinery/ Woodworking total with type of wood that is TH, TS, and TeH and major species in each category (13.4 + 13.8)	23,000	25,990	37,260	41,731	46,738.9	5,2347.6
	13.1 Builders' Joinery tropical hardwood (TH) and major species (13.5 +13.9)	20,500	23,165	33,210	37,195	41,658.6	46,657.7
	13.2 Builders' Joinery tropical softwood (TS) and major species (13.6 +13.10)	1,500	1,695	2,430	2,721.6	3,048.19	3,413.98
	13.3 Builders' Joinery temperate hardwood (TeH) and major species (13.7 +13.11)	1,000	1,130	1,620	1,814.4	2,032.13	2,275.98
	13.4 Builders' Joinery total Imports with type of wood that is TH, TS, and TeH and major species in each category and country-wise (13.5+13.6+13.7)	18,500	20,905	29,970	33,566	37,594.4	42,105.7
	13.5 Builders' Joinery Imports of tropical hardwood (TH) and major species and country-wise	17,000	19,210	27,540	30,845	34,546.2	38,691.7
	13.6 Builders' Joinery Imports of tropical softwood (TS) and major species and country-wise	1,000	1,130	1,620	1,814.4	2,032.13	2,275.98
	13.7 Builders' Joinery Imports of temperate hardwood (TeH) and major species and country-wise	500	565	810	907.2	1,016.06	1,137.99
	13.8 Builders' Joinery Domestic with type of wood that is TH, TS, and TeH and major species in each category (13.9+13.10+13.11)	4,500	5,085	7,290	8,164.8	9,144.58	10,241.9
	13.9 Builders' Joinery domestic of tropical hardwood (TH) and major species	3,500	3,955	5,670	6,350.4	7,112.45	7,965.94
	13.10 Builders' Joinery domestic of tropical softwood (TS) and major species	500	565	810	907.2	1,016.06	1,137.99
	13.11 Builders' Joinery domestic of temperate hardwood (TeH) and major species	500	565	810	907.2	1,016.06	1,137.99
14	Price competitiveness by species and country wise vis-à-vis domestic						
15	End-use of timber in						
	15.1 Construction Total of timber (Proportion of Door frames/window frames, door shutters/window shutters/ward robes flooring and others. Inclusive of all income groups High /Medium/Low as based on total houses constructed.)	25,000	28,250	40,500	45,360	50,803.2	56,899.6
	15.1 A. Major import species country wise used in construction						
	15.1 B. Major species in domestic market used in construction						
	15.1 C. Preference criteria for use in Construction						
	15.2 Builders' Joinery/ Woodworking total	23,000	25,990	37,260	41,731	46,738.9	52,347.6
	15.2 A. Major import species country wise used in Builder's Joinery	(Same as is the case with other cities)					
	15.2 B. Major species in domestic market used in Builder's Joinery						
	15.3 Furniture/ furniture components Total timber (Proportion of Household and Commercial furniture and also Proportion of imported and domestic species in each)	70,000	79,100	1,13,400	1,27,008	1,42,249	1,59,319
	15.3 A. Proportion of Household and Commercial furniture	30:70	30:70	30:70	30:70	30:70	30:70
	15.3.A.1 Timber consumption in Household Furniture	21,000	23,730	34,020	38,102	42,674.7	4,77,95.7
	15.3.A.2. Proportion of imported and domestic species in Household furniture (Name Major species both imported-with country name and domestic species) Teak, Sal, Rosewood	85:15	85:15	85:15	85:15	85:15	85:15
	15.3.B.1 Timber consumption in Commercial Furniture	49,000	55,370	79,380	88,906	99,574.3	111,523
	15.3 B. 2 Proportion of imported and domestic species in Commercial furniture (Name Major species both imported-with country name and domestic species)	85:15	85:15	85:15	85:15	85:15	85:15
	15.3.C. Preference criteria for use in Furniture/ furniture components	Same as is the case with other cities.					
	15.4. Flooring Total timber consumption	Nil	Nil	Nil	Nil	-	-
	15.4.A Proportion of imported species used in Flooring, name of country and major species	Nil	Nil	Nil	Nil	-	-
	15.4. B. Proportion of domestic species used in Flooring and major species	Nil	Nil	Nil	Nil	-	-
	15.4.C Preference criteria for use in Flooring	Nil	Nil	Nil	Nil	-	-
	15.5. Plywood Total timber consumption						
	15.5.A. Proportion of imported species used in Plywood, name of country and major species	-	-	-		-	-
	B. Proportion of domestic species used in Plywood and major species	As per details details given above					
	C. Preference criteria for use in Plywood						
16	Preference for any value added-imported timber products (Name of the Value added product and the preference criteria)						
17	Trends in Channels of Distribution of each timber product (as of now and 5 years ago)	Same as is the case with other cities					
	Imported :- Importer - Saw mills - distributor- stockist - Wholesale dealer - Retailer - Consumer						
	Domestic :- Government Auctioner / Agro plantation Co's - Saw mills - distributor- stockist - Wholesale dealer - Retailer - Consumer						

Annex 4.4.5

CONSUMPTION CENTRE SUMMARY REPORT FOR URBAN CITY: CHENNAI (Cu.m)

S.N.	Items	1997-98	1999-2000	2002-03	2005-06	2007-08	20012-13
	Total timber consumption (Industrial roundwood/Logs)						
	Sum Total of Imported TH and TS	140,500	166,500	186,000	238,500	284,500	351,000
1.	Sum Total of TH and TS (Imported and Domestic)	140,500	166,500	211,000	238,500	284,500	351,000
	Sum Total of All Imported and Domestic Hard Wood (TH)	134,000	159,500	201,000	226,500	272,000	336,000
	Tropical Hardwood and major						
	Species						
	Teak	26,500	29,000	49,000	36,000	47,000	63,000
	Marbau	22,000	25,000	30,000	30,000	27,000	25,000
	Padauk	40,000	45,000	50,000	60,000	80,000	100000
2.	Sal	3,500	4,000	5,000	6,000	7,000	8000
	Keruing	20,000	30,000	39,000	45,000	50,000	55,000
	Gurjan	22,000	26,500	25,000	29,500	36,000	45,000
	Purple Heart from South America	Nil	Nil	3,000	20,000	25,000	40,000
	Pine (New Zealand) TS (Imported)	6,500	7,000	10,000	12,000	12,500	15,000
	Imported TH (Tropical Hardwood)						
	major species and country-wise						
	West African Countries						
	Teak ($ 450)	12,500	12,000	10,000	12,000	12,500	15,000
	Padauk (Gabon and Cameroon $ 280 - 320)	40,000	40,000	50,000	60,000	80,000	1,00,000
	South America						
	Purple Heart , Green Heart, Tata poo (Gayana) $ 160-170	Nil	Nil	7,000	15,000	20,000	30,000
3.	Teak Columbia ($ 320-500)	10,000	12,000	10,000	15,000	20,000	25,000
	Teak Brazil ($ 300- 450)	4,000	5,000	4,000	6,000	7,000	8,000
	Malaysia						
	Sal ($ 160 - 250)	3,500	4,000	5,000	6,000	7,000	8,000
	Gurjan (Long length) $ 220/Cu.m.	8,000	9,000	10,000	12,000	15,000	20,000
	Keruing ($ 140)	20,000	30,000	39,000	45,000	50,000	55,000
	Indonesia						
	Gurjan ($ 220)	4,000	5,500	5,000	5,500	6,000	7,000
	Marbau ($ 220 - 290)	22,000	25,000	30,000	30,000	27,000	25,000
	Burma (Less Price, Less length)						
	Gurjan ($160)	10,000	12,000	10,000	12,000	15,000	18,000
	New Zealand						
	Pine TS (Imported)($ 125 / 22 Cu.Ft.)	6,500	7,000	10,000	12,000	12,500	15,000
	Domestic HW major species and source-wise	Nil	Nil	Nil	Nil	Nil	Nil
4.	F (Forest department)						
	P (Plantation/ Agro Forestry)						
	H (Homestead)						
5.	Sawnwood total		Nil	Nil	Nil	Nil	Nil
	Imports						
	major species and country-wise						
	Sawn Wood import is very meagre due to heavy Excise duty of 35 %						
	Domestic with major species						
	Teak (Balarsa) Temporary (Sizes Rs. 800 - 1200 / Cu.Ft)						
	Kerala	Nil	Nil	25,000	Nil	Nil	Nil

S.N.	Items	1997-98	1999-2000	2002-03	2005-06	2007-08	20012-13
	Rubber Wood (Rs. 60 / Cu.Ft - Rs. 400/ Cu.Ft.)						
	Eucalyptus (Rs.900 - 1100 per tonne i.e. 25 - 30 cft)	Meagre	Meagre	Meagre	Meagre	Meagre	Meagre
	Silver Oak (Sawn sizes 12" Plank Rs.230 - 240/cft)	Meagre	Meagre	Meagre	Meagre	Meagre	Meagre
	Himachal Pradesh	Meagre	Meagre	Meagre	Meagre	Meagre	Meagre
	Pine (Rs. 165 - 180 / Cu.Ft.)	Meagre	Meagre	Meagre	Meagre	Meagre	Meagre
	Veneer (only HW) total			70			
6.	Veneer & Plywood are not imported due to heavy excise duty of 65%	Nil	Nil	Nil	Nil	Nil	Nil
7	End-use of timber in						
	1. Construction Total						
8	(Proportion of Door frames/window frames, door shutters/window shutters/ward robes flooring and others.						
	Inclusive of all income groups High /Medium/Low as based on total houses constructed)	1.5	1.5	1.5	1.5	1.5	1.5
	Door Frames						
	Window Frames	40%	40%	40%	40%	40%	40%
	Door Shutters	8%	8%	8%	8%	8%	8%
	Window Shutters	40%	40%	40%	40%	40%	40%
	Ward Robes	8%	8%	8%	8%	8%	8%
	Flooring	4%	4%	4%	4%	4%	4%
	A. Major import species and quantity country wise	Rare	Rare	Rare	Rare	Rare	Rare
	Nil (Due to heavy Excise Duty 63%)						
	B. Major species in domestic market and quantity						
	1. Teak	80%	80%	80%	80%	80%	80%
	2. Padauk	10%	10%	10%	10%	10%	10%
	3. Sal	10%	10%	10%	10%	10%	10%
	C. Preference criteria for use in Construction*	Price Competitiveness Durability Strength	Price Competitiveness Durability Strength	Price Competitiveness Durability Strength	Price Competitiveness Durability Strength	Price Competitiveness Durability Strength	Price Competitiveness Durability Strength
	2. Builders' Joinery / Woodworking total						
	Lipping, Door Frames, Window Frames, Designs	1,200	1,300	1,500	2,500	4,000	6,000
	A. Major import species and quantity country wise						
	African Teak	1,000	1,350	1,350	1,500	2,000	3,000
	Burma Teak	100	90	120	150	200	300
	B. Major species in domestic market and quantity						
	Teak (Kerala and Balarsa)	Nil	Nil	50 Cu.m	Nil	Nil	Nil
	C. Preference criteria for use in Builders' Joinery / Woodworking	1. Low wastage 2. Moisture	1. Low wastage 2. Moisture	1. Low wastage 2. Moisture	1. Low wastage 2. Moisture	1. Low wastage 2. Moisture	1. Low wastage

S.N.	Items	1997-98	1999-2000	2002-03	2005-06	2007-08	20012-13
		3. Durability	3. Durability	3. Durability	3. Durability	3. Durability	2. Moisture
	3. Furniture/ furniture components Total in M^3	9,200		10,000			3. Durability
	(Proportion of Household and Commercial furniture and also Proportion of imported and domestic species in each)	70:30:00	9,600		10,500	10,600	12,000
		95:05:00					
	A. Proportion of Household and Commercial furniture	70:30:00					
		50% 50%	55% 40%	30% 70 %	40% 60%	60% 40%	60% 40%
		60:25:15	60:25:15	60:25:15	60:25:15	60:25:15	60:25:15
	B. Proportion of imported and domestic species in Household furniture (Name Major species)	Teak	Teak	Teak	Teak	Teak	Teak
		Padauk	Padauk	Padauk	Padauk	Padauk	Padauk
		Pine	Pine	Pine	Pine	Pine	Pine
	D. Proportion of imported and domestic species in Commercial furniture (Name Major species)	30 : 70	50% 50%	30 : 70	40 : 60	70% 30%	
	Pine TH – (New Zealand) - 05%						
	Balarsa Teak TH – 70 %						
	Any TH – 25 %						80% 20%
	E. Preference criteria for use in Furniture/ furniture components	1. Price competitiveness	1. Price competitiveness	1. Price competitiveness	1. Price competitiveness	1. Price competitiveness	
		2. Appearance	2. Appearance	2. Appearance	2. Appearance	2. Appearance	1. Price competitiveness
	150 Sq.ft ./ house						2. Appearance
		3. Moisture Content	3. Moisture Content	3. Moisture Content	3. Moisture Content	3. Moisture Content	3. Moisture Content
				Negligible			
	4. Flooring Total			Used in Karnataka			
	A. Proportion of imported species in Total Flooring (Name Major species) 99 %						
	African Teak	100	120	150	200	500	700
	American Steam Beech						
	American White Beech						
	Hard Maple						
	White Cedar (NewZealand)						
	B. Proportion of domestic species Total Flooring (Name Major species)	0.50%	0.50%	0.40%	0.40%	0.30%	0.20%
	Teak 70%						
		50	60	60	80	150	140
	Haldu Adina cardifolia 30%						
	C. Preference criteria for use in Flooring	1. Dimentional Stability	1. Dimentional Stability	1. Dimentional Stability	1. Dimentional Stability	1. Dimentional Stability	1. Dimentional Stability
		2. Appearance	2. Appearance	2. Appearance	2. Appearance	2. Appearance	2. Appearance
		3. Price Competitiveness	3. Price Competitiveness	3. Price Competitiveness	3. Price Competitiveness	3. Price Competitiveness	3. Price Competitiveness
	5. Plywood Total	24,000	36,000	45,000	50,000	55,000	70,000
	A. Proportion of imported species in Total Plywood (Name Major species)	100%	100%	100%	100%	100%	100%
	Garjan 40%						
	Keruing 60%						
	B. Proportion of domestic species in Total Plywood (Name Major species)	Nil	Nil	Nil	Nil	Nil	Nil
	C. Preference criteria for use in Plywood	1.Machinability	1.Machinability	1.Machinability	1.Machinability	1.Machinability	1.Machinability
		2.Right sizes	2.Right sizes	2.Right sizes	2.Right sizes	2.Right sizes	2.Right sizes

S.N.	Items	1997-98	1999-2000	2002-03	2005-06	2007-08	20012-13
		3.Gluing/fix times	3.Gluing/fix times	3.Gluing/fix times	3.Gluing/fix times	3.Gluing/fix times	3.Gluing/fix times
	Preference for any value added-imported timber products. No chance is in sight as the Import duty is very heavy i.e. 35 % Excise duty. *Keruing (Malaysia) $140/= *Gurjan (Burma / Myanmar) $ 160/=	Nil	Nil	Nil	Nil	Nil	Nil

Annex 4.4.6

CONSUMPTION CENTRE SUMMARY REPORT FOR URBAN CITY: BANGALORE

S.NO	ITEMS	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
1	Total timber consumption (Industrial roundwood/Logs)	53,660	99,835	117,218	219,960	319,600	441,000
	Tropical Hardwood	42,960	47,035	55,518	107,160	159,800	214,500
2	Imported Tropical Hardwood Species and country-wise	26,850	36,481	43,181	90,240	143,820	180,500
3	Domestic Hardwood species and source wise	16,110	10,554	12,337	16,920	15,980	34,000
	F (Forest department)	9,344	5,278	6,169	6,768	6,392	13,500
	P (Plantation/Agro Forestry)	1,933	3,166	3,701	6,768	6,392	13,500
	H (Homestead)	4,833	2,110	2,467	3,384	3,196	7,000
4	Tropical Softwood	8,560	42,240	49,360	90,240	127,840	179,600
	Import tropical softwood	2,424	18,896	15,744	31,096	41,136	59,840
	Domestic tropical softwood	6,136	23,344	33,620	59,144	86,704	119,760
5	Temperate Hardwood	2,140	10,560	12,340	22,560	31,960	46,900
	Import temperate hardwood	1,626	10,504	10,106	21,304	29,764	44,410
	Domestic temperate hardwood	514	56	2,234	1,256	2,196	2,490
6	Sawnwood total	1,611	3,769	4,112	4,230	3,995	8,500
	Imports with major species and country-wise	0	Nil	Nil	Nil	Nil	
	Domestic with major species	1,611	3,769	4,112	4,230	3,995	8,500
7	Veneer (Only HW) total	0	Nil	Nil	Nil	Nil	
	Imports with major species and country-wise	0	Nil	Nil	Nil	Nil	
	Domestic with major species	0	Nil	Nil	Nil	Nil	
8	Plywood -total	4,300	5,700	7,000	9,000	12,500	17,000
	Imports with major species and country-wise	0	Nil	Nil	Nil	Nil	
	Domestic with major species	4,300	5,700	7,000	9,000	12,500	17,000
9	Price competitiveness by species and country wise vis-à-vis domestic						
10	End -use of timber in						
	1. Construction Total (Proportion of Door frames/window frames, door shutters/window shutters /ward robes flooring and others Inclusive of all income groups High/Medium?Low as based on total houses constructed)	37,590	26,386	28,787	56,400	89,887	111,900
	A.Major import species and quantity countrywise	18,795	21,108	23,029	45,120	80,898	90,240
	B.Major species in domestic market and quantity	14,000	5,277	209	11,280	8,988	22,000
	C.Preference criteria for use in construction						
	2. Builder's joinery/woodworking total	2,255	7,915	8,636	16,920	26,966	34,000
	A.Major import species and quantity country wise	677	5,541	6,908	11,844	21,572	24,000
	B.Major species in domestic market and quantity	1,578	2,374	1,728	5,076	5,393	10,000
	C.Preference criteria for use in Builder's joinery/woodworking						
	3.Furniture/furniture components Total	564	15,831	17,272	33,840	53,932	66,000
	A.Proportion of Household and Commercial furniture						
	No imported species only domestic species in both sectors						
	4.Flooring Total	0	0	0	0	0	
	5.Plywood Total (Only domestic species)	4,300	5,700	7,000	9,000	12,500	

Annex 4.4.7

CONSUMPTION CENTRE SUMMARY REPORT FOR URBAN CITY: HYDERABAD (Cu.m)

S.NO	ITEMS	1997-98	1999-00	2002-03	2005-06	2007-08	2012-13
1	Total timber consumption (Industrial roundwood/Logs)	41,828	46,899	61,073	67,788	76,238	87,500
2	Tropical Hardwood and major species	23,828	28,129	39,323	43,648	51,542	61,500
3	Imported Tropical Hardwood Species and country-wise	12,236	16,589	27,610	32,504	42,265	52,500
4	Domestic Hardwood species and source wise	11,592	11,540	11,713	11,144	9,277	9,000
	F (Forest department)	6,260	6,232	6,677	6,018	5,010	4,800
	P (Plantation/Agro Forestry)	2,898	2,885	2,928	2,786	2,319	2,300
	H (Homestead)	2,434	2,423	2,108	2,340	1,948	1,900
5	Tropical softwood	14,400	15,016	17,400	19,312	19,760	20,800
	Import tropical softwood	4,760	5,006	3,960	4,725	4,904	8,320
	Domestic tropical softwood	9,640	10,010	13,440	14,587	14,856	12,480
6	Temperate Hardwood	3,600	3,754	4,350	4,828	4,936	5,200
	Import temperate hardwood	2,240	3,379	3,915	4,145	4,326	4,980
	Domestic temperate hardwood	1,360	375	435	682	610	220
7	Sawnwood total	0	Nil	Nil	Nil	Nil	
	Imports with major species and country-wise	0	Nil	Nil	Nil	Nil	
	Domestic with major species	0	0	0	0	0	
8	Veneer (Only HW) total	0	Nil	Nil	Nil	Nil	
	Imports with major species and country-wise	0	Nil	Nil	Nil	Nil	
	Domestic with major species	0	Nil	Nil	Nil	Nil	
9	Plywood -total	5,200	5,928	6,639	7,435	8,252	9,100
	Imports with major species and country-wise	0	Nil	Nil	Nil	Nil	
	Domestic with major species	5,200	5,928	6,639	7,435	8,252	9,100
10	Price competitiveness by species and country wise vis-à-vis domestic						
11	End -use of timber in						
	1. Construction Total (Proportion of Door frames/window frames, door shutters/window shutters /ward robes flooring and others Inclusive of all income groups High/Medium?Low as based on total houses constructed)	38,640	43,276	50,200	55,722	61,851	69,500
	A.Major import species and quantity countrywise	12,236	16,589	27,610	32,504	42,265	53,000
	B.Major species in domestic market and quantity	26,404	26,687	22,590	23,218	19,586	16,500
	C.Preference criteria for use in construction						
	2. Builder's joinery/woodworking total	17,388	15,146	17,570	19,502	21,647	27,900
	A.Major import species and quantity country wise	12,520	10,300	12,651	14,822	17,752	24,500
	B.Major species in domestic market and quantity	4,868	4,846	4,919	4,680	3,895	3,400
	C.Preference criteria for use in Builder's joinery/woodworking						
	3.Furniture/furniture components total	9,660	10,819	12,550	13,930	15,462	18,500
	A.Proportion of Household and Commercial furniture						
	No imported species only domestic species in both sectors						
	B.Proportion of imported and domesic species in Household furniture						
	C.Proportion of imported and domestic speccies in Commercial furniture						
	D.Preference criteria for use in furniture/furniture components						
	4.Flooring Total	0	0	0	0	0	
	5.Plywood Total (Only domestic species)	5,200	5,928	6,639	7,435	8,252	9,800

Annex 4.4.8

CONSUMPTION CENTRE SUMMARY REPORT FOR URBAN CITY: KOLKATA ('000 Cu.m)

	1997-98			1999-2000			2002-03		
	Domestic	Imports	Total	Domestic	Imports	Total	Domestic	Imports	Total
Timber Products									
Logs All	207.11	133.55	345.00	209.19	139.49	348.68	229.97	129.81	359.78
Tropical Hardwood	151.80	71.90	223.70	153.42	73.71	227.13	158.30	74.15	232.45
Tropical Softwood	55.22	41.82	97.04	54.34	42.90	97.24	70.12	31.74	101.86
Temperate Hardwood	0.08	19.83	24.26	1.43	22.88	24.31	1.55	23.92	25.47
Sawnwood All	102.00	210.00	312.00	100.22	216.32	316.54	103.48	226.51	329.99
Tropical Hardwood	99.00	159.00	258.00	97.00	164.00	261.00	99.83	169.99	269.82
Tropical Softwood	Negligible	18.00	18.00	Negligible	19.50	19.50	Negligible	23.75	23.75
Temperate Hardwood	3.00	33.00	36.00	3.22	32.82	36.04	3.65	32.77	36.42
Veneer & Plywood All			63.00			65.00			69.30
Tropical Hardwood									
Tropical Softwood				Break-up not available for veneer & plywood					
Temperate Hardwood									
Builders Joinery All			138.00			141.65			148.94
Tropical Hardwood			109.00			112.47			119.49
Tropical Softwood			Negligible			Negligible			Negligible
Temperate Hardwood			29.00			29.18			29.45
End-use of Timber									
Construction									
Timber Consumption			165.00			167.54			171.60
Plywood & Veneer Consumption			34.00			36.45			38.45
Furniture & Furniture Component									
Total			83.49			85.68			89.10
Household			57.82			59.54			61.47
Commercial / Office			25.67			26.14			27.63

Contd… Annex 4.4.8

	2005-06			2007-08			2012-13		
	Domestic	Imports	Total	Domestic	Imports	Total	Domestic	Imports	Total
Timber Products									
Logs All	237.08	140.92	511.52	244.12	147.88	527.28	250.60	159.40	410.00
Tropical Hardwood	166.32	78.16	378.00	172.48	84.24	392.00	180.40	89.20	269.60
Tropical Softwood	69.09	37.73	106.82	69.93	38.29	108.22	67.39	44.93	112.32
Temperate Hardwood	1.67	25.03	26.70	1.71	25.35	27.06	2.81	25.27	28.08
Sawnwood All	101.29	243.24	344.53	99.50	252.50	352.00	96.00	279.00	375.00
Tropical Hardwood	97.64	181.32	278.96	97.00	190.00	287.00	93.00	212.00	305.00
Tropical Softwood	Negligible	25.11	25.11	Negligible	27.00	27.00	Negligible	31.00	31.00
Temperate Hardwood	3.65	36.81	40.46	2.50	35.50	38.00	3.00	36.00	39.00
Veneer & Plywood All			77.52			82.00			91.00
Tropical Hardwood									
Tropical Softwood	Break-up not available for veneer & plywood								
Temperate Hardwood									
Builders Joinery All			153.22			156.00			168.00
Tropical Hardwood			123.69			128.00			136.00
Tropical Softwood			Negligible			Negligible			Negligible
Temperate Hardwood			29.53			28.00			32.00
End-use of Timber									
Construction									
Timber Consumption			173.52			176.00			189.00
Plywood & Veneer Consumption			42.70			44.00			65.00
Furniture & Furniture Component									
Total			96.46			98.00			106.00
Household			67.91			69.00			71.00
Commercial / Office			28.55			29.00			35.00

Annex 4.4.9

CONSUMPTION CENTRE SUMMARY REPORT FOR URBAN CITY: KANPUR ('000 Cu. M)

	1997-98			1999-2000			2002-03		
	Domestic	Imports	Total	Domestic	Imports	Total	Domestic	Imports	Total
Timber Products									
Logs All	129.60	80.40	210.00	129.38	82.72	212.10	136.86	81.76	218.62
Tropical Hardwood	95.40	46.20	141.60	97.32	46.66	143.99	99.19	48.10	147.29
Tropical Softwood	31.83	22.89	54.72	30.69	23.80	54.49	37.24	19.83	57.06
Temperate Hardwood	2.37	11.31	13.68	1.36	12.26	13.62	0.43	13.84	14.27
Sawnwood All	83.39	84.87	168.26	82.39	89.30	171.69	86.12	97.47	183.59
Tropical Hardwood	80.19	59.33	139.52	80.27	61.08	141.35	82.65	63.63	146.28
Tropical Softwood	Negligible	10.40	10.40	Negligible	11.30	11.30	Negligible	12.45	12.45
Temperate Hardwood	3.20	15.14	18.34	2.12	16.92	19.04	3.47	21.39	24.86
Veneer & Plywood All			25.10			26.90			29.37
Tropical Hardwood									
Tropical Softwood				Break-Up Not Available For Veneer & Plywood					
Temperate Hardwood									
Builders Joinery All			84.90			85.28			89.46
Tropical Hardwood			75.12			76.14			82.04
Tropical Softwood			Negligible			Negligible			Negligible
Temperate Hardwood			9.78			9.14			7.42
End-use of Timber									
Construction									
Timber Consumption			98.94			102.27			106.48
Plywood & Veneer Consumption			18.50			19.68			21.62
Furniture & Furniture Component									
Total			44.55			46.72			47.73
Household			28.18			29.00			30.55
Commercial / Office			16.37			17.72			17.18

Contd… Annex 4.4.9

	2005-06			2007-08			2012-13		
	Domestic	Imports	Total	Domestic	Imports	Total	Domestic	Imports	Total
Timber Products									
Logs All	145.94	85.11	231.05	154.96	81.04	236.00	163.82	98.18	262.00
Tropical Hardwood	107.66	50.83	158.49	113.84	51.92	165.76	121.28	57.64	178.92
Tropical Softwood	37.83	20.22	58.05	38.72	17.48	56.19	39.88	26.59	66.46
Temperate Hardwood	0.45	14.06	14.51	2.40	11.64	14.05	2.66	13.95	16.62
Sawnwood All	90.57	106.66	197.23	87.50	117.50	205.00	91.00	115.00	229.00
Tropical Hardwood	88.14	71.10	159.24	86.00	79.00	165.00	91.00	98.00	189.00
Tropical Softwood	Negligible	13.06	13.06	Negligible	14.00	14.00	Negligible	17.00	17.00
Temperate Hardwood	2.43	22.50	24.93	1.50	24.50	26.00			23.00
Veneer & Plywood All			33.68			35.00			39.00
Tropical Hardwood									
Tropical Softwood	Break-Up Not Available For Veneer & Plywood								
Temperate Hardwood									
Builders Joinery All			93.48			97.00			105.00
Tropical Hardwood			84.60			86.00			92.00
Tropical Softwood			Negligible			Negligible			Negligible
Temperate Hardwood			8.88			11.00			13.00
End-use of Timber									
Construction									
Timber Consumption			115.78			122.00			137.00
Plywood & Veneer Consumption			24.24			27.00			35.00
Furniture & Furniture Component									
Total			49.86			52.00			58.00
Household			32.18			34.00			37.00
Commercial / Office			17.68			18.00			21.00

Annex 4.4.10

CONSUMPTION CENTRE SUMMARY REPORT FOR URBAN CITY: DELHI ('000 CU.m)

			1997-98			1999-2000			2002-03	
		Domestic	Imports	Total	Domestic	Imports	Total	Domestic	Imports	Total
Timber Products										
Logs	All									
	Total Tropical HW	284.68	144.34	429.02	286.88	153.44	440.32	299.20	158.60	457.80
	Total Tropical SW	102.63	71.75	174.38	105.61	63.74	169.34	109.66	68.10	177.76
	Total Temp HW	7.36	36.24	43.60	5.23	37.10	42.34	6.44	38.00	44.44
	Logs All	394.67	252.33	647.00	397.72	254.28	652.00	415.30	264.70	680.00
Sawnwood										
	Total Tropical HW	305.30	151.20	456.45	288.04	172.62	460.66	288.58	178.61	467.19
	Total Tropical SW	0.00	38.28	38.28	0.00	39.09	43.09	0.00	47.78	47.78
	Total Temperate HW	5.79	69.93	75.72	13.38	82.13	95.51	14.64	83.47	98.11
	Total Sawnwood	311.09	259.41	570.45	301.42	293.84	599.26	303.22	309.86	613.08
Vaneer & Plywood										
	Total Tropical HW									
	Total Tropical SW									
	Total Temp HW									
	Total Veneer & Plywood			101.24			109.47			116.49
Builder's Joinery										
	Total Tropical HW			256.25			268.69			280.57
	Total Tropical SW			Negligible			Negligible			Negligible
	Total Temp HW			14.93			16.67			18.25
	Total Builder's Joinery			271.18	0.00	0.00	285.36	0.00	0.00	298.82
End-use of Timber										
Construction										
Total (Tropical HW)				295.86			303.87			317.82
Plywood & Veneer Consumption					65.40			70.49		
Furniture & Furniture Component										
Total		163.67			175.65			178.79		
Household					109.22			112.01		
Commercial / Office					66.43			66.78		

Contd… Annex 4.4.10

			2005-06			2007-08			2012-13	
		Domestic	Imports	Total	Domestic	Imports	Total	Domestic	Imports	Total
Timber Products										
Logs	All									
	Total Tropical HW	305.80	161.90	467.70	310.20	169.10	479.30	316.80	174.40	491.20
	Total Tropical SW	119.10	62.74	181.84	118.34	62.22	180.56	109.82	73.22	183.04
	Total Temp HW	3.55	41.91	45.46	6.51	38.63	45.14	2.58	43.18	45.76
	Logs All	428.45	266.55	695.00	435.05	269.95	705.00	429.20	290.80	720.00
Sawnwood										
	Total Tropical HW	296.13	186.49	482.62	299.03	193.62	492.65	239.94	265.62	505.56
	Total Tropical SW	0.00	49.62	49.62	0.00	51.78	51.78	0.00	64.58	64.58
	Total Temperate HW	13.36	98.14	111.50	24.94	101.72	126.66	28.81	106.65	135.46
	Total Sawnwood	309.49	334.25	643.74	323.97	347.12	671.09	268.75	436.85	705.60
Vaneer & Plywood										
	Total Tropical HW									1321.39
	Total Tropical SW									7.24
	Total Temp HW									0.78
	Total Veneer & Plywood			126.17			133.78			147.92
Builder's Joinery										
	Total Tropical HW			280.74			287.73			294.45
	Total Tropical SW			Negligible			Negligible			Negligible
	Total Temp HW			21.38			23.21			27.98
	Total Builder's Joinery			302.12	0.00	0.00	310.94	0.00	0.00	322.43
End-use of Timber										
Construction										
Total (Tropical HW)				318.36			325.32			346.72
Plywood & Veneer Consumption					79.66			91.08		
Furniture & Furniture Component										
Total		199.22			201.88			225.37		
Household					126.05			135.22		
Commercial / Office					75.83			90.15		

Annex 4.4.11

CONSUMPTION CENTRE SUMMARY REPORT FOR URBAN CITY : DELHI SATTELITE TOWNS (GURGAON, GHAZIABAD, NOIDA, FARIDABAD) ('000 Cu.m)

	1997-98			1999-2000			2002-03		
	Domestic	Imports	Total	Domestic	Imports	Total	Domestic	Imports	Total
Logs All									
Total Tropical HW	178.56	84.28	262.84	188.44	88.22	276.66	213.60	91.30	304.90
Total Tropical SW	60.72	35.48	96.20	61.68	37.79	99.47	55.85	32.23	88.08
Total Temp HW	3.41	20.65	24.05	4.49	20.38	24.87	3.20	18.82	22.02
Total	242.69	140.40	383.09	254.61	146.39	401.00	272.65	142.35	415.00
Sawnwood All			339.22			348.74			364.66
Tropical Hardwood	179.71	102.35	282.06	181.45	105.87	287.32	183.35	107.68	291.03
Tropical Softwood	Negligible	19.25	19.25	Negligible	21.30	21.30	Negligible	24.15	24.15
Temperate Hardwood	6.36	31.55	37.91	7.69	32.43	40.12	8.91	40.57	49.48
Total	186.07	153.15	339.22	189.14	159.60	348.74	192.26	172.40	364.66
Veneer & Plywood All			61.50			62.68			65.64
Tropical Hardwood									
Tropical Softwood			BREAK-UP NOT AVAILABLE FOR VENEER & PLYWOOD						
Temperate Hardwood									
Builders Joinery All			201.48			207.59			218.00
Tropical Hardwood			194.67			199.12			208.34
Tropical Softwood			Negligible			Negligible			Negligible
Temperate Hardwood			6.81			8.47			9.66
End-use of Timber									
Construction									
Timber Consumption			189.25			192.37			196.92
Plywood & Veneer Consumption			27.05			28.44			31.25
Furniture & Furniture Component									
Household			58.79			59.03			61.26
Commercial / Office			40.99			40.43			40.84
Total			99.78			99.46			102.10

Contd… Annex 4.4.11

	2005-06			2007-08			2012-13		
	Domestic	Imports	Total	Domestic	Imports	Total	Domestic	Imports	Total
Logs All									
Total Tropical HW	186.56	98.28	284.84	201.84	95.92	297.76	216.24	103.62	319.86
Total Tropical SW	74.80	36.53	111.33	74.36	36.24	110.59	72.55	48.36	120.91
Total Temp HW	1.78	26.05	27.83	3.76	23.88	27.65	0.02	30.21	30.23
Total	263.14	160.86	424.00	279.96	156.04	436.00	288.81	182.19	471.00
Sawnwood All			374.56			392.00			438.00
Tropical Hardwood	184.86	110.54	295.40	181.85	127.91	309.76	193.00	155.00	348.00
Tropical Softwood	Negligible	25.40	25.40	Negligible	28.08	28.08	Negligible	34.00	34.00
Temperate Hardwood	9.00	44.76	53.76	7.36	46.80	54.16	7.00	49.00	56.00
Total	193.86	180.70	374.56	189.21	202.79	392.00	200.00	238.00	438.00
Veneer & Plywood All			70.27			73.83			81.00
Tropical Hardwood									
Tropical Softwood	BREAK-UP NOT AVAILABLE FOR VENEER & PLYWOOD								
Temperate Hardwood									
Builders Joinery All			221.00			228.24			265.00
Tropical Hardwood			211.24			219.10			255.00
Tropical Softwood			Negligible			Negligible			Negligible
Temperate Hardwood			9.76			9.14			10.00
End-use of Timber									
Construction									
Timber Consumption			194.10			199.78			222.00
Plywood & Veneer Consumption			37.90			41.32			47.00
Furniture & Furniture Component									
Household			67.04			72.35			80.00
Commercial / Office			45.33			47.33			52.00
Total			112.37			119.68			132.00

Annex 4.4.12

CONSUMPTION CENTRE SUMMARY REPORT FOR URBAN CITY: YAMUNA NAGAR, HARYANA ('000 Cu.m)

				1997-98			1999-2000			2002-03
			Domestic	Imports	Total Co.	Domestic	Imports	Total Co.	Domestic	Imports
Timber Products										
Industrial Roundwood / Logs	All		370	0	370	420	0	420	470	0
		Tropical SW	20	2	22	20	4	24	20	7
		Tropical HW	350	0	350	400	0	400	450	0
		Temperate HW	0	0	0	0	0	0	0	0
Sawnwood	All		0.397	0.465	0.862	0.337	0.525	0.862	0.257	0.835
		Tropical SW	0	0	0	0	0	0	0	0
		Tropical HW	0.397	0.465	0.862	0.337	0.525	0.862	0.257	0.835
		Temperate HW	0	0	0	0	0	0	0	0
Vaneer										
	All		40	0	40	48	0	48	60	0
		Tropical SW	0	0	0	0	0	0	0	0
		Tropical HW	40	0	40	48	0	48	60	0
		Temperate HW	0	0	0	0	0	0	0	0
Plywood										
	All		2.4	0	2.4	3.05	0	3.05	4.3	0
		Tropical SW	0.4	0	0.4	0.4	0	0.4	0.3	0
		Tropical HW	2	0	2	2.65	0	2.65	4	0
		Temperate HW	0	0	0	0	0	0	0	0
Builder's Joinery										
	All		0.084	0.17	0.254	0.09	0.17	0.26	0.065	0.23
		Tropical SW	0	0	0	0	0	0	0	0
		Tropical HW	0.084	0.17	0.254	0.09	0.17	0.26	0.065	0.23
		Temperate HW	0	0	0	0	0	0	0	0
End-use of Timber										
Construction										
		Tropical HW	0.29	0.445	0.735	0.255	0.475	0.73	0.2	0.78
	Species		Teak,Sal							
	Preference criteria									
Builder's joinery										
		Tropical HW	0.084	0.17	0.254	0.09	0.17	0.26	0.065	0.23
	Species		Teak,Sal							
	Preferemce criteria									
Furniture and										
Furniture		Tropical HW	0.1	0.02	0.12	0.075	0.03	0.105	0.045	0.035
Components	Species		Teak,Sal							
	Preference criteria									
	Proportion of Household/commerical:				80:20					
Flooring										
					Negligible consumption					
	Species									
	Preference criteria									

Contd… Annex 4.4.12

			2005-06			2007-08			2012-13		
			Domestic	Imports	Total Co.	Domestic	Imports	Total Co.	Domestic	Imports	Total Co.
Timber Products											
Industrial Roundwood / Logs	All		520	10	530	620	10	630	920	30	950
		Tropical SW	20	10	30	20	15	35	20	30	50
		Tropical HW	500	0	500	600	0	600	900	0	900
		Temperate HW	0	0	0	0	0	0	0	0	0
Sawnwood	All		0.197	1.07	1.267	0.162	1.145	1.307	0.13	2.05	2.18
		Tropical SW	0	0	0	0	0	0	0	0	0
		Tropical HW	0.197	1.07	1.267	0.162	1.145	1.307	0.13	2.05	2.18
		Temperate HW	0	0	0	0	0	0	0	0	0
Vaneer											
	All		67	0	67	74	0	74	108	0	108
		Tropical SW	0	0	0	0	0	0	0	0	0
		Tropical HW	67	0	67	74	0	74	108	0	108
		Temperate HW	0	0	0	0	0	0	0	0	0
Plywood											
	All		5.6	0	5.6	6.5	0	6.5	9.8	0	9.8
		Tropical SW	0.3	0	0.3	0.5	0	0.5	0.8	0	0.8
		Tropical HW	5.3	0	5.3	6	0	6	9	0	9
		Temperate HW	0	0	0	0	0	0	0	0	0
Builder's Joinery											
	All		0.075	0.28	0.355	0.07	0.32	0.39	0.055	0.6	0.655
		Tropical SW	0	0	0	0	0	0	0	0	0
		Tropical HW	0.075	0.28	0.355	0.07	0.32	0.39	0.055	0.6	0.655
		Temperate HW	0	0	0	0	0	0	0	0	0
End-use of Timber											
Construction											
		Tropical HW	0.155	0.97	1.125	0.123	1.025	1.148	0.105	1.4	1.505
	Species										
	Preference criteria										
Builder's joinery											
		Tropical HW	0.075	0.28	0.355	0.07	0.32	0.39	0.055	0.6	0.655
	Species										
	Preferemce criteria										
Furniture and											
Furniture		Tropical HW	0.035	0.065	0.1	0.032	0.1	0.132	0.025	0.15	0.175
Components	Species										
	Preference criteria										
	Proportion of Household/commerical:										
Flooring											
	Species										
	Preference criteria										

Annex 4.5

AGGREGATE TIMBER CONSUMPTION OF 12 URBAN CONSUMPTION CENTRES ('000 Cu.m)

		1997-98			1999-2000			2002-03		
		Domestic	Imports	Total	Domestic	Imports	Total	Domestic	Imports	Total
Timber Products										
Logs	All									
	Total Tropical HW	1,356.24	832.67	2,322.91	1,456.86	928.71	2,545.08	1,539.67	958.40	2,699.07
	Total Tropical SW	289.48	235.57	531.56	309.41	257.26	573.67	345.26	230.43	585.69
	Total Temp HW	19.88	101.94	121.83	13.46	118.09	131.56	14.82	119.28	134.10
	Logs All	1,665.61	1,170.19	2,976.30	1,779.74	1,304.07	3,250.31	1,899.74	1,308.11	3,418.85
Sawnwood										
	Total Tropical HW	926.71	769.15	1,695.80	950.20	846.22	1,796.42	960.70	838.66	1,799.35
	Total Tropical SW	2.06	115.97	118.03	2.34	125.86	132.20	2.93	139.39	142.32
	Total Temperate HW	18.80	150.87	169.67	26.93	165.74	192.67	31.23	179.53	210.76
	Total Sawnwood	947.57	1,035.99	1,983.50	979.47	1,137.81	2,121.29	994.85	1,157.57	2,152.43
Vaneer & Plywood										
	Total Tropical HW	485.54	0.20	485.73	579.11	0.20	579.31	705.77	0.26	699.03
	Total Tropical SW	5.20	0.20	5.40	5.99	0.23	6.22	5.70	0.21	5.91
	Total Temp HW	-	0.63	0.63	-	0.72	0.72	-	0.65	0.65
	Total Veneer & Plywood	490.74	1.02	491.76	585.10	1.15	586.26	711.47	1.11	705.59
Builder's Joinery										
	Total Tropical HW	40.06	94.69	769.79	46.14	108.84	811.40	43.67	108.38	842.49
	Total Tropical SW	0.50	1.00	1.50	0.57	1.13	1.70	0.81	1.62	2.43
	Total TempHW	0.50	0.50	61.52	0.57	0.57	64.59	0.81	0.81	66.40
	Total Builder's Joinery	41.06	96.19	832.81	47.27	110.53	877.69	45.29	110.81	911.32
End-use of Timber Construction										
	Total*	97.12	114.64	985.81	91.81	134.15	1,020.26	76.77	138.57	1,048.66
Builders' Joinery										
	Total*	86.00	156.02	266.22	98.86	176.87	303.02	89.52	168.33	296.61
Flooring										
	Total*	0.10	0.08	0.17	0.12	0.10	0.22	0.15	0.13	0.27
Furniture and furniture components		**House hold**	**Commercial**	**Total**	**House hold**	**Commercial**	**Total**	**House hold**	**Commercial**	**Total**
	Total*	421.97	410.26	832.79	460.75	452.26	928.85	465.43	454.57	937.27

Contd… Annex 4.5

		2005-06			2007-08			2012-13		
		Domestic	**Imports**	**Total**	**Domestic**	**Imports**	**Total**	**Domestic**	**Imports**	**Total**
Timber Products										
Logs	All									
	Total Tropical HW	1,604.00	1,057.49	3,021.50	1,746.72	1,162.86	3,316.86	2,140.78	1,304.29	3,781.06
	Total Tropical SW	400.54	263.94	676.48	429.61	272.93	715.04	449.39	361.72	826.11
	Total Temp HW	9.95	143.62	153.57	17.79	145.09	162.88	11.44	174.93	186.37
	Logs All	2,014.48	1,465.05	3,851.55	2,194.12	1,580.88	4,194.78	2,601.61	1,840.93	4,793.55
Sawnwood										
	Total Tropical HW	991.06	881.77	1,872.83	1,005.87	934.98	1,940.85	1,004.95	1,118.55	2,123.50
	Total Tropical SW	3.22	145.55	148.77	3.54	154.15	157.68	3.97	184.01	187.98
	Total Temperate HW	29.04	203.59	232.63	36.94	209.95	246.89	39.53	193.26	255.79
	Total Sawnwood	1,023.32	1,230.92	2,254.23	1,046.34	1,299.08	2,345.42	1,048.45	1,495.82	2,567.26
Vaneer & Plywood										
	Total Tropical HW	776.01	0.31	776.31	854.60	0.35	833.61	1,211.51	0.63	1,321.39
	Total Tropical SW	5.97	0.22	6.18	6.22	0.22	6.44	6.99	0.25	7.24
	Total Temp HW	-	0.67	0.67	-	0.69	0.69	-	0.78	0.78
	Total Veneer & Plywood	781.97	1.19	783.17	860.82	1.26	840.74	1,218.50	1.66	1,329.41
Builder's Joinery										
	Total Tropical HW	45.69	114.56	860.52	47.56	120.67	889.05	53.42	135.77	966.64
	Total Tropical SW	0.91	1.81	2.72	1.02	2.03	3.05	1.14	2.28	3.41
	Total TempHW	0.91	0.91	71.36	1.02	1.02	73.38	1.14	1.14	85.26
	Total Builder's Joinery	47.50	117.28	934.60	49.59	123.71	965.48	55.70	139.18	1,055.31
End-use of Timber Construction										
	Total*	90.34	168.85	1,106.31	86.03	217.04	1,176.97	103.08	249.84	1,304.53
Builders' Joinery										
	Total*	95.63	180.94	320.80	97.62	197.77	346.13	112.93	245.98	417.26
Flooring										
	Total*	0.17	0.15	0.32	0.38	0.35	0.73	0.48	0.45	0.93
Furniture and furniture components		**House hold**	**Commercial**	**Total**	**House hold**	**Commercial**	**Total**	**House hold**	**Commercial**	**Total**
	Total*	501.86	486.67	1,022.38	522.24	465.09	1,041.26	573.12	577.81	1,216.95

* Almost all Tropical HW.

Annex 4.6

WOOD PRODUCTS SURVEY OF WOOD BASED INDUSTRY
DEVELOPMENT OF SME

1. Please tick mark the option relevant to the Unit:

1.	Name of the Factory: Category:	Large/Medium/Small
2.	Year of Establishment. Actual No. of working days in a year	……. ……..
3.	Products manufactured	Sawn wood/Furniture/ Joinery/Veneer/Plywood/Blockboard/Flushdoor/ Teachest/Compreg/Others
4.	Annual Installed Capacity on 4mm basis (8 hrs shift) to have cum of finished products of wood.	……Million sq.metres
5.	Achieved capacity (%)	<50 50-60 60-70 >70

II. Raw material requirement

i) Wood consumed: Log average length……m, Average girth…….m

Species used		Girth (cms) Min.	Max	Consumption per 8 hrs Shift (m3)	
1.	Plantation logs				
2.	Logs from Natural Forests				
3.	Imported logs				

III. Sawmill/Furniture factories
Sawmill – Vertical saw
Horizontal saw
Feed System

Wood working machine (list)

Annual output

Product	Installed production	Production	
		Sizes/items	Quantity
Sawn timber for ha.			
Furniture			
Others			

IV. Panel Material only

(a) Resin – Indigenously made or purchased ….Yes/No.
If yes, please specify quantity manufactured UF……..kg
PF……..kg
Others…….kg

If no, please specify quantity purchased UF……..kg
PF……..kg
Others…….kg.

Type of Resin	% production (per day)	Qty.consumed Per 8 hr.shift (…kgs)
UF		
PF		
Others		

Resin kettle used and its capacity…….kg.

(b) Driers: No. of driers…….Make: 1) …….No. of decks……
2)…….No. of decks……

Size of the drier……

Details of Hot Press (es):

i.	Nos. of daylights (please tick)	4	5	6	10	Others
ii.	No. of hot presses					

(c) Production of Plywood/panel board: Annually/Monthly/Daily

Thickness Pressed (please specify)	4mm	6mm	9mm	12mm	16mm	19mm	Other Thickness
Production in m2 (App.)							

(d) Other panel products

Product	Installed capacity (m2)	Production (m2)
a) Blockboard		
b) Flush door		
d) Particle board.		

V. Preservative treatment

Treatment Percent used	Proportion of Treated Products			
	Plywood	Block board	Veneers	Others
1. Ascu				
2. Vapour boron				
3. Dip diffusion				
4. Glue line application				
5. Remedial treatment				

VI. Seasoning

Kiln type	Installed capacity	Actual quanity

VII. Energy consumption (KWH)

1.	Electricity	……..	KWH
2.	Diesel	…….	Ltrs (used)
3.	Coal	…….	Tons
4.	Wood residues	……	Tons

VIII. Employment generation in the Unit/Factory:

Category	No.
1.Managerial: 2.Skilled: 3.Semiskilled: 4.Unskilled: 5.Contract Labour 6.Causual Labour 7.Others	

IX. Marketing strategy adopted (Please tick) Through Company show Rooms / Dealers' Network.

X. Your vision to update & to improve the condition of wood processing industry in the country/Region.

Annex 5.1

SELECT LIST OF SAW MILLS, BUILDERS, FURNITURE MANUFACTURERS, TRADERS & OTHERS WHO WERE CONSULTED DURING THE SURVEY

BANGALORE

Saw mills

1. Mysore Timber Trading Co.
#275/1,N.T.Y.Layout, Mysore Road,
Bangalore
Ph: 26749748, 26747984
E-mail:mttco1975@yahoo.co.in

2. Bangalore Timber Co.
35, I Main, Seshadripuram, Bangalore
Ph: 23364323

3. Sri Ram Saw mills
82, N.T.Y Layout, Mysore road,
Bangalore
Ph: 26742638

4. Laxmi Saw Mills
275/9, NTY Layout, Mysore road,
Bangalore
Ph: 26748134

5. Shankar Vijay Saw Mills
Peenya Industrial Area, Bangalore
Ph: 28392864

6. Mr. N.D Uday, Scientist IPIRTI,
Bangalore

Timber Merchants

1. Kaveri Timber Mart
4, MS Layout, Old Madras Road, Ulsoor
Bangalore
Ph: 25366544

2. Balaji Timber Depot
16, NTY Layout, Mysore road, Bangalore
Ph: 26740217

3. Sri Krishna Saw Mills
275/7, NTY Layout, Mysore Road,
Ph: 26743151
Fax: 26743712

4. Ganesh Saw Mills
275/4, NTY layout, Mysore Road,
Ph: 26741009

5. Venkateshwara Wood & Manufacturing Industries
275/1-2, NTY layout, Mysore Road
Ph: 26747673
Fax: 26745490

Furniture Manufacturers

1. Unilite interiors (P) Ltd
#3, 14th cross, I main road, SR Nagar,
Mumbai
E-mail: unilite@indya.com
Ph:2224765

2. Asian Furniture Co.
#7, 8th main, SR Nagar
E-mail: asianfurnitureco@usa.net
Ph: 2223216

3. Technica Enterprises
4/2. 4th cross, Lalabagh fort road,
Doddamavalli
E-mail: taurusoffice@yahoo.com

4. Amanullakhan's Sons
81, NB Bazar Mumbai
E-mail: abbask@bgl.vsnl.net.in
Ph: 2236986

Builders

1. Arcline Builders
24,I floor, St.John's Church Road
E-mail: ribuilders@hotmail.com
Ph: 25568998

2. Sahayam Construction P Ltd
15, II cross, III stage, Basaveswaranagar
E-mail: sahayam@netcracker.com
Ph: 23239299

3. Landmarks
1,Casa Augusta, Curley Street
Ph: 2216603

4. Classic Enginners & Contractors
56, Haines Road,
Ph: 25512496

5. H.M.Constructions
HM Geneva house, 14, Cunningham Road
E-mail: sales-hm@hmconstructions.com

6. Gopalan Enterprises
5, Richmond road,
E-mail: gopalan@giasbg01.vsnl.net.in
Ph: 22777121

7. SI Property
37, Kasturba road cross, Off Lavelle Road
E-mail: sipdblr@bgl.vsnl.net.in
Ph: 22218043

8. Sobha Developers
E-106, Sunrise Chambers, 22, Ulsoor Road
E-mail: sobha@giasbg01.vsnl.net.in
Ph: 25321902

Architects

1. Saolapurkaar & Associates
294, HMT Layout, RT Nagar
E-mail: nitinvs@vsnl.com
Ph: 23335074

2. Mohan Associates
771, 100' Road, Indiranagar
E-mail: rakeshmohan1@vsnl.com
Ph: 25275206

3. Karnataka State Forest Industries Corpn.Ltd
45A, NTY Layout, Mysore Road
Website: www.ksfic.com

HYDERABAD

Sawmills

1. Ashapuri Saw Mills, Ganesh Nagar
Ph: 27038287

2. KK Papaiah Saw Mills, New Bhogiguda
Ph: 2531136

3. Krishna Vijay Saw Mills, Jsreenagar, Vijayawada Road
Ph: 2038031

4. Surya Vijay Saw Mills, Vikasnagar, Dilsukh Nagar,
Ph: 24047762

Timber traders

1. Adilabad Timber Mart Nacharam Village Road
Ph: 2175219

2. Ambica Timber Trading 42-789, Satyagiri Colony, Sardar Patelnagar
Ph: 27123282

Furniture

1. Allwin furniture.
5-8-110/12 &13, Nampally
Ph: 23203085

2. Andrapradesh furniture,
Station Road. Nampally
Ph: 23202221

3. Asha Enterprises.
Station Road, Nampally
Ph: 24604532

Builders

1. Ashoka Builders,
401, Ashoka Chambers, Adarshnagar
Ph: 3237272
Fax: 2321078

2. Vindhya Developers,
12-2-826/A/6,LIC Colony, Mehdipatnam,
E-mail: alakakapoor@yahoo.com
Ph: 23513555

3. Dattachandra Constructions,
Nalagonda X road, Malakpet
Ph: 24547070

4. Deepthi Builders,
YMCA complex, Sardar Patel Road,
Ph:27805877

Architects

1. Ajay &Associates
22, Buckingham, amrutha valley,
Banjarahills
E-mail: ajayarchitects@yahoo.com
Ph: 26622435

2. Mahendra & associates,
104, sunanda apartments, plot no 42,
Vikaspuri
E- mail: mahiarci@yahoo.com
Ph: 23702440

3. Indraprasta consultants, 810, II floor,
F- 302, Castle hills, Masab tank road
E- mail: indraprastaconsultants@yahoo.com

MUMBAI

Institutions

1. Timber Merchants Association, Mumbai.
Address: 67, Sant Savta Marg, Mustafa bazaar,
Mumbai – 400010
Phone 022-23726397,
Contact Person: - Mr. Hanif E Memon
(President)

2. Surat timber Associtaion, Chairman
Mr. Bhanjibhai Patel,
Batiyar Chowk Rasta, Shankar Vijay, Saw Mill, Surat , Gujrat , India

3. Timber Traders Association of Pune
Mr. Sha Rupaji Nagaji Oswal (Member) 63,
New Timber market, Pune
Phones 6356485 / 6349095

4. Mumbai Customs
Mumbai Custom House, Ballard Pier,
Mumbai, India

5. Mumbai Port Trust, Mumbai, India

6. Jawaharlal Nehru Port Trust
Sheva, Navi Mumbai, India
Phones 022-27242623 – 31

7. Dy. Conservator (Forest)
Maharashtra State Forest Dept. Thane,
Mumbai , India.

Builders / Constructors / Developers / Architects

1. Arvind Shah
H.V. Associated (Builders & Contractors)
Shop No – 121, M.G. Road, Opp. Aparna Stores, Near Shankar Mandir, Ghatkoper (w) Mumbai

2. Shree Sai- Datta Developers
Omkar – A, Flat No. 202, Bal Govindas Raod, Mahim, Mumbai – 400 016
Ph: 022-24322491; Fax 022-24308097
Contact person: Mr. Vishal Naik/ Mr. Rajendra B. Naik / Mr. Shashikant D. Gore

3. Virani.Group of Companies,
Virani Tower. 'C' wing, First Floor, S.V. Road, Dahisar (E), Mumbai – 68
Ph: 022-28935370; Fax: 022-28931056
Email: viranigroup@hotmail.com
Contact Person : Mr. Bharat / Mr. Mansoor Virani.

4. Pathak Constructions and Finance Ltd.,
4, Bhalchandra Kripa Bldg, Room No. 3, Daulat Nagar, Borivali (E), Mumbai – 66
Ph: 28916783 / 28917590 / 28945783;
Fax: 28900272
Email: - pathakre@bol.net.in
Contact Person :- Mr. Arun R. Pathak, Managing Director

5. Surasash Associates
Shop No. 7, Sweta Park, Road No. 25, Daulat Nagar, Borivli (E), Mumbai – 400 066.
Ph: 9892117732 (M)
Contact Person: Mr. Dharmendra Pandit

6. J.D. Associates, Shop No. 42,
Opp. Ambika Plastics, Near Sai Shristi, L.B.S. Marg, Bhandup (w), Mumbai
Ph: 9821541497 (M)
Contact Person: Mr. Jay Dasha

7. Paresh Construction
Civil Engineers & Contractors, 107, R.L.A. Tower Tank Road, Bhandup (W),
Mumbai – 400 078.
Phones: 25600201 / 25994810/25649846 / 25914587

8. Gharandja Builders
Dev Chhaya, Plot No. 120, Grd. Flr. , Dr. M.B. Raut Road, Shivaji park, Mumbai – 400 028.
Tel: 24466179; Fax: 24444599
Email: ghar@vsnl.com

9. D.S. Kulkerni Developers Ltd.,
Head Office: "DSK House", 1187/60, J.M. Road, Shivaji Nagar, Pune – 411 005
Tel: 020-25534595/ 6/7/8/9; Fax: 020-4221816.
Mumbai Office: 14 "Upasana", Near Sena Bhavan, Lady Jamshetjee Road,
Shivaji Park, Mumbai – 400 016.
Tel: 022 - 24301883 / 24302738; Fax: 022 - 24221816
Email: dskmum@pn2.vsnl.net.in, sales@dskdl.com, ranjit@dskdl.com
Contact Person: Mr. Nitin Phadke, Chief Engineer / Mr. Ranjit Kulkarni

10. Paranjape Schemes (Construction) Pvt Ltd.,
Shri Krishna Kunj, 11/2, Anand Coloy, Near Suvarnarekha Dinning Hall,
Old Karnatak High School Lane, off Prabhat Road, Pune- 411 004.
Tel: 91-20-5442690 / 5442691 Fax:91-20-5460986
Email: paranjpe@bom3.vsnl.net.in, svbapat@indiatimes.com
Contact Person: Mr. Pathak / Mr. Shekhar – Tech. Purchase

11. Somnath, CTS
No. 988, Ram Mandir Road, next to Tilak Mandir, Vile Parle(East), Mumbai – 400 057
Tel: 91-22-26105350 / 26105165, Fax: 91-22-26106136

Wholesale Timber Merchants

1. Swadesh Timber Mart,
85 Victoria Road, Mustafa Bazar, Mumbai – 400010
Tel: 022-23781656

2. Arif Timbers
Chardi Bazar, Victoria Road, Mumbai – 400 027
Tel: 23729050
Contact Person: Mr. Arif Bhai

3. Alpha Timber ,
Plot No. 58, Sector- A-1, Timber Market, Koperkhairne, Navi Mumbai – 400 701
Tel: 022-27548605
Contact Person: Mr. Najmuddin. A. Gargardiwala

4. Sagar Timber Traders & Plywood Merchant,
Ram-Ratan Co-op Society, T.H. Katariya Marg,
Opp. Mahim Head Post Office,
Mahim, MUMBAI – 400 001.
Tel:022-26111364 / 24458785
Contact Person: Mr. Harshad Mehta

5. Bhanesh Shah,
112, B.d. Associates, R.R.T Road, Mulund (W)
Tel: 022- 55901450

6. Maharashtra Timber,
New Nagardas Road, Opp. Pinky Talkies,,
Andheri (East), Mumbai – 400 069.
Tel: 022 – 28329527
Fax: 022 - 28364746
Contact Person : Vanita Rodrigues.

7. Chheda Ply & Timber
Poona Bharwad, Chawl, Chuna Bathi, Opp. Ravindra Hotel,
S.V. Road, Dahisar (East), Mumbai – 400 068
Tel: 28952867
Contact Person: Mr. Khimji H. Chheda

8. Narottam Plywood R.T. CAL,
263, N.C. Kelkar Road, Dadar (W.Rly.),
Mumbai - 400 028.
Tel: 24304475
Contact Person: Mr. Bharat Mehta

9. Shreeji Group
National Mill Compound, S.V. Raod, Near Dahisars Petrol Pump, Dahisar (East),
Mumbai – 400 068
Tel: 022-8927377 / 28927830 / 28192085
Fax: 022-28927830
Contact person: Nilesh Parekh

10. M/s. M.S. Ply
47, Timber Market, Pune – 411 042
Tel: 26344233 / 26346560
Contact Person : Mr. Raman Parwar

11. Euro Wood
Plot No. 109, New Timber Market, Bhawani Peth, Pune – 42
Ph: 4014493 / 6361146
Contact Person : Mr. Moez Balsara

Plywood Manufacturers

1. Green Valley Plywood Limited.,
4, Ashok Villa, V.P. Raod, Vile Parle (Wes),
Mumbai – 400 056.
Tel: 022-26124108
Contact Person : Mr. Bhai

Furniture Manufacturer / Interior Decorators

1. Santoshi Furniture Works
3, Gandhi Sadan, New Nagardas Road, Near Pinki Talkies, Andheri (East),
Mumbai – 400 069.
Tel: 022-28201894 / 26478140
Contact Person: Mr. Sarju S. Vishwakarma / Chandrakant S. Vishwakarma

2. Khanolkar & Company
106, Jay gopal Industrial Estate, Bhavani Shankar 'X' Road, Dadar (W), Mumbai – 28
Tel: 24221992
Email: anilk13@hotmail.com
Contact Person : Mr. Anil Khanolkar

3. Rakesh Furniture
102, Jogani Industiral Estate, 541, Senapati Bapat Marg, Dadar West, Mumbai – 400 028
Tel: 022-24223864
Kind Attn : Mr. Rakesh Adivarekar

4. Manish Bhai Shah
G-15, Unique Industrial Estate, Prabhadevi, Dadar
Phone: 9820754343 (M)

5. Wel Décor furniture
Shop No. 7, Punit Nagar, S.V. Road, Next to Poisar Bus Depot. Borivali (W),
Mumbai – 400 092
Tel: 28062217
Contact Person : Mr. Farhat

6. Creative Home Furniture & Interiors
Relief Road, Oshirwara Jogeshwari (w)
Mumbai – 400 102.
Tel: 26784208
Contact Person : Mr. M. Mehboob

7. Milap Furniture Interior Decorators
Durga apartment, Shop No. 3 & 4, Ram Kuwar Thakur Road, Dahisar (East), Mumbai – 400 068.
Tel: 28940119
Contact Person : Mr. Samer M. Sheikh

8. Well Art
21, Gurudwara Bldg., S.S. Wagh Marg, Opp. Chitra, Dadar (East), Mumbai – 400 014
Tel: 24132589 / 24154963
Contact Person : Mr. Sohaib Ahmed

9. Bhandari Furniture Mart,
235, Rewa Bhuwan, L.J. Road,
Bombay – 400 016.
Tel: 24304705
Contact Person : Mr. Chandrakant Bhandari

10. Partner of Lucky Furniture Enterprises
Add. Chinchawad Linking Road, Opp. Baba Haridas Mandir Pune – 411017.
Mobile : 9822435731

11. Shri Balaji Furnitures.,
Town Tower, Shop No. 7, Jambulkar Chowk, Near Parmar park Jan-Sheva Sahakari Bank, Wanauri, Pune-40.
Tel: 4008719
Contact Person: Mr. Rajendra Janu.

12. Anup furniture
Laxmi Chmbers, Shop No. 2, Kondva Khurd,
Pune – 411040
Tel: 6930336 / 4280210
Contact Person : Mr. Santosh Bagmaar.

13. Altaf Interiors
Shop No. 17 / 18, Shangrila Gardens, Opp. Bund Garden, Pune – 411001
Phone: 6125072 / 6125073
Contact Person : Mr. Salman Mitha.

Saw Mill Owners

1. General Saw Mill
Behind Trimurti Studio, S.V. Road, Dahisar (E), Mumbai – 400 068
Contact Person: Sohkhat Ali

2. Sky Art Show Mill
Dahisar Cheki Naka, Dahisar (E) Mumbai – 68
Tel : 28901607, Contact Person : Rahman Bhai (Purchase Manager),

3. Borivali Saw Mill
Mahatma Gandhi Road, Near Railway Crossing, Borivali (E), Mumbai - 66
Contact Person : Mr. Pravinbhai Patel/ Chetan P. Patel
Tel : 892 8941/ 690 8941

4. Querasi Timber Mart & Saw Mill,
Oshivina, S.V. Road, Jogeshwari (W), Mumbai
Contact Person : Sabbir Bhai

5. Ehshanullah Timber Traders
Plot No. 5, Lakdi Bunder, Daru Khana, Mumbai – 10
Tel : 23726528, Contact Person : Arshad

6. Raguwanshi Saw Mill
Plot No. 86, D-3 Block MIDC, Opp. GreavesLtd., Chinchwad, Pune – 411 019
Tel : 4102217/ 7472217(O), 7655894 (R);
Contact Person : Shantilal Patel

7. Ganesh Saw Mills
39/1,2 Thergaon, Old Mumbai-Poona Rd., Chinchwad, Pune – 411 033
Contact Person : P.B. Mirajkar (Partner) / Ganesh P. Mirajkar
Tel : 7278581

8. Mrs. Vandana Thakkar,
Plot 17, Siddheshwar Co-op-Housing Society, Behind BIAF Complex, Warje, Pune.

9. Mr. Vishwas Patwardhan,
121 / 1, Plot No. 18, Rajyog Society, Warje – Pune- 52

10. Abhijeet Slindurao Desai
Plot C- 11, Next to 9 BRD, Viman Nagar Lane, Pune – Nagar Road,
(Next to Naikware Project)

SURAT

1. Metro Furniture
Dhan Laxmi Palace, Near People Bank, Adajan Patiya, Surat – 395 009
Tel : 2778363, Contact Person : Nilesh Bhai. M Panchal

2. Contact Person : Dilip Panchal
63/230, Shashi Shari No. 1, Opp. Powar,
Surat – 384003
Tel : 27424421

3. Bhagwati Timber Mart
Tel : 0261 – 3479227 / 3479327,
Contact Person : Shankarbhai Patel

Individual Land Lords / House Hold Owners

1. Mr. Sundarbhai Parekh
Shantiniketan Society Banglow, No. 109, Row No. 4, Surat

2. Mahendra Kumar Patel,
At Post Udna Ranchodnagar, Opp. Aadshi Chemical, Udna, Surat.

3. Mahesh Lakdawala,
Lalbhai Naginchand & Sons, Nanpada, Jana Parwaja, Surat – 395001
Phone No. 2479210

4. Rahubhai Patel
Udhana Road, Adarsha Nagar Society, Bunglow No. – 130 Surat

5. Jafar Jahan
Bangla No.7, Maskand Society, Adugan Patiya, Rander Road, Surat – 395009

6. Bipin Bhai Ridwawala
43, Sugam SOC, Rayani Patoya, Near Sugmara Complex, Surat
Phone – 2779976

7. Station Square Building,
Station Road, Surat
Phone # 9825125858
Contact Person: Mr. Prashant Doriwala.

8. Adinath Furnitures
Lower Ground, Sankheshwar Complex, Opp. Raymond Show Room, Manjura Gate, Surat
Phone # 2347 3083 / 2346 1046
Fax # 234776112
Contact Person : Mr. Tarun Sheth

VISHAKHAPATNAM

Mr. Aman Garg, Choice Ply, Vishakhapatnam

Mr. Singhal, Plywood Manufacturer, Vishakhapatnam

Mr. Satyanarayan Murthy, C&F Agnet, Vishakhapatnam

KOLKATTA

Mr. S. Bhajanka, Managing Director, Century Plyboards, Kolkata

Amit Timber Emporium- Mr Vinod Patel
9831027357(Mob.)
amittimber_cal@yahoo.co.in

Nitful- Mr Uttam Kr. Banik
uttambanik_cal@yahoo.com

Shankar Saw mills-Mr Narendra Patel
blpatel@cal2.vsnl.net.in
Mahabir Timber Works-Mr. Vikas Jaiswal-98300 69099
vikky_disparado@hotmail.com

Shree Shankar Timber Trading- Mr. Sunil Rebiawala
sstc@cal2.vsnl.net.in

Jitendra Saw Mill & Co- Mr Anil Sudan-9830027813
jsmae@caltiger.com

NEW DELHI

Mr. A.K Banerjee, Asstt. Secretary, Federation of Indian Plywood and Panel Industries,
New Delhi

Mr. K. K. Batra, Snowhite Furniture World, G-16 South Extension 1, New Delhi
swstores@vsnl.com

ORISSA

Dy Commissioner Customs, Paradip Port, Orissa

YAMUNA NAGAR

Units manufacturing Plywood

1 M/s Saraswati wood Products 0-8 Ind. Area Yamunanagar
2 M/s Shakti Plywood Industries v. Cocdhondli
3 M/s Jawala Plywood Industries Timber Market Yamunanagar
4 Gupta Saw Mills, Lakkar Market Saharanpur Rd. Yamunanagar
5 M/s Jagdamba Plywood Bhagpur Road, V. Tejli
6 Shivam Plywood Industries Vill. Kauli Majra
7 M/s Super Ply Industries Dadupur Road Chhachhrauli
8 M/s Assam Plywood Industry V. Raspur
9 M/s Shiv Shambu Polywood Povt. Ltd. V. Burra
10 M/s Ambalika Plywood (P) Ltd. V. Udhonagar
11 G.M.G Plywood (P) Ltd. V. Kauli Majra
12 Assam Wood & Allied Products, V. Mukarelpur
13 M/s Preeti Plywod Pvt. Ltd. Amadalpur Road Jagadhari
14 M/s Alakhnanda Plywood Industries Pvt.Ltd. Kauli Majara
15 M/s R.D wood Products V. Jarran
16 M/s S.A Timber Taders V. Kami Majra
17 M/s Sandeep Plywood Industries Kami Majra
18 M/s Micro Plywood Industries Kami Majra
19 M/s Ekta Enterprises V. Coadholi
20 Star Plywood Pvt. Ltd. V Coadholi
21 M/s Madan Industries Kahgan Nagar Jagadhari
22 M/s Ishan Industries V. Jarran
23 S.R Jindal Plywood Industries Old Saharan pur Road Jagahdari
24 M/s Neelgiri Wood Crafts V. Jarran
25 M/s Marwah Plywood Industries V. Kami Majra
26 Pooja Decorator Plywood V. Kami Majra
27 M/s Ashoka Cold Sorage Bilaspur Bye Pass Rd. Jagadhari
28 M/s Raj kumar & Sons Kauli Majra
29 M/s Super Ply Ding Jagadhari
30 M/s Unitech Industries V. Jarran
31 M/s Shree Radhey Enterprises
32 M/s Modern wood Industries V. Tejli, P.O Fatehpur
33 M/s Ajay Plywood Industries Pvt. Ltd.
34 M/s Rainbow Ply wood Industries Khajari Rd. Yamunanagar
35 M/s G.N. Plywood Industries Saharanpur Rd. Yamunanagar
36 M/s Punjab Teak Plywood Industries, V. Kauli Majra
37 M/s Narwah Industries V. Damla
38 M/s S.K. Plywood Indsutries Pvt. Ltd. Hanuman Gate Jagadhari
39 M/s Triveni wood Crafts V. Damla
40 M/s Krishna Plywood Industries V. Rajpur
41 M/s Marshal Plywood Industries V. Kauli Majra
42 Mafsle Ply Industries, Kamarpur
43 M/s R.C Products Chandpur
44 M/s Elite Plywood Industries Pvt. Ltd. Timber Market Saharanpur Road Yamunanagar
45 M/s S.K wood Products V. Penjetor
46 M/s Punjab Plywood Industries Kamal Majra
47 M/s Kanwal Plytech Industries V. Harmauli
48 M/s B.M. Plywood Pvt. Ltd. Kuguns Road Yamunanagar
49 M/s Sagar wood Products Pvt.Ltd. V. Tejli
50 M/s Unique wood Products V. Jerran
51 M/s Haryana wood Products Mukarabpur
52 M/s Asian wood Industries E 20 Ind. Area Yamunanagar

53 M/s Mohit Timber Industries New Aggarsain Chowk Jagadhari

54 M/s Ajay wood Products V. Harnoli

55 M/s Aggarsain wood Crafts Kami Majra

56 M/s GangaPlywood Industries Khajrauli Road Yamunanagar

57 M/s Shree Vardhman Industries Khajuri Rd. Yamunanagar

58 M/s Universe & Timber Corporation Rador Rd. Jerren

59 Swaclts Udyog Habibpur

60 M/s Bir Industries E20 Ind. Area Yamunanagar

61 M/s T.T. Ply Board, Shadipur

62 S.R. Wood Products V. Jaroda

63 M/s Aggarwal Timber ProductsW-9 Ind. Area Yamunanagar

64 M/s Rajan Steels 22, Ind. Estate Yamunanagar

65 M/s Premier Sales Corpoartion O-1 Ind. Area

66 M/s R.D Plywood Industries O- 8 In. Area Yamunanagar

67 M/s Talwar Timber Khajuri Road, Kami Majra

68 M/s Vijay Industries Timber Market, Yamunanagar

69 M/s Rajinder Singh & Co. (Plywod Sector) Swanpur Jagadhari

70 M/s Universe Timber Industries W-3 Ind Area Yamunanagar

71 M/s V.P.M Plywood Industries W- 3 Ind. Area Yamunanagar

72 M/s Shree Ply Boards V Chahron

Units Manufacturing Veneer

1 M/s Kay Emm Enterprises New Saraswati Col. Jagadhari

2 M/s Sumer Chand Rajeshwar Parkash Industries. Opp.Jain Nagar, Jagadhari

3 M/s G.R. Industries, V.Dusans

4 M/s Oberoi Wood Crafts, Pamoara

5 M/s Hasth Timber Timber Markets Yamunanagar

6 M/s Jai Plywood Industries V.Kauns Nagar

7 M/s Satya Shree Industries V. UdhamNagar

8 M/s Rama Plywood, V. Gadhauli

9 M/s Heera Products Aurangabad

10 M/s Bhagat Timber Trader Cantt. Rd. Jagadhari

11 M/s Hargun Industries Saharanpur Rd. Yamunanagar

12 M/s Sagar Industries Timber Market Yamunanagar

13 M/s Swastik Wood Producrs V. Kami Majra

14 M/s Marwah Woods Khajuri Rd. Yamunanagar

15 M/s Ved Parkash Vinay Kumar Timber Market Yamunanagar

16 M/s Shiva Boarda & Ply Wood Kami Majra

17 M/s M.R.J. Plywood, V. Jerren

18 M/s Purnima Industries V. Kami Majra

19 M/s Pine Timber Trader V. Mamidi

20 M/s Davinder wood Products Parkfrn Rd. Jagadhari

21 M/s Arawali Wood Industries V. Hamida

22 M/s Prem Oberoi & Sons Pansore

23 M/s Ved Parkash Radhey Shyam Cantt. Rd. Jagadhari

24 M/s V.K. Timber Co. Khajuri Road Yamunanagar

25 M/s Popular Wood Inds. V. Kami Majra

26 M/s Sewak Enterprises, V. Jorian

27 M/s Shree Mahaveer Inds., V. Kami Majra

28 M/s Bhavani Wood Ind. V. Mamidi

29 M/s V.K Enterprises, Palika Vihar Radour Road, Camp, Yamunanagar

30 M/s Samrat Timber, V. Kami Majra

31 M/s B.S Enterprises, Near Dimple Cinema, Jagadhari

32 M/s G.M.G Ins. V. Kami Majra

33 M/s Ved Parkash Mittal & Sons W- 9 Ind. Area, Yamunanagar

34 M/s Bhatia Timber Inds. 45 Ind. Estate, Yamunanagar

35 M/s Elite Timber Traders, Timber Market, Yamunanagar

36 M/s Super Timber, Chh. Road Jagahdari

37 M/s Bhagat Wood Inds. Khajuri Road Habibpur, Yamunanagar

38 M/s Sushant Industries, E-19, Ind. Area, Yamunanagar

39 M/s Mehta Wood Products, V, Jerrian.

40 M/s Triveni Timber Co. Bhola Nagar, Jagadhari

41 M/s Ambalika Inds. Aggarsain Chowk Jagadhari

42 M/s Modi Udyog, Vill. Kami Majra

43 M/s Chopra Timber Co. Opp. Dimple Cinema, Jagadhari

44 M/s Ved Industries Saharanpur Rd. Yamunanagar

45 M/s Wood Industries Saharanpur Road, Yamunanagar

46 M/s Rahul Industries Saharanpur Road Yamunanagar

47 M/s Shiv Timber Industries Vill. Tejli

48 M/s Gaurav Enterprises Vill. Jorian

49 M/s Shri Gopal Udyog Shadipur

50 M/s Ganpati Plywood Ind. Chh. Road Jagadhari

51 M/s Krishana Wood Industries Vill. Raipur, P.O. Shadipur

52 M/s Maha Narain wood Inds. Vill. Jaroda

53 M/s Aggarwal Enterprises Khajuri Road Yamunanagar

54 M/s Dada Timbers Timber Marekets YNR.

55 M/s Sri Kartikay Plywood Inds Bhola Nagar, Garhi Mundo Jagadhari

56 M/s Trehan Wood Industries Vil. Panjora

57 M/s Shree Ganesh Industries Vill. Kami Majra

58 M/s A.P. Industries Vill.Parwalan

59 M/s Rajiv Timber Industries Khajuri Road Opp. Canal Col. Yamunanagar

60 M/s Arora Enterprises, Radaur Rd. Camp Yamunanagar

61 M/s Singla Industries, Timber Market , Yamunanagar

Units engaged in manufacturing wooden items, e.g., Saw Milling

1 M/sRakesh Timber, V. Kami Majra

2 Rajsons Industries, Udhamgarh

3 M/s Kami Majra, V. Kami Majra

4 M/s Raj Furniture Works Kapal Mochen Rd. Bilaspur

5 M/s Sanjay Furniture works Kapal Mochen Rd. Bilaspur

6 M/s Raj wood Industries Ambala Road Jagadhari

7 M/s Dhiman Wood Works Sarwan

8 M/s Balwinder Singh S/o Sardara Ram Furniture Udyog Machhrouli

9 M/s Panchal Wood Works V. Mandherr

10 M/s Sarwan S/o Lakhmira Jagadhari

11 M/s Dimple S/O Mohan Lal Kanri Kalan

12 M/s Baranala Wooden Furniture Court Rd. Jagadhari

13 M/s Pine wood Enterprises Jhota Rd. V. Tejli

14 M/s V.Paras Industries V. Mandoli

15 M/s Kiran Pal S/o Gian Chand V. Darpur

16 M/s Sehgal Furniture Works Hasanpur

17 M/s Parmanand Timber Trader Radhey Lal Yamunangar

18 M/s Gurdas Furniture works Kaptuin Majra

19 M/s Jagmal wood works Kaptain Majra

20 M/s Channa Furniture Kheri Lakhe Singh

21 M/s Crown wood Products Saharanpur Rd. Yamunanagar

22 M/s V.K. Timber Ind. Gumthla Road

23 M/s Capsons Engg. Works 48, Ind. Estate Yamunanagar

24 M/s Super Traders, Radaur Road, Near New Chungi , YNR

25 M/s Uni Ply Industries, Vill. Jorian

26 M/s Kartar Singh & Sons Khajuri Road, YNR

27 M/s Jagmal Singh & Bros. Saw Mill Vill. Shergarh

28 M/s Shiv Parshad & Sons Timber Market, Mamider YNR

29 M/s Sudesh Industries Vill. Habibpur

30 M/s Deepak Furniture Sharma Colony Camp[YNR

31 M/s Nav Durga Saw Mill. Luxmi Dharm Kanta, Chh. Road, Jagadhari

32 M/s Luxmi Steel & Timber Crafts Vill. Kami Majra

33 M/s S. Timber, Radour Road Radour

34 M/s Dhiman Bani Saw Inds Vill. Chaharwala

35 M/s Aggarwal Timber Radaur

36 M/s Ram Singh S/o Bhangi Ram Vill. Dev Dhar

37 M/s Gupta Enterprises Ram Vikas Khajuri Road Yamunanagar

38 M/s Bhagwati Wood Ind. Sialta

39 M/s Shiv Shakti Engg. Works BVI 1897 Vishnu Nagar Jag. Workshop

40 M/s Jogi Furniture Works VPO Jathlana

41 M/s D.K. Timber, Ambala Road, Opp. Sadar Police Stn. Jagadhari

42 M/s Punit Saw Mill, Gulab Nagar, Jag.

43 J.K. Saw Mills, Vill. Tharpur

44 Sohan Wood Works, Vill. Shahpura.

45 M/s Suresh Kumar S/o Ved Parkash, Uncha chanina.

46 M/s Rameshwar Dass Atma Ram, Vill. Uncha Chanina

47 M/s Ramesh Kr. Wooden Furniture Udyog, Vill. Chaharwala

48 M/s Surya Timbers, Pansara

49 M/s Vijay Wood Works, Vill. Jubbal

50 M/s Ranjit Timber Industries Khalsa College Road, Y.Nagar

51 M/s Parkash Enterprises,Vill. Kami Majra

52 M/s Gagan Timber Kharam Road, Y.Nagar

53 M/s Shiva Saw Mill,Vill.Rampur Kalan

54 M/s Jai Vishwakarma Saw Mills, Vill. Masana Rangran

55 M/s Mahadev Wooden Products,Vill. Chharpur Khurd

56 M/s Bhushan Saw Mill, Vill. Baindi

57 M/s Vinod Wood Works, Vill. Sarawan

58 M/s Sh. Amrit Enterprises, Khajuri Road, Y.Ngr

59 M/s Sumer Chand Furniture Works Works, Vill. HaibatPur

60 M/s Janta Woods Works, Barara Road, Vill. Sarawan.

61 M/s Surjit Memorial Saw Mill, Chaneti Road Jag.

62 M/s Vishawkarma Furniture Works, Vill. Rajpur

63 M/s Bajaj Timber Industries, Vill. Jorian

64 M/s R.R. Industries,Lakshami Garden,Y.Ngr.

65 M/s Vishawkarma Wood Works, Near Gurudwara, Sadhaura.

66 M/s Iqbal Mohd.Furniture Works, Bhagwanpur.

67 M/s Dharshan Enterprise, Vill. Mamidi.

68 M/s S.K Wood Works Near High School, Jathlana.

69 M/s Sudesh Furniture, Vill. Sadhaura.

70 M/s Naresh Furniture House, Near Post Office, Sadhaura.

71 M/s Amar Wood Works Vill. Rasul Pur

72 M/s Dhiman Furniture, Kheri Lakha Singh.

73 M/s Amar Panel Door, Vijay Colony,Japadh

74 M/s Minakshi Timber Industries, Badi Majra, P.O. Panara

75 M/s Shafi Saw Mills, Vill. Kotra

76 M/s Kamboj Timber Radaur Road, Mamidi

77 M/s Raj Kumar S/o Chiranji Lal, Mustfabad

78 M/s Atma Ram S/o Nathu Ram, Thana Chappar

79 M/s Puran Chand S/o Joti Ram , Thana Chhappar

80 M/s Harmeet Saw Mills, W-25, Ind. Area YNR.

81 M/s Sanjay Furniture Emporium Workshop Rd. YamunaNagar

82 M/s Popular Janta Saw Mill Yamuna Nagar Rd. Jagadhari

83 M/s Raghubir Singh & Co. YamunaNagar Rd. Jaghadhari

84 M/s Baldev Furniture House 69, Thapar Col. YamunaNagar

85 M/s Dhiman Saw Mills Vill. Mamidi

86 M/s Satish Kumar Pardeep Kumar e-28 Ind. Area YNR.

87 M/s Sai Wngg. (P) Ltd. E-35 Ind. Estate. YNR.

88 M/s Babu Ram Ved Parkash Khajuri Road. YNR.

89 M/s Darshan Kumar Kapoor SaharanPur Road YamuNagar

90 M/s Vishwa Karma Furniture Works, Mustfabad

91 M/s Ram Krishan Wood Works V. Tugel pur

92 M/s Bharat Furniture House Behind Jindal Ice Factory Yamunanagar.

93 M/s Faqir Chand Ram Kumar Paonta Road, Chhachhrauli.

94 M/s Mangat Ram S/o Charat Ram V. Babli P.O. Chhachhrauli.

95 M/s Vinod Wood & Steel Industries. 28, Ind. Estate Yamunanagar

96 M/s Delhi Timber Traders Khajuri Road, Yamunanagar.

97 M/s Bawa Ind. Corporation Saharanpur Road Yamunanagar.

98 M/s Hans Raj S/o Sh. Data Ram Wood Works, Chabutaron.

99 M/s Techn no Timber Corportion Ind. Area YamuNagar.

100 M/a Bishan Das Nayyar & Saws, SaharanPur Road YNR.

101 M/s Timber Corporation Khajuri Road YamuNagar

102 M/s New Janta Saw Mill Khalsa College Road YNR.

103 M/s Verma Wood Works Khajuri Road YamunaNagar

104 M/s United Timber Works, Jagadhari Rd. YamuNagar

106 M/s Shree Kartar Timber Traders Kahjuri Rd. YNR.

107 M/s Faquir Chand S/o Ram Dass , Mandhor.

108 M/s Unique Enterprises 3, Industrial Estate, Phase II Yamuna Nagar.

109 M/s Vijay Industries Timber Market SaharanPur Road YNR.

110 M/s Gurmeet Singh S/o Iqbal Singh Uncha Chandna.

111 M/s Ramji Lal Wood Works Post Office Street. Radaur.

112 M/s Mahavir Products Vill. Gumthala Rao.

113 M/s Pawan Kumar S/o Bachan Singh Vill. Mamidi, P.O. Aurangabad

114 M/s Balwinder Singh S/o Joginder Singh Vill. Balachaur, P.O. Chachhrauli.

115 M/s Chaman Wood Works Vill. Khera Lakha Singh P.O. Vill. Bhagu Majra. Wooden Furniture

116 M/s Prabhu Dyal S/o Mahinder V.P.O. Thana Chhappar.

117 M/s Omi wood Works Vill. Dhdra, P.O. Radaur.

118 M/s Mittal Saw Mills Plot No. W- 3 Ind. Area YNR.

119 M/s Suresh Wood Works Buria Gate, Jagadhari.

120 M/s Baini Wood Products Old Yamu Nagar Road. Radaur.

121 M/s Goel Wood Industries Vill. Kami Majra.

122 M/s Manna Wood Works, Vill. Khurdban.

123 M/s Abdul Mazid S/o Mohd. Yasin Wood Works Vill. Machhrauli.

124 M/s Satish Kumar S/o Mukhtiara Ram Wood Works, Vill. Makhore P.O. Marwa Khurad

125 M/s Parnami Packing, Azad Nagar, H.No. 494 Gali No. 2 Yamuna Nagar

126 M/s Dilbag Imarti Works Bhatia Nagar. Yamu Nagar.

127 M/s Rajinder Furniture Works Gopal Mochan Road, Bilas Pur

128 M/s Raghubir Singh & Co.544, Chhoti Line, Guru NanakPura (Sawan Puri) Jagadhari.

129 M/s Sule Man S/o Azizudin V.P.O. DarPur.

130 M/s Choudhary Saw Mills Vill. Jogiwara.

131 M/s Universal Timber Industries Pvt. Ltd. Near Old Subzi Mandi Yamuna Nagar.

132 M/s Surindra Furniture Near Lal Dwara Mandir, Yamuna Nagar.

133 M/s Dhiman Ply & Jali Cutting Devi Bhawan Bazaar, Jagadhari.

134 M/s Mohinder S/o Kesho Ram V.P.O Nahar Pur.

135 M/s Pawan S/o Seo Ram Wood Works Vill. Changndi

136 M/s Ruldi Ram S/o Seo Ram Furniture Works Vill. Sarawan P.O Ajij Pur Kalan

137 M/s Sevo Ram S/o Moti Ram Wood Works Vill. Marwa Khurd.

138 M/s Ishwar Furniture Works Chachhrauli Gate Jagadhari.

139 M/s Ram Kumar S/o Baljit V.P.O. Pansara

140 M/a Khalsa Engg. Works Ind. Estate YNR.

141 M/s P.L. Chopra & Co. Khajuri Road YNR.

142 M/s Kapoor Timber Trading Corportion. Ind. Area Yamu Nagar.

143 M/s Bal Krishan S/o Palm Ram Vill. Thana Chappar.

144 M/s Sher Singh S/o Paras Ram Vill. Naherpur.

145 M/s Dhiman Saw Mills Vill Ledo.

146 M/s Harpal Singh Rakha Ram, Bahadurpur.

147 M/s Budh Ram S/o Sadhu Ram Vill. Mamidi.

148 M/s Bachan Singh S/o Sadhu Ram Vill. Mandoli.

149 M/s Kuldip Kumar S/o Molu Ram Vill. Mandoli.

150 M/s Lala Ram S/o Mathura Ram Vill. BilasPur.

151 M/s Pragati Enterprises Khajuri Road. YNR.

152 M/s Ishwar Industries 23, Ind. Estate YNR.

153 M/s Maurya Timber Ind. Area YNR.

154 M/s Satpal S/o Badu Ram, Mamidi.

155 M/s Deep Chand S/o Bachlu Ram, Mamidi.

156 M/s Sachdeva Business Centre Jag. Rd. YNR.

157 M/s Tej Pal S/o Telu Ram , Tigra.

158 M/s Bachan Singh & Sons Timber Market, SaharanPur Rd. YNR.

159 M/s Bhushan Lal Parshotam Lal & Co. W- 10, Ind. Area YNR.

160 M/s S.P. Timber Industries Pvt.Ltd. SaharanPur Rd. YamunaNagar.

161 M/s Mittal Saw Mill , # Ind. Area YNR.

162 M/s Shiv Furniture House Vill. Pansara.

163 M/s Yamu Packing Industreis Pvt. Ltd. SaharanPur Rd. Yamu Nagar

164 M/s Shree Harmilap Enterprises Khajuri Rd. YNR.

165 M/s Shiv Charan Gobind Pur Rd. Jagadhari.

166 M/s Dhiman Imarti Works , Roop Nagar Colony. Jagadhari.

167 M/s Rattan Packages. Khajuri Rd. YNR.

168 M/s Pritam Imarti works Roop Nagar Col. Jagadhari.

169 M/s Rama Furniture House Buria Gate Jagahdari.

170 M/s Vartman Engineers Pvt. Ltd. O 1 Ind. Area YNR.

171 M/s Radhe Sayam Saw Mills. Dawarika puri, Jagadhari.

172 M/s Nathu Ram Dhiman & sons Vill. Badi Majra.

173 M/s Ram Chander S/o Mangat Ram Wood works, Vill. Benket.

174 M/s Chhaju Ram S/o Prabhu Ram Wood Works Vill. Banket

175 M/s Shyam Lal S/o Ghassi Ram Wood works

176 M/s Shivalik Timber Khajuri Rd. YNR.

177 M/s Sant Ram S/o Shiv Ram Wood Works Vill. Kurali.

178 M/s Shabir Ahmed S/o Fakrral, Vill. Khajuri road

179 M/s Akal Timber , Ind. Area YNR.

180 M/s BajajGeneral Mills M-27, Ind. Area YNR.

181 M/s Muni Lal S/o Jiwan Ram Furniture Works, ChandeKheri

182 M/s Gian Chand S/o Munshi Ram Saw Industry V. BilasPur

183 M/s Jai Parkash Wood Works HanuMan Gate, Jagadhari.

184 M/s Hari Krishan Wood Works HanuMan Gate, Jagadhari.

185 M/s Som Parkash S/o Chiranji Lal Vill. Vil.Guilla Y Nagar.

186 M/s Haryana Joinery Mills Khjjuri Rd YNR.

187 M/s Ram Chander Wood Works, ChandPur Road, Jagadhari.

188 M/s Jai Pal S/o Kali Ram V. Jusj\Pur

189 M/s Parmal Singh S/o Rikhi Ram, BahadurPur.

190 M/s Bombay Furniture House,16 DAV Market Yamuna Nagar.

191 M/s Harpal Furniture Emporium Jag. Rd. YNR.

192 M/s D.K. Furniture House , Farakhpur

193 M/s Jai Pal S/0 Keshav Ram UnchacChenden

194 M/s om Wood Products Katera Khurad.

195 M/s Sikri Sons, M-13 Ind. Area YNR.

196 M/s Anand Timber industries, Sham Nagar, YNR.

197 M/s Layal Pur Works, Khalsa College Rd. YamuNagar

198 M/s Amar Singh Mills SaharanPur Rd. YNR.

199 M/s Kharaiti Dhiman Furniture Works YNR. Rd. Jagadhari.

200 M/s Kali Ram Imarti Works Aggarsain Chown, Jagadhari

201 M/s Aone Furniture House Burrian Gate, Jagadhari.

202 M/s Om Furniture Workshop Model Col. YNR.

203 M/s Hind Furniture Emporium BilasPur Rd. Jagadhari.

204 Allay Steals & Casting, 38 Industrial Estate, Y.ngr.

205 M/s Amir Chand S/o Ghanshyam Dass, Chhoti Line YNR.

206 M/s Vikas Furniture House Opp.Bus Stand YNR.

207 M/s Ram Pal Wooden Works Gobind Pur Rd. Jagadhari.

208 M/s Modern Furniture, DAV Markets Yamuna Nagar.

209 M/s Suresh Kumar S/o Kasturei Lal V. Bhambrdi

210 M/s Rameshawar Furniture Works Near Herbert Hospital Jagadhari.

211 M/s Chopra Traders, Khajuri Rd. YNR.

212 M/s Prem Chadn S/0 Sant Ram Uncha Chandian

213 M/s Ram Chander Lakshaman Dass Burian Gate, Jagadhari

214 M/s Talwar Saw Mills Chitta Mandir Rd. Gadholi.

215 M/s Nav Bhart Timber Traders New Old Subji Mandi YNR.

216 M/s Cosn Engg. E-9, Ind. Area Yamuna Nagar.

217 M/s Renu Furniture House Work Shop Rd. YNR.

218 M/s Ravi Saw Mills, Old SaharanPur Rd. Jagadhari.

219 M/s Canadian Furniture Cantt. Rd. Jagadhari.

220 M/s Vishal Industries O- 4, Ind. Area YNR.

221 M/s Dhiman Furniture Works Amla, Road, Jagadhari.

222 M/s Pal Imarti Works, Gobind Pura Rd. YNR.

223 M/s Bharat Timber Works Radaur Rd. YNR.

224 M/s Ramesh Engg. Corporation Radaur Rd. YNR.

225 M/s Taneja Timber Traders Radaur Rd. YNR.

226 M/s Jaspal Singh S/o Sawan Ram, Darpur.

227 M/s Madan Gopal Harbans Lal Old Subji Mandi YNR.

228 M/s R.K Industries, Radaur Rd. YNR.

229 M/s Radha Krishan Sita Ram Chhoti Line, Jagadhari.

230 M/s National Furniture House Jagadhari.

231 M/s Hukam Chand S/o Surta Ram Khizrabad.

232 M/s Om Parkash S/o Baru Ram KalaNaur.

233 M/s Som Parkash Furniture Harren Colony, Jagadhari

234 M/s Sohan Furniture Works

235 M/s Vishawa Karma Furnitue Works Near Herbet Hospita Jagadhari

236 M/s Mam Chand Furniture Works Burian Gate, Jagadhari

237 M/s Ram Pal S/o Kanshi Ram Khizrabad.

238 M/s Balet Ram & Sons Furniture Works, Khalsa College Rd. YNR.

239 M/s Narang Furniture , Khalsa College Rd. YNR.

240 M/s Ram Kumar S/o Ram Sarup Vill. Telpina

241 M/s Jaspal Timber Works Bye Pass Rd. YNR.

242 M/s Bawa Gram Udyog Samiti, Shyam Sunder Puri, Jagadhari.

243 M/s Hem Raj Wood Works , Bilas Pur

244 M/s Som Nath S/o Fakir Chand Daspur

245 M/s Kasturi Lal S/o Fakir Chand, Darpur.

246 M/s Jarnail S/o Rafiq , Khizrabad.

247 M/s Norhtern Timber Khajuri Rd. YNR.

248 M/s Naresh Kumar S/o Paras Ram Mustfabad.

249 M/s ShivFurniture works Bye Pass Chowk, Yamuna Nagar

250 M/s Som Nath S/o Sadhu Ram Bilarpur

251 M/s Sant Ram S/o Shoo Ram, V. Kurali

252 M/s Amar Chand S/o Soran, Kurali

253 M/s Madan Lal S/o Shoo Ram , Kurali

254 M/s Shanti Sarup S/o Molar Ram, Mustafabad

255 M/s Karan Pal S/o Data Ram, Jagdhari

256 M/s Sham Lal S/o Dota Ram, Chachhrauli

257 M/s Raghbir Singh & w. Chhoti Line, Jagdhari

258 Yamuna Indurtries, Old Saharanpur Rd. Jagdhari

259 M/s Madan Lal Saw Mills, V. Taumli

260 M/s Om Furniture, 60, baudpur Rd. Yamuna Nagar

261 M/s Sarwati Tube, Barara

262 M/s Rahul Inderies, Saharnpur Rd. Yamuna Nagar

263 M/s Sarwati Furniture, Aggarsan Chowk, Jagdhri

264 M/s Om Parkash S/o Baru Ram V. Shapur

265 M/s Super Padrs Rade Rd. Comp. Yamuna Nagar

266 M/s Parmod Kumar S/o Hukam Chand, Khgrulpur

267 Rasheed Amed S/o Mohd Yaami, Khedri

268 M/s Deepak Furniture Repair Workshop Rd. Yamuna Nagar

269 M/s Dhiman Furniture House, Comp, Yamuna Nagar

270 M/s Mihinder Furniture House, Man Bazar, Railway Road, Yamuna Nagar

271 M/s Dhiman Saw mills. Vill Gulab Nagar

272 M/s Jaswant Furniture Works, Buria Gate, Jagadhri.

273 Bagra Engg. Works, Adrash Nagar,Yamuna Nagar

274 M/s Bharat Wood Works, Vill. Bilaspur.

275 M/s Vishwakarma Furniture, Buria Gate, Jagadhri.

276 M/s Prakash Industries, Vill. Shahpur.

277 Swami Atma Nand Moga, Yamuna Nagar.

278 M/s Sat Pal S/o Budh Ram Vill. Bhatauli.

279 M/s Sant Ram S/o Darma Nand, Vill. Shahpur.

280 M/s Yamuna Sales Corpration W. Shop Road, Yamuna Nagar

281 M/s Yashpal S/o Nagina Ram, Telipura P.O. Khadsi Ganga Nagar, Jagadhri.

282 M/sRampal S/o Malkhan Singh, Gandhi Nagar, Yamuan Nagar.

283 M/s Balbir Jmarti work, Gandhi Nagar, Chandpur.

284 M/s Kotra Saw Mills Leda Road, Chachhrauli

285 M/s Dhiman Furniture Works, Bye Pass Road, Jagadhri.

286 M/s Mohit Timber, Jhota Road, Jagadhri.

287 M/s Wood Craft industries Gali No. 5, Trimurti Bhawan, Azad Nagar, Yamuna Nagar.

288 M/s Shiv Furniture House, Buria Gate, Jagadhri

289 M/s Haryana Survey & Drawing Udyog, Atmapuri Colony, Yamuna Nagar.

290 M/s United, Shop No. 3 Bye Pass Road, Yamuna Nagar.

291 M/s Ess Kay & Company E - 28, Industial Area, Yamuna Nagar.

292 M/s Sachdeva Saw Mills Gobind Road, Yamuna Nagar.

293 M/s Dayal Furniture Emporium, a, Bhata Building Road Jagadhri, Yamuna Nagar

294 M/s Nasar Ahmed S/o Nargar, Vill. Dev Dhar.

295 M/s B. R. Dackwell Industries (P) Ltd. Jhota Road, Jagadhri.

296 M/s A One Timber Industri Gobindpuri Road, Jagadhri.

297 M/s Sunil Furniture House, Nalagarh Ka Majra, Ambala Road, Jagadhri.

298 M/s Ajmer S/o Raja Ram, Vill. Kanalshi.

299 Pawan S/o Banta Ram Furniture Works, Vill. Fatehgarh Tumbi.

300 M/s Dhiman Saw works, Vill. Fatehgrah Tumbi.

301 M/s Kartar Chand S/o Mohan Ram, Court Road, Jagadhri.

302 M/s J.K. Furniture,Civil Line, Jagadhri.

303 M/s Shiva Araa Machine Gulab Nagar, Jagadhri

304 M/s Ram Furniture House Old Chachhrauli Road, Jagadhri.

305 M/s Mond Hamid S/o Ali Niwaz, Vill. Mazapal Kalan.

306 M/s Isar Kaur Ara Machine, Saw Mill Bilashpur Road, Jagadhri.

307 M/s Sajiq Wood Works, Vill. Palley wala, P.O. Alahar,

308 M/s Dhiman Saw Mills & Furniture House Bharat Sewak Nagar, Jagadhri.

309 M/s J. A. Engineering Near Kali Mandir, Jagadhri.

310 M/s Ved Prakash Mittal & Company, Mittal Building Old Sabzi Mandi, Yamuna Nagar.

311 Sh. Madan Lal S/o Roshan Lal V.P.O. Kharwan.

312 M/s Rameshwar S/o Jyoti Ram, Wood Saw works, Vill. Bihta, Jagadhri.

313 M/s Vishnoo Saw Mills Near Old Sabzi Mandi, Yamuna Nagar

314 M/s Shree Ganesh Saw General Mills, Near Aggarsain Chowk, Jagadhri.

315 M/s Shri Maha Laxmi Saw Mills, Old Sabzi Mandi, YNR.

316 M/s Surjan Vill. Dansara.

317 M/s Ram Kishan S/o Jhandu, Vill. Jugal Pur, P.O. Ledi.]

318 M/s Saldir Ahmed S/o Fauirra, Vill. Manakpur P.O. Lalheri.

319 M/s Dhiman Furniture & Interor Dewrators, Aggarsen Chowk, Court Road, Jagadhri.

320 M/s Dhiman Saw Mills. Vill. Kotrakhas

321 M/s Jagmal Furniture work, vill. Kotrakhas

322 Unipack Industries, Bank Colony, Yamuna Nagar.

323 M/s Green Timber Industries, Saharanpur Road, Yamuna Nagar.

324 M/s Kuldeep Wood works, Vill. Haveli.

325 M/s Ved Prakash Timbers Traders, Court Road, Near Aggarsen Chowk, Jagadhri.

326 M/s A. R. Industries, Vill. Jorian.

327 M/s Saraswati Wood Industries, Vill. Bolni. P.O. Mustafabad.

328 M/s Abdul Gaffar S/o Saddik, V.P.O. Shadipur.

329 M/s Kiran Pal S/o Gian Chand V.P.O. Darpur

330 M/s Woody Farms, Vill. Jorian. V.P.O. Aurangabad.

331 M/s Shaukat Ali S/o Rafiq Ahmed Vill. Muzafat Kalan

332 M/s Labour Cherai Ara Machine, Ambala Road, Jagadhri.

333 M/s Joginder Furniture House, V.P.O. Ranjitpur

334 M/s Dharmapal Wood works, Vishal Nagar, Yamuna Nagar.

335 M/s Ashok Kumar Arun Kumar Goel, Lakkar Mandi Sharanpur Road, Yamuna Nagar.

336 M/s Parmod Furnitures works, Buria Road, Jagadhri.

337 M/s Anil Furniture works, Buria Road, Jagadhri.

338 M/s Avtar Traders, Prahlad Puri workshop Road,Yomuna Nagar.

339 M/s U.G. Enterprises, Old Sabzi Mandi Road, Yamuna Nagar.

340 M/s Dhiman Furniture House, Court Road, Jagadhri.

341 M/s Shiv Shankar Saw Mill, Chhachhrauli Road, Near Sharma Hospital, Jagadhri.

342 M/s Bajaj Industries (Wood Section) 964 - 965 workshop Road, Yamuna Nagar.

343 M/s Bharat Saw Mills Near Tehsil Office Radaur.

344 M/s Shiv Ram S/o Mukandi Ram, Vill. Ratauli P.O. Khera Farm.

345 M/s Saheed Ahmed S/o Mohd Umardeen V.P.O. Khizrabad.

346 M/s Neeraj Kumar S/o Amir Chand, Vill. Kishanpura P.O. Khizrabad.

347 M/s Yamin Furniture works, vill. Ranjroo.

348 M/s Ram Kumar S/o Banwari Wood works vill. Kotra Khas.

349 M/s Uttam Furnitures, Sawanpuri, Chhoti line. Jagadhri.

350 M/s Alpne Enterprises, Saharnpur Road, Vill. Dansara.

351 M/s Bhishamber Dass S/o Janki Dass, Vill. Dayalgarh

352 M/s Satpal S/o Budh Ram, Ambala Road, Jagadhri.

353 M/s Ram Wood Works, Ambala Road, Jagadhri.

354 M/s Rajpal furniture works, Ambala Road, Jagadhri.

355 M/s Vijay Furniture House, Munda Majra Road, Yamuna Nagar.

356 M/s Sunita Timber Industries, Timber Market, Saharanpur Road, Yamuna Nagar.

357 M/s Shiv Wood Works, Vijay Nagar, Jagadhri.

358 M/s Panchal Furniture Works, Gandhi Nagar Colony, Jagadhri.

359 M/s Dilbag Wood Works, Kopal Mochan Road, Yamuna Naga. (Bilaspur)

360 M/s Duran Saw Mills, Vill. Dabni Kalan

361 M/s Dalip Singh & Co. Aggarsain Chowk, Jagadhri.

362 M/s Mehar Chand Wood Cutter. Sarup, Near PNB, Buria.

363 M/s Mohinder Kumar S/o Ram Sarup, Near PNB, Buria,

364 M/s Om Chand S/o Niranjan, Near PNB, Buria.

365 M/s Joginder Furniture House, V.P.O. Ranjitpur, P.O. Pipliwala.

366 M/s Shiva Furniture Shop, V. Tirath Nagar, Badi Majra.

367 M/s Kadri Furniture House, Vill. Ranjitpur, Pipliwala.

368 M/s Samay Singh S/o Baru Ram, Bus Stand Buria.

369 M/s Gainesh Saw Mills, Tirath Nagar, Badi Majra Road, Panjara.

370 M/s Kumar Wooden Works Vill. Alahar.

371 M/s Subh Kisan Wood Works, vill. Kangru.

372 M/s Mam Chand S/o Nathi Ram, Vill. Gulabgarh.

373 M/s Ram Kumar S/o Laik Ram, Furniture works, Vill. Dhanora.

374 M/s R.D. Plywood Industries, 0- 8 Indi. Area, Yamuna Nagar.

375 M/s Gurdev Kumar. S/o Sugan Ram, Karnauli.

376 M/s Hari Datt S/o Shri Singh,

377 M/s Pal Timber & Aihed Industires, Vill. Udhamgarh.

378 M/s Gagan Furniture Workshop, Chhita Mandir Road, Near Jagadhri Q/R Cieul Mills, Yamuna Nagar.

379 M/s Tiwari Furniture Works Shop No. 4, Beet Nagar, Yamuna Nagar.

380 M/s Raj Kumar S/o Mangat Ram, Saw Mills, V.P.O. Kolla.

381 M/s Babu Ram S/o Chiranji Lal, vill. Sherpur, P.O. Ledi.

382 M/s Jai Saw Mills, Buria Gate, Bharat Sewak Nagar, Jagadhri.

383 M/s Shiv Wooden Works, Vill. Antawa (Radaur)

384 M/s Sandeep Furinture Works, Gulab Nagar Chowk, Jagadhri.

385 M/s Ramesh Chand S/o BanarsiDass VPO Devdhar, The. Chhachrauli

386 M/s Naresh Kumar S/oBanarsi Dass VPO Devdhar

387 M/s Kharati Dhiman Furniture House, Sawanpuri Yamuna Nagar Road, Jagadhri

388 M/s Ajay Timber & Allied Industries Amadalpur Road, Buria Chowk, Jagadhri

389 M/s Suresh Wooden Works, Buria Gate Jagadhri

390 M/s Om Parkash Furniture, Jagadhri Road, Gobindpuri, Yamuna Nagar

391 M/s Goel Wood Products Vill. Mandholi P.O. Kalanour

392 M/s Oberoi Wooden Industries, M-15, Ind. Area, Yamuna Nagar

393 M/s Venus Cabinet & Furniture, Jaswant Col. Near Rly Over Bridge, Yamuna Nagar

394 M/s Dhiman Saw Mills, Jathlana Road, Ghespur

395 M/s Rashim Timber Aurangabad

396 M/s Ravinder Kuimar & Co. Radam Raod Camp. Yamuna Nagar

397 M/s Dhiman Furniture Udyg vill. Gundiana

398 M/s Sunny Wooden Frames workshop Road, Yamuna Nagar

399 M/s Golden Furniture works Near Krishna colony, Yamuna Nagar

400 M/s Dhiman Furniture works, Vill Bilaspur

401 M/s Sethi Enterprieses 198 Shipuri - B P.O. Yamuna Nagar

402 M/s Dhiman Furniture woks, Bye pass chowk, Mistra Colony, Yamuna Nagar.

403 M/s Jai Saw Furniture works pct Nrt. Bharat Swak Nagas Jagain

404 M/s Ajay Enterprises, Old Sahawan Dm Road, Jagadh.

405 M/s Pinkay sawing Vill Nargarh P. O. Pipliwala

406 M/s Ramesh S/0 Piyara Lal Rajesh Nagar Colony, Jagadhri

407 M/s Krishan Wooden works Main Bazar, Radam

408 M/s Shiv Shakit Saw Mills, Vill Tirath Nagar Badhi Majra

409 M/s Anit Kumar Workshop Rd. Yamuna Nagar

410 M/s Shiv Imasti works , workshop road, Yamunanagar

411 M/s Sita Ram S/o Mangli Ram, Wood Udyagi Vill. Laharpiur

412 M/s Shamsher Wood Works, Vill. Sikanora, P. O. Hartan

413 M/s Ramesh Wood works Vill Sikanore , P. O. Hartan

414 M/s Ganga Wind Industries Vill. Badi Majra

415 M/s V. K. Enterprises , Plam wiar Radam Road , Comp. Yamuna Nagar

416 M/s Kanwar Industries Vill. Hrian P. C. Pmangadad

417 M/s Madan Lal Wooden Furniture Vill. Alishepur Majra

418 M/s Kaha Gram Udyog Manal Vill. Cadhauli

419 M/s Krishna Timber Industries Old Saharanpur Vill. Jaghri.

420 M/s Bharat Saw Vills. Neem Chhachhruli road, Jagdhri

421 M/s Faginra Furniture & Deccrater . Cmt Road Jagdhri

422 M/s Shital Furniture works Jagdhri Road, Bilaspur

423 M/s Shiv Sawmill. Jadhri Road, Vill. Bilaspur

424 M/s Agarwal Traders , Kapal Machan Road, Vill. Bilaspur

425 M/s Rahiv Dhiman Furniture House Sodhaaura Road, Bilaspur

426 M/s Pachal Sawmiils , Amadalpur Road, Jagahri

427 M/s Rajan Steel , 22 Ind. State yamuna Nagar

428 M/s Premer Sales Comp. C- 1, Ind. Drea , Yamuna Nagar

429 M/s Rajinder Kumar S/o Mangal Ram. Furniture works, Bilaspur

430 M/s Achin Industry , Garhi Mundo , Jagadhri

431 M/s Paramjit wood works 185 Vishwa Kumar Rohalla, Gali No. 6 Yamuna Nagar

432 M/s R. K. Brothers, P47 No. 37 II Ind. Estate, YamunaNagar

433 M/s Nasirudin wood works, vill. Ramgarh P. O. Hartan

434 M/s Jagjit Furuniture House, 601 Modles Colony, Yamuna Nagar

435 M/s Gulshan & Co. Rana Parkash Bagh, Near Chh. Road, Jagadhri

436 M/s Amit Kumar S/o Mohninder Pal Gandhri Nagar, Buria Road, Jagdhari

437 M/s Mamchand & Sons Wood works Edhaura Road, Bilaspur

438 M/s Bein Pal S/o Chamela Ram Vill Shahzadpur, P. o. Mehar Majra

439 M/s Phiman wood works Vi.. Sohatpura

440 m/S Ballir wood works Vill Sadikpur

441 M/s Vikas Furniture House, Vill. Sadikpur

442 M/s Vidya Arada Line Vill. Kishanpura

443 M/s Dhiman Imarti Works, Gandhi Puri Road Jagadhri

444 M/s Suresh wood works, Viil. Kandoli P. o. Gumahla Road

445 M/s Ramesh Wooden Furniture Udyog Vill. Sherpur Majra

446 M/s Glofe Guginrring cotri (Ambal Div.) 6/1, Ramam Chanipur Yamunna Nagar

447 M/s Are Tube Trading Co. Shahranpur Rd. Yamuna Nagar

448 M/s Ashoka Tube Industries Eo 22 India Yamuna Nagar

449 M/s Atma Ram S/o Uday Ram Larharr Kalen

450 M/s Anand Tuber Traders Saharnpur Rd. Yamuna Nagar

451 M/s Boota Singh & Sons Jadhari Road. Yamuana Nagar

452 M/s Bhalla Furniture , Jag Rd Yamuna Nagar

453 M/s Bhardwaj 50 W mills Saherapur Rd. Yamuna Nagar

454 M/s Universal Tuber Chopra Yamnu Nagar

455 M/s Mulakh Ran S/o Madhu Suden Lal, well Area Yamuna Nagar

456 Sh. Menoher Induster , E-24- 75 Tull Area, Yamuna Nagar

457 M/s Mistra Aga Ram Mini Lal Bilaspur

458 Sh. Indl. Tember Corporation Radaw Road, Yamuna Nagar

459 Sh. Kasturi Lal & Sons Yamuana Nagar

460 M/s Kuldip Saw Mills, Khayand Rd. Yamuna Nagar

461 M/s Khurana Furniture Exporim Hira Buiding , Yamuna Nagar

462 M/s Kalra Timber Industries Khaguri Rd. , Yamnua Nagar

463 Sh. J. K. Kapoor & Co. Yamuna Nagar

464 M/s Jayents Tember Industries , Yamuna Nagar

465 M/s Jatndra Tember Industries, Khejuri Rd. , Yamuna Nagar

466 M/s Joyti Ram Krishan Ram, Bilaspur

467 M/.s Jai Parkash S/o Sont Ram, Chhochhroli

468 M/s Punjala Sons Mills , Yamuna Nagar

469 M/s Parshotam Singh Chander , Yamuna Nagar

470 M/s Paras Ram Cerpemtar , Chhacharuli

471 M/s Diajal Drawing Boare Saharanpur Rd. Yamuna Nagar

472 M/s Dewan Brothers E- 72 , Ind. Area, Yamuna Nagar

473 M/s Dalip Singh & Sons Kuajri Road, Yamuna Nagar

474 M/s Dalip Singh & Co. Jagdhri Rd. Yamuna Nagar

475 M/s Dhiman Furniture Wash , Bilaspur

476 M/ S S. P. Timber Industries , Yamuna Nagar

477 M/s Seva Saw Mill , Burra town

478 M/s S. P. Kapoor & Co. Inde. Area Yamuna Nagar

479 M/s Satorh Kumar & Co. , Nhajmi Road, Yamuna Nagar

480 M/s Raman Saw Mills, Yamuna Nagar

481 M/s Ramwas Industries (Ind. Area) Yamuna Nagar

482 M/s Rekhi Ram S/o Teja Ram , Darpur

483 M/s Hind Tube Ind., Yamuna Nagar

484 M/s Harspal Saw Mill , Yamuna Nagar

485 M/s National Saw Mill , Saharanpur Rd. Yamuna Nagar

486 M/s Chhbra Saw Mill

487 M/s Craws Tamber & Forests RA Ltd. Saharanpur Rd. , Yamuna Nagar

488 M/s Taneja Tender Ind. Camp, Yamuna Nagar

489 M/s Tanja Saw Mill Radam Rd., Yamuna Nagar

490 M/s Ved Parkash & Co. Khanji Road, Yamuna Nagar

491 M/s Vikas Timber Ind. Khanjuri Road, Yamuna Nagar

492 M/s Victory Timber Ind. Burra Rd. Jagdhari

493 M/s Faquir Chand Ram Kumar Saw Mill Chhachhruali

494 M/s Shri Ram S/o Budu Ram , Durpur

495 M/s Shri Santokh Saw Mill W - 9 Ind. Area, Yamuna Nagar

496 M/s SPK loding Tower Pvt. Ltd. E - 35 , Ind. Area , Yamuna Nagar

497 M/s Shakit Timber Ind. Khejrui Rd. , Yamuna Nagar

498 M/s Shri Amrjit Bachar Saw Mill Khajrui Rd. , Yamuna Nagar

499 M/s Sham Timber Ind. Camp. , Yamuna Nagar

500 M/s Rishi Wood Ind. Sarawati Rd. Jagadhri

501 M/s Dhiman Saw Mill

502 M/s Ahluwallia Saw Mill , Kishan Pura

503 M/s Nathu Ram & Sons Lakshmi Nagar Camp. , Yamuna Nagar

504 M/s Ravindra Enterprises Jain Cop. Comp. , Yamuna Nagar

505 M/s Ravinder Pal Singh Vill. Chenti

506 M/s Unique Timber Works 0-5 Ind. Area, Yamuna Nagar

507 M/s Harmen Enterprieses, V. Jorian

508 M/s Pragati Eco. Board Khanjrui Road, Yamuna Nagar

509 M/s Moti Timber Industries , Khajuri Road, Yamuna Nagar

510 M/s Royal Enterpriese , 0-17 Ind. Area, Yamuna Nagar

511 M/s Anil Saw Mill , Burragate , Jagadhri

512 M/s Lalit Mohan Goel & Co. Ahamd Pur Road, Jagadhri

513 M/s Bharat Joinery & Saw Mill Khanjuri Road, Yamuna Nagar

514 M/s New Namdheri Saw Mill, Saheranpur Road, Yamuna Nagar

515 M/s Om Parkash Saw Mill Burra

516 M/s J. K. Timber Industries , Khajuri Road, Yamuna Nagar

517 M/s Prince Trading Co. E - 19 Ind. Area, Yamuna Nagar

518 M/s Mittal Saw Mills W - 3 , Ind. Area, Yamuna Nagar

519 M/s Babu Ram Ved Parkash , Khajuri Road, Yamuna Nagar

520 M/s Ravindra Saw Mills & Wood Industries , Aggarsain Chowk, Jagadhri

521 M/s Namdev Saw Mills, Yamuna Nagar Road, Jagadhri

522 M/s Panchal Saw Mills, Cunshala Road

523 M/s Rashim Timber, Auragabad

524 M/s Sumitra Saw Mills, Khajuri Road, Yamuna Nagar

CHENNAI

1. Sri. Rajalaxmi Timber Corporation
190, G.N.T.Road, Puzhal, Chennai - 66

2. Jayaraj International Pvt. Ltd.,
AMC Centre, 29 / 5, Viswanathapuram, Main road, Kodambakkam, Chennai - 24

3. Velmurugan Timber Traders
16 / 1 B , Red Hills Roiad, Kathirvedu, Chennai - 99

4. Sharon Veneers Pvt. Ltd.,
12, Sriman Srinivasan Road, Alwarpet, Chennai - 18

5. Shree Vijaya Meenatchi Timber traders
New No. 311, Appao Rao Gardens, Meenakshi Nilayam, Choolai, Chennai - 600 112

6. Pyramid Timber Associates (Pvt) Ltd.,
100, G.N.T. Road, Puzhal, Chennai - 66

7. West India Impex (Pvt.) Ltd.,
2/2 Tanjore Main Road. Opp.Laxmipuram, Tiruchirapalli-10

8. Sri Krishna Timber Traders
No.291, Nehru Timber Market, Choolai, Chennai - 600 112

9. Pokar Timber Mart
95/ 1 Nagappa Industrial estate, G.N.T. Road, Puzhal Chennai 600 066

10. Ravi Timber Agency
95 / 1 G.N.T.Road, Puzhal, Chennai - 600 066

11. Anand Timber Mart
No. 291, Nehru Timber Mart, Choolai, Chennai - 600 112

12. Aakar Enterprises
No.4, Settanna Naickar street, Nehru Timber Mart, Chholai, Chennai - 600 112

13. Uniply Industries Ltd.,
168, Sydenhams road, Chennai - 600 003

14. Ethiraj Timbers Private Ltd.,
    162, Sydenhams Road, Periamet, Chennai -3

15. Patel Timber Depot
    5 Choolai High Road, Chennai - 600 112

16. Shreeply
    58, A.P. Road, Choolai, Chennai - 600 122

17. Subhashree Trading Enterprises Ltd.,

Annex 6.1

NATIONAL FOREST POLICY, 1988
GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT AND FORESTS
NEW DELHI

No. 3-1/86-FP
Ministry of Environment and Forests
(Department of Environment, Forests & Wildlife)
Paryavaran Bhavan, CGO Complex,
Lodi Road, New Delhi - 110003.
Dated the 7th December, 1988.

RESOLUTION
National Forest Policy, 1988

1. PREAMBLE

1.1. In Resolution No.13/52/F, dated the 12th May, 1952, the Government of India in the erstwhile Ministry of Food and Agriculture enunciated a Forest Policy to be followed in the management of State Forests in the country. However, over the years,* forests in the country have suffered serious depletion. This is attributable to relentless pressures arising from ever-increasing demand for fuel-wood, fo dder and timber; inadequacy of protection measures; diversion of forest lands to non-forest uses without ensuring compensatory afforestation and essential environmental safeguards; and the tendency to look upon forests as revenue earning resource. The need to review the situation and to evolve, for the future, a new strategy of forest conservation has become imperative. Conservation includes preservation, maintenance, sustainable utilisation, restoration, and enhancement of the natural environment. It has thus become necessary to review and revise the National Forest Policy.

2. BASIC OBJECTIVES

2.1 The basic objectives that should govern the National Forest Policy - are the following:

- Maintenance of environmental stability through preservation and, where necessary, restoration of the ecological balance that has been adversely disturbed by serious depletion of the forests of the country.
- Conserving the natural heritage of the country by preserving the remaining natural forests with the vast variety of flora and fauna, which represent the remarkable biological diversity and genetic resources of the country.
- Checking soil erosion and denudation in the catchment areas of rivers, lakes, reservoirs in the "interest of soil and water conservation, for mitigating floods and droughts and for the retardation of siltation of reservoirs.
- Checking the extension of sand-dunes in the desert areas of Rajasthan and along the coastal tracts.
- Increasing substantially the forest/tree cover in the country through massive afforestation and social forestry programmes, especially on all denuded, degraded and unproductive lands.
- Meeting the requirements of fuel-wood, fodder, minor forest produce and small timber of the rural and tribal populations.

- Increasing the productivity of forests to meet essential national needs.
- Encouraging efficient utilisation of forest pro duce and maximising substitution of wood.
- Creating a massive people's movement with the involvement of women, for achieving these objectives and to minimise pressure on existing forests.

The principal aim of Forest Policy must be to ensure environmental stability and maintenance of ecological balance including atmospheric equilibrium which are vital for sustenance of all lifeforms, human, animal and plant. The derivation of direct economic benefit must be subordinated to this principal aim.

3. ESSENTIALS OF FOREST MANAGEMENT

3.1 Existing forests and forest lands should be fully protected and -their productivity improved. Forest and vegetal cover should be in creased rapidly on hill slopes, in catchment areas of rivers, lakes and reservoirs and ocean shores and, on semi-arid, and and desert tracts.

3.2 Diversion of good and productive agricultural lands to forestry should be discouraged in view of the need for increased food production.

3.3 For the conservation of total biological diversity, the network of national parks, sanctuaries, biosphere reserves and other protected areas should be strengthened and extended adequately.

3.4 Provision of sufficient fodder, fuel and pasture, specially in areas adjoining forest, is necessary in order to prevent depletion of forests beyond the sustainable limit. Since fuelwood continues to be the predominant source of energy in rural areas, the programme of afforestation should be intensified with special emphasis on augmenting fuelwood production to meet the requirement of the rural people.

3.5 Minor forest produce provides sustenance to tribal population and to other communities residing in and around the forests. Such produce should be protected, improved and their production enhanced with due regard to generation of employment and income.

4. STRATEGY

4.1 Area under Forests

The national goal should be to have a minimum of one-third of the total land area of the country under forest or tree cover. In the hills and in mountainous regions, the aim should be to maintain two-third of the area under such cover in order to prevent erosion and land degradation and to ensure the stability of the fragile eco-system.

4.2 Afforestation, Social Forestry & Farm Forestry

4.2.1 A massive need-based and time bound programme of afforestation and tree planting, with particular emphasis on fuelwood and fodder development, on all degraded and denuded lands in the country, whether forest or non-forest land, is a national imperative.

4.2.2 It is necessary to encourage the planting of trees alongside of roads, railway lines, rivers and streams and canals, an d on other unutilised lands under State/corporate, institutional_ or private ownership. Green belts should be raised in urban/industrial areas as well as in arid tracts. Such a programme will help to check erosion and desertification as well as improve the microclimate.

4.2.3 Village and community lands, including those on foreshores and environs of tanks, not required for other productive uses, should be taken up for the development of tree crops and fodder resources. Technical assistance and other inputs necessary for initiating such programmes should be provided by the Government. The revenues generated through such programmes should belong to the panchayats where the lands are vested in them; in all other cases, such revenues should be shared with the local communities in order to provide an incentive to them. The vesting, in individuals, particularly from the weaker sections (such as landless labour, small and marginal farmers, scheduled castes, tribals, women) of certain ownership rights over trees, could be considered, subject to appropriate regulations; beneficiaries would be entitled to usufruct and would in turn be responsible for their security and maintenance.

4.2.4 Land laws should be so modified wherever necessary so as to facilitate and motivate individuals and institutions to undertake tree-farming and grow fodder plants, grasses and legumes on their own land. Wherever degraded lands should be made available for this purpose either on lease or on the basis of a tree-patta scheme. Such leasing of the land should be subject to the land grant rules and land ceiling laws. Steps necessary to encourage them to do so must be taken. Appropriate regulations should govern the felling of trees on private holding.

4.3 Management of State Forests

4.3.1 Schemes and projects which interfere with forests that clothe steep slopes, catchments of rivers, lakes, and reservoirs, geologically unstable terrain and such other ecologically sensitive areas should be severely restricted. Tropical rain/moist forests, particularly in areas like Arunachal Pradesh, Kerala, Andaman & Nicobar Islands, should be totally safeguarded..4.3.2 No forest should be permitted to be worked without - the Government having approved the management plan, which should be in a prescribed format and in keeping with the National Forest Policy. The Central Government should issue necessary guidelines to the State Governments in this regard and monitor compliance.

4.3.3 In order to meet the growing needs for essential goods and services which the forests provide, it is necessary to enhance forest cover and productivity of the forests through the application of scientific and technical inputs. Production forestry programmes, while aiming at enhancing the forest cover in the country, and meeting national needs, should also be oriented to narrowing, by the turn of the century, the increasing gap between demand and supply of fuelwood. No such programme, however, should entail clear-felling of adequately stocked natural forests. Nor should exotic species be introduced, through public or private sources, unless long-term scientific trials undertaken by specialists in ecology, forestry and agriculture have established that they are suitable and have no adverse impact on native vegetation and environment.

4.3.4 Rights and Concessions

4.3.4.1 The rights and concessions, including grazing, should always remain related to the carrying capacity of forests. The capacity itself should be optimised by increased investment, silvicultural research and development of the area. Stall-feeding of cattle should be encouraged'. The requirements of the community, which cannot be met by the rights and concessions so determined, should be met by development of social forestry outside the reserved forests.

4.3.4.2 The holders of customary rights and concessions in forest areas should be motivated to identify themselves with the protection and development of forests from which

they derive benefits. The rights and concessions from forests should primarily be for the bonafide use of the communities living within and around forest areas, specially the tribals.

4.3.4.3 The life of tribals and other poor living within and near forests revolves around forests. The rights and concessions enjoyed by them should be fully protected. Their domestic requirements of fuelwood, fodder, minor forest produce and construction timber should be the first charge on forest produce. These and substitute materials should be made available through conveniently located depots at reasonable prices.

4.3.4.4 Similar consideration should be given to scheduled castes and other poor living near forests. However, the area, which such consideration should cover, would be determined by the carrying capacity of the forests.

4.3.5 Wood is in short supply. The long-term solution for meeting the existing gap lies in increasing the productivity of forests, but to relieve the existing pressure on forests for the demands of railway sleepers, construction industry (particularly in the public-sector), furniture and panelling, mine-pit props, paper and paper board etc.substitution of wood needs to be taken recourse to. Similarly, on the front of domestic energy, fuelwood needs to be substituted as far as practicable with alternate sources.like bio-gas, LPG and solar energy. Fuel-efficient "Chulhas" as a measure of conservation of fuelwood need to be popularised in rural areas.

4.4 Diversion of Forest Lands for Non-forest purposes

4.4.1 Forest land or land with tree cover should not be -treated merely as a resource readily available to be utilised for various projects and programmes, but as a national asset which requires to be properly safeguarded for providing sustained benefits to the entire community. Diversion of forest land for any non-forest purpose should be subject to the most careful examinations by specialists from the standpoint of social and envir6nmental costs and benefits. Construction of dams and reservoirs, mining and industrial development and expansion of agriculture should be consistent with the needs for conservation of trees and forests. Projects which involve such diversion should at least provide in their investment budget, funds for regeneration/compensatory afforestation.

4.4.2 Beneficiaries who are allowed mining and quarrying in forest land and in land covered by trees should' be required to repair and re-vegetate the area in accordance with established forestry practices. No mining lease should be granted to any party, private or public, without a proper mine management plan appraised from the environmental angle and enforced by adequate machinery.

4.5 Wildlife Conservation

Forest Management should take special care of the needs of wildlife conservation, and forest management plans should include prescriptions for this purpose. It is specially essential to provide for "corridors" linking the protected areas in order to maintain genetic continuity between artificially separated sub-sections of migrant wildlife.

4.6 Tribal People and Forests

Having regard to the symbiotic relationship between the tribal people and forests, a primary task of all agencies responsible for forest management, including the forest development corporations should be to associate the tribal people closely in the protection, regeneration and development of forests as

well as to provide gainful employment to people living in and around the forest. While safeguarding the customary rights and interests of such people, forestry programmes should pay special attention to the following:

- One of the major causes for degradation of forest is illegal cutting and removal by contractors and their labour. In order to put, an end to this practice, contractors should be replaced by institutions such as tribal cooperatives, labour cooperatives, government corporations, etc. as early as possible;
- Protection, regeneration and optimum collection of minor forest produce along with institutional arrangements for the marketing of such produce;
- Development of forest villages on par with revenue villages;
- Family oriented schemes for improving the status of the tribal beneficiaries;

  and
- Undertaking integrated are a development programmes to meet the needs of the tribal, economy in and around the forest areas, including the provision of alternative sources of domestic energy on a subsidised basis, to reduce pressure on the existing forest areas.

4.7 Shifting Cultivation

Shifting cultivation is affecting the environment .and productivity of land adversely. Alternative avenues of income, suitably harmonised with the right landuse practices, should be devised to discourage shifting cultivation. Efforts should be made to contain such cultivation within the area already affected, by propagating improved agricultural practices. Area already damaged by such cultivation should be rehabilitated through social forestry and energy plantations.

4.8 Damage to Forests from Encroachments, Fires and Grazing

4.8.1 Encroachment on forest lands has been on the increase. This trend has to be arrested and effective action taken to prevent its continuance. There, should be no regularisation of existing encroachments.

4.8.2 The incidence of forest fires in the country is high. Standing trees and fodder are destroyed on a large scale and natural regeneration annihilated by such fires. Special precautions should be taken during the fire season. Improved and modern management practices should be adopted to deal with forest fires.

4.8.3 Grazing in forest areas should be regulated with the involvement of the community Special conservation areas, young plantations and regeneration areas should be fully protected. Grazing and browsing in forest areas need to be controlled. Adequate grazing fees should be levied to discourage people in forest areas from maintaining large herds of non-essential livestock.

4.9 Forest-based Industries

The main considerations governing the establishment of forest-based industries and supply of raw material to them should be as follows:

- As far as possible, a forest-based industry should raise the raw material needed for meeting its own requirements, preferably by establishment of a direct relationship between the factory and the individuals who can grow the raw material by supporting the individuals with inputs including credit, constant technical advice and finally harvesting and transport services.

- No forest-based enterprise, except that at the village or cottage level, should be permitted in the future unless it has been first cleared after a careful scrutiny with regard to assured availability of raw material. In any case, the fuel, fodder and timber requirements of the local population should not be sacrificed for this purpose.
- Forest-based industries must not only provide employment to local people on priority but also involve them fully in raising trees and raw-material.
- Natural forests serve as a gene pool resource and help to maintain ecological balance. Such forests will not, therefore, be made available to industries for undertaking plantation and for any other activities.
- Farmers, particularly small and marginal farmers, would be encouraged to grow, on marginal/degraded lands available with them, wood species required for industries. These may also be grown along with fuel and fodder species on community lands not required for pasture purposes, and by Forest department/corporations on degraded forests, not earmarked for natural regeneration.
- The practice of supply of forest produce to industry at concessional. Prices should cease. Industry should be encouraged to use alternative raw materials. Import of wood and wood products should be liberalised.
- The above considerations will, however, be subject to the current policy relating to land ceiling and land-laws.

4.10 Forest Extension

Forest conservation programme cannot succeed without the willing support and cooperation of the people. It is essential, therefore, to inculcate in the people, a direct interest in forests, their. development and conservation, and to make them conscious of the value of trees, wildlife and nature in general. This can be achieved through the involvement of educational institutions, right from the primary stage. Farmers and interested people should be provided opportunities through institutions like Krishi Vigyan Kendras, Trainers' Training Centres to learn agrisilvicultural and silvicultural techniques to ensure optimum use of their land and water resources. Short term extension courses and lectures should be organised in order to educate farmers. For this purpose, it is essential that suitable programmes are propagated through mass media, audio -visual aids and the extension machinery.

4.11 Forestry Education

Forestry should be recogr1is ed both as a scientific discipline as well as a profession. Agriculture universities and institutions, dedicated to the development of forestry education should formulate curricula and courses for imparting academic education and promoting postgraduate research and professional excellence, keeping in view the manpower needs of the country. Academic and professional qualifications - in.forestry should be kept in view for recruitment to the Indian Forest Service and the State Forest Service. Specialised and orientation courses far developing better management skills by inservice training need to be encouraged, taking into account the latest development in forestry and related disciplines.

4.12 Forestry Research

With the increasing recognition of the importance of forests for environmental health, energy and employment, emphasis must be laid on scientific forestry research, necessitating adequate strengthening of the research base as well as new priorities for action. Some broad priority areas of research and development needing special attention are:

- Increasing the productivity of wood and other forest produce per unit of area per unit time by the application of modern scientific and technological methods.
- Revegetation of barren/marginal/waste/mined lands and watershed areas.
- Effective conservation and management of existing forest resources (mainly natural forest eco-systems).
- Research related to social forestry for rural/ tribal development.
- Development of substitutes to replace wood and wood products.
- Research related to wildlife and management of national parks and sanctuaries.

4.13 Personnel Management

Government policies in personnel management for professional foresters and forest scientists should aim at enhancing their professional competence and status and attracting and retaining qualified - and motivated personnel, keeping in view particularly -the Arduous nature of duties they have to perform, often in remote and inhospitable places.

4.14 Forest Survey and Data Base

Inadequacy of data regarding forest resources is a matter of concern because this creates a false sense of complacency. Priority needs to. be accorded to completing the survey of forest resources in the country on scientific lines and to updating information. For this purpose, periodical collection, collation and publication of reliable data on relevant aspects of forest management needs to be improved with recourse to modern technology and equipment.

4.15 Legal Support and Infrastructure Development

Appropriate legislation should be undertaken, supported by adequate infrastructure, at the Centre and State levels in order to implement the Policy effectively.

4.16 Financial Support for Forestry

The objectives of this revised Policy cannot be achieved without the investment of financial and other resources on a substantial scale. Such investment is indeed fully justified considering the contribution of forests in maintaining essential ecological processes and life support systems and in preserving genetic diversity. Forests should not be looked upon as a source of revenue. Forests are a renewable natural resource. They are a national asset to be protected and enhanced for the well-being of the people and the Nation.

(K.P.Geethakrishnan)
Secretary to the Government of India

Annex 6.2

THE NATIONAL FOREST COMMISSION

A National Forest Commission has been set up in 2003 to look into restructuring, reforms and strengthening of the entire forest sector set up and affiliated institutions in the country.

Constitution of the National Forest Commission

The composition of the National Forest Commission is as under:

(i)	Justice B. N. Kirpal, Ex Chief Justice of India	Chairman
(ii)	Director General of Forests and Special Secretary, MoEF, G. O. I.	Member, Ex- Officio
(iii)	Prof. J. S. Singh, B. H. U.	Member
(iv)	Shri Chandi Prasad Bhatt	Member
(v)	Dr. M. K. Ranjitsinh	Member
(vi)	Shri A. P. Muthuswamy	Member
(vii)	Addl. D. G. Forests, Ministry of Environment and Forests, G. O. I.	Member- Secretary Ex-Officio

Terms of Reference of the Commission

The terms of reference of the Commission are as follows:

(i) Review and assess the existing policy and legal framework and their impact in a holistic manner from the ecological, economic, social and cultural view point.

(ii) Examine the current status of forest administration and the forestry institutions both at all India and State level to meet the emerging needs of the civil society.

(iii) Make recommendations indicating specific policy options for achieving sustainable forest and wildlife management and ecological security.

(iv) Suggest ways and means to make forest administration more effective with a view to help to achieve the above policy options.

(v) Establish meaningful partnership and interface between forestry management and local communities including tribal.

Prescribed Period

The prescribed period for the Commission to complete its assigned job is two years.