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CURRENT PRODUCTION AND FUTURE REQUIREMENT OF WOOD PRODUCTS IN INDIA

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INTRODUCTION

The contribution of agriculture to the national economy has been mainly from the farm sector, and forestry including animal husbandry sub-sectors in India did not receive the attention that they deserved till recently. However, the potential role of the forestry sub-sector was realised in the mid-seventies by the National Commission on Agriculture (NCA). The recommendations of the NCA resulted in restructuring the forestry system in India (Government of India, 1976).

Forest products have been divided into (i) major (wood products) and (ii) minor (non-wood products). Wood products consist of timber, small wood, and fuelwood. Non-wood products include bamboo, oilseeds, grasses, fruits, resins, barks, leaves, exudates, animal products, etc. The forestry sector also provides numerous intangible goods and services such as soil and water conservation, oxygen, restoration/maintenance of ecological and environmental balance.¹ However, forest managers are mainly concerned with the management of wood products in India. An empirical study of wood products in India assumes importance. Therefore, the present paper is addressed to analyse the production and consumption of wood products in India during the period 1962 to 1983.² Based on the trend equations, the future requirements of wood products have also been estimated in this paper. The results and discussion pertaining to each group of wood products are provided below.

RESULTS AND DISCUSSION

Roundwood

The production of roundwood in India has increased from 92.3 million M³ in 1962 to 232.5 million M³ in 1983, witnessing a continuous growth rate of 2.5 per cent as compared to 1.3 per cent growth rate in the world output of this commodity during the same period. At the same time, assuming its output as dependent on time factor and using regression analysis, the value of R² stood at 0.99 for India and 0.96 in the case of world as a whole. The growth in roundwood production during the study period was statistically significant at one per cent level (Annexure 1). This implied that despite the

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ban on forest felling, the output of wood products increased in India and the world as a whole which is not necessarily due to harvesting rate but due to the control on leakage and smuggling of wood specially in the mid-seventies and early eighties.

Considering domestic production plus import and excluding export, the per capita annual consumption of total roundwood in India was found to have increased from 0.20 M³ in 1962 to 0.32 M³ in 1983. The average annual consumption of total roundwood stood at 131.4 million M³ against the annual domestic production of 141.9 million M³ during the period 1962 to 1983. Growth in import and export may be seen from Annexures 1 and 2. It may, however, be pointed out that the unit price of roundwood import increased while its quantity imported into India decreased significantly. On the other hand, the export unit prices of this commodity increased at the rate of seven per cent while its quantity exported from India increased by 4.13 per cent. The unit price of roundwood export was higher than the unit price paid for its import and consequently, the average annual net foreign exchange earnings from trade in this commodity stood at Rs. 76.4 million. However, our requirement of roundwood by 2000 A.D. has been estimated at 337.47 million M³ against the current annual domestic output level of 141.9 million M³ (Table I).

Sawnwood

The production of sawnwood in India increased from 2 million M³ in 1962 to 11 million M³ in 1983 and its average annual production stood at 4.42 million M³. The growth in total sawnwood production during the last two and half decades ending 1983 worked out to 3.64 per cent and it was statistically significant at one per cent level (Annexure 1).

The average annual import of this material was 0.01 million M³ against the export of 0.002 million M³ (Table I). The growth rate of its import was negative at 20.71 per cent as against the positive export growth rate of 6.43 per cent during the study period. At the same time, unit prices of sawnwood import and export increased at the rate of 16.21 and 17.88 per cent respectively (Annexure 2). However, the average annual consumption of sawnwood in India worked out at 4.43 million M³ against the domestic production of 4.42 million M³. But the requirement of this material by 2000 A. D. is estimated to reach at 15.63 million M³ (Table I).

Wood-based Panels

The production of total wood-based panels in India increased from 0.096 million M³ in 1962 to 0.237 million M³ in 1983. The average annual production of this material stood at 0.18 million M³ during the last two and half decades in India. The annual growth rate in its production stood at 3.85 per cent (Annexure 1). Further, the time period under reference explained the variations in its production to the extent of 88 per cent and was statistically significant at one per cent level.

TABLE I. CURRENT PRODUCTION AND CONSUMPTION, AND FUTURE REQUIREMENTS OF WOOD PRODUCTS IN INDIA

Wood products	Current average annual (1962 to 1983)				Estimated future requirements			Percentage requirements by 2000 A.D. over current production
	Production	Import	Export	Consumption	1990		2000 A.D.***	
					I*	II**		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Total roundwood (million M ³)	141.90	20.9	31.3	131.4	185.82	181.42	337.47	237.8
(a) Fuelwood including charcoal	129.80	11.0	4.9	135.9	166.17	159.10	308.29	237.5
(b) Industrial roundwood	12.10	9.9	20.5	1.5	19.65	22.32	29.18	241.2
2. Total sawnwood (million M ³)	4.42	0.01	0.002	4.43	3.40	5.68	15.63	353.6
(a) Sawnwood	4.22	0.01	0.002	4.23	3.38	5.63	15.47	366.6
(b) Sleeper	0.20	neg.	neg.	0.20	0.07	0.05	0.16	80.0
3. Total wood-based panels (million M ³)	0.18	neg.	0.01	0.17	0.03	0.29	0.37	205.5
4. Total wood pulp (million tonnes)	0.25	0.07	nil	0.32	N.A.	N.A.	0.83	332.0
5. Paper and paper board (million tonnes)	0.87	0.17	0.01	1.05	0.52	2.02	1.80	206.9

Source: 1. Data presented under cols. (2) to (5) and (8) and (9) are the results of analysis carried out by the author. However, for detailed methodology (not stated here for want of space), see Guleria (1987).

2. Data presented under cols. (6) and (7) are from Chandrakanth *et al.* (1979).

Note:—* Based on income as determinant factor. ** Based on time considering only limited number of years in the seventies. *** Based on trend equation ($Y = a + bt$) by considering the time period 1962 to 1983 for projections for the year 2000 A.D.

The import of this material was negligible during the study period. But its average annual export stood at 0.01 million M³. The quantity exported increased at the rate of 30 per cent, while its unit export price increased at the rate of 11.89 per cent during the study period. Statistically, however, only the increase in unit export price was found significant at 5 per cent level (Annexure 2). At the same time, the study of price-quantity relationship with the help of regression analysis revealed a significant corroboration. On the whole, the value of net earnings from its trade was favourable at Rs. 73.8 million in 1983. However, the average annual consumption of total wood-based panels in India stood at 0.17 million M³ during the study period (Table I). The requirement of this material is estimated at 0.37 million M³ by 2000 A.D. as compared to the current annual level of its production at 0.18 million M³.

Wood Pulp

The production of wood pulp excluding fibre pulp in India increased from 0.02 million tonnes in 1962 to 0.48 million tonnes in 1983. The average annual production of this wood material stood at 0.25 million tonnes (Table I). The annual growth rate in its production during the study period was 14.26 per cent. The explanation of time as independent factor in its output variation was statistically significant at one per cent (Annexure 1).

In addition to domestic production, this wood material was also imported (no export) into India during the study period. The average annual import stood at 0.07 million tonnes. However, the quantity imported over the study period decreased at the rate of 4.74 per cent, while the unit price of import increased at the rate of 10.43 per cent per annum (Annexure 2). Further, the unit price of this material explained the variations in the quantity imported into India to the extent of 33 per cent and was statistically significant at one per cent level of probability. Given the above, the average annual consumption of wood pulp adds to 0.32 million tonnes. The requirement of this wood material by 2000 A.D. is estimated at 0.83 million tonnes as against the current annual production level of 0.25 million tonnes (Table I).

Paper and Paper Board

The output of wood materials used for paper and paper board production in India has increased from 0.48 million tonnes in 1962 to 1.29 million tonnes in 1983. The average annual production stood at 0.87 million tonnes (Table I). During the study period, the output of this material increased at the annual linear growth rate of 3.67 per cent. Considering its output as a dependent factor on time and using regression analysis, the value of R² worked out to 0.96 and the coefficient of determination was significant at one per cent level (Annexure 1).

The average annual import of this material was 0.17 million tonnes as against its average export of 0.01 million tonnes per year. However, the

quantity exported during the study period registered a negative growth rate of 1.32 per cent, while the unit price of its export witnessed a positive growth rate of 6.57 per cent per annum (Annexure 2). But the quantity imported as well as the unit price of import showed a positive and significant growth of 2.75 and 9.74 per cent per annum respectively. However, its unit prices were not the strong determinants of the quantities imported and exported during the last two and half decades under reference. Given this, the average annual consumption of this wood material was estimated at 1.05 million tonnes (Table I). The requirement of this resource by 2000 A. D. is estimated at 1.80 million tonnes as against the current annual production of 0.87 million tonnes. Therefore, all wood products considered above witnessed a growing gap between their demand and supply.

Recommendations

To bridge the widening gap between the demand and supply of wood products, the NCA (1976) recommended to bring an additional 48 million hectares of area under forests. Similarly, the National Wastelands Development Board aimed at 5 million hectares of land to be put under plantations every year. But the progress during the last three decades shows that the average annual area planted under various schemes stood at only 0.156 million hectares (Guleria, 1987, p. 314). In fact, the land is available on account of illegal encroachments. Since illegal possession of such land in India will not be vacated, the chances of bringing additional land under plantation seems very bleak. This calls for strong policy measures to be linked up with land reform activities. Further, farm forestry and social forestry have so far resulted more in coping with commercial demand for wood than providing livelihoods for the poor (Rao, 1988, A-4). More importantly, such government programmes are capital intensive, while agriculture is labour intensive. Therefore, large farmers in general and industrialists in particular appropriate the benefits of commercial forestry and the majority of the poor in India remains starved not only on account of food but also of fuel and timber.

The solution also lies in enhancing the yield levels through scientific management of forests in India. However, the current level of wood yield in India is significantly low as compared to many developing countries of the world. The reasons for this could be low amount of investment in the forestry sector and also the policy decision pertaining to demand management specially due to environmental and ecological constraints in India. Moreover, the nature of the forestry is such that there is sufficient time lag between the investment and commercial return from that investment. The country is faced with a dilemma. If production is increased to meet the expanding needs and demands of growing population at increasing incomes, ecological balance is disturbed. If ecological balance is maintained, production suffers resulting in increase in the prices of forestry products, necessitating imports of such products which the country can ill-afford. The solution lies in maintaining a proper balance between the conflicting interests of the ecosystem and production of forestry products.

NOTES

1. For estimates of the contribution (tangible and non-tangible) of these forest products, see Guleria (1988, pp. 243-269).
2. The relevant data are mainly available from the published and unpublished records of the Food and Agriculture Organization of the United Nations, Rome.

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ANNEXURE 1

TREND COEFFICIENTS OF QUANTITY OF PRODUCTION
OF WOOD PRODUCTS IN INDIA(Equation: $Y = a + bt$)

Wood products	b	Growth rate	R ²
1. Total roundwood	2.766* (0.059)	2.47	0.99
(i) Fuelwood and wood for charcoal	2.362* (0.045)	2.36	0.99
(ii) Industrial roundwood	0.379* (0.024)	3.83	0.95
2. Total sawnwood	0.102* (0.005)	3.64	0.96
(i) Sleepers	-0.114 (0.002)	-7.37	0.74
(ii) Other sawnwood	0.114* (0.004)	28.49	0.98
3. Wood-based panels	6.056* (0.611)	3.85	0.88
4. Wood pulp	27.450* (2.252)	14.26	0.90
5. Paper and paper board	29.040* (1.544)	3.67	0.96

Notes.— Figures in parentheses denote standard errors.

*Statistically significant at one per cent level.

ANNEXURE 2

TREND COEFFICIENTS OF QUANTITY AND PRICE IN INDIA'S FOREIGN TRADE OF WOOD PRODUCTS

(Equation: $Y = a + bt$)

Wood products	Imports				Exports				Growth rate			
	Quantity		Price		Quantity		Price		Import		Export	
	Quantity	Price	Quantity	Price	Quantity	Price	Quantity	Price	Quantity	Price	Quantity	Price
1. Total roundwood	-1.31** (0.584)	31.81*** (17.574)	1.140* (0.314)	181.57* (22.062)	- 8.68	7.51	4.13	7.00				
(i) Fuelwood and wood for charcoal	-0.38 (0.452)	4.41* (0.799)	-0.21*** (0.100)	22.08* (7.434)	- 5.51	6.09	-14.00	16.56				
2. Total sawnwood	-2.313* (0.782)	210.149* (30.237)	0.099* (0.041)	159.808* (31.031)	-20.71	16.21	6.43	17.88				
(i) Sleepers	N.A.	N.A.	1.20 (0.694)	79.60*** (29.372)	N.A.	N.A.	30.00	11.89				
3. Total wood-based panels	N.A.	-26.65 (24.539)	1.899* (0.398)	132.97* (24.947)	N.A.	- 4.33	16.20	8.62				
4. Total wood pulp	-3.10* (1.054)	251.77* (27.943)	N.A.	N.A.	- 4.74	10.43	N.A.	N.A.				
5. Total paper and paper board	4.08** (1.625)	239.56* (34.870)	-0.090 (0.321)	278.07* (88.276)	2.75	9.74	- 1.32	6.57				

Note:— (i) Figures in parentheses denote standard errors.

(ii) N.A. denotes nil or not calculated for want of data.

*Statistically significant at one per cent level.

**Statistically significant at 2.5 per cent level.

***Statistically significant at 5 per cent level.