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Empirical Study of Timber Trade in Tamil Nadu, India

R. Shobika[1++], S. Selvanayaki[1#*], K. T. Parthiban[1†], S. Varadha Raj[1‡] and V. Priyanka[1^]

[1]Forest College and Research Institute, TNAU, Mettupalayam, Coimbatore 641301, Tamil Nadu, India.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

This paper is an attempt to assess the major tree species that are being traded in the state and a comparison of domestic and import prices of the most preferred species has been done. India is one of the top producers of tropical logs in the world; on the other hand it is also among the largest consumer of wood products. It is also among the top importing countries of tropical woods since it cannot match its own demand for wood products with domestic supplies (ITTO, 2015). Tamil Nadu has more than 500 small scale timber industries, with majority of them being unorganized. The price had also been fluctuating between domestic and imported wood based on their requirement, quality, size and other parameters. Forty sample respondents were selected through snow ball sampling technique and initial references were drawn from Consortium of Industrial Agroforestry (CIAF) operating at Forest College and Research Institute (Tamil Nadu Agricultural University), Mettupalayam. The price variability between domestic and imported teak was evaluated using

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[++] *MBA Scholar;*
[#] *Associate Professor (ARM);*
[†] *Dean (Forestry);*
[‡] *Professor and Head (BSS);*
[^] *Teaching Assistant;*
**Corresponding author: E-mail: sselvanayaki@tnau.ac.in;*

bivariate correlation analysis. It could be found that there was significant positive correlation between the price of country teak and Ecuador teak, country teak and African teak which implied that if there is increase in price of country teak, there will be increase in price of either Ecuador or African teak and vice-versa.

Keywords: Timber trade; wood products; afforestation; forest resource.

1. INTRODUCTION

India ranks tenth among the top ten countries in terms of forest area, accounting for 2 per cent of global forest area with a cover of 72 million hectares [1]. Due to regeneration and afforestation programmes, annual change rate is positive and ranges between 0.4 and 1.0 per cent per annum, indicating steady increase in forest area of 0.66 to 1 million hectares per year [2]. India is one of the top producers of tropical logs in the world, but it is also among the largest consumer of wood products. It is also among the top importing countries of tropical woods since it cannot match its own demand for wood products with domestic supplies [3]. The bulk of imports have been traditionally supplied from countries like Malaysia, Myanmar, Ghana, Ecuador, Costa Rica, Congo, the Solomon Islands and Papua New Guinea. The export from India is in value added form of wood and wood products. The major importers of Indian wood products are the United States of America (38.94 per cent), the United Arab Emirates (5.99 per cent), Germany (4.63 per cent) and Netherland (4.25 per cent) [4]. Timber is produced in different Indian states like Andhra Pradesh, Tamil Nadu, Maharashtra, Madhya Pradesh, Bihar, and Uttar Pradesh. The common species grown are Teak, Sal, Rosewood, Eucalyptus, Jack, Mango, Casuarina, Oak, Arjuna tree, Mahogany etc. Among this, teak is the most popular raw material for wood-based furniture occupied 65 per cent with worth of INR 468 billion which dominates in western and southern regions of the country, followed by 30 per cent of Mahogany, Cedar, Sheesham and Mango, and 20 per cent of Sal and Deodar [5]. The estimated annual wood production recorded as 1.21 million m^3 and 44.34 million m^3 from forest and Trees Outside Forest respectively in 2016. Imports of all timber and allied products accounted for 18.01 million m^3. The wood consumption in India estimated about 48 million m^3 in construction, furniture and agricultural implements, followed by paper, paperboard and newsprint (12.52 million m^3) and plywood (8.47 million m^3). Import of timber has been projected to be 27.01 million m^3 and 31.5 million m^3 in 2025 and 2030 respectively if the import increased at 0.9 million m^3 per year.

India became the manufacturing hub for the global markets. As India was one of the major wood-users in the Asia pacific region, wood and allied industry has an immense potential to grow in the developing country. Due to policy changes and legal regulations by Forest Conservation Act and National Forest Policy 1988, industries were supposed to develop their raw material on own resources rather than relying on forest department supplies. This created unavailability of resources and directed towards imports of wood and wood products in the recent decades. The wood-based industries in India are matchbox, paper and pulp, newsprint, plywood, veneer and particleboard, sports goods, furniture, agricultural implements, railway sleepers, packaging, construction industries etc. depend on either forest or private plantation for their raw materials. The wood demand has been divided into two categories: short rotation species and long rotation species. The long rotation species are mostly hardwoods and used for furniture, construction, railway sleepers, catamaran. The short rotation species are softwood and used for pulp and paper industry, packing, agricultural implements, sports goods, match and other miscellaneous industries. The overall projected demand for long rotation wood were 54.40 million m^3 in 2015 and 65.10 million m^3 in 2020 which was lower than the projected demand for short rotation species at 68.76 million m^3 in 2015 and 87.70 million m^3 in 2020 [6]. The annual fuelwood consumption was around 12.4 million tonnes, followed by industrial sectors of housing and construction (18.5 million m^3), furniture (2.5 million m^3) and agricultural implements (0.2 million m^3) [7]. The booming paper industry is predicted to reach 40 million tons with an annual growth rate of 7-8 per cent by 2030.

2. METHODOLOGY

Tamil Nadu has more than 500 small scale timber industries, with majority of them being unorganized. The agents or intermediaries has been playing an important role in both domestic

and overseas supply chain of wood and wood products. The price had also been fluctuating between domestic and imported wood based on their requirement, quality, size and other parameters. The traders in these industries had been facing various problems like dependence of imported timber, unsure of the imported species and their quality, unscrupulous middlemen, frequent fluctuation in prices, labour shortage, unnecessary interference of the government officials and restricted permission for new timber processing units and so on. This study also examined the price difference between selected domestic and imported timber. The present study is confined to the timber industries located in Tamil Nadu. The timber traders procure wood within and from other states within the country and timber are also imported from different countries viz., Malaysia, Burma, Singapore, Thailand, New Zealand and Africa to meet our domestic demand. The study included 40 respondents selected through snow ball sampling technique. The snowball sampling is collecting data from initial referral which creates additional referrals. The initial reference was obtained from Consortium of Industrial Agroforestry (CIAF) operating at Forest College and Research Institute (Tamil Nadu Agricultural University), Mettupalayam.

3. RESULTS

3.1 Timber Trade in Tamil Nadu

Major timber species traded by the sample respondents in Tamil Nadu include Teak, Coconut, Neem, Mango and Palm trees. Other minor species included Jack, *Acacia sp*., Pungam, Casuarina, Eucalyptus, *Prosopis sp., Thespesia sp*., silver oak and other country woods (Table 1). Among these, teak was traded by majority of the firms (92.50 per cent) as it tops the list in terms of customer preference. Followed by sal with 42.50 per cent. The least procured timber species in Tamil Nadu were silver oak and mahogany, owing to their less availability in the state.

Similar trend was also noted in case of imported wood species in Tamil Nadu (Table 2). Teak was the major tree species imported to meet the domestic consumption. Teak was imported in various forms such as roundwood for production of sawlogs, sawnwood, pulpwood, veneer sheets, plywood and other wood residues and sawnwood for flooring and furniture making. Owing to the ban on roundwood import from Myanmar, teak was processed and imported as sawnwood and veneer sheets.

In Tamil Nadu, it was recorded that 80 per cent of the firms imported teak from Myanmar, Ecuador, Ghana, Togo, Gabon of Africa. It was followed by sal (42.50 per cent of firms) from Malaysia in the form of roundwood for making various timber products. Padauk (27.50 per cent of the firms) from Congo and Gabon of Africa for veneer sheets, flooring and making of musical instruments. Meranti tree wood recorded least imported (15 per cent of the firms) from Malaysia for window frames. Other country woods from Malaysia, Singapore and Indonesia were imported for its cost advantage.

Table 1. Major timber species traded in Tamil Nadu

S. No	Tree Species	No. of. firms
1.	Teak	37 (92.50)
2.	Sal	17 (42.50)
3.	Eucalyptus	15 (37.50)
4.	Casuarina	12(30.00)
5.	Padauk	11(27.50)
6.	Neem	10(25.00)
7.	*Acacia sp.,*	8(20.00)
8.	*Pterocarpus sp.,*	7(17.50)
9.	Fruit trees: Jack, Mango, Cashew	6(15.00)
10.	Meranti	6(15.00)
11	Silver oak	5(12.50)
12.	Mahogany	4(10.00)
13.	Other country woods	19(47.50)

Table 2. Major tree species imported in Tamil Nadu

S. No	Imported Species	No. of. firms	Per cent
1.	Teak	32	80.00
2.	Sal	17	42.50
3.	Padauk	11	27.50
4.	Meranti	6	15.00
5.	Other country woods from Malaysia, Singapore, Indonesia	19	47.50

Wood is normally imported from Malaysia, Myanmar, Indonesia, New Zealand, Papua New Guinea, America and Africa through the ports of Kandla, Mundra, Nhava Sheva, Chennai, Kolkata, Tuticorin and Mangalore. In Tamil Nadu, Chennai (32.50 percent of the firms) and Tuticorin (80 Per cent of the firms) are found to be suitable ports for importing timber. Tuticorin port was preferred owing to easy access to western countries and sophisticated wood logs storage space for long period.

3.2 Distribution Channel

Distribution channel indicates a group of people, organizations and activities that coordinates the movement of goods from the point of origin to the point of consumption. The main goal was to establish link between the company that produces product and potential customers who might wish to buy it. The key market participants in the timber trade were producers, traders, agents, wholesalers, retailers and customers. The importance of marketing included optimization of resource use output management, widening of market, growth of forest-based industries, adoption and spread of new technology, employment generation, income at the regional and national level, improving people's quality of life and creation of form, place, time and possession utilities [8].

It was quite obvious that there were many possible distribution channels of felled timber to reach the ultimate customer. Present study revealed that the major domestic timber species traded in Tamil Nadu were Casuarina, Eucalyptus, Neem, *Pterocarpus sp*., Jack, Mango and Cashew. Majority of the softwood species namely Casuarina, Eucalyptus and Silver oak were used by paper industry. While hardwood species were used for furniture making and other engineered wood manufacturing.

3.3 Price Variations between Domestic and Imported Timber

According to the present study, roundwood form of Teak (*Tectona grandis*) was the majorly traded species in the domestic market. Imported timber species bought in the roundwood form includes Teak (*Tectona grandis*), Sal (*Shorea robusta*) and Padauk (*Pterocarpus macrocarpus*). The average procurement price of major timber species imported from major importing countries were calculated for a period of eight years (2014-2021) and the results are presented in Table 3.

The costs excluded the felling and transportation cost in case of domestic wood and transportation cost alone for imported wood. Because of superior quality with limited quantity, domestic wood was procured at a higher price comparatively. The other determinants of domestic wood price were demand and supply, time of procurement, timber species and its quality etc. Owing to this, traders import large quantity of wood at the cheaper price. The imported wood price was fixed by the commission agents at the port destination based on its quality. There was 10-15 per cent increase in imported timber price per cubic feet per year regardless of different species. It could be noted that during Covid-19 pandemic the price was hit by 20-25 per cent increase in imported timber price per cubic feet owing to prolonged waiting time in overseas countries, increased loading and unloading charges etc.

Pearson correlation analysis was done to establish a statistical relationship between domestic and imported price of timber. Correlation was calculated between domestic and imported price of teak wood of different origins during the period of 2014-2021 (Table 4).

The results showed that there was a positive correlation of 0.987 between the price of country teak and Ecuador teak - an increase in price of country teak reflected positively in the price of Ecuador teak and the vice-versa in case of Tamil Nadu. These values were also statistically significant at 0.01 significance level. Similarly, there was a positive correlation 0.989 between price of country teak and African teak which implied that if the price of country price is high, the price of African teak will also increase and

Table 3. Average price of major imported species (Roundwood form) (INR / cft)

Year	Country Teak	Ecuador Teak	African Teak	Malaysian Sal	African Padauk
2014	2800	1100	1250	950	1500
2015	2950	1100	1550	1050	1700
2016	3000	1150	1800	1100	1900
2017	3400	1200	1950	1200	2100
2018	3500	1300	2000	1350	2300
2019	4200	1800	2500	1600	2600
2020	5000	2400	3200	2000	3400
2021	5100	2400	3300	2100	3500

Table 4. Statistical Relationship between price of teak wood of different origin

	Price of wood (2014-2021)			Significance
	Country Teak	Ecuador Teak	African Teak	
Country Teak	1			
Ecuador Teak	0.987	1		0.000**
African Teak	0.989	0.971	1	0.001**

*** statistical significance at the 0.01 level*

vice-versa and was statistically significant at 0.01 level. This positive corelation reckoned that imported wood met the local demand to a greater extent in Tamil Nadu and there exists a continuous demand for teak wood in the state.

4. DISCUSSION AND CONCLUSION

Majority of the sample firms were engaged in trading of Teak (92.50 per cent) followed by Sal (42.50 per cent), Eucalyptus (37.50 per cent), Casuarina (30 per cent) and Padauk (27.50 per cent). Other species traded were *Acacia sp., Pterocarpus sp.,* fruit trees such as jack, mango and cashew, meranti, silver oak and mahogany. Major tree species imported to Tamil Nadu were Teak (80 per cent) from Myanmar, Ecuador, Ghana and Togo, followed by Sal (42.50 per cent) from Malaysia, Padauk (27.50 per cent) from Congo and Gabon of Africa and Meranti (15 per cent) from Malaysia. Major importing countries to Tamil Nadu were the African countries (77.50 per cent), followed by Malaysia (57.50 per cent) and Myanmar (22 per cent). The average procurement price of country teak was more than imported teak because of its unique quality in limited quantity. There would be raise in imported price at the rate of 10-15 per cent per cubic feet per year regardless of different species. The price variability between domestic and imported teak was evaluated using bivariate correlation analysis. It could be found that there was significant positive correlation between the price of country teak and Ecuador teak, country teak and African teak which implied that if there is increase in price of country teak, there will be increase in price of either Ecuador or African teak and vice-versa.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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